Civil Rights Activists in the Information Age: The Development of Math Literacy Workers

Roderick J Watts*, Ph.D. Principal Investigator and Omar Guessous, M.A. Project Director
Georgia State University

*rjwatts@gsu.edu

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BACKGROUND

This is the final report of an evaluation research projects completed with and on the Young People's Project in Chicago. The mission of the Young People's Project (YPP) is to "organize young people to work to radically change their education, and the way they relate to it." In the YPP, that means using organizing principles from the civil rights movement to create a culture of math literacy in communities and schools throughout the nation. High school students trained as math literacy workers are the main engine for this effort. These peer educators organize a range of events aimed at math education for middle school children as they act on a broad vision of civic engagement, community development and social justice.

The YPP could be described as a third-generation movement for social justice. It evolved out of the Algebra Project, which in turn grew out of the civil rights activism of Robert Moses. Robert Moses chronicled the first two generations of the work in his book, Radical Equations: Math Literacy and Civil Rights (Moses & Cobb, 2001). Moses civil rights experience led to the Algebra Project, and the Algebra project grew into a network of over 40,000 children in 25 cities. Omo Moses, the national director of YPP is the son of Robert Moses. He was a student in the Algebra Project, and he absorbed its spirit of intellectual and social empowerment. Omo recognized the need for a youth-led effort that put young people at the center of their own development. He and his associates founded and incorporated the Young People's Project 1996. Young people, known as Math Literacy Workers (MLWS) conduct math institutes and workshops and strive to make these events a part of civic and community life. For instance, the MLWs cultivate relationships with churches in areas where they do math workshops, and help churches sponsor family math nights. These events give the MLWs community-organizing experience along with an educational and even a political consciousness-raising component, they events include fun and engaging math education, homework help, and games.

The point of this third-generation approach to education and civil rights it to raise political consciousness along the math and science literacy necessary for a success in twenty-first century society. According to its web site, the Young People's Project create[s] a space within the various Algebra Project communities for young people to develop skills and then use these skills to provide services for the Algebra Project network. We are in the process of modeling how student leadership and economic empowerment can be directly applied to education [and] how young people can organize to uplift other young people." Thus, YPP takes a holistic perspective on youth development. Its founder and staff see themselves as preparing young people for adult life and citizenship as well as for their work as peer math educators.

The YPP's goals include (1) training high school and college aged students to organize and conduct math workshops for middle and elementary students (2) increasing math literacy among the middle school students who participate in the workshops run by these Math Literacy Workers (MLWs); (3) promoting math literacy-related curricula and programming in the schools; and (4) Encouraging MLWs to develop a life-long interest in math, community development and social change.

Despite its potential as a youth and civic development strategy, much of the attention from researchers has been on the direct impact of the Algebra Project and YPP on math achievement. The benefits of math literacy work in promoting civic engagement has yet to be examined. Thus, the plan for the Chicago branch of YPP was to advance new programming on youth empowerment and civic engagement, and to conduct evaluation research to assess the outcomes.

THE YOUNG PEOPLE'S PROJECT AND SOCIOPOLITICAL DEVELOPMENT THEORY

The research project described in this document addresses theoretical and evaluation research questions related to the YPP. This includes its contribution to the sociopolitical, civic, intellectual, socio-emotional, and ethnoracial development of youth. This emphasis echoes the

on-going work of the authors and their associates whose work explores sociopolitical development, the use of popular culture, and participatory research methods in youth work (e.g., Watts, Griffith, & Abdul-Adil, 1999; Watts, Abdul-Adil, & Pratt, 2002, Watts, Williams, & Jagers, 2003). Early work by the senior author and his associates initially conceived of sociopolitical development as a series of stages, but in their most recent work we have moved to a more transactional approach that emphasizes the interplay of critical reflection and action. The group training, discussion, community organizing and field experiences in the Young People's Project make it an ideal venue for furthering work on these ideas.

Figure 1 presents the two theoretical models of sociopolitical and civic development that informed this research. Systems Worldview is the term used to describe the set of awareness, insights, and attitudes about sociopolitical and cultural matters that people gain through life experience, especially through community and civic engagement. It includes an understanding of social injustice and the social forces that contribute to it. This is seen as a prerequisite to effective civic action, because effective civic action benefits from at least a nominal understanding of the social systems in question. Although a systems worldview may be useful, it is not enough for sustained civic engagement behavior. A systems worldview alone may produce nothing more than an "armchair activist" someone who is analytic and articulate, but lacking the capacity for active engagement in civic or political affairs. The missing variable is a sense of agency or empowerment. Empowerment being " . . .a combination of self-acceptance and self-confidence, social and political understanding, and the ability to play an assertive role in controlling resources and decisions in one's community." (Zimmerman & Rappaport, 1988, p. 726). According to the theory, Math literacy workers must believe they have the power to make their world a better place before they will apply insights from their systems worldview. The skills they learn and their field experiences are expected to grow this sense of agency.

Figure 1: A Theory of Sociopolitical Development

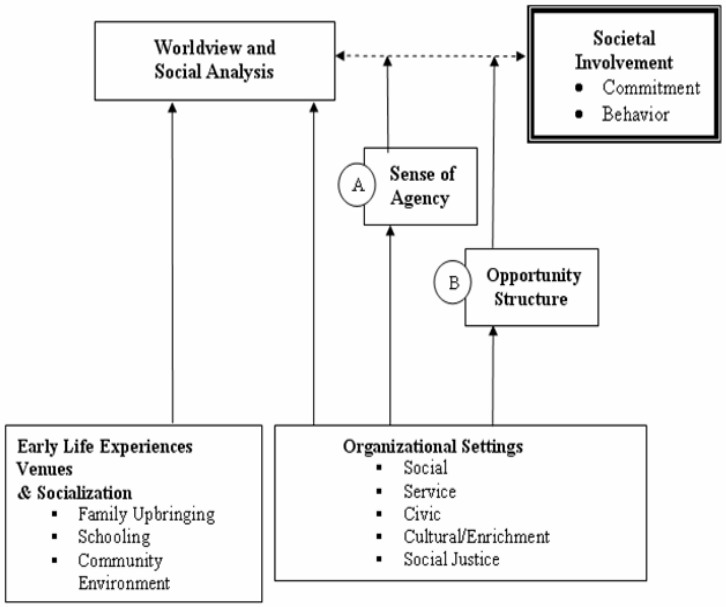


Figure 2: Relationships among Indicators of Societal Involvement and Positive Youth Development

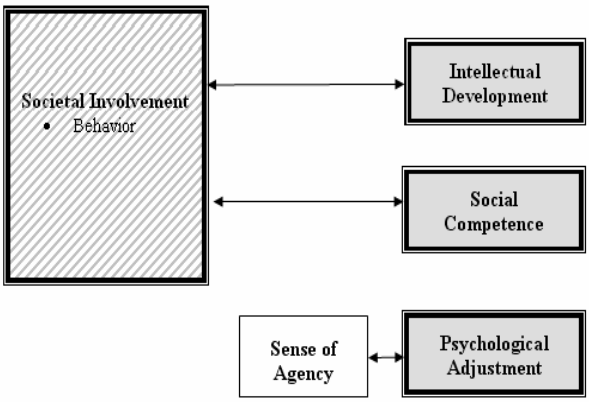


Figure 2 includes math achievement as well as most of the variables in the primary model. Instead of acting as a moderator, empowerment is a predictor variable. This theoretical formulation is more straightforward, but it is also more speculative. The idea here is that feelings of competency associated with mathematical expertise—stemming from an ability that is scarce in many low-income communities of color—contributes to a sense of intellectual agency and accomplishment. The model predicts that this academic sense of self-efficacy has unique predictive power for civic activism—beyond the variance accounted for by empowerment. In a recent book published by the National Research Council on adolescent development and community interventions, the contributors reviewed the findings of recent developmental research to identify what ought to be emphasized in youth programs (Eccles, 2002). Their recommendations fall into two broad categories (1) Consistent environments that promote healthy development (physical and psychological safety, appropriate structure, supportive relationships, integration of family, school and community efforts), and (2) An empowering social environment with peers that affirm new ways of thinking and behaving (opportunities to belong, positive social norms, support for efficacy and mattering, opportunities for skill building). They note, as do researchers such as Flanagan & Gallay (1995) that the civic and sociopolitical development of youth has long been neglected by social researchers. We know surprisingly little about how to cultivate it or how it is related to other aspects of development.

The major theoretical and evaluation research questions are summarized below. The evaluation research questions focus on differences between students in the Young People's Project and those in the control groups.

Initial Process evaluation and program fidelity questions:

1. Participant self-selection issues: What distinguishes the young people who become involved in YPP from their non-participating peers (during and at time points after the intervention)?
2. The following questions are related to theory as well as program fidelity. They are based on the program characteristics National Research Council and others link to positive youth outcomes:
    a. How and to what extent are young people and adults involved (roles, consistency, intensity)?
    b. What are the components of the MLW training and development process as implemented?
    c. What are the components and characteristics of the (i) Math literacy workshops and (ii) community-based math institute work conducted by MLWs—on paper and as implemented?
3. What are programmatic and organizational strengths and weaknesses of the Young People's Project, particularly those that are related to program sustainability and replication?

Outcome Evaluation Research Questions:

1. Did MLWs make significant gains over their non-YPP peers on the short-term outcome variables of interest pro-social behavior, empowerment, and civic activism commitment?
2. What academic, ethnoracial, and psychosocial gains in MLWs are associated with program participation?
3. Are the after school programming and other school-based interventions by MLWs associated with desirable changes in the participating schools and their staff—particularly with regard to math curricula, pedagogy, and civic education?
4. To what extent do the activities of MLW contribute to community-building? Specifically, do the events they sponsor engage or expose adults and youth to community issues?
5. Is math achievement or the acquisition of math reasoning a factor in civic action commitment?
6. What products, materials, and resources has

YPP produced? How can they be used to aid program dissemination?

METHODOLOGY

The Original Research Design

Approval for this research was granted by the Georgia State University Institutional Research Board and consent and assent was secured for all research participants, including parental consent where applicable.

The original design called for a three year project involving the Jackson Mississippi and Boston YPP sites. Year 1 was to be a cross-sectional design that assesses the current MLWs in Boston and Jackson—in all, about 70 high school students who have been working in the program for at least a year. The design for Year 1 also included the first of three cohorts of new MLWs, as part of a longitudinal design. Pretests of these new MLW trainees (know as "novices") were to serve as a nonequivalent control group. Over time, the result would have been a recurrent institutional design that would allow comparisons with existing MLWs (known as "veterans"). An additional comparison group, called the MLW peer group, was to be constructed as well, from friends nominated by the current MLWs to mitigate some of threats to validity ("selection" and "history") posed by the sole reliance on new MLW trainees and their comparison groups. Current MLWs were asked to choose a friend who predated their association with YPP, someone who is very similar to them in their lifestyle and interests except for participation in YPP.

Lastly, there was to be a group of students with no exposure to the YPP programs. This group would be compared with novices as part of the longitudinal design, and also as an additional set of control veterans.

(Re)Developing the Research Design

During the significant period of time that elapsed between submission of the proposal and funding, there were significant changes in YPP's program priorities and in the final grant award. It proved necessary to restrict the study to a single site—the new Chicago site that was to have a substantial focus on the civic and community engagement aspects of YPP's mission. To determine what changes to the original research design would be necessary, the principal investigator conducted a site visit and collected process evaluation data. The findings from the site visit are presented first, so that the operational characteristics of the program and their implication for the research design will be clearer.

Research in Context: Site Visit Findings

This evaluation of the YPP began in the summer of 2004 with a four-day site visit to Chicago, when the P.I. met all the staff and conducted a series of informal participant observations to get a sense of program operations. The principal investigator spent time at both the University of Illinois at Chicago site and at the DePaul University site.

The summer session is the most content-rich of all the sessions because the staff provides much more training and education on the historical and political context of the YPP. Much less time is available for training beyond what they need to conduct the math workshops when school is in session. The rest of the program year consists of two 10-week sessions where there is more emphasis on teaching the MLWs the basics of math and the various exercises, games and instructional techniques associated with conducting math workshops for elementary and middle school students. High school students can join the YPP at the beginning of any of the 10 week sessions because training is provided on an on-going basis. However, there is much less historical and political education for MLWs who do not attend the summer session.

It is notable that YPP does not require its participants, at entry, to demonstrate proficiency in math or to demonstrate any specific aptitudes. Screening and selection emphasizes motivation, commitment to work with other youth, and the likelihood of consistent participation. This programmatic policy is rooted in YPP's mission to increase math literacy for the masses and

to promote a life-long interest in the subject. Consequently, we have no reason to expect YPP participants at entry to be more confident and interested in math. In fact, given that YPP's target population encompasses a large proportion of youth who grow up in poverty and attend low-income and low-performing schools, YPP participants might in fact perform below-average in math. The demands of the program—especially the expectation that the youth will instruct others in math—requires that the youth understand the math concepts and tools that they study more deeply than is typically expected of school students. The ability to teach a subject matter requires a sophisticated conceptual and technical grasp of the material, coupled with the confidence required to convey that material appropriately and intelligibly. Based on observations of both training sessions and in-school workshops it appears that that the math-related training and the roles MLWs play in instructing their middle school students challenge them in new ways, and it probably triggers a degree of self-doubt. Although informal interviews suggested that this doubt is not severe, it is likely to give them a very different perspective on their math competency than their peers with no such experience. Further information on the Young People's Project and program operations is available in the Appendix.

Evaluation of the Chicago YPP was not so straightforward a matter because there is no fixed beginning or end of the program. Our original plan was to collect data at a series of time points, but because participation is on-going the notion of true pre and post tests in not meaningful. Therefore, outcomes are best thought of as a function of "dose"—that is, how much program exposure a participant has as measured by the total number and kinds of sessions he or she has attended. Changes in the design from a three site to a one site study also meant that many fewer participants would be available for the analysis and thus fewer analytic options.

One of our aims was to better understand how the political and historical elements of the YPP influence the young people who participate, over and above whatever their experiences with the math education and workshops contribute. Because the summer program differs so much from the other session, it provides an opportunity to specifically examine the impact of this program element.

Research Design and Measurement

In consideration of the change to a one-site design, and opportunities and constraints in the Chicago program's operation, the original design evaluation changed and evolved into the following:

- *The longitudinal designed was eliminated in favor of a simple cross-sectional design.* We collected data on the following groups:
    - High School and/or College MLWs on November 2004, February 2005, July 2005, and August 2005.
    - YPP peers: November 2004 and February 2005
    - Comparison group of school-based ASM participants (School Controls): May 2005

- *Given the distinctiveness of the summer session—it is more intensive and in-depth in its coverage of sociopolitical material—we collected pre- and post-test data at the start and end of the summer 2005 session.*

- *Comparison Data:*
    - We collected the peer comparison data as originally planned, although due to a number of complications, this group is smaller than intended.
    - The bulk of comparison data was collected from Chicago-area high school students who participated in structured after-school programs other than YPP. Similar to YPP, these comparison-group programs were coordinated by After School Matters, an organization that recruits youth for after school programs throughout the Chicago area. YPP is one of many programs that are funded and

supported by the Chicago-based After School Matters (ASM, www.afterschoolmatters.org).

Research Questions for the Revised Study

The purpose of this study is to examine whether the Young Peoples Project, as a community-based math and social justice organization for youth, contributes to the math, academic, sociopolitical, ethnoracial identity, and positive youth development of participants. Our specific research questions (RQ's) are:

1. *RQ #1, Program effect:* Do YPP participants show more favorable outcomes than the two comparison groups on outcome indicators of interest?
2. *RQ #2, Dosage effect:* Do veterans show more favorable outcomes than novices on the outcome indicators of interest?
3. ***RQ #3, Program x dosage interaction:*** Is the dosage effect stronger among YPP participants than among the School Controls? In other words, is there an interaction effect between program membership and level of seniority?
4. ***RQ #4, Math—SPD link:*** Is there a positive relationship between math confidence and indicators of sociopolitical development?
5. ***RQ #5, Math—SPD x Program:*** Is this link moderated by group membership, such that YPP participants demonstrate a stronger positive relationship between math confidence and indicators of sociopolitical development than the School Controls (SC)?

SUMMARY OF RESEARCH PROCEDURES AND FINDINGS

Participants & Procedures

All participants lived in the Chicago, IL area. The paper-and-pencil surveys used in this study were administered in a group format at the site of each YPP and After School Matters (ASM) program, during or immediately following the scheduled time for program activities. All data was collected by adult staff, with the assistance of our on-site research coordinator.

Parental consent was secured prior to data collection, while youth assent was secured at the start of data collection. Participation was voluntary, even for YPP participants. Potential participants were not penalized if they decided to abstain or withdraw from participation. Incentives for participation consisted of movie tickets (one per participant).

YPP participants were encouraged to recruit a peer who did not participate in YPP to serve as matched comparisons. This took place during the first two data collection dates and yielded a total of 20 peers—two of whom are excluded from analyses. Additionally, ASM participants from three Chicago public high schools (Simeon, Taft, and Tilden) were recruited for participation in this study, to serve as an additional comparison group (N=73). All data collection took place during the following months:

- YPP participants: November 2004, February 2005, July 2005, and August 2005.
- YPP peers: November 2004 and February 2005
- Comparison group of school-based ASM participants (School Controls): May 2005

Only youth in grades 8 and up, including recent high school graduates, were included in present analyses. As a result CMLW's—college students—along with two younger YPP peers were excluded from all analyses in this report. No within-subjects analyses appear in this report. Although a handful of YPP participants were surveyed on two, three, or four occasions (N = 23), there was wide variability in the timing of the follow-up surveys. For these respondents, only their first set of data is used. We combined all data from YPP participants into one large cross-sectional dataset and analyzed dosage effects by analyzing group differences between novice and veteran program participants.

Additionally summertime post-test data—the last time that data was collected—was only included for those participants who had not completed any previous surveys. Thus are no true "waves" of data in the longitudinal sense.

Of the 196 participants whose data was included in this study's analyses, over half (58%, N=114) were female and 81.5% self-identified as Black or African American (N=160). The remaining 18.5% were Latino/a (N=16), White (N=5), Multiracial (N=3), Asian American (N=1), Native American (N=1), and of unknown race or ethnicity (N=10). As many as 16% (N=34) reported that one or two of their parents were born outside the U.S., while 4.6% (N=9) of participants were themselves born outside the U.S. Participants' ages ranged from 13 to 19, with a mean age of 15.9 and a median age of 16. The sample is almost equally distributed across high school grades with 46.4% (N=91) of surveyed youth in their first two years of high school (grades 9 and 10) and 42.3% (N=83) in their last two years.

As depicted in Figure 1, the 196 surveys included in these analyses fall into one of two broad categories: there are 105 surveys of YPP Program participants (MLWs) and 91 surveys of Comparison Group participants. The Comparison group is further broken down into YPP peers (N=18) and ASM School Controls (N=73). Demographic data for each group is provided in Table 1. Within the Program and Comparison groups, participants are classified by seniority. Novices are those who were surveyed during their initial experience with the program (N=86) whereas those in the veterans category had already completed at least one program session before they were surveyed (N=80). ASM programs, including YPP, operate on a schedule of 3 "sessions" per year, each with a beginning and an end. We refer to them as Fall, Spring, and Summer sessions. Of all the variables in the study, only four significant differences existed between novices and their peer controls. Nor were there consistent absolute differences in how the three groups ranked on the measures (see the Appendix for details). These findings suggest that self-selection was not a major factor in the results.

Measures

Each variable of interest was assessed using one or more self-report survey instruments that were answered on a numerical Likert scale.

Measures of Social Analysis: How youth understood issues of justice and equality and the root causes of common social problems.

Global Belief in a Just World Scale (GBJWS) (Lipkus, 1991). The GBJWS is a 7-item scale that assesses a person's general belief that the world is a just place and that people get what they deserve and deserve what they get. This particular unidimensional scale grew out of a significant body of research in Social Psychology on just world beliefs, and has proven to be the most robust to date of all previous attempts at measuring this concept; it has achieved Cronbach's alpha reliabilities that range from .80 (O'Connor, Morrison, & Morrison, 1996) to .83 (Lipkus, 1991). Items are ranked on a 4-point Likert scale from (1) "strongly disagree" to (4) "strongly agree," and include such statements as "I feel that people earn the rewards and punishments they get" and "I feel that people who have problems have brought them on themselves." The GBJWS was used to assess one aspect of social analysis.

What's Going on in Your City (WGYC)

Table 1. Demographic Information by Program

	Sex	*Mean Age*	*Grades 11-12*	*African Americans*	*Immigrant Parent(s)*
YPP youth	66% female	15.9	54.5%	89.5%	17%
YPP peers	50% female	15.6	35%	89%	11%
School Controls	60% female	16.0	38.5%	81%	22%

(Watts & Guessous, 2004). This 20-item instrument assesses respondents' endorsements of individual- and systems-level explanations of ten common problems in their city of residence. Because these two types of explanations are not mutually exclusive, respondents rate each type of explanation separately. For example on the issue of homelessness, they rate the following two explanations: "There is not enough affordable housing" and "Some people don't want to find a job and hold onto it." Each explanation is rated on a 4-point Likert scale that ranges from "strongly disagree" to "strongly agree." One pair of items (#6) was removed because it was not as conceptually refined as the other items. Factor analysis confirmed the existence of two subscales: Individual-Level Attributions and Systems-Level Attributions. This measure is used to assess another aspect of social analysis.

Measures of Sense of Agency: The extent to which the youth feel capable and empowered to take part in successful social or political action.

Sociopolitical Control Scale (SPCS) (Zimmerman & Zahniser, 1991). This 17-item scale assesses the cognitive, motivational and personality dimensions of an individual's perceived level of sociopolitical control. This scale, in other words, measures the degree to which a person believes that actions in the social and political system can lead to desired outcomes. Two subscales - Leadership Competence and Policy Control – make up this psychometrically-validated scale, as Previous research has yielded reliability coefficients of .78 to .79 for the Leadership Competence subscale and .74 to .75 for the Policy Control subscale (Zimmerman & Zahniser, 1991; Itzhaky & York, 2000). Items are rated on a 6-point Likert scale that ranges from "very strongly disagree" to "very strongly agree". The authors' subscales, however, demonstrated poor reliability in this study—as it did in other research we have conducted with adolescents, a large proportion of whom are African American. Based on factor analysis results, we will instead use a Total Sociopolitical Control score, against the authors' recommendations (most of which are based on their research with adults). This instrument was used to assess sense of agency in the sociopolitical domain.

Experience of Agency (EOA) (Morgan & Streb, 2001). This 4-item scale was created by its authors to assess the level of student "voice" in the design and implementation of service-learning projects. These items were adapted for the current study to assess the extent to which participants had been involved in community or political projects that allowed them to exert and further develop their individual sense of agency. Factor analysis confirmed the unidimensional nature of this brief measure.

Measures of Societal Involvement: Level of commitment to and actual involvement in various forms of service, community, and political activities.

Youth Social Responsibility Scale (YSRS) (Pancer et al., 2000). This scale was developed to assess teenagers' commitment to societal involvement, using such items as "More young people should become active in political parties and organizations" and "Young people have an important role to play in making the world a better place." Each item is ranked on an adapted 4-point Likert scale ranging from "strongly disagree" to "strongly agree". Alpha's for the YSRS ranged from .85 to .87 among two samples of Canadian youth aged 16-19. Test-retest reliability over a two year period was .62. A total score will be used in subsequent analyses. The YSRS was used to measure commitment to societal involvement.

Youth Inventory of Involvement (YII) (Pancer et al., 2000). This 30-item scale was devised to assess the types and amounts of societal involvement behavior that participants were involved in. Factor analysis was conducted by the authors to derive four subscales, each of which represents a different kind of societal involvement: political activities, community/ neighborhood activities, helping activities, and responding activities. Only the first two are used in present analyses. Respondents indicate how much, in the past year, they have participated in each of the activities using an adapted 6-point scale that

ranges from "never" to "weekly or more." Based on two large samples of Canadian youth aged 16-19, Alpha for the YII was.90 and test-retest reliability over two years was .61. The YII was used to assess societal involvement behavior.

Measures of Cultural & Ethnoracial Identity: Identification and feelings towards one's cultural and ethnoracial group memberships.

Communalism Scale (CS) (Boykin, Jagers, Ellison & Albury, 1997). This 31-item measure assesses the degree to which a person is oriented toward social obligation and interdependence. Items are responded to on a 6-point Likert scale that ranges from (1) "completely false" to (6) "completely true". A sample item is "I believe that a person has an obligation to work cooperatively with family and friends". Previous research has yielded alpha coefficients ranging from .83 to .88 (Jagers & Mock, 1995; Mattis et al., 2000). Although our own factor analysis suggests the existence of two separate subscales—Collectivism and Individualism—a Total Communalism score will be used in subsequent analyses. The CS was used to measure cultural worldview.

Multidimensional Inventory of Black Identity (MIBI) (Sellers, Rowley, Chavous, Shelton & Smith, 1997). The MIBI is a 51-item measure guided by Sellers' multidimensional model of racial identity. Factor analysis yielded eight subscales—Racial Centrality, Salience, Private Regard, Public Regard, and four Ideology subscales. This study uses two adapted subscales. The Private Regard subscale contains seven items that assess one's affective evaluation of one's ethnoracial group membership. The 9-item Oppressed Minority ideology subscale assesses one's identification with the oppression that is experienced by other ethnoracial groups. All items are responded to on a 7-point Likert scale ranging from "strongly disagree" to "strongly agree." The scale's authors report coefficient alphas ranging from .60 to .79. The MIBI was used to measure two aspects of racial identity.

Scale of Racial Socialization for African American Adolescents (SORS-A) (Stevenson, 1994). The SORS-A was designed to assess an adolescent's opinion about the appropriateness of racial socialization processes in educational, family, and societal venues. One subscale from this instrument will be administered to all: Cultural Pride and Reinforcement. The 10 items are rated on a 5-point Likert scale that ranges from "strongly disagree" to "strongly agree". The scale's author reports a coefficient alpha of .62. This instrument was used to measure yet another aspect of racial identity.

Measures of Academic and Math Self-Concept: Personal valuing of, orientation towards, and competence in school and math in particular. In addition to self-reported GPA, measures include:

Academic Confidence Scale (ACS). The ACS is a brief 5-item scale that assesses a student's rating of his or her ability to perform school work. Sample items include "Even if the work in school is hard, I can learn it" and "I'm certain that I can master the skills taught in school this year." Factor analysis confirmed the unidimensional nature of this instrument, yielding a total Academic Confidence score.

Value of Education Scale (VES) (Watts & Guessous, 2004). On this 7-item instrument, respondents indicate how much value they place on school and formal education. Sample items include "I find what I learn in school useful" and "School is important to me." Factor analysis revealed the existence of two factors—Intrinsic Value and Extrinsic Value—along with the possibility of computing a Total Value of Education score.

Math & Science Orientation Scale (MSOS) (Watts & Guessous, 2004). This 12-item instrument assesses respondents' future plans as they relate to math and science. Sample items include "Do you plan to pursue a career that uses your math skills?" and "How likely is it that you will take science courses just because you like it or think it is important?" Factor analysis indicates the existence of three factors—Math Future Plans, Math College Plans, and Science College Plans. The latter two can be combined to yield a total score for Math & Science College Plans.

Math Confidence Scale (MCS) (Watts & Guessous, 2004). The MCS is a 10-item scale

that assesses a student's level of confidence in his or her math skills. Sample items include "I feel nervous when I'm doing math problems" and "When I teach math to others, I realize that I know a lot." Factor analysis uncovered two factors—Math Confidence and Math Self-Doubt. Given that a Total Confidence score for the scale yielded poor reliability, the subscales will be analyzed separately in subsequent analyses.

Measures of Positive Youth Development: Indicators of youth initiative and social skills.

Intellectual Engagement Index (IEI) (Watts, 2004). This is a self-report inventory of behaviors that are associated with intellectual curiosity and engagement above and beyond those required by school. Sample items include following current events (TV, radio, print, internet), elective reading, elective conversations about current events, and intellectually challenging extracurricular activities/ hobbies (debating, writing for publication). Factor analysis uncovered two subscales: Basic Forms of Intellectual Engagement and Advanced Forms of Intellectual Engagement, although a Total Intellectual Engagement score may be used as well.

Social Skills Rating System (SSRS) (Gresham & Elliott, 1990). The SSRS was standardized on a national sample of over 4,000 children and adolescents. It provides separate norms for boys and girls ages 3-18. The internal consistency and test-retest reliability for social skills self-ratings were at .83 and .68 respectively. Only two of the four subscales are used in this study: Self-Control and Assertiveness.

DATA ANALYSIS PROCEDURES

The survey data was entered into a statistical software package (SPSS) and checked for data entry errors along with violations of the statistical assumptions that are associated with the analyses described below. Next, reliability statistics (Cronbach's alpha) were computed for all instruments to ensure that participants' responses to each instrument's items coalesced in a manner that was reliable and consistent. For those instruments that we created, exploratory factor analyses were performed to determine scoring procedures—as outlined in the previous Instruments section. Factor analysis results were further refined and evaluated based on conceptual considerations. In some cases the instruments in this evaluation were used in one of our Atlanta-based studies (Watts & Guessous, 2006). In such cases we merged data on common instruments to further validate the instruments' factor structure and scoring procedures. This procedure was used for:

- What's Going on in Your City?
- Parental & Adult Engagement Scale
- Experience of Agency Scale
- Academic Confidence Scale
- Value of Education Scale
- Math & Science Orientation Scale
- Math Confidence Scale
- Intellectual Engagement Index

Because of the low reliability of both subscales of the Sociopolitical Control Scale (SPCS) we conducted a factor analysis in an attempt to improve its performance. The result was a smaller scale with a single factor and good reliability. Table 2 displays the reliability statistics (Cronbach's alpha) for each of these instruments, based on how they performed with this study's sample.

For all analyses, we set a statistical significance level of $p<.05$, although we also report findings as marginally significant as long as their p-values do not exceed .15, i.e. a 15% chance that the effects are due to chance alone. Before merging Program data from all three data collection dates we did basic ANOVA tests to check for significant demographic differences between the groups. No significant differences were found. We also compared the three Program groups (see Figure 0) on demographic data and found that although they did not differ on age, sex, race, and immigrant status, significant difference were found for grade level; the YPP group was significantly different from the YPP peer group ($p=.056$) and marginally different from the school CG group ($p=.121$): YPP participants were more likely to be in the 11-12th grades, as shown in Table 1. Since all of the ensuing analyses control for grade, we remained confident in the validity of this study's comparison

groups.

Table 2. Reliability Statistics for Study Instruments

Instrument	*Cronbach's Alpha*	*Instrument*	*Cronbach's Alpha*
Social Analysis		**Academic and Math Self-Concept**	
GBJWS Just World Belief	.740	ACS Academic Confidence	.865
WGYC systems	.630 **	VES Intrinsic Educ. Value	.838
WGYC individual	.721 **	VES Extrinsic Educ. Value	.809
Sense of Agency		VES Total Value of Education	.850
SPCS Sociopolitical Control	.848	MSOS Math Future Plans	.759 *
EOA Experience of Agency	.781	MSOS Math College Plans	.684 *
Societal Involvement		MSOS Science College Plans	.757 *
YSRS Youth Soc. Responsibility	.802	MSOS Math & Sci. Coll. Plans	.726 *
YII Community Activs.	.883 *	MCS Math Confidence	.797
YII Political Activs.	.779 *	MCS Math Self-Doubt	.833
YII Comm. & Pol. Activs.	.910 *	MCS Total Math Confidence	.693
Cultural & Ethnoracial Identity		**Sociopolitical Exposure**	
CS Collectivism	.892	PAES Parent Engagement	.692 *
CS Individualism	.631	PAES Other Adult Engagement	.778 *
CS Total Communalism	.848	PAES Total Adult Engagement	.824 *
MIBI Private Regard	.833	PES Peer Engagement	n/a *
MIBI Oppressed Minority	.701	**Positive Youth Dev.**	
SORS-A Cultural Pride	.841	IEI Basic Intellectual Engagement	.802
		IEI Adv. Intellectual Engagement	.791
		IEI Total Intellectual Engagement	.852
		SSRS Assertiveness	.656
		SSRS Self-Control	.732

* Since this instrument is an index whose items are conceptually not expected to correlate, we do not expect it to produce a high reliability statistic.

** For a youth sample, we do not expect this reliability to be high: at this developmental stage, most have yet to develop an overarching framework for social analysis that extends to a range of social issues. Our findings suggest reliability on these scales improves with age.

Table 3. Summary of Analytical Strategies.

	Analysis Method	*Groups Included*	*Covariates*
Q1: Program differences	ANCOVA	YPP School CG YPP peers	Sex Grade level Grades
Q2: Dosage effects	ANCOVA	YPP School CG	Sex Grade level Grades
Q3: Program x Dosage	Mixed-Model ANCOVA	YPP School CG	Sex Grade level Grades
Q4: Math—SPD link	Two-step Hierarchical Multiple Regression	YPP School CG YPP peers	Sex Grade level Grades
Q5: Math-SPD x Program	Moderation using three-step Hierarchical Multiple Regression	YPP School CG YPP peers	Sex Grade level Grades

The five research questions were examined using Univariate Analysis of Covariance (ANCOVA, RQ1, RQ2, and RQ3) and Hierarchical Multiple Regression (RQ4 & RQ5). Sex, grade level, and GPA were used as covariates in all analyses, based on their well-documented relationship to many of the outcomes of interest. They were therefore entered as covariates in the ANCOVA analyses (RQ1-3) and entered into the first step of the hierarchical regression models (RQ4-5). The outcome variables of interest were entered as the dependent variable, and the predictor variables of interest was entered as the independent variables. These analytical strategies allowed us to partial out the effects of demographic variables in order to determine the unique effects of the predictor variables of interest. These analyses are summarized in Table 3.

FINDINGS

Research Question #1: *Do YPP participants show more favorable outcomes than the two comparison groups on the outcome indicators of interest?*

We investigated this research question using Univariate Analysis of Covariance (ANCOVA), which allowed us to test between-group differences while controlling for sex, grade level, and grades. When the overall model was statistically significant at $p < .05$, contrasts were run using YPP as the reference group to determine whether the YPP group specifically differed from YPP peers and from School controls. The significant findings that we report refer to the contrast analyses; mean values by program for these contrasts are displayed in the figures that follow each set of significant findings. The findings are also summarized in Table 4. Note: SC = Student Controls (Control group from After School Matters). "Peers" are the peer control group.

RQ #1, Significant Findings: *The Program groups were significantly different on these variables:*

- Math Variables (Math & Science Orientation Scale—MSOS & Math Confidence Scale—MCS).
  - YPP participants reported more math future plans than SC (p=.031), but were similar to Peers. [General plans to make use of math in the future. (MSOS)].
  - YPP participants reported more math college plans than SC (p=.022), but were similar to Peers. [Plans for taking math courses in College (MSOS). True among those considering college only (N=186, or 95%),]
  - Math Self-Doubt (MCS). YPP participants reported less self-doubt that Peers (p=.001), but higher levels of self-doubt than SC (p=.025).
- Sense of Agency Variables (Sociopolitical Control Scale—SPCS & Experience of Agency—EOA).
  - Contrary to our hypotheses, YPP participants reported lower sense of agency than SC (p=.023), but were similar to Peers. [Sense of Agency (SPCS).]
- Societal Involvement Variables (Youth Social Responsibility Scale—YSRS & Youth Inventory of Involvement—YII).
  - Although YPP participants reported marginally higher levels of commitment to societal involvement than Peers (p=.073), they expressed less commitment than SC (p=.004). [Commitment to Societal Involvement (YSRS)].
- Findings for Youth Development Variables (Intellectual Engagement Inventory—IEI & Social Skills Rating System—SSRS).
  - YPP youth reported higher levels of self-control than Peers (p=.037), but were similar to SC (p=.423). [ANCOVA model (p.=.047), contrasts (SSRS)].

RQ #1, Null Findings: *The Program groups did not significantly differ on any of the following variables.*

- Academic Variables (Academic Confidence Scale—ACS & Educational Value Scale—EVS).
- Social Analysis Variables (Global Belief in a Just World Scale—GBJWS & What's Going on in Your City—WGYC).
- Cultural & Ethnoracial Identity Variables (Communalism Scale—CS, Multidimensional Inventory of Black Identity—MIBI & Scale of Racial Socialization—SORSA).

Figure 1: A Theory of Sociopolitical Development

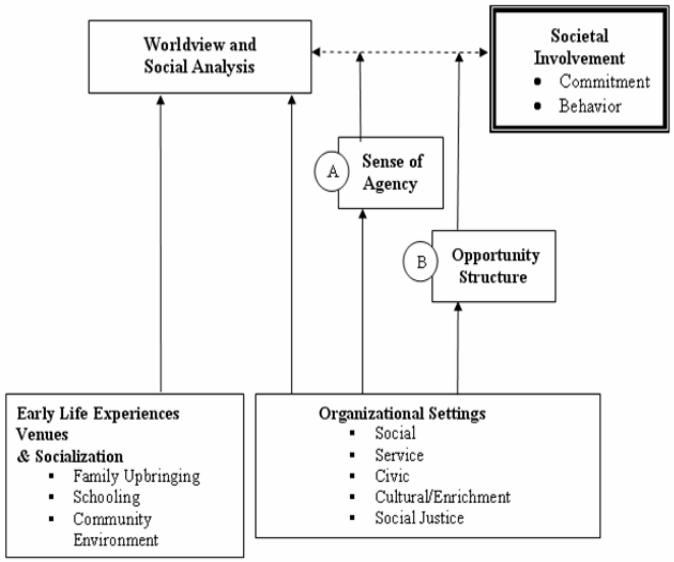
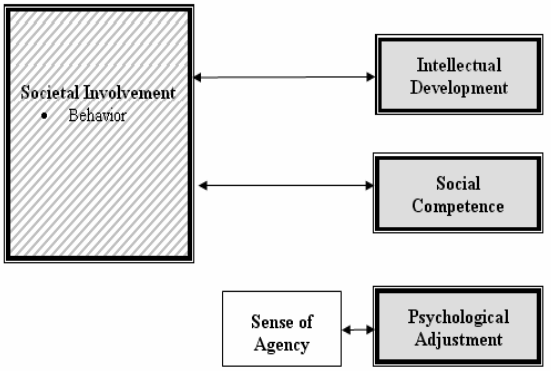


Figure 2: Relationships among Indicators of Societal Involvement and Positive Youth Development



Research Question #2: *Do veterans show more favorable outcomes than novices on the outcome indicators of interest?*

This research question was investigated using the same analytical strategies as in Research Question #1, but with Seniority as the independent variable. The significant findings that we report refer to the contrast analyses; mean values by program for these contrasts are displayed in the figures that follow each set of significant findings. The findings are also summarized in Table 5.

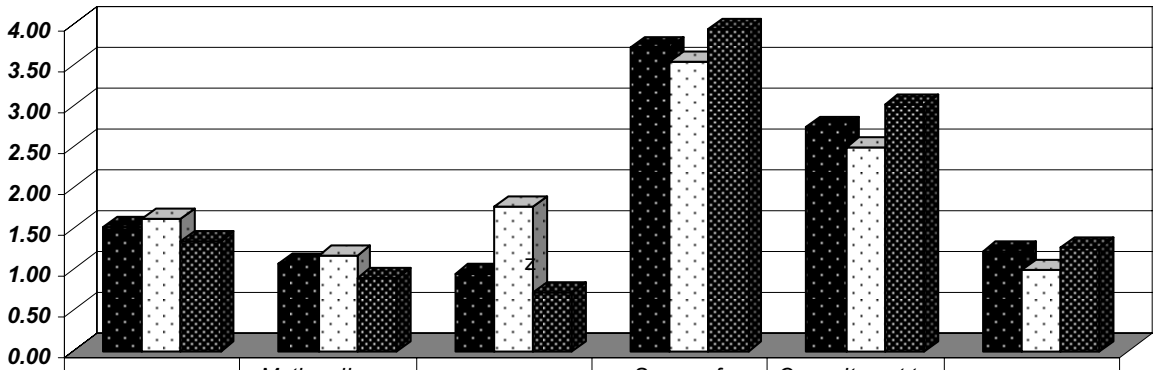
RQ #2, Significant Findings: *The ANCOVA model was significant for the following variable.*

- Math Variables (Math & Science Orientation Scale—MSOS & Math Confidence Scale—MCS).
    - Novices reportedly have more plans to make use of math in the future (p=.034). [General plans to make use of math in the future. (MSOS)].

RQ #2, Null Findings: *Veterans did not significantly differ from novices on any of these variables:*

- Academic Variables (Academic Confidence Scale—ACS & Educational Value Scale—EVS).
- Social Analysis Variables (Global Belief in a Just World Scale—GBJWS & What's Going on in Your City—WGYC).
- Sense of Agency Variables (Sociopolitical Control Scale—SPCS & Experience of Agency—EOA).
- Societal Involvement Variables (Youth Social Responsibility Scale—YSRS & Youth Inventory of Involvement—YII).
- Youth Development Variables (Intellectual Engagement Inventory—IEI & Social Skills Rating System—SSRS).
- Cultural & Ethnoracial Identity Variables (Communalism Scale—CS, Multidimensional Inventory of Black Identity—MIBI & Scale of Racial Socialization—SORSA).

Figure 2: Significant Outcome Variables by Program (RQ1)



	Future math use	Math college courses	Math self-doubt	Sense of Agency	Commitment to S.I.	Self-Control
YPP	1.52	1.08	0.95	3.72	2.73	1.22
Peers	1.61	1.15	1.76	3.52	2.49	1.00
Control Schools	1.33	0.89	0.71	3.94	3.01	1.27

Research Question #3: *Is the dosage effect stronger among YPP participants than among the Control Schools?*

This research question was investigated using ANCOVA's. By entering both Program and Seniority as independent variables, we were able to evaluate the Program x Seniority interaction effect, which allows us to evaluate the effect of seniority level varied was different for YPP and CS participants. Once again, sex, grade level, and grades were controlled for. As noted previously, we found very few significant differences between the novices and their peer controls that would suggest a strong threats to validity due to self-selection (that is, we detected few things that were special about YPP participants that existed before they received their training. See Appendix). When the overall model was statistically significant at $p < .05$, follow-up contrasts were run. The significant findings that we report refer to the contrast analyses; mean values by program for these contrasts are displayed in the figures that follow each set of significant findings. The findings are also summarized in Table 6.

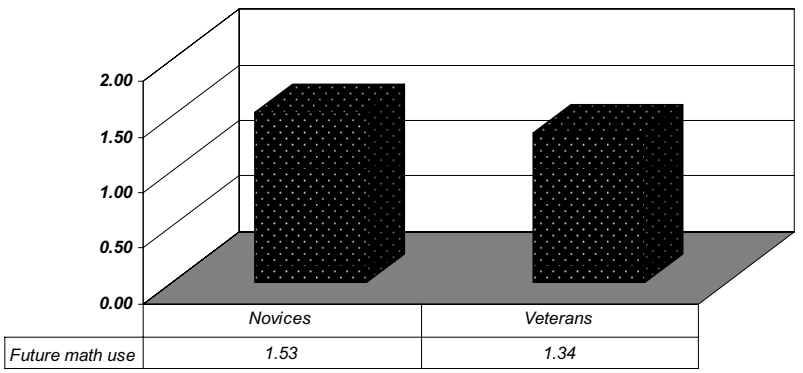
RQ #3, Significant Findings: *The Program x Seniority interaction effect was significant for the following variable.*

- Youth Development Variables (Intellectual Engagement Inventory—IEI & Social Skills Rating System—SSRS).
  - Among YPP participants, veterans and novices reported similar levels of intellectual engagement. However among SC, novices reported significantly higher levels of intellectual engagement. [Basic Forms of Intellectual Engagement (IEI)].

RQ #3, Null Findings: *No significant Program x Seniority interaction effect was found for any of the following variables.*

- Academic Variables (Academic Confidence Scale—ACS & Educational Value Scale—EVS).
- Math Variables (Math & Science Orientation Scale—MSOS & Math Confidence Scale—MCS).
- Social Analysis Variables (Global Belief in a Just World Scale—GBJWS & What's Going on in Your City—WGYC).
- Sense of Agency Variables (Sociopolitical Control Scale—SPCS & Experience of Agency—EOA).
- Societal Involvement Variables (Youth Social Responsibility Scale—YSRS & Youth Inventory of Involvement—YII).
- Cultural & Ethnoracial Identity Variables (Communalism Scale—CS, Multidimensional Inventory of Black Identity—MIBI & Scale of Racial Socialization—SORS-A).

Figure 3: Future math use by Seniority (RQ2)



Research Question #4: *Is there a positive relationship between math confidence and indicators of sociopolitical development?*

This research question was investigated using Hierarchical Multiple Regression using data from across all three groups (YPP, Peers and School Controls). The covariates (sex, grade level, and grades) were entered into the first step of the hierarchical regression models, followed by the two MCS subscale scores at the second step—Math Self-Confidence and Math Self-Doubt—at the second step. The outcome variables of interest consisted of the indicators of key components of sociopolitical development—social analysis, sense of agency, societal involvement, and ethnoracial identity. We evaluated the significance level, direction, and strength of the R2change and standardized Beta (β) coefficients that are associated with the MCS predictor variables, after accounting for the effects of sex, grade level, and GPA. The relationships that reached statistical significant at $p < .05$ are displayed in the figures that follow. The findings are also summarized in Table 7.

RQ #4, Null Findings: *No relationship to math confidence was found for the following sociopolitical indicator.*

- Social Analysis Variables (Global Belief in a Just World Scale—GBJWS & What's Going on in Your City—WGYC).

RQ #4, Significant Findings: *A significant relationship to math confidence was found for the following sociopolitical indicators.*

- Sense of Agency Variables (Sociopolitical Control Scale—SPCS & Experience of Agency—EOA).
  - Sense of Agency (SPCS). Both Math Confidence and a lack of Math Self-Doubt contribute to the participants' Sense of Agency (R2change = .211 ($p < .001$); R2model = .255). Indeed there is a positive relationship between Math Self-Confidence and Sense of Agency (β=.236, p=.001) and a negative relationship between Math Self-Doubt and Sense of Agency (β=-.389, $p < .001$). See Table 8 in the Appendix for details.
- Societal Involvement Variables (Youth Social Responsibility Scale—YSRS & Youth Inventory of Involvement—YII).
  - Commitment to Societal Involvement (YSRS). Math Self-Doubt is negatively related to participants' Commitment to Societal Involvement (R2change = .086 ($p < .001$); R2model = .195). Because this relationship is a negative one (β=-.294, $p < .001$) it means that more Self-Doubt in math is associated with lower levels of Commitment, and vice versa. See Table 9 in the Appendix for details.
- Cultural & Ethnoracial Identity Variables (Communalism Scale—CS, Multidimensional Inventory of Black Identity—MIBI & Scale of Racial Socialization—SORS-A).
  - Cultural Pride Reinforcement (SORS-A). Math Self-Confidence is related to Cultural Pride Reinforcement (R2change = .035 ($p < .07$); R2model = .134). Participants who reported higher levels of Math Self-Confidence also reported a greater appreciation for the importance of reinforcing pride in one's cultural heritage (β=-.193, $p < .05$). See Table 10 in the Appendix for details.

RQ #4, Null Findings: *No relationship to math confidence was found for the following sociopolitical indicator.*

- Social Analysis Variables (Global Belief in a Just World Scale—GBJWS & What's Going on in Your City—WGYC).

<u>Quick Summary for RQ #4</u>

- Those who are confident in their math abilities also tend to feel that they can make things happen in the world.
- Those who have less self-doubt in their math abilities tend to have more positive attitudes towards their ethnoracial group and tend to see the value in promoting cultural pride.

Figure 5: Relationship of Math Self-Confidence to SPD Indicators

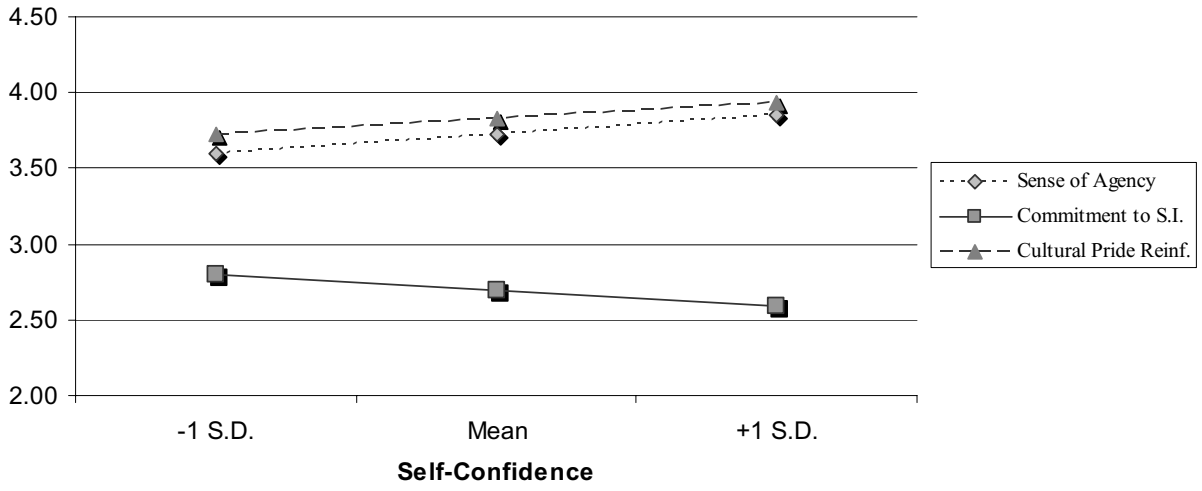
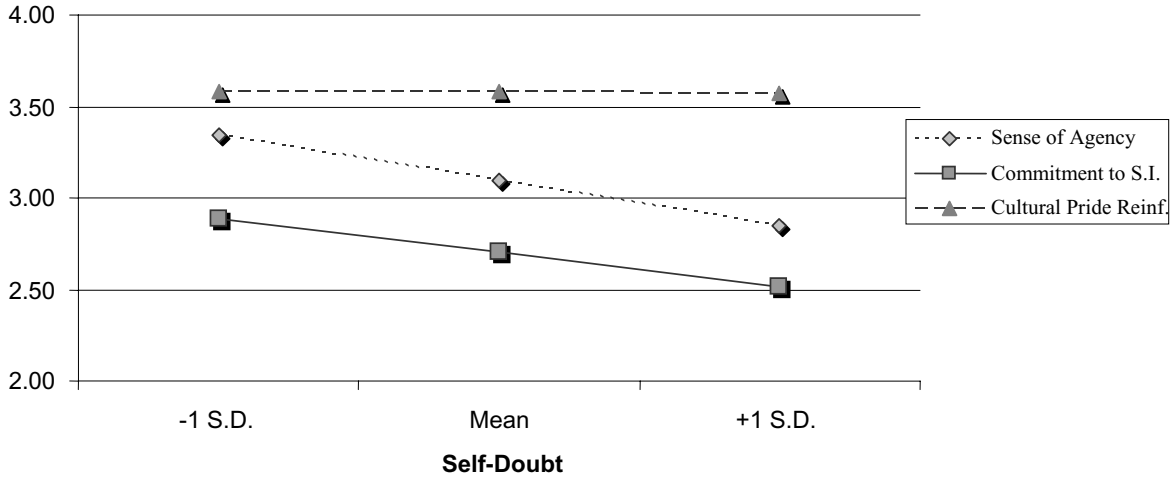


Figure 6. Relationship of Math Self-Doubt to SPD Indicators.



Research Question #5: *Do YPP participants demonstrate a stronger positive relationship between math orientation and indicators of sociopolitical development than Control Schools?*

This research question was investigated using the same analytical strategies as in Research Question #4. However since our goal was to determine whether the strength of the Math—SPD differs for YPP participants and CS, we ran separate regression models for each of the two groups. The same predictor, covariate, and outcome variables were analyzed. Although we followed up these analyses with a subgroup analysis of veterans only, they are not reported since they did not yield any new findings. The relationships that reached statistical significant at $p < .05$ are displayed in the figures that follow. The findings are also summarized in Table 11.

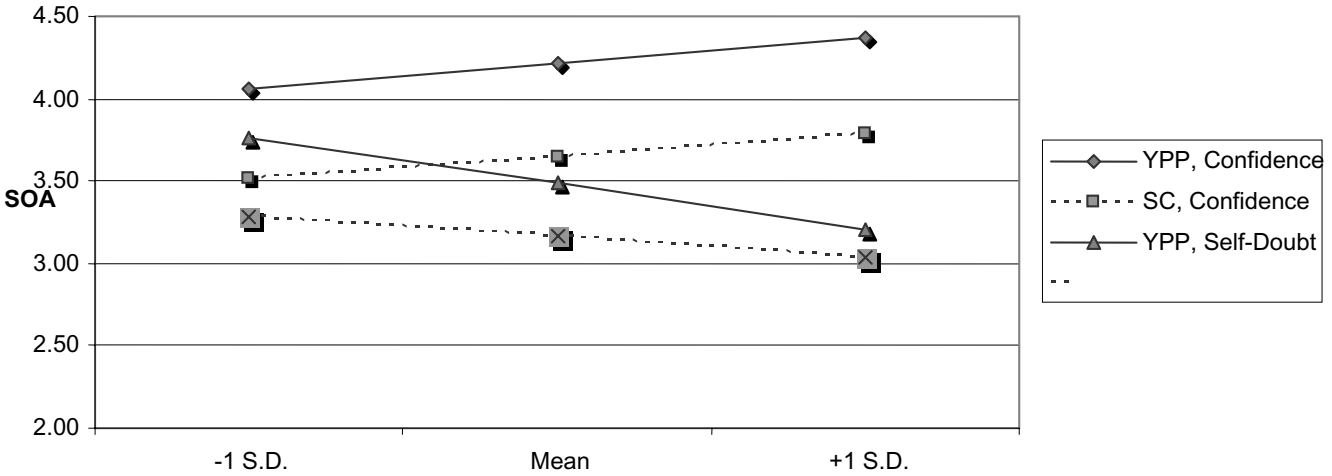
RQ #5, Null Findings: *No difference between YPP and School Controls was found in the relationship between math confidence and the following sociopolitical indicator.*

- Social Analysis Variables (Global Belief in a Just World Scale—GBJWS & What's Going on in Your City—WGYC).

RQ #5, Significant Findings: *The relationship between math confidence and the following sociopolitical indicators was significantly stronger among YPP youth than School Controls.*

- Sense of Agency Variables (Sociopolitical Control Scale—SPCS & Experience of Agency—EOA).
    - Sense of Agency (SPCS). The positive relationship between Total Math Confidence and Sense of Agency is stronger among YPP participants ($\beta=.553$, $p < .001$), than it is among School Controls ($\beta=.356$, $p=.003$). Stated another way,, math confidence accounts for 30.5% of the variance in SOA among YPP participants, whereas it only accounts for 12.7% of variance in the school comparison group. This finding is specifically driven by the fact that decreases in Math Self-Doubt are strongly related to increases in SOA among YPP participants ($\beta=-.436$, $p < .001$), whereas that link is weaker and only marginally significant among SC ($\beta=-.197$, $p=.108$). See Table 12 in the Appendix for details.

Figure 7. Relationship of Math Confidence/Self-Doubt To Sense of Agency, by Program



Quick Summary for RQ #5

- Among YPP participants, those who have less self-doubt in their math abilities tend to feel that they can make things happen in the world, tend to have a stronger commitment to community and social justice work, and tend to have more positive attitudes towards their ethnoracial group.
- This link between math self-confidence and agency, commitment, and private regard is not as strong among School Controls.

- Societal Involvement Variables (Youth Social Responsibility Scale—YSRS & Youth Inventory of Involvement—YII).
  - Commitment to Societal Involvement (YSRS). The positive relationship between Total Math Confidence and Commitment to Societal Involvement is slightly stronger and marginally significant among YPP participants (β=.215, p=.092), whereas it does not reach significance among School Controls (β=.126, p=.270). Once again, this finding is driven by levels of Math Self-Doubt: increases in Self-Doubt are strongly and significantly related to decreases in Commitment among YPP participants (β=-.312, p=.010), whereas this link is weaker and non-significant among SC (β=-.102, p=.391).
  - We find a similar pattern when isolating those commitment items that relate to young people's social responsibility: a significant negative relationship of math self-doubt to commitment in the YPP group (β=-.340, p=.005), contrasted with a non-significant relationship among SC (β=-.073, p=.540). See Table 13 in the Appendix for details.
- Cultural & Ethnoracial Identity Variables (Communalism Scale—CS, Multidimensional Inventory of Black Identity—MIBI & Scale of Racial Socialization—SORS-A).
  - Private Regard for Ethnoracial Membership (MIBI). While we did not find a main effect of overall Math Confidence on Private Regard of one's ethnoracial membership across programs, this sub-analysis reveals that such a relationship does exist, but only in the YPP group. Whereas Math Self-Confidence and Self-Doubt are not related to Private Regard among SC, there is a negative relationship between Math Self-Doubt and Private Regard in the YPP group (β=-.281, p=.024). In other words negative feelings about one's ethnoracial group membership increase along with Math Self-Doubt, and vice versa. See Table 14 in the Appendix for details.
  - Cultural Pride Reinforcement (SORS-A). While math confidence and attitudes towards Cultural Pride Reinforcement are positively and significantly related among both Program groups, this relationship is not particularly stronger among YPP youth.

Figure 8. Relationship of Math Confidence/Self-Doubt To Private Regard, by Program

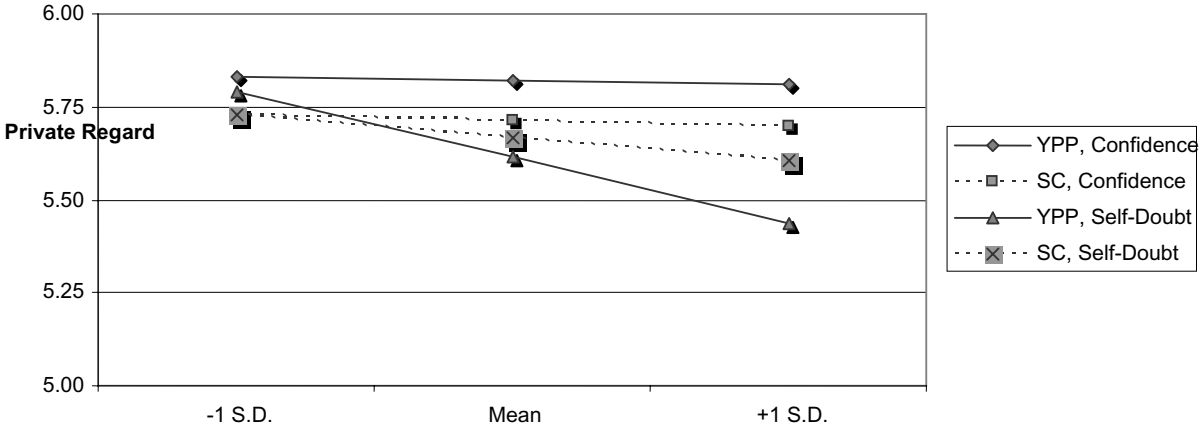
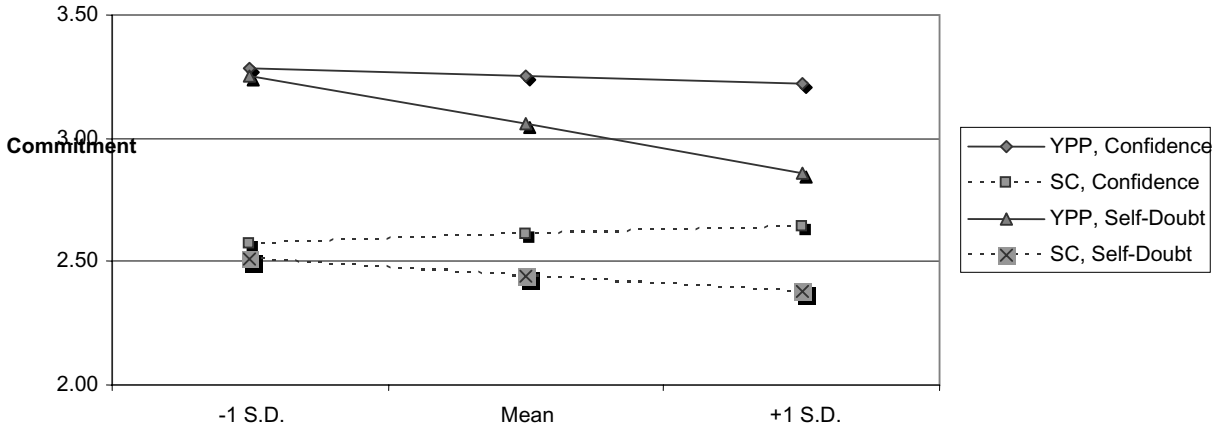


Figure 9. Relationship of Math Confidence/Self-Doubt To S.I. Commitment, by Program



DISCUSSION

Do YPP participants show favorable characteristics on measures of mathematics attitudes and sociopolitical development—which we argue is a construct for understanding civic engagement? Do any observed gains by Math Literacy Workers (MLWs) exceed those of the two control groups, and do these gains become more favorable as their experience with the program experience accumulates? These were the principle questions guiding this research. Three outcome areas were of interest; one was a favorable link between YPP participation and aspirations for mathematics education, and another was evidence of sociopolitical development. The third was an exploration of other youth development outcomes of interest to the program and the researchers. This cross-sectional study limits inferences on the impact of prolonged participation to between-group comparisons (veterans vs. novices).

Outcomes for mathematics attitudes and aspirations

For math, we predicted that YPP participants would report a significantly stronger math orientation along with higher levels of math confidence and effects that increased with longer program exposure. The findings on between-group differences were mixed; YPP participants did not clearly distinguish themselves from the comparison groups. On two of the three math indicators, the YPP group had significantly more favorable scores than the Student Controls (SC), but in both cases the YPP scores were similar to those of the peer control group. In the case of math self-doubt, however, YPP group scores were higher than the SCs, but lower than peer controls. Data on dosage effects was similarly (and consistently) disappointing; the one significant finding revealed that veterans said they were less likely to use math in the future than their novice counterparts. The search for dosage effects was a key component of this research and the lack of significant findings suggests either weaknesses in the research design (too few and data points and the lack of a within-subjects design) or weaknesses in the intervention.

We will speculate a bit further with this interpretation: for the average student (which describes the YPP participants), teaching math to other students is a sobering experience that is as challenging as it is rewarding. Although YPP participants tend to see a greater role for math in their future than the average student (SCs) their experiences temper their plans as compared to the plans of their friends. Although their friends scored higher on these variables, they also scored significantly higher than both YPP youth and SCs on math self-doubt.

Arguably, math-self doubt may be a greater worry than modest plans for math education. The social psychology research literature has documented rather convincingly a "stereotype threat" effect that produces an adverse impact on African American academic performance. It is based on the idea that social stereotypes ("Blacks aren't good in math") and low expectations on the part of educators depress performance. The preponderance of stereotypical depictions and beliefs that African Americans children are low achievers in school, particularly in the math and scientific disciplines, is thought to account for this effect by creating a negative school climate and student self-doubt that together produce a self-fulfilling prophecy. This in turn makes them unlikely to develop the skills or interest necessary for advanced study in math and science. This explanation is further supported by the finding from research question #5 that negative feelings about one's ethnoracial group membership were associated with higher levels of Math Self-Doubt among YPP participants. Clearly, the relationship between racial identity and math confidence remains a potent one—a relationship that is worthy of further examination.

In sum, it is plausible that liberal admissions policies, demands for a deeper understanding of math, and stereotype threat—account for the unexpected finding that YPP participants do not report higher levels of math confidence and orientation than comparison groups. On the other hand, it speaks to the need for a high level of program support and structure for MLWs, especially for incoming novices.

Sociopolitical and Youth Development Outcomes

Findings is this area were the most disappointing; YPP participants did not distinguish themselves on any of the variables of interest (Social Analysis, Sense of Agency, or Societal Involvement) in the between-group analysis, and there were no "dosage" effects. YPP participants scored lower on sense of agency when compared with SCs. YPP participants only once scored higher (and only marginally) than one of the comparison groups; YPP veterans never outscored YPP novices.

For the youth development outcomes, the pattern was similar. There were no between-group differences on any of the cultural/ethnoracial variables and no direct dosage effects. There was a single encouraging finding: although the level of intellectual engagement was lower among SC veterans as compared with novices, YPP veterans held their own—their scores were same as novices on this variable.

Sociopolitical Development and Mathematics Education: A synergy for the future?

There were some intriguing findings on the interplay between SPD and math attitudes. Sense of Agency was positively related to math self confidence and negatively related to math self-doubt. Similarly, commitment to societal involvement activities was negatively related to math self-doubt. And in the only instance were the ethnoracial variables came into play, cultural pride reinforcement was found to be positively related to math self confidence.

The connection between sense of agency and commitment to societal involvement as they related to math self confidence, the statistical effect sizes were strong. We have often argued (and investigated) the importance of youth sociopolitical development in its own right and in relationship to conventional indicators of youth development. However this finding has led us to rethink the relationship between youth SPD and academic variables, especially in the context of youth of color and stereotype threat. This area of research is largely unexplored.

Are there ways that we can create greater synergy between sociopolitical development and academic achievement? In the context of literacy and social justice, Carter Woodson, Paulo Freire and other proponents of education for liberation have long advocated for the coupling of consciousness-raising and instruction. This partnership can enhance learning as well as further the quest for a just society.

The relationship between SPD and math confidence was consistently stronger among YPP participants, as compared to School Controls. This suggests that YPP contributed to a link between math knowledge or reasoning and to both sociopolitical agency and commitment. In other words YPP experiences are associated with the idea that "math is power." The interrelationships among these variables, the involvement of ethnoracial identity and the persistence of these associations across groups are important findings. It supports our view that the quest to improve math achievement among African American youth may involve distinctive processes, may benefit from distinctive strategies, and in the end may produce distinctive outcomes. The distinctiveness of African history in the US context is certainly undeniable, and in light of theories of social attribution (the "halo" effect) and stereotype threat it makes sense to infuse ethnoracial themes into African American education. This echoes the prospectus for the Freedoms schools that launched the civil rights movement:

> *The aim of the Freedom Schools' curriculum will be to challenge the student's curiosity about the world, introduce him to his particularly "Negro" cultural background, and teach him basic literacy skills in one integrated problem.*

In the case of YPP, however, the motivation may have been working in reverse. We suspect that the main difference between the two groups lies in the fact that Freedom School participants arrived there with a desire for liberation and gained literacy in the process, whereas YPP youth came to their

program interested in math and their community. Soon after, they connected this to a sense of agency and a commitment to civic engagement.

Conclusions and Directions for Future Research and Practice

Because of the limitations inherent in cross-sectional research and those associated with data collection and program operations, we view this study as exploratory yet highly promising. A larger sample of novices, followed over time, with data collected under more consistent conditions, and the addition of personal interviews would have made for clearer and more conclusive findings on the effects of long-term program participation. The current design, which focused on the use of comparison groups was less effective. Nonetheless, we were heartened by some of the relationships found between variables in our model of sociopolitical development and the attitudes YPP participants held about mathematics. But the program director's own admission, the demands of running a large peer-tutoring program with few resources earmarked specifically for programming on civic and political development, have limited YPP's ability to build in as much programming on civic engagement as they had planned. To an extent the summer program was the exception, in that it offered a perspective on math education that was culturally and historically informed. However the day to day work of the MLWs tended to be on the math workshops. The use of civic/political mentors, community events emphasizing the link between math literacy and social justice, and other hands-on activities was very limited. Resources are needed to make these program elements a more prominent feature of YPP as its leaders originally envisioned.

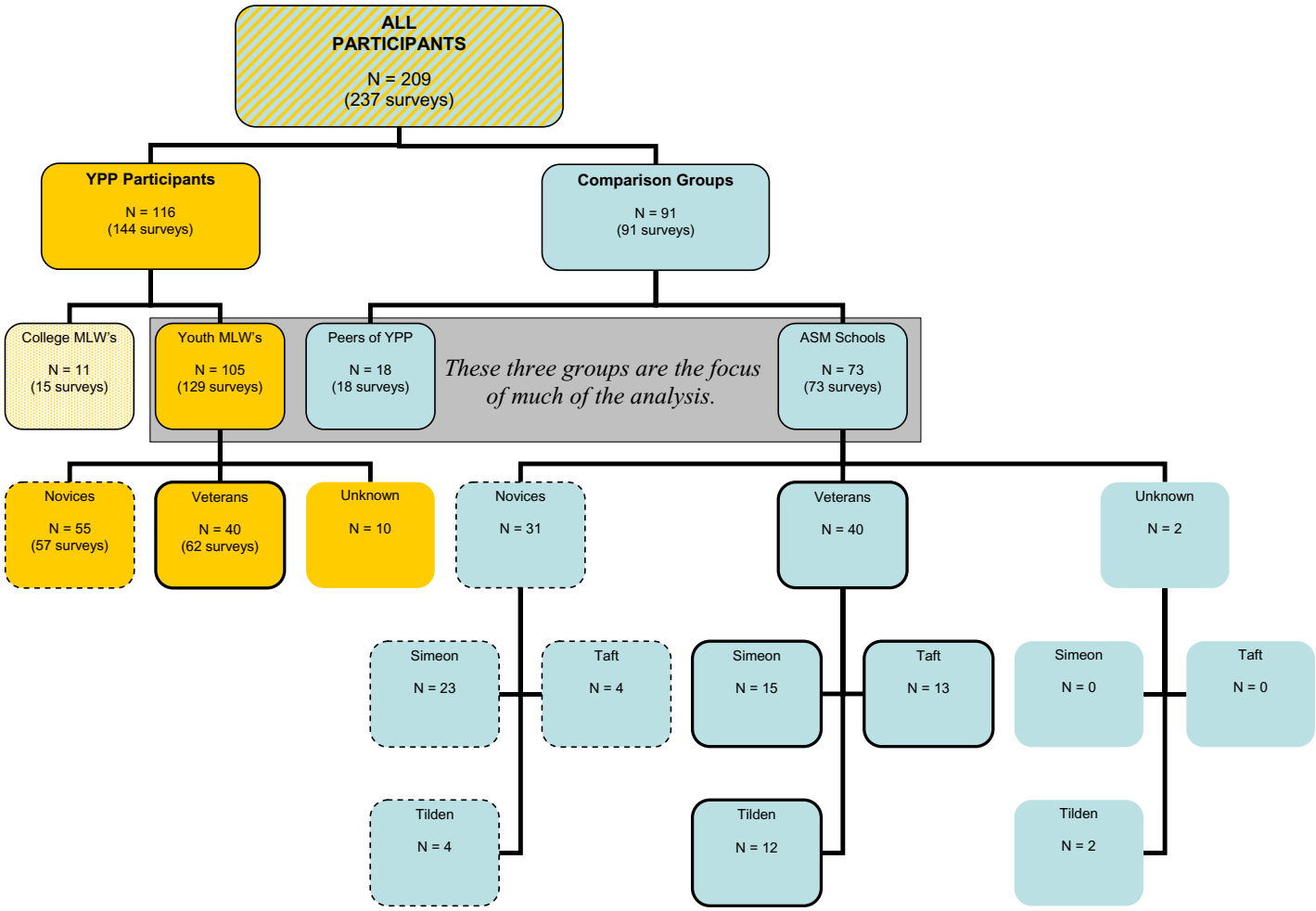
The final argument we make for future research is the ongoing crisis in urban public education. Weak effects of reform efforts and federal initiatives such as "No Child Left Behind" have put enormous pressure on low-performing schools to tie all time and resource-consuming activities to state and local performance and testing standards—"teaching to the test above all the rest." Demonstrating a peer-based form of education that engages the civic imagination of young people and empowers them to take action in and outside of the classroom would set a compelling new direction for future educational innovations.

Future research involving questions such as those we have asked call for a intervention research study rather than a program evaluation. This will require the resources necessary to increase in the number of MLWs and the civic, community, and political programming—informed by best practices in the field. This simply was not possible under the present conditions. We continue to see the questions and the topics we began with as promising, but as a result of this study we are also clearer that a higher dose of civic and political education and skill building will be necessary with strong support of the students who do it. It was exciting to discover a link between academic attitudes and SPD concepts, but what warrants more investigation is whether both math and SPD variables are a function of sense of agency (which can be seen as a version of self efficacy) or whether civic engagement and SPD play a causal role in sense of agency, and perhaps intellectual and academic development as well.

APPENDIX

1. Flowchart of Study Participants by Program and Seniority
2. Group Comparisons of Novice Data
3. Supplementary Tables
4. Young People's Project Program Information
5. Bibliography

Flowchart of Study Participants by *Program* and *Seniority*



Group Comparisons of Novice Data[1]

Instrument	*YPP N=54*	*P N=18*	*SC N=31*
Social Analysis			
GBJWS Just World Belief	2.50	2.36	2.64
WGYC systems	2.66	2.77	2.80
WGYC individual	2.73	2.86	2.83
Sense of Agency			
SPCS Sociopolitical Control*	**3.74**	3.54	3.91
EOA Experience of Agency	1.16	1.11	1.25
Societal Involvement			
YSRS Youth Soc. Responsibility***	**2.74**	2.60	2.90
YII Community Activs.	0.81	1.09	1.10
YII Political Activs.	1.28	1.30	1.48
YII Comm. & Pol. Activs.	1.03	1.19	1.28
Cultural & Ethnoracial Identity			
CS Collectivism	4.20	4.09	4.56
CS Individualism (-)	3.49	3.56	3.86
CS Total Communalism	4.10	3.99	4.32
MIBI Private Regard	6.14	5.65	6.15
MIBI Oppressed Minority	4.96	4.90	5.23
SORS-A Cultural Pride	3.91	3.85	4.12

Instrument	*YPP N=54*	*P N=18*	*SC N=31*
Academic and Math Self-Concept			
ACS Academic Confidence	4.27	4.37	4.29
VES Intrinsic Educ. Value	3.54	3.58	3.68
VES Extrinsic Educ. Value	4.56	4.83	4.82
VES Total Value of Education	3.96	4.05	4.15
MSOS Math Future Plans	1.60	1.57	1.34
MSOS Math College Plans	1.08	1.24	0.91
MSOS Science College Plans	0.99	0.75	0.90
MSOS Math & Sci. Coll. Plans*	**1.02**	0.99	0.90
MCS Math Confidence	1.38	1.63	1.27
MCS Math Self-Doubt (-)	0.97	1.69	0.68
MCS Total Math Confidence	1.22	1.05	1.30
Sociopolitical Exposure			
PAES Parent Engagement	1.50	1.49	1.38
PAES Other Adult Engagement	1.64	1.57	1.51
PAES Total Adult Engagement	1.55	1.53	1.44
PES Peer Engagement	3.59	4.68	3.58
Positive Youth Dev.			
IEI Basic Intellectual Engagement	3.34	3.20	3.76
IEI Adv. Intellectual Engagement	2.56	2.29	2.96
IEI Total Intellectual Engagement	3.01	2.82	3.33
SSRS Assertiveness	1.29	1.15	1.34
SSRS Self-Control**	**1.25**	1.01	1.28

Dashed borders indicates YPP is lowest of all groups

(-) Lower scores are more in accordance with predictions

Double borders indicates YPP is highest of all groups

[1] Significant differences shown are for comparisons of YPP and Peer Controls only:

* $p < .10$

** $p < .05$

*** $p < .01$

Table 9. Regression coefficients for the relationship of Math Confidence to Sense of Agency (RQ4).

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.711	.495		7.493	.000
	sex	.178	.103	.139	1.724	.087
	grade	.000	.042	-.001	-.009	.993
	IMPUTED: letter grades	-.058	.034	-.137	-1.706	.090
2	(Constant)	3.419	.481		7.102	.000
	sex	.207	.092	.162	2.247	.026
	grade	.012	.037	.024	.330	.742
	IMPUTED: letter grades	-.031	.031	-.075	-1.026	.306
	MCS math confidence	.276	.085	.236	3.236	.001
	MCS math self-doubt	-.369	.067	-.389	-5.495	.000

a. Dependent Variable: SPCS total score

Table 9. Regression coefficients for the relationship of Math Confidence to Societal Involvement Commitment (RQ4).

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.778	.285		9.731	.000
	sex	.205	.059	.269	3.440	.001
	grade	-.019	.024	-.061	-.790	.431
	IMPUTED: letter grades	-.034	.019	-.135	-1.737	.084
2	(Constant)	2.946	.299		9.858	.000
	sex	.205	.057	.270	3.598	.000
	grade	-.020	.023	-.063	-.850	.397
	IMPUTED: letter grades	-.032	.019	-.130	-1.705	.090
	MCS math confidence	-.014	.053	-.020	-.263	.793
	MCS math self-doubt	-.166	.042	-.294	-3.989	.000

a. Dependent Variable: YSRS total

Table 10. Regression coefficients for the relationship of Math Confidence to Cultural Pride Reinforcement (RQ4).

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.126	.563		7.324	.000
	sex	.107	.117	.075	.913	.363
	grade	.007	.047	.013	.156	.876
	IMPUTED: letter grades	-.139	.038	-.297	-3.626	.000
2	(Constant)	3.584	.609		5.886	.000
	sex	.129	.116	.091	1.112	.268
	grade	.019	.047	.033	.404	.687
	IMPUTED: letter grades	-.120	.039	-.256	-3.098	.002
	MCS math confidence	.252	.108	.193	2.336	.021
	MCS math self-doubt	-.004	.085	-.004	-.045	.964

a. Dependent Variable: SORS-A Cultural pride reinforcement

Table 12. Regression coefficients by Program for the relationship of Math Confidence to Sense of Agency (RQ5).

Coefficients[a]

Categorization	Model		Unstandardized Coefficients		Standardized Coefficients		
			B	Std. Error	Beta	t	Sig.
YPP youth (MLW)	1	(Constant)	4.256	.797		5.343	.000
		sex	.029	.158	.022	.184	.854
		grade	-.002	.064	-.004	-.034	.973
		IMPUTED: letter grades	-.154	.054	-.340	-2.841	.006
	2	(Constant)	3.848	.733		5.247	.000
		sex	.158	.140	.121	1.133	.261
		grade	-.023	.055	-.041	-.408	.685
		IMPUTED: letter grades	-.067	.050	-.148	-1.330	.188
		MCS math confidence	.375	.136	.289	2.766	.007
		MCS math self-doubt	-.396	.092	-.436	-4.298	.000
School CG	1	(Constant)	3.967	.760		5.219	.000
		sex	.236	.156	.184	1.517	.134
		grade	-.032	.066	-.058	-.481	.632
		IMPUTED: letter grades	-.033	.048	-.082	-.677	.501
	2	(Constant)	3.325	.778		4.275	.000
		sex	.249	.148	.193	1.681	.098
		grade	.011	.065	.020	.174	.862
		IMPUTED: letter grades	-.026	.046	-.065	-.562	.576
		MCS math confidence	.267	.130	.248	2.052	.044
		MCS math self-doubt	-.230	.141	-.197	-1.630	.108

a. Dependent Variable: SPCS total score

Table 13. Regression coefficients by Program for the relationship of Math Confidence to Societal Involvement Commitment (RQ5).

Coefficients[a]

Categorization	Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
YPP youth (MLW)	1	(Constant)	3.123	.476		6.554	.000
		sex	.050	.095	.066	.528	.599
		grade	-.023	.038	-.072	-.597	.552
		IMPUTED: letter grades	-.053	.032	-.203	-1.644	.105
	2	(Constant)	3.315	.490		6.773	.000
		sex	.069	.093	.091	.740	.462
		grade	-.028	.037	-.090	-.774	.442
		IMPUTED: letter grades	-.040	.034	-.151	-1.178	.243
		MCS math confidence	-.040	.091	-.053	-.438	.663
		MCS math self-doubt	-.164	.062	-.312	-2.665	.010
School CG	1	(Constant)	2.638	.436		6.044	.000
		sex	.373	.089	.462	4.166	.000
		grade	-.019	.038	-.055	-.500	.619
		IMPUTED: letter grades	-.049	.028	-.194	-1.752	.085
	2	(Constant)	2.533	.474		5.348	.000
		sex	.374	.090	.463	4.146	.000
		grade	-.009	.039	-.025	-.222	.825
		IMPUTED: letter grades	-.048	.028	-.193	-1.714	.092
		MCS math confidence	.042	.079	.062	.525	.602
		MCS math self-doubt	-.074	.086	-.102	-.864	.391

a. Dependent Variable: YSRS total

Table 14. Regression coefficients by Program for the relationship of Math Confidence to Private Regard for Ethnoracial Membership (RQ5).

Coefficients[a]

Categorization	Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
YPP youth (MLW)	1	(Constant)	5.412	1.533		3.529	.001
		sex	-.010	.305	-.004	-.034	.973
		grade	.082	.123	.082	.666	.508
		IMPUTED: letter grades	-.056	.104	-.068	-.533	.596
	2	(Constant)	5.848	1.598		3.660	.001
		sex	.053	.304	.022	.175	.861
		grade	.065	.120	.065	.541	.591
		IMPUTED: letter grades	-.010	.110	-.013	-.094	.925
		MCS math confidence	-.054	.296	-.023	-.183	.855
		MCS math self-doubt	-.463	.201	-.281	-2.307	.024
School CG	1	(Constant)	5.636	1.776		3.173	.003
		sex	.838	.364	.333	2.301	.026
		grade	-.126	.155	-.118	-.815	.420
		IMPUTED: letter grades	.058	.113	.075	.518	.607
	2	(Constant)	5.745	1.955		2.938	.005
		sex	.828	.372	.329	2.226	.032
		grade	-.110	.162	-.103	-.680	.500
		IMPUTED: letter grades	.051	.116	.065	.439	.663
		MCS math confidence	-.061	.327	-.029	-.185	.854
		MCS math self-doubt	-.224	.355	-.098	-.630	.532

a. Dependent Variable: MIBI Private Regard

Young People's Project Program Information

Excerpts from* Young Peoples Project *Program Materials

Overview of the Mission, Goals
And Programs of the Young People's Project

Prepared by Omo Moses, YPP National Director
July, 2001

It is the goal of YPP to organize young people to work to radically change their education, and the way they relate to it. Over the next five years we seek to develop critical masses of young people in the North, South, Midwest, and West Coast who do math literacy work, and who have the skill and capacity to organize and manage this work. We see a critical mass as the number of young people needed to sustain math literacy work in their own communities, and to extend it to other young people in other communities, in order to create a "tipping point." A point beyond which mathematics literacy will become an expected right and achievement for all young people, who then will rise to participate en-mass in America's democratic process and help make America's public schools truly work for all of its children.

Our efforts center upon developing hubs for math literacy. Currently two such hubs exist: YPP Jackson and YPP Boston/Cambridge. These sites serve as focal points for the development of Math Literacy Workers and Outreach into local and regional communities. Through these efforts we seek to engage the following questions: (1) what are mechanisms of organizing young people to have an impact on math literacy in their communities? (2) how can this be replicated in other communities?, and (3) how can it be sustained by these communities?

YPP was founded on the belief that literacy, specifically mathematical literacy, is the organizational tool, comparable to the right to vote, for young people of color to self-determine their existence in today's society. In each community that we become a part of it is our intent to grow programs that address the critical need for math literacy.

Programs Areas:

Math Literacy Worker Development – develop a formal process for the overall development of young people becoming math literacy workers (MLWs). This includes training in workshops, math content and facilitation, as well as a guiding process by which young people take ownership of the work (organizing workshops, programs, etc.) The goal is to develop a blueprint combining training and activity-based experiences that serve as a baseline standard for the development of MLWs in local sites. Define a process for students to become workshop assistants, workshop facilitators, and workshop trainers.

Math Literacy Work Training

Math Literacy Workers do two basic things: they learn specific math activities, and they learn to teach what they have learned to others. Currently YPP has conducted 2-week residential training sessions and 5-6 week day training sessions. Training sessions involve 8^{th}-12^{th} grade students, who learn techniques in facilitation as well as AP/YPP math activities and content

areas. Continual development and follow up occur through out the year through hands on work in school, after school and summer programs, where they learn how to assist and facilitate sessions for others through apprentice relationships. All of the math students learn in their workshops are embedded in some activity, physical event or game.

Math Institute

The Math Institute is a year round initiative, which represents a collection of programs, events and activities that foster the growth and development of MLWs in their respective communities. The Math Institute provides a space for Math Literacy workers to develop, test and practice workshops and at the same time serve their target population.

In School: the in-school program is centered on integrating new technologies, the Algebra Project five step curricular process and young people into traditional classrooms. YPP staff members, high school seniors on work-study and college students facilitate workshops in classrooms to enhance the classroom curriculum, and to provide students with activities that help them to develop their conceptual understanding. The focus is on middle school math concepts and Algebra 1, with the goal of helping Algebra 1 students pass their end-of-year statewide exam.

After School: YPP after-school programs center around creating youth led environments for doing math literacy work. In some cases these programs are solely YPP initiatives, as in the Brinkley Institute in Jackson and Area IV after school program in Cambridge. These programs service students ranging from 4^{th}-8^{th} grade and provide a farm system for the development of future MLWs. The main purpose of these programs is to provide young people with alternative math experiences that are concrete, that they can relate to, and which build their confidence in their ability to do math. In our after-school programs we want students to learn and have fun at the same time, creating a culture where young people feel comfortable learning together, owning the work and the learning process.

Summer: during the summer YPP runs a series of Math Institutes and host various training sessions. The Math Institutes have dual functions. They act as training grounds for YPP facilitators to develop first-hand facilitation experience, as well as provide a service to families within the community. In Jackson and Cambridge, YPP runs summer Math Institutes for local youth from 4^{th} grade to 8^{th} grade. The Math Institutes combine education with recreation and training. During morning classes, Institute participants learn the range of YPP workshop activities, and in the afternoons have field trips and recreational activities. The Institutes are also training grounds for YPP facilitators who develop lots of first-hand facilitation experience. A major component of our summer initiatives is the Summer Exchange program in which Math Literacy Workers from different areas of the country travel to work in or participate in the different Math Institutes and/or training sessions. As a result of their summer experience, we want students excited about being students, ready to go into next years classes with the confidence and desire to tackle whatever is presented to them, and to take the initiative to help their peers do the same.

<u>Community Outreach:</u> the goals of community outreach are to:

(1) Develop pockets of young people who effectively “own” math literacy work,
(2) Encourage the workers to see the positive impact that this work has on them as individuals and in the neighborhoods they live, and,
(3) Raise awareness in communities that embrace the work and the young people who do it.

Through these efforts we seek to have a positive impact on schools and existing programs or organizations, to create awareness of young people as resources, to provide jobs which employ and build the skill capacity of young people, and to create spaces where parents and young people can work together to better their community. In some cases YPP staff and students work in other existing programs, as in Cambridge where YPP students do workshops after school in teen centers across the city or in Jackson where it has been a tradition to travel to the Mississippi Delta to conduct workshops in extended day sessions. These programs, along with Family Math Nights at local churches and community presentations, represent the majority of outreach activities to date.

Materials/Workshop Development: through our various workshops – Graphing Calculators, Desk-Top Publishing (DTP)/Graphic Design, Computer Programming/Robotics, Fractions Bars, Math Games – we seek to provide mechanisms for students to learn and understand math. As part of this continual process of development, it is through the continual practice and preparation that we also seek to upgrade, develop, and pilot new workshops. Our goal is to maintain a portfolio of activities and workshops, which are on the cutting edge of what interests and inspires young people to learn.

Technology: Our technology initiative seeks to network different communities of young people who do Math Literacy work, to provide for the effective transfer of skills over this network, and to practically apply new innovations in a way that enhances math literacy work and the overall development of Math Literacy Workers. Long Distance Learning, Computers, Graphing Calculators, Music and Video Production, Web Based Content, and various Software Applications are some of the tools Math Literacy Workers are introduced to and trained in.

Math Literacy Promotion: through presentations, math literacy tours, and production of media such as newsletters and web pages, and audio/video production, YPP promotes math literacy in local communities and nationally. We work to interest young people at existing sites to do math literacy work through demonstrations and by disseminating products that immerse mathematics within the culture that young people today grow up in. These media productions are to be used as both inspirational and educational tools.

Documentation/Evaluation – to develop a standard process for collecting anecdotal and statistical information based on the different activities, programs, and events. Establish a database that can be updated on the local levels that stores all pertinent information. Digitally record (picture, audio, video) activities, programs, events, and interviews to produce products which are informative and serve as training tools for MLW's. Produce a Quarterly publication, and distribute it via print and e-mail, which incorporates the activities and work going on in different sites. Produce digital portfolios that weave the individual stories of MLWs with their work in YPP.

Site Development -- work with local groups to establish necessary infrastructure, provide support through programs, technical assistance. Host/sponsor national, regional, and local events that will connect MLWs with other young and community people (Bus Tours, Youth Conferences, Seminars, Math Games Tournaments). Market YPP and the work of MLWs to target communities, funders, general public, etc., in a way that enhances interest and level of support. Establish funding stream that incorporates foundations, corporations, and individual donors with local and state funds.

THE YOUNG PEOPLES PROJECT (YPP) [2]
RUBRIC DEFINITIONS AND DEMONSTRATION ACTIVITIES

The following are the Rubric Dimensions and their Sub-categories:

Teaching/Workshop Delivery
- Substance
- Delivery
- Group Facilitation

Math Knowledge (pre- and post-test may be administered, YPP creating test instrument)
- Understanding of Math Concepts
- Application of Math Concepts in Interactions

Team Building/ Team Work
- Team Participation
- Effective Use of Interpersonal Skills

Community Engagement/Civic Awareness (Still trying to identify a method to observe change over the six-week summer program. Two methods being proposed are to 1) observe a dialogue around teen views of community engagement and civic awareness and 2) have teens fill out a pre- and post-questionnaire about their views of community.)

Proposed Demonstration Activities

- Math literacy workers to take a math knowledge test at beginning and end of program
- Attend preparatory meeting with math literacy workers to observe math knowledge and team building/team work abilities
- Attend workshop with youth to observe all of the rubric dimensions
- Attend debriefing session to observe math knowledge and team building/team work abilities

[2] Version circulated at the time the research began

THE YOUNG PEOPLES PROJECT (YPP) / RUBRIC DRAFT[3]

	Very Weak 1	Weak 2	Satisfactory 3	Strong 4	Very Strong 5	*Rating*
Teaching/Workshop Delivery						
Substance	Subject matter is not clear, presentation is not well organized and the subject is not relevant	Subject matter is not adequately articulated, presentation is not well organized and subject is not relevant	Subject matter is adequately articulated, presentation is adequately organized and the subject is relevant	Subject matter is articulated well, presentation is organized and the subject is relevant	Shows clear understanding of subject matter and clearly articulates subject substance, well organized and the subject is relevant	
Delivery	Fails to use eye contact, delivery not engaging and voice is not audible	Uses occasional eye contact, delivery not engaging and voice is barely audible	Uses some eye contact, delivery is sometimes engaging and voice is audible	Often uses eye contact, delivery is engaging and voice is audible	Effectively uses eye contact, engages with audience and voice is clear	
Group Facilitation	Not able to control group and not able to get group to perform the assigned tasks	Shows limited ability to control group and not able to get group to perform the assigned tasks	Shows ability to control group and ability to get group to perform the assigned tasks	Shows good ability to control group and ability to get group to perform the assigned tasks	Shows complete ability to control group and get group to perform the assigned tasks	
Math Knowledge (pre- and post-test may be administered)						
Understanding of Math Concepts	Shows no understanding of math concepts	Shows limited understanding of math concepts	Shows some understanding of math concepts	Shows good understanding of math concepts	Shows mastery of math concepts	
Application of Math Concepts in Interactions	Shows no ability to articulate math concepts in interactions with group	Shows limited ability to articulate math concepts in interactions with group	Shows ability to articulate math concepts in interactions with group	Shows good ability to articulate math concepts in interactions with group	Shows mastery of articulating math concepts in interactions with group	
Team Building – Team Work *(no entries for this category)*						
Team Participation	Does not participate with other team members to achieve common goal	Rarely participates with other team members to achieve common goal	Shows ability to participate with team members to achieve common goal	Shows good ability to participate with team members to achieve common goal	Shows excellent ability to participate with other team members to achieve common goal	
Effective use of interpersonal skills	Does not participate in group interactions even with prompting	Rarely participates in group interactions even with prompting	Shows ability to participate in group interactions and expresses ideas that are sensitive to the feelings of others with occasional prompting	Shows consistent ability to promote effective group interactions and expresses ideas that are sensitive to the feelings of others without prompting	Consistently and actively promotes effective group interactions and the expression of ideas that are sensitive to the feelings of others	
Community Engagement/Civic Awareness		(a) dialogue observation		(b) pre- and post-questionnaire		

[3] Version circulated at the time the research began

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