A longitudinal evaluation of a survivor-mentor program for child survivors of sex trafficking in the United States

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ABSTRACT

Background: Commercial sexual exploitation (CSE) of children is a significant public health and criminal justice problem, but there are few evaluated models of CSE mentorship service.

Objectives: To assess whether youth who participated in a CSE survivor-mentor program evidenced changes in CSE victimization, dating abuse victimization, health, delinquency, social support, and coping during the year following their enrollment in the program.

Participants: 41 youth who were CSE-experienced at baseline (72%) or determined very high risk, 11–18 years old, 95% female, 58% heterosexual, 29% White, 29% Hispanic, and 42% other races/ethnicities.

Setting: An urban city in the Northeast United States.

Methods: We used a one-group repeated measures design and a GEE analysis. Data were collected at baseline, six months after baseline (71% follow-up) and 12 months after baseline (68% follow-up).

Results: At baseline 72% could be characterized as CSE-experienced, while at 6 months the percentage decreased to 24% (p < 0.001) and at 12 months to 14% (p < 0.001). After 6 months of receiving survivor-mentor services, youth were less likely to have experienced CSE, engaged in sexually explicit behavior (SEB), used illicit drugs, engaged in delinquent behavior, been arrested or detained by police, and they had better social support and coping skills. After 12 months, youth were less likely to have experienced CSE, to have engaged in delinquent behavior, be arrested or detained by police, and had improved coping skills.

Conclusion: Findings demonstrate that youth who received survivor-mentor services from MLMC experienced improved well-being and less drug use, delinquent behavior, and exploitation.

1. Introduction

Sex trafficking of children is considered a global public health problem (Greenbaum & Committee on Child Abuse and Neglect, 2017). Since 2000 in the U.S., any commercial sex act involving a person less than 18 years old has been considered human trafficking according to the federal Trafficking Victims Protection Act, often called "TVPA" (Victims of Trafficking & Violence Protection

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Act, 2000), but until recently, not every U.S. state considered child survivors of sex trafficking to be victims of child abuse and neglect. In May 2015, the Justice for Victims of Trafficking Act required states to change their statutes and definitions of child abuse such that any finding of commercial sexual exploitation (CSE) of a minor was also automatically a finding of child abuse and neglect (Justice for Victims of Trafficking Act of, 2015; Preventing Sex Trafficking and Strengthening Families Act, 2014). Thus, the prevention of CSE, and its recognition as a child abuse issue, is a high priority for the nation.

CSE can take many forms, such as prostitution or sexually explicit performances (*e.g.*, stripping), and sometimes involves a third-party exploiter (*e.g.*, a pimp). Although the prevalence of CSE in U.S. youth is unknown and virtually impossible to estimate, serious and long-lasting mental and physical health sequelae of CSE have been documented (De Vries & Goggin, 2018). Mental health effects can include post-traumatic stress disorder, depression, and anxiety (Hossain, Zimmerman, Abas, Light, & Watts, 2010) sexually transmitted infections (Edinburgh, Pape-Blabolil, Harpin, & Saewyc, 2015), unwanted pregnancy (Greenbaum, Dodd, & McCracken, 2018), and substance use disorders (Lederer & Wetzel, 2014), among other physical health consequences (Barnert et al., 2017). In addition, youth who survive CSE can experience housing, food, and employment instability, as well as problems obtaining medical and mental health care (Dank et al., 2015). Several factors that may place youth at increased risk for experience CSE have been identified, and these include being female, experiencing parental abuse or neglect, being homeless, runaway or thrown out of their home, having untreated mental health problems, involvement with the legal or child protection system, unaccompanied or undocumented status, family poverty, forced migration, substance use, and experiencing a natural disaster or community upheaval (Gibbs, Henninger, Tueller, & Kluckman, 2018; Greenbaum & Committee on Child Abuse & Neglect, 2017; O'Brien, White, & Rizo, 2017; Reid, Baglivio, Piquero, Greenwald, & Epps, 2017; Reid, Baglivio, Piquero, Greenwald, & Epps, 2018).

Preventing human trafficking and assisting survivors are stated priorities of the United Nations, the U.S. Department of Health and Human Services, and the U.S. Department of Justice (Greenbaum & Committee on Child Abuse and Neglect, 2017; U.S Department of Justice, 2017; U.S. Department of Health & Human Services, 2018). Acting on these priorities, the Office of Justice Programs awarded $1.8 million to CSE service provision programs in 2018 to "develop or enhance their mentoring capacity" for trafficking survivors (U.S. Department of Justice, 2018). "Survivor-Mentoring," is the term used in the field of CSE services to describe the pairing of a CSE survivor with a person who has survived sexual exploitation and can function as their mentor; that is, can help them recover from trauma and re-stabilize.

It is welcome news that the U.S. government is now investing in survivor-mentor and other CSE service provision programs. However, a critical problem is that there are few evaluated models of CSE mentorship service provision (Moynihan, Pitcher, & Saewyc, 2018). In a recent systematic review, Moynihan et al. (2018) identified 21 research studies published in peer-reviewed journals between 1991–2015 that provided outcome data for minors who participated in an intervention designed to promote healing for survivors of CSE or similar phenomena (*e.g.*, "street-active youth") (Moynihan et al., 2018). Problematically for the field, not all of the studies were about mentorship or similar intervention models, most studies were non-experimental (only eight included a comparison group), many used subjective ratings of outcomes, and some did not collect data directly from youth but relied upon staff observations of youth. Therefore, there is very little evidence about what works to re-stabilize CSE youth less than 18 years old, and no information about how or what kind of mentorship is needed to achieve objectives (Hardison Walters et al., 2017; Moynihan et al., 2018). As a result, some CSE service providers are using evidence from related fields such as interpersonal violence victimization and trauma as the basis of their programs, and offering focused health or social services, intensive case management, psychoeducational therapy groups, residential programs or other potentially helping interventions such as micro-grants (Moynihan et al., 2018), but there are no empirically-based best practices models to guide them. As a result, until evidence accrues about what works to help child survivors of CSE, there is a potential that resources may be wasted on ineffective programs.

In 2014, the U.S. Department of Justice recognized the urgent need for evidence regarding the efficacy and/or effectiveness of community programs to prevent CSE and awarded our research team funding to conduct a non-experimental evaluation of an established and well-known CSE services agency: My Life My Choice (MLMC). This paper relays the results of the evaluation study, which entailed collecting data at three points over the course of a year from youth who enrolled in survivor-mentorship services with MLMC. The primary research question was: "Do youth who participate in MLMC survivor-mentorship services demonstrate improvement on five key factors, including CSE victimization, dating abuse victimization, health, delinquency, and social factors?" These five factors were selected as the outcomes of interest because they are prevalent, costly and have been identified as public health priority outcomes (Rothman et al., 2017; U.S. Department of Health and Human Services, 2019; U.S. Centers for Disease Control & Prevention, 2015) and because each is theoretically related to the content of the intervention. The purpose of this evaluation was to study changes in outcomes for youth given that they were participants in MLMC survivor-mentorship services, irrespective of why they were referred to the program. Research hypotheses were that MLMC mentees would report less CSE and dating abuse victimization, and improved health, social support and coping, after one year of being assigned a survivor-mentor.

2. Methods

2.1. Study design

This study used a one-group repeated measures design. Data were collected at baseline, six months after baseline, and 12 months after baseline.

2.2. The My Life My Choice Survivor-Mentorship Program Model

My Life My Choice (MLMC) is a program of a large non-profit agency that was founded in 2002 in response to the death of an adolescent in Boston who was murdered while being commercially sexually exploited. MLMC pairs exploited adolescents, or youth at very high risk of CSE, with a trained adult mentor who is a survivor of exploitation. The mentor's role is to support mentees in their exit from commercial sex and recovery from the trauma of being exploited (i.e., "being in the life"), and in finding safety and stability as they move forward. MLMC serves youth of all genders, but has only received requests to provide services to cis-gender boys a handful of times, and transgender youth 7 times, whereas they have served over 300 unique girls since their inception. The program model was developed with a theoretical grounding in Maslow's Hierarchy of Needs (Maslow, 1943). Maslow's Hierarchy of Needs contends that in order to reach their true potential, humans first need their basic physiological needs met and then need to experience safety, love, belonging, and esteem.

MLMC receives referrals of minor youth to their mentorship services from a variety of sources, including the Department of Children and Families (DCF), law enforcement, Children's Advocacy Centers, schools, and congregate care facilities. Typically, children are referred to MLMC if the referring entity knows that a child has experienced CSE because the youth has made a disclosure, or in the absence of such a disclosure, evidence from law enforcement, a witness, or an online advertisement for the exchange of sex with the child. Some children referred to MLMC are strongly suspected to have been exploited, but there is no definitive proof at the time of the referral. Reasons to strongly suspect exploitation may include several of the following factors: a history of repeatedly being missing from care, being involved with a male who is significantly older, having a history of multiple STIs and/or pregnancies, a history of systems involvement and prior abuse victimization, evidence that the child has been meeting with strangers met online, disclosure from other peers and or reports that the youth may be involved in recruiting other peers for CSE purposes, and/or tattoos that indicate branding. In 67% of these cases, youth who are only suspected to have experienced CSE when referred to MLMC confirm that they were exploited after establishing a relationship with a mentor (Espensen, 2019).

MLMC has a designated survivor-led assessment team. On behalf of the organization one member of that team will make in-person contact with a youth who is designated as appropriate for services by the assessment team, conducts an assessment interview, and matches the youth with one of MLMC's 13 full-time survivor-mentor staff. Each survivor-mentor has been free from CSE for at least five years. Newly-hired survivor-mentors spend at least two months shadowing a senior survivor-mentor before being assigned their own mentees. All survivor-mentors also participate in a minimum of 40 h of didactic training in topics including trauma-informed care, CSE of children, healthy boundaries, suicide prevention and substance use.

MLMC mentees are offered a continuum of supports; each individual's mentorship plan reflects their own specific needs. However, at a minimum, each young person gets regular visits with her mentor. When a young person is first assigned a survivor-mentor, they meet at least weekly. Over time the frequency of meetings typically decreases. However, a young person may access support from their mentor and the program overall for as long as they would like, which is often for several years, with no age limit at which services are cut off. In addition, mentees receive intensive case management services as needed, which may include warm referrals to mental health services, housing programs (including residential or congregate care programs), youth support services such as a LGBTQ youth drop-in center, educational support, parenting support, health care, substance use treatment, resources from the Department of Transitional Assistance, and child welfare services. Mentors will accompany youth to appointments as requested. Further, mentees have the opportunity to participate in various leadership development and skill building opportunities. For ex-ample, MLMC Leadership Corps is a part-time paid position in which mentees have the opportunity to work on projects that impact the movement to end exploitation while building job readiness skills. Finally, mentees have opportunities to develop a sense of belonging by participating in community building activities, such as the annual holiday party or summer beach day.

2.3. Subjects

To be eligible for participation, youth had to be enrolling in mentorship services from MLMC, speak English, and be at least 11 years old. When the study began, youth ages 14 years old or older were eligible. However, because in the first few weeks of enrollment three children referred to MLMC were younger than 14 years old, we reduced the age eligibility criterion approximately two months into the study. MLMC only provides mentorship services in Massachusetts, so at enrollment, all research participants were residing in eastern Massachusetts.

A total of 72 youth were screened for eligibility (Fig. 1). Of these, 7 were ineligible either because they were too young or because they opted not to initiate MLMC mentorship services after they were referred. Of the 65 eligible, 66% (n = 43) enrolled in the study and completed the baseline survey. Four parents, three youth and one DCF guardian declined to give consent or assent to research (Fig. 1). Reasons why we were unable to enroll the remaining 14 youth included that youth entered locked-down juvenile detention facilities and we did not have IRB approval to approach detained youth, that youth saw MLMC mentors more than three times before we were able to arrange baseline data collection, that consent forms were signed incorrectly and we were unable to re-consent the participant or their parent/guardian, or that they moved out of the country (Fig. 1). Two participants were removed from the sample after enrolling. In the first case, the participant was removed because her parent contacted the study team to request that her daughter be withdrawn because she was concerned that study participation would not be good for her daughter. A second participant stole money from MLMC staff soon after being enrolled as a MLMC mentee and MLMC opted to refer her to alternate services. As she never received any MLMC services, it did not make sense to include her in the evaluation.
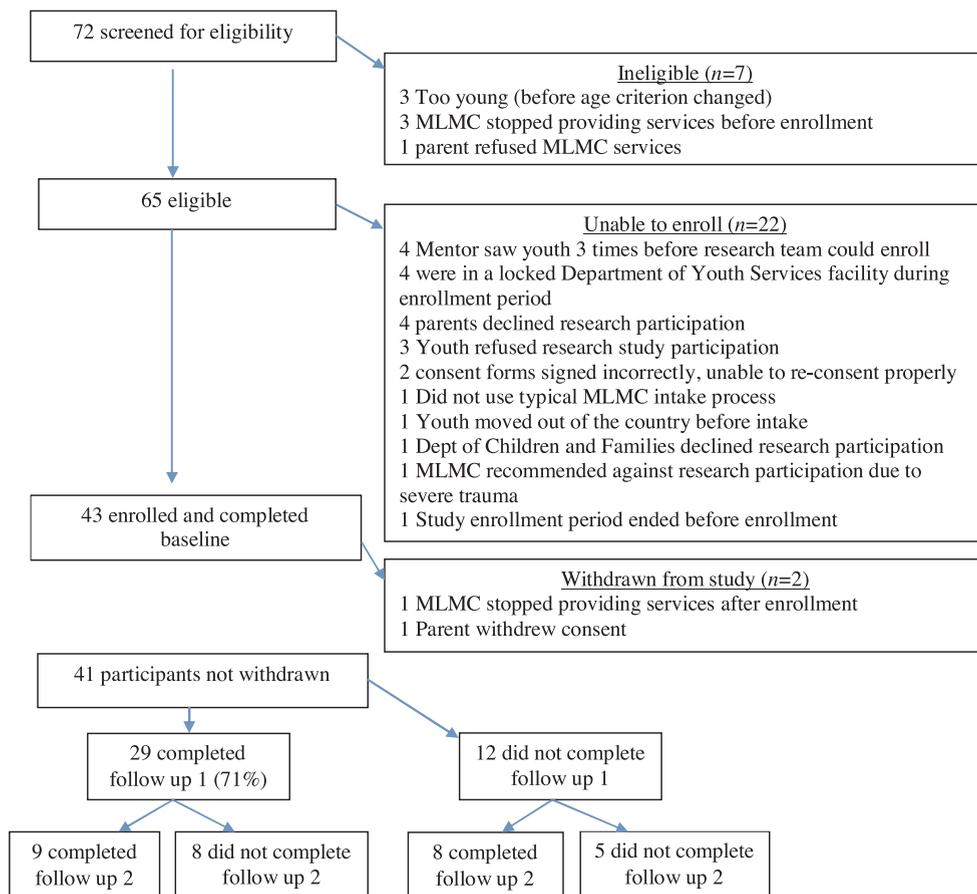
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┌─────────────────────────────┐
│ 72 screened for eligibility │
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                  │              ┌──────────────────────────────────────────────────────┐
                  │              │              Ineligible (n=7)                         │
                  │──────────────│ 3 Too young (before age criterion changed)           │
                  │              │ 3 MLMC stopped providing services before enrollment  │
                  ▼              │ 1 parent refused MLMC services                       │
┌─────────────────────────────┐ └──────────────────────────────────────────────────────┘
│        65 eligible          │
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                  │              ┌──────────────────────────────────────────────────────┐
                  │              │              Unable to enroll (n=22)                  │
                  │              │ 4 Mentor saw youth 3 times before research team could │
                  │              │   enroll                                             │
                  │──────────────│ 4 were in a locked Department of Youth Services       │
                  │              │   facility during enrollment period                  │
                  │              │ 4 parents declined research participation            │
                  │              │ 3 Youth refused research study participation         │
                  │              │ 2 consent forms signed incorrectly, unable to        │
                  │              │   re-consent properly                                │
                  │              │ 1 Did not use typical MLMC intake process            │
                  │              │ 1 Youth moved out of the country before intake       │
                  │              │ 1 Dept of Children and Families declined research     │
                  │              │   participation                                      │
                  ▼              │ 1 MLMC recommended against research participation due │
┌─────────────────────────────┐ │   to severe trauma                                   │
│ 43 enrolled and completed   │ │ 1 Study enrollment period ended before enrollment    │
│          baseline           │ └──────────────────────────────────────────────────────┘
└─────────────────────────────┘
                  │              ┌──────────────────────────────────────────────────────┐
                  │              │              Withdrawn from study (n=2)               │
                  │──────────────│ 1 MLMC stopped providing services after enrollment   │
                  │              │ 1 Parent withdrew consent                            │
                  ▼              └──────────────────────────────────────────────────────┘
┌─────────────────────────────┐
│ 41 participants not         │
│      withdrawn              │
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            │            │
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┌──────────────────┐  ┌──────────────────┐
│ 29 completed     │  │ 12 did not       │
│ follow up 1 (71%)│  │ complete         │
│                  │  │ follow up 1      │
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│9        ││8 did not││8        ││5 did not│
│completed││complete ││completed││complete │
│follow   ││follow   ││follow   ││follow   │
│up 2     ││up 2     ││up 2     ││up 2     │
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Fig. 1. Research Study Enrollment and Retention Diagram.

2.4. Measures

2.4.1. Commercial sexual exploitation and sexually-explicit behavior

Because there is no gold standard measure of CSE, our surveys included multiple original questions about exchanging sex for things of value and, separately, engaging in sexually-explicit behavior (SEB). SEB was defined as sexual behaviors that did not necessarily involve physical contact with another person. These acts were stripping, taking naked selfies, being filmed naked or doing sexual things, or participating in naked modeling. The wording of the original items used to assess CSE were based in part on questions about exchanging sex from the National Longitudinal Study of Adolescent Health and from suggestions made by the MLMC mentors who participated in the design of the assessment instruments (Resnick et al., 1997). In total, we included eight questions about commercial sex, three questions about being propositioned to engage in commercial sex, and four additional questions about SEB (see Appendix for the full text of all eight questions). After collecting data via all 15 original questions, we created four dummy indicator variables that represented any: (1) Self-reported CSE victimization (8 items, $\alpha = 0.51$), (2) CSE victimization (self-report, or as noted in the program's file), (3) turning down CSE propositions ($\alpha = 0.89$), and (4) engaging in sexually explicit behavior (SEB) ($\alpha = 0.67$). Youth who responded "yes" to any of the eight CSE items were classified as having experienced CSE via self-report. Because youth may have underreported their own CSE victimization, CSE victimization was also assessed in a second way: by combining any self-report of CSE with any suspected report of CSE that was provided to MLMC by someone else and noted in the youth's file—including reports from mentors, CPS workers, congregate care staff, or family members. Stable or increasing rates of turning down CSE may be a positive indicator of child stabilization. Youth who responded positively to ≥1 question about turning down CSE propositions were classified as having turned down CSE. Youth who responded yes to ≥1 question about SEB was classified as having engaged in SEB.

2.5. Dating abuse victimization

Youth were asked if they had been in a dating relationship in the past six months, which was defined very broadly. Youth were provided with the specific instruction to count any "romantic or dating-type relationship" including people with whom they had been "spending time," "a friend with benefits," "hooking up with," "talking to," or an ex-partner that they still sometimes see. Those who

responded affirmatively were then asked a series of 28 questions about dating abuse (DA) victimization. The DA questions were adapted from the DAPAS, which is a psychometrically-sound measure of dating abuse victimization that has previously been used in samples of urban-residing adolescents (Goncy & Rothman, 2016). The DA questions included 15 items about physical DA, four questions about sexual DA, and nine questions about psychological DA. The DA questions were preceded by the following lead-in: "How many times has any person with whom you were in a dating-type relationship done the following things to you? Do not count when the person did this thing with your permission and in a way that you definitely wanted because it made you sexually excited. In the past six months, a dating partner…" A sample item is: "threw something at me that hit me." Response options were "never," "1 to 3 times," "4 to 9 times," and "10 or more times." Any response to any of the items other than never was categorized as an experience of DA victimization. Cronbach's α = 0.90 in this sample.

2.5.1. Delinquent behavior

We created three indicator variables for delinquent behavior; any illicit drug use, any criminal behavior, and being arrested or detained by the police. To assess illicit drug use, youth were asked a question from the Youth Risk Behavior Survey: "How many days in the past 30 days have you used marijuana" with response options ranging from "0 days" to "all 30 days." In addition, youth were asked: "Thinking about the past 6 months, how often have you used the following?" with a list of nine types of illicit drugs (e.g., cocaine, heroin) and response options ranging from 0 times to 20 or more times. To assess delinquency, we used 10 items from the Rochester Youth Development Survey to assess delinquency (Thornberry, Lizotte, Krohn, Farnworth, & Jang, 1994). A sample item is: "In the past six months, have you tried to steal or actually stole money or things worth less than $50?" The response options were "Yes" or "No." We assessed whether youth had been arrested or detained by the police by asking: "In the past six months, have you been arrested or detained by the police for any reason?" with response options "Yes," "No," and "Sort of/Don't know." Those who responded yes were classified as having been arrested. Cronbach's α = 0.84 in this sample.

2.5.2. Health status

We collected data on diagnoses of sexually-transmitted infections (STIs), feeling sad, and feeling hopeless in order to create three indicator variables for health status. STI diagnoses was assessed via a single item: "In the last 6 months, have you been diagnosed with a sexually transmitted infection or STD?" with response options "yes" or "no." Sadness was assessed via a single item adapted from the Youth Risk Behavior Survey: "During the past 30 days, about how many days did you feel sad, blue or depressed?"; youth who reported feeling sad for ≥7 days were classified as having been sad often in the past month as compared to those who felt sad less frequently (< 7 days in the past month). Hopelessness was assessed via six items from the 17-item Hopelessness Scale for Children (Kazdin, French, Unis, Esveldt-Dawson, & Sherick, 1983). A sample item is: "There is no use in trying to get something I want because I probably won't get it." Response options were on a Likert-type scale from 1 to 4, where 1 represented "strongly disagree" and 4 represented "strongly agree." Cutpoints for low and high levels of hopelessness were based on baseline scores. Those who scored in the lowest two tertiles of the scale were classified as having lower hopelessness and those who scored in the highest tertile were classified as having high levels of hopelessness. Cronbach's α = 0.80 in this sample.

2.5.3. Social factors

We created three dichotomous variables to classify participants as having "high" or "low" levels of social factors potentially influential in youths' lives: level of social support from others, coping skills, and engagement in risky behaviors. Social support was assessed via 10 questions, six of which were from the 40-item Interpersonal Support Evaluation List (ISEL), α = 0.81 (Sheldon Cohen & Hoberman, 1983), and four were original and generated by the research team in collaboration with MLMC staff. Response options were on a 4-point Likert-type scale ranging from 1-"definitely false" to 4-"definitely true." Coping skills were assessed using 10 items, some of which were derived from the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983), and some were generated by the research team. A sample item is: "I feel that difficulties are piling up so high that I cannot overcome them," and response options were on a 4-point Likert-type scale ranging from 1-"strongly disagree" to 4-"strongly agree." Cronbach's α = 0.86 in this sample. Risky behavior was assessed via four items taken from the risk-seeking and impulsivity subcomponents a self-control scale (Grasmick, Tittle, Bursik, & Arneklev, 1993). A sample item is: "I like to test myself now and then by doing something a little risky," and response options were on a 4-point Likert-type scale ranging from 1-"strongly disagree" to 4-"strongly agree." Cronbach's α = 0.59 in this sample. Continuous scores were calculated by taking the mean value of all of the responses to the questions for a given scale. Tertile cutpoints were derived for each of the three scales using baseline data. For social support and coping, participants with scores less than or equal to the first tertile were defined as having low levels while those with scores greater than the first tertile were considered to have high levels of social support and coping skills, respectively. For risky behavior, those with mean scores greater than the third tertile cutpoint were considered to have high levels of risky behaviors while those with mean scores less than or equal to the third tertile cutpoint were considered to have low levels of risky behavior.

2.6. Data collection

Data were collected between August 2015 and January 2018. Data collection protocols were designed to yield the best quality data given the sensitive nature of the questions and trauma histories of research participants. All research staff were undergraduate or master's degree students and were trained by the first and/or last author to collect sensitive data. All research procedures were reviewed and approved by the first author's Institutional Review Board (IRB), and also approved by the IRBs at the Massachusetts Department of Children and Families (DCF), and the Justice Research Institute (JRI).

Prior to data collection, informed consent and/or assent was obtained from all prospective research participants and where required, from a parent or guardian. Parent/guardian consent forms were available in English throughout the study period, and also available in Spanish beginning in January 2016. There was one situation that the IRBs determined warranted a waiver of parental consent. If youth were involved with child protection services but parental rights had not yet been terminated (*i.e.*, living in foster care or congregate care), the requirement for parent/guardian consent was waived. The reason was that there was a possibility that contacting a parent could compromise the youth's privacy or endanger the youth. For example, a parent who had little contact with their child might be unaware that their child had been sexually exploited and might blame the child or believe that the child should be punished for engaging in sexual activity. Alternatively, there are some parents who exploit their children, and informing a parent that their child had been exploited might encourage contact that endangered the child or put the child at risk of exploitation by the parent.

To obtain data, research staff contacted the youths' MLMC staff mentors. Mentors presented the idea of research study participation during the first in-person meeting with youth client and invited a trained research assistant (RA) to either their second or third in-person meeting with the youth client to review assent materials and collect baseline data. After youth assented, they completed a 30-minute, self-administered paper survey. During the assent and data collection-related activities, mentors left the room so that youth had privacy to make choices about study participation and did not feel pressured about survey responses, but the RA remained in the room to provide help if the youth had trouble understanding a survey question. A detailed description of the ethical challenges of collecting data from youth who have experienced CSE and how these challenges were addressed in the present study are presented in [publication redacted for peer review] (Rothman, Farrell, Bright, & Paruk, 2018).

Youth also filled out a contact sheet with personal information including physical addresses, email addresses, social media contacts, and contacts of trusted adults and agency representatives, such as child welfare, school or congregate care staff. Research staff contacted youth or their listed contact people once per month to ensure the research team still knew how to locate them to improve longitudinal follow-up retention rates. This was a time-consuming and difficult process that required a high-level of safety-awareness from research staff. Staff had to be extremely cautious about the fact an exploiter could be reading text messages or listening to phone calls, and developed techniques to ascertain whether they were actually speaking with the intended individual and if that person had privacy. They also developed skills for locating youth using social media. When research staff reached youth they were invited to complete follow-up surveys 6 months after baseline and 12 months after baseline. To supplement self-reported data, some data elements were abstracted from MLMC administrative files. Follow-up surveys could be completed on paper in the company of a RA, which 31% of participants selected to do at 6 months and 21% selected to do at 12 months. RAs met research participants in congregate care facilities, libraries, parks, and fast food restaurants for survey administration. Otherwise, follow-up surveys were completed online using a secure database. Youth received $15 for completing the baseline survey, $20 for completing the 6-month survey, and $25 for completing the 12-month survey.

2.7. Data analysis

Descriptive statistics were calculated for demographic characteristics and survey items for all participants who completed the baseline survey as well as for the subset of participants who completed either the 6-month survey, or 12-month survey, or both. Means and standard deviations were used for continuous variables and frequency counts and percentages were used for categorical variables. To compare baseline characteristics between those who participated only in the baseline survey vs. those who participated in at least one follow-up, we used a Fisher's Exact test for categorical variables and a Wilcoxon Rank Sum test for continuous variables. A McNemar's test was used to assess within-participant change in survey items between the baseline visit and each follow-up survey. In order to directly estimate relative risks (RRs) and 95% confidence intervals, we fit a modified Poisson model with robust error variances (Zou, 2004). RRs were calculated for the association between data assessment point (baseline versus 6-months, baseline versus 12-months) and each outcome variable. Our primary model was unadjusted and a secondary model was constructed with further adjustment for age, race, and the baseline level of the outcome of interest. All analyses were performed using SAS v9.4 (Cary, NC). A p-value of < 0.05 was considered statistically significant.

3. Results

Our study sample was 43 people, and two withdrew leaving us with a final analytic sample of N = 41 youth (Fig. 1). Of the 41 in the final analytic sample, 71% completed the 6-month survey and 68% completed the 12-month survey (Fig. 1). Twenty-one (51%) completed both 6 and 12-month surveys.

The average age of youth in the analytic sample was 15.6 years old (SD = 1.3 years (Table 1). Approximately 95% of the sample identified as female, one identified as male, and one as transgender/non-binary (Table 1). At baseline, the sample was 29% White, 29% Hispanic, 10% Black/African-American, 20% Multiracial, 2% American Indian or Alaskan Native, and 10% identified their race as "other" (Table 1). Approximately half (58%) identified as straight or heterosexual (Table 1). Almost all (75%) the youth were enrolled at school at baseline and of those enrolled in school, 23% reported that they had missed 11 or more days of school in the past month (Table 1). At baseline, there was a high degree of past month residential instability. A minority (33%) had lived only in one place in the past month; 35% had lived in two places, 25% had lived in 3–4 places, and 8% had lived in 5 or more places (Table 1). The majority of youth in the sample were still engaged with MLMC services after six months and after 12 months, though 17% and 32%, respectively, had disengaged (Table 1).

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Table 1
Study sample characteristics for participants at baseline, 6 months, and 12 months.

	Baseline n (%)	6 months n (%)	12 months n (%)
Total	41 (100)	29 (100)	28 (100)
Gender identity			
Female	39 (95)	27 (93)	28 (100)
Male	1 (2)	1 (4)	0 (0)
Other	1 (2)	1 (4)	0 (0)
Race/ethnicity			
White/non-Hispanic	12 (29)	8 (28)	6 (21)
Black/African-American	4 (10)	2 (7)	4 (14)
Hispanic/Latina	12 (29)	9 (31)	8 (29)
American Indian or Alaskan Native	1 (2)	1 (4)	1 (4)
Multiracial	8 (20)	5 (17)	8 (29)
Other	4 (10)	4 (14)	1 (4)
Sexual orientation			
Straight/heterosexual[a]	18 (58)	13 (52.0)	15 (68.2)
Not straight/heterosexual	13 (42)	12 (48.0)	7 (31.8)
Currently enrolled in school	30 (75)	24 (83)	22 (79)
No days of school missed past month[b]	10 (33)	9 (45)	6 (40)
1-2	9 (30)	6 (30)	5 (33)
3-5	3 (10)	0 (0)	2 (13)
6-10	1 (3)	2 (10)	0 (0)
11 or more	7 (23)	3 (15)	2 (13)
Residential stability past 6 months			
Lived in 1 place	13 (33)	14 (50)	16 (57)
Lived in 2 places	14 (35)	10 (36)	6 (21)
Lived in 3-4 places	10 (25)	3 (11)	4 (14)
Lived in 5 or more places	3 (8)	1 (4)	2 (7)
Receiving MLMC services	41 (100)	24 (83)	19 (68)
Age (in years)			
Mean (SD)	15.6 (1.3)	15.7 (1.3)	15.3 (1.4)
Range	13-18	13-18	13-17

[a] Missing data from 10 youth at baseline, 4 youth at 6 months and 6 youth at 12 months.
[b] Denominator is those enrolled in school.

3.1. CSE and SEB

We observed decreases in the percent of youth who experienced CSE. At baseline, 28% self-reported that they had experienced CSE in the past six months. On the 6-month survey, 10% reported the same (p = 0.10), and on the 12-month survey, 7% reported the same (p = 0.06) (Table 2). However, we did not only rely on youths' self-report of CSE. Incorporating both self-reported CSE plus formal reports from mentors or representatives of state-funded agencies, at baseline 72% of youth could be characterized as CSE-experienced, while at 6 months the percentage decreased to 24% (p < 0.001) and at 12 months it decreased to 14% (p < 0.001) (Table 2). Some youth also were propositioned and asked to engage in CSE but declined. At baseline, 54% had had at least one experience of turning down CSE in the past six months. At 6 months, 46% reported turning down CSE (not statistically significant) and at 12 months 32% did (p < 0.05) (Table 2). Finally, youth were asked about SEB in which they may have engaged that may not have been CSE (*e.g.*, posing for naked selfies or videos). At baseline 38% reported having engaged in sexually explicit behavior in the past 6 months, which decreased to 10% at 6 months (p < 0.01), and rebounded to 25% at 12 months (NS).

In regression models adjusting for age, race, and baseline levels of the outcome of interest, we observed decreases from baseline to 6 months in CSE (measured via self-report or external reports) (RR 0.33, 95% CI 0.17, 0.64), and SEB (RR 0.27, 95% CI 0.11, 0.69) (Table 3). We also observed decreases from baseline to 12 months in both self-reported CSE (RR 0.25, 95% CI 0.06, 1.05) and CSE measured via self-report or external reports (RR 0.21, 95% CI 0.09, 0.48) (Table 3).

3.2. Dating abuse victimization

There was little variation in self-reported dating abuse victimization over time (Table 2). The number of individuals who reported having been in a dating relationship at each time-point was stable: 83%, 76%, and 85%, respectively (Table 2). At baseline, 40% of those who were in a dating relationship in the prior 6 months reported experiencing at least one act of dating abuse victimization (n = 8), and at the six month follow-up 55% (n = 11) reported the same (NS)(Table 2). Focusing on those who contributed 12-month data, of those, 45% who reported being in a dating relationship in the past six months also reported experiencing an act of dating abuse at baseline, and 35% reported the same at 12 months (NS, Table 2). In regression models adjusting for age, race, and baseline

Table 2
Changes in outcomes from baseline to 6 months, and baseline to 12 months.

Outcome	Baseline and 6-Month Surveys (N = 29)			Baseline and 12-Month Surveys (N = 28)		
	Baseline n (%)	6 months n (%)	p-value	Baseline n (%)	12 months n (%)	p-value
Commercial sexual exploitation (CSE) and sexually explicit behavior						
Self-reported CSE	8 (28)	3 (10)	0.10	7 (25)	2 (7)	0.06
CSE self-report or external report[a]	21 (72)	7 (24)	0.0005	21 (75)	4 (14)	< 0.0001
Turned down CSE offers	15 (54)	13 (46)	0.48	17 (61)	9 (32)	0.01
Sexually explicit behavior	11 (38)	3 (10)	0.005	8 (29)	7 (25)	0.71
In a dating relationship past 6 months	24 (83)	22 (76)	0.41	23 (85)	23 (85)	0.99
Dating abuse victimization[b]	8 (40)	11 (55.0)	0.26	9 (45)	7 (35)	0.48
Criminal behavior past 6 months						
Illicit drug use	15 (52)	9 (31)	0.11	17 (61)	12 (43)	0.20
Any crime perpetration	27 (93)	21 (72)	0.01	26 (93)	17 (61)	0.003
Arrested or detained by police	10 (36)	6 (21)	0.10	13 (48)	6 (22)	0.02
Health-related						
Diagnosed with a sexually transmitted infection	6 (21)	3 (11)	0.18	6 (21)	3 (11)	0.26
Sad for ≥7 sad days in past month (vs < 7 days)	15 (58)	14 (54)	0.71	14 (54)	13 (50)	0.74
High level of hopelessness[d]	7 (24)	8 (28)	0.65	5 (18)	7 (25)	0.48
Social determinants						
Low social support[c]	11 (38)	4 (14)	0.008	6 (22)	3 (11)	0.26
Low coping skills[c]	10 (36)	5 (18)	0.03	10 (36)	2 (7)	0.01
High level of risky behaviors[d]	6 (21)	2 (7)	0.10	3 (11)	3 (11)	0.99
Missed ≥1 days of school in past month€	14 (70)	11 (55)	0.26	10 (67)	9 (60)	0.56
Lived in ≥2 places in past 6 months	19 (68)	14 (50)	0.10	16 (59)	11 (41)	0.10

[a] Either self-report on survey, from MLMC survivor-mentors, or from MLMC administrative data.

[b] Denominator was the number of individuals who reported being in a dating relationship in the past since months, n = 20 (completed baseline + 6 month), n = 20 (completed baseline + 12 month).

[c] Low levels = having a score < 33.3[rd] percentile cut-point (derived at baseline).

[d] High levels = having a score > 66.7[th] percentile cut-point (derived at baseline); € Denominator is those who are currently enrolled in school, n = 20 (completed baseline + 6 month), n = 15 (completed baseline + 12 month).

levels of the outcome of interest, we did not observe differences in dating abuse victimization following survivor mentoring.

3.3. Health

We assessed three health-related outcomes; STI diagnosis, sad for ≥7 days in the past month, and high levels of hopelessness. We observed changes in STI diagnosis over time, but the prevalence of STI diagnoses was so low that these changes did not attain statistical significance. To be specific, 21% of the sample reported STI diagnosis at baseline and approximately half—11%–reported the same at 6 months and 12 months (Table 2). However, given that only six youth reported STI diagnosis at baseline, and that 3 reported new diagnoses at each follow-up, the cell sizes were too small for meaningful interpretation of results. We did not observe any changes in depression or hopelessness from baseline to 6 months or baseline to 12 months.

3.4. Delinquent behavior

Illicit drug use was prevalence in the sample at baseline. Approximately 52% reported that they had used marijuana in the past month or a different illicit drug one or more times in the past six months at baseline. At six months, only 31% reported the same, and 43% reported illicit drug use at 12 months (Table 2). The decrease from baseline to 6 months was statistically significant. The relative risk of illicit drug use at six months as compared to baseline was 0.51 (95% CI 0.27, 0.94, p < 0.05), though the decrease from baseline to 12 months was not statistically significant (Table 3). Delinquency was also prevalent at baseline—93% of the sample endorsed at least one of the criminal behavior items at baseline, and 72% and 76% did at six and 12 months respectively (Table 2). The decreases were statistically significant. Youth were 21% less likely to report delinquency at six months as compared to baseline, and 38% less likely to report it as 12 months than at baseline, controlling for age and race (Table 3). Youth were also substantially less likely to have been arrested or detained by police at six months as compared to baseline, and at 12 months compared to baseline. The relative risk of arrest or detention by police at six months compared to baseline was 0.52 (95% CI 0.29, 0.94, p < 0.05), and 0.46 at 12 months compared to baseline (95% CI 0.24, 0.90, p < 0.05) (Table 3).

Table 3

Relative risk of outcomes from baseline to 6 months, and baseline to 12 months[a].

	Model	Follow-up period			
		6 month vs. baseline		12 month vs. baseline	
		RR (95% CI)	P-value	RR (95% CI)	P-value
Commercial sexual exploitation (CSE) and sexually explicit behavior					
Self-reported CSE	Unadjusted	0.35 (0.11-1.11)	0.07	0.27 (0.08-0.92)	0.04
	Multivariable	0.38 (0.12-1.22)	0.10	0.25 (0.06-1.05)	0.06
CSE self-report or external report	Unadjusted	0.33 (0.17-0.63)	0.0008	0.22 (0.10-0.48)	0.0002
	Multivariable	0.33 (0.17-0.64)	0.001	0.21 (0.09-0.48)	0.0002
Turned down CSE	Unadjusted	0.76 (0.49-1.17)	0.21	0.60 (0.37-0.97)	0.04
	Multivariable	0.75 (0.48-1.18)	0.22	0.56 (0.34-0.93)	0.03
Sexually explicit behavior	Unadjusted	0.27 (0.09-0.81)	0.02	0.81 (0.45-1.47)	0.49
	Multivariable	0.27 (0.11-0.69)	0.006	0.83 (0.42-1.66)	0.60
Dating abuse victimization					
Dating abuse victimization	Unadjusted	1.27 (0.80-1.99)	0.31	0.88 (0.49-1.60)	0.68
	Multivariable	1.37 (0.86-2.20)	0.19	0.78 (0.41-1.50)	0.46
Criminal behavior past 6 months					
Illicit drug use	Unadjusted	0.53 (0.29-0.96)	0.04	0.73 (0.44-1.23)	0.24
	Multivariable	0.51 (0.27-0.94)	0.03	0.79 (0.47-1.31)	0.36
Any crime perpetration	Unadjusted	0.79 (0.65-0.96)	0.02	0.62 (0.47-0.84)	0.002
	Multivariable	0.79 (0.65-0.96)	0.02	0.62 (0.47-0.83)	0.001
Arrested or detained by police	Unadjusted	0.59 (0.36-0.97)	0.04	0.44 (0.22-0.89)	0.02
	Multivariable	0.52 (0.29-0.94)	0.03	0.46 (0.24-0.90)	0.02
Health-related[b]					
High level of hopelessness	Unadjusted	1.35 (0.71-2.58)	0.35	1.75 (0.82-3.71)	0.15
	Multivariable	1.36 (0.73-2.54)	0.33	1.87 (0.86-4.09)	0.12
Social determinants					
Low social support	Unadjusted	0.36 (0.14-0.94)	0.04	0.42 (0.19-0.96)	0.04
	Multivariable	0.38 (0.16-0.88)	0.02	0.50 (0.21-1.20)	0.12
Low coping skills	Unadjusted	0.50 (0.28-0.88)	0.02	0.20 (0.06-0.65)	0.008
	Multivariable	0.44 (0.24-0.81)	0.009	0.19 (0.04-0.94)	0.04
High level of risky behaviors	Unadjusted	0.38 (0.08-1.67)	0.20	0.64 (0.19-2.08)	0.46
	Multivariable	0.39 (0.09-1.65)	0.20	0.77 (0.24-2.53)	0.67

[a] Multivariable models are adjusted for age at baseline, race group (non-Hispanic white, black/African American, Hispanic, other race), and baseline levels of the outcome variable.

[b] Too few individuals reported STI diagnosis or depression to conduct regression analyses; models did not converge.

3.5. Social factors

We observed some changes in the social factor variables over time. The percentage of youth with low social support at baseline was 38%, which decreased to 14% at 6 months, and was 11% at 12 months (Table 2). In multivariable regression models the relative risk of having low social support at 6 months was 62% lower than it was at baseline (RR 0.38, 95% CI 0.16, 0.88, p < 0.05) (Table 3). Similarly, the percentage of youth with low coping skills was approximately double at baseline than it was six months later (36% vs. 18%) (Table 2). The adjusted regression model yielded a relative risk for low coping skills at six months as compared to baseline of 0.44 (95% CI 0.24, 0.81, p < 0.01), and 0.19 at 12 months compared to baseline (95% CI 0.04-0.94, p < 0.05) (Table 3). At baseline, 21% of the sample had high levels of risky behavior, which decreased to 7% at six months and was 11% at 12 months (Table 2). In adjusted analysis, the relative risk of high levels of risky behavior at six months as compared to baseline was not statistically significant. There was no substantial change from baseline to 12 months in the adjusted analysis for low social support or risky behavior.

4. Discussion

To our knowledge, this is the first study to evaluate the efficacy of a survivor-mentor program for commercially-sexually exploited minor youth using data collected directly from youth over a longitudinal period. Our study followed a sample of 41 youth for one year following their engagement with the My Life My Choice survivor-mentor program, and assessed whether they experienced decreases in outcome variables including CSE and SEB, dating abuse victimization, delinquent behavior, health problems, and social problems including low social support and low coping skills. We found that after 6 months of their first engagement with MLMC, youth were less likely to have experienced CSE, engaged in SEB, used illicit drugs, engaged in delinquent behavior, been arrested or detained by police, and that they experienced better social support and coping skills. We also found that 12 months following their engagement with MLMC youth were more likely to have turned down an offer to exchange sex, to have engaged in delinquent behavior or be

arrested or detained by police, and to have improved coping skills. Taken collectively, these findings demonstrate that the youth who received survivor-mentor services from MLMC experienced improved well-being and less drug use, delinquent behavior, and exploitation. Importantly, because there was no control or comparison group, it is not clear to what extent these successes are attributable to the program instead of other factors. However, at a minimum, the data indicate that MLMC services may have been one component of the circumstances that created positive change in the lives of these youth. They also suggest that MLMC programming likely had no adverse effects on the sample.

We detected decreases from baseline to 6 months, and then minor rebounding at 12 months, for four outcomes: SEB, illicit drug use, low social support, and high levels of risky behaviors. This suggests that, similar to recovery from trauma of other types, recovery from CSE is not always a linear process (Osenbach et al., 2014). Prospective studies of adolescents who are treated for substance use disorders have found that as many as 66% relapse within 6–12 months (Anderson, Ramo, Schulte, Cummins, & Brown, 2007; Cornelius et al., 2003), suggesting that a recovery trajectory with no lapses is atypical. Thus, those who work with and/or care about youth who have been exploited may need to be prepared to endure relapses in risky behavior, and to provide services for a long period of time. Moreover, we did not observe statistically significant changes in dating abuse victimization, sadness, or hopelessness over time. The number of youth who reported dating abuse victimization and persistent sadness at baseline was small, so the minor decreases may not have reached statistical significance because of sample size limitations. It may also be that staying safe continuously, and feeling persistently sad less often, in the year after exploitation was a substantial challenge for youth. We did not detect a change in hopelessness over time. A sense of hope has been found to moderate the relationship between depression and suicidal ideation in a sample of maltreated children (Kwok & Gu, 2019), and to predict future delinquency and exposure to community violence in a sample of justice-involved youth (Burnside & Gaylord-Harden, 2019). Hope has also been identified as a stage of change in the process that women go through when exiting commercial sexual exploitation, and it has been proposed that helping interventions might be tailored to the needs of clients more closely if clients' stage of change is assessed (Wilson & Nochajski, 2018). It is possible that our measure of hope did not adequately assess changes in hopelessness that were truly experienced, and it is also possible that hopelessness is a variable that changes very slowly over longer period of time than 6 or 12 months.

Evidence about what works to help rehabilitate and restore youth who have experienced CSE is critically important. Though the precise number of youth who experience CSE in the U.S. and elsewhere each year is difficult to determine because of the clandestine nature of human trafficking, many major cities now find themselves handling numerous cases of child CSE per year, and those responsible for the children's welfare are in urgent need of data about best practices to help them (Fong & Berger Cardoso, 2010; Gibbs, Hardison Walters, Lutnick, Miller, & Kluckman, 2015). To date, the best option for child welfare experts has been to follow principles and use programs for children who have survived any type of sexual abuse. The problem is that child CSE is a distinct, unique phenomenon and prior research has demonstrated that, as compared to other children who have suffered abuse victimization, child survivors of CSE are more likely to have experienced violence, substance use, running away from home or a congregate care facility, dating violence, gang affiliation, STIs, post-traumatic stress disorder diagnosis, and involvement with child protective services and/or law enforcement (Hershberger et al., 2018; Hickle & Roe-Sepowitz, 2018; Varma, Gillespie, McCracken, & Greenbaum, 2015). Therefore, having specific information about what works to help children who have experienced CSE is essential to the field.

The idea that survivor-mentorship could be instrumental for youth survivors of CSE is consistent with prior research that has established that close, caring interpersonal relationships provide protection and foster CSE resiliency in youth who have been exploited (O'Brien, 2018). Other research suggests that a relationship with a supportive adult "may be the difference between homeless youth not being trafficked" (Chisolm-Straker, Sze, Einbond, White, & Stoklosa, 2018). Our results are also consistent with several prior non-experimental research studies that have assessed changes in youths' psychosocial outcomes following engagement with programs or interventions designed to promote healing for those who have experienced CSE or other adverse experiences (Moynihan et al., 2018). For example, using North American samples, Pierce (2012) found that for a sample of Native American/Native Alaskan 11–21 year old girls, participation in an intensive case management program was positively associated with changes in girls safety and housing stability, and improved social support (Pierce, 2012). Edinburgh and Saewyc (2009) found that for girls ages 10–14 years old who had run away, participation in a stabilization program was associated with a decrease in chlamydia, substance use, and non-contraceptive use (Edinburgh & Saewyc, 2009). In a sample of 114 Seattle-based youth engaged in commercial sex, Wurzbacher, Evans, and Moore (1991) found that engagement in an alternative school intervention was associated with higher self-esteem (Wurzbacher et al., 1991). Our findings are consistent with these prior studies.

5. Limitations

This study was subject to several limitations. As described above, there was no control or comparison group so it is not possible to attribute changes over time to the MLMC intervention. A second limitation is that the sample size was small. This research involved intensive longitudinal follow-up of an especially hard-to-reach population, which involved monthly contact checks with individuals who were more difficult than average youth to enroll in research. The resources required to enroll and follow a larger sample would be considerable. A third limitation is that most data were self-reported and may reflect social desirability bias resulting in misclassification. We attempted to address this limitation with regard to what we considered the most important outcome variable—CSE victimization—by measuring CSE in two ways, including one method that relied on reports from individuals with knowledge of the youth client's experiences other than the research participant. Nevertheless, social desirability may have influenced youth to underreport behaviors like illicit drug use, dating abuse victimization, SEB, or STI status, particularly at baseline, and it is difficult to detect improvement when the base rate of an outcome is low. Therefore, our results may have been biased towards the null. Longitudinal follow-up rates were a relative strength of the study, given that the sample was an especially hard-to-reach and hard-to-

follow population. However, because 12% of the baseline sample was lost to follow-up at 6-months, and 32% of the baseline sample was lost to follow-up at 12-months, it is possible that bias was introduced. Specifically, if the reasons that youth lost contact with the researchers was related to one of the outcomes of interest, results may have been influenced. A final limitation is that we had to develop original measures to assess many of the outcomes of interest. As CSE research is still in a nascent stage, there are too few established, psychometrically-sound instruments to draw upon at this time. It is our hope that one of the contributions of this research project was the development of the assessment tools that we used, which are available upon request.

In conclusion, this evaluation research study that assessed whether youth participants in the MLMC survivor-mentor program demonstrated changes in outcomes of interest over time. Our analysis found that there were many changes in the desired direction and support the contention that the MLMC survivor-mentor programming was at least one component of helping services that influenced participating girls positively.

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Declaration of Competing Interest

No conflicts of interest to declare

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.chiabu.2019.104083.

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