

Reducing Recidivism and Symptoms in Emerging Adults with Serious Mental Health Conditions and Justice System Involvement

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Abstract

The peak years of offending in the general population and among those with serious mental health conditions (SMHC) are during emerging adulthood. There currently are no evidence-based interventions for reducing offending behavior among 18–21 year olds, with or without SMHC. This open trial examined outcomes from an adaptation of Multisystemic Therapy (MST), an effective juvenile recidivism reduction intervention, modified for use with emerging adults with SMHC and recent justice system involvement. MST for emerging adults (MST-EA) targets MH symptoms, recidivism, problem substance use, and young adult functional capacities. All study participants (n=41) were aged 17–20 and had a MH diagnosis and recent arrest or incarceration. Implementation outcomes indicated that MST-EA was delivered with strong fidelity, client satisfaction was high, and the majority of participants successfully completed the intervention. Research retention rates also were high. Pre–post-analyses revealed significant reductions in participants' MH symptoms, justice system involvement, and associations with antisocial peers.

Introduction

Adolescence and emerging adulthood are the age periods of peak offending in the general population^{1–3} as well as among individuals with serious mental health conditions (SMHC⁴).

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“Emerging adulthood” will be used herein to refer to ages 17–25 unless otherwise noted.⁵ Compounding this, individuals with SMHC have greater justice system involvement than those without SMHC, both as juveniles^{6–8} and emerging adults.^{4,6,9} For those with intensive adolescent mental health service use, the majority will be arrested by their mid-20s.^{10–13} Further, among emerging adults with SMHC, those with recent justice system involvement are at greatest risk for arrests. Indeed, data indicate that among recently arrested emerging adults with SMHC, rearrest rates peak at 50% for men and 39% for women.¹³ Justice system involvement can be a strong impediment to positive development. It is a strong predictor of school dropout,^{14,15} unemployment,^{16–18} low earnings,^{17–19} welfare dependence,¹⁶ and substance abuse problems^{16,20} in young adulthood. Thus, reducing recidivism in this high-risk group with SMHC, during the ages when offending becomes criminal rather than delinquent, might significantly modify adult trajectories of offending and support more positive developmental outcomes.²¹

Yet, there are no established interventions with evidence of efficacy to reduce recidivism among emerging adults with or without SMHC. There are evidence-based interventions to reduce offending and reoffending in juveniles in the general population, including Multisystemic Therapy²² and Multidimensional Treatment Foster Care,²³ but these services have not been used or evaluated with individuals older than 17 years of age.²⁴ Evidence-based practices for reducing recidivism in the adult general population include substance abuse treatment,²⁵ education²⁶ or employment^{27,28} programs, and the general array of cognitive behavioral approaches for reducing offending behavior.^{29,30} All have moderate effects on recidivism, but the efficacy of these approaches specifically with emerging adults is either unknown or less potent.³¹ Only two programs with a focus on emerging adults have some evidence of recidivism reduction efficacy in the general population. Both programs delivered developmentally appropriate supports (e.g., attending to housing, vocational, or educational needs) for justice system-involved emerging adults in the community.^{32,33} Though limited in their research design, the specialized intervention group had better recidivism outcomes than the control group in each study, highlighting the potential utility of targeting emerging adults’ unique developmental challenges in the context of recidivism reduction approaches.^{32,33}

Though there is debate about whether treatment of SMHC contributes to reduced recidivism (e.g.,^{34–36}), there is little debate about the appropriateness of ensuring that offenders with SMHC receive good MH treatment as part of pre- or post-plea court diversion,^{37,38} or as part of justice system community supervision.³⁹ Further, malleable risk factors for offending among those with SMHC are similar to those in the general population including school failure,^{40–44} alcohol and substance use,^{40–46} unemployment,⁴⁵ poverty,³⁵ and homelessness.^{47,48} Thus, recidivism reduction approaches for emerging adults with SMHC should include provision of good mental health care and approaches to reduce recidivism that address the changing nature of recidivism correlates during the transition from adolescence to mature adulthood.

As youth mature, some of the factors that cause delinquent behavior dissipate or evolve into adult versions of those causes. For example, parents no longer exert a direct supervisory and monitoring role (e.g.,^{49,50}) during emerging adulthood, but families continue to provide important resources (e.g., work in family business or with family friends), emotional support (e.g., encourage staying out of trouble), and a safety net (e.g., move back home when self-support fails).^{51–53} Similarly, structured time (e.g.,⁵⁴) shifts from attending school to working. The role of antisocial peers (e.g.,⁵⁵) remains,^{56–60} but diminishes as the daily social environment shifts from high schools to smaller workplaces, and romantic relationships increasingly include marriage and parenting (e.g.,^{21,61}). Other factors contribute to recidivism in adolescents and adults, and therefore, should be the target of recidivism reduction approaches in emerging adults: rational choice (i.e., how individuals weigh costs and benefits of potential behavior and act on their conclusions^{62–65}) and substance abuse (e.g.,^{1,66–68}).

Given the high risk of recidivism in emerging adults with SMHC, the negative impact of justice system involvement on positive development, and the absence of any approach with strong

evidence of recidivism reduction efficacy in this age group, an intervention that reduces the risk of recidivism in emerging adults with SMHC would be of great value. An important first step towards achieving this goal is developing a community-based (i.e., noninstitutional) model that prevents reoffending. A community-based model can assist offenders in a wide array of circumstances: those on community-based sanctions (e.g., probation, parole), those reentering after incarceration, those arrested but not convicted (but at heightened risk of reoffending), and those qualifying for an alternative to incarceration. A community-based model also emphasizes service provision in the least restrictive environment.⁶⁹

Multisystemic Therapy (MST) is a manualized, community- and family-based intervention with proven effectiveness for reducing recidivism in delinquent youth aged 12–17 (e.g.,^{70–74}). The standard MST model has not been used with emerging adults or with individuals experiencing significant MH concerns. The current paper, however, describes an adaptation of MST for emerging adults (MST-EA) who are (a) between the ages of 17 and 21, (b) have an SMHC and recent arrest or release from incarceration, and (c) residing in the community. In addition, the paper presents feasibility findings based on an open pilot trial of the MST-EA approach.

Positive youth development approaches support youths' strengths and facilitate the growth of attributes that mark a flourishing, healthy young person (e.g.,^{75–78}) in the context of multiple relationships as described in relational developmental systems theoretical models.⁷⁹ MST is a positive youth development approach that is based on social ecological theory,^{80,81} and emphasizes that youth are imbedded in multiple interconnected systems (i.e., family, extended family, neighborhood, school, peers, and community). MST treatment principles emphasize approaches that are positive and build on youths' strengths.

In order to describe the adaptations to MST that were incorporated in MST-EA, a brief description of standard MST is provided.⁸² MST is a home-based intervention for antisocial youth aged 12–17. It employs a team of three to four master's level therapists, each carrying a caseload of four to six families, overseen by an on-site clinical supervisor. An intensive training and quality assurance system is used, which includes an off-site MST expert who conducts weekly telephone consultation and quarterly booster trainings with the team. MST promotes behavioral change by empowering caregivers/parents to make changes in the ecology of the juvenile. Specifically, the MST therapist and caregiver/parent work together to target a comprehensive set of risk factors across individual, family, peer, school, and neighborhood domains. Interventions integrate empirically based clinical techniques, primarily from the cognitive and behavioral therapies. The intervention is fairly intensive, with typically two or more sessions per week with families, flexible scheduling including evenings and weekends, and 24/7 availability of MST team members to help manage behavioral crises and prevent out-of-home placements.

The MST-EA adaptation addresses factors that are the most likely causes of offending and poor mental health in emerging adults with both justice system involvement and an SMHC. Further, the adapted model has been made developmentally appropriate for 17–21 year olds via individualized interventions, and support from age-appropriate social agents (i.e., social network members and a coach). The primary goals of MST-EA are to reduce recidivism and support positive functioning in school, work, independent living, and relationships (including parenting skills, when needed), while ensuring treatment and management of mental illness and any co-occurring substance use disorder. Such a focus on emerging adults' functional growth and relationships is consistent with the emphases of positive youth development approaches.⁷⁸

MST-EA was designed for the youngest emerging adults (17–21 year olds) because (a) this age group has the highest rates of offending, (b) this age group allows for an important first extension of the model into adulthood beyond that served by standard MST (up to age 17), (c) this reflects ages in which child/juvenile justice services end and adult/criminal justice services begin (usually between ages 18 and 21^{4,79}), and (d) the ending of child and beginning of adult services at this age range is associated with both loss of health care coverage^{83,84} and reduction in mental health

service utilization (e.g.,⁸⁵). MST-EA follows the MST treatment principles and process,⁸⁶ but the two most significant adaptations are that the client (i.e., the emerging adult) is the primary lever for change instead of the caregiver/parent, and the role of “family” is expanded to include the emerging adult’s “social network.” The social network can include biological, extended, or foster family, as well as close friends, significant others, or adult allies. The therapist completes a social network analysis⁸⁷ to “map” each EA’s social network and identify ways each social network member could be helpful to supporting the client’s goals. The MST-EA team works in partnership with the client to determine goals and steps to achieve those goals, with the client guiding decisions about how to include the social network to support his goals. MST-EA therapists also utilize the full array of motivational interviewing strategies to engage clients in the intervention,⁸⁸ in addition to the strategies all MST models utilize to overcome engagement and retention barriers (e.g., flexible scheduling, home-based services, targeting practical barriers, strength-focused approach).

Because MST-EA therapists deliver a broader array of treatments than standard MST therapists (i.e., intensive mental health and substance abuse treatment), and because of the high risk for criminal recidivism and mental health crises in the MST-EA population, caseloads are reduced to no more than four clients. Specific mental health and substance abuse treatment approaches fall within the array of cognitive and behavioral therapies (e.g., behavioral activation, prolonged exposure, contingency management). Therapists deliver intensive interventions (three or more sessions plus phone contact each week) with the 24/7 crisis management availability and flexible scheduling that MST is known for providing. Given the high risk for suicidality, homicidality, and victimization among this population, extensive effort is devoted to ensuring safety of the client and the client’s social network members, with continuous assessment and safety planning from the very start of the intervention.

The MST-EA adaptation added part-time psychiatric support to the team, to ensure rapid access to psychiatric care when needed. The adaptation also added four part-time coaches that are paraprofessional positions. The coaching approach incorporates general mentoring features that have good evidence of efficacy and are consistent with the MST-EA intervention. It is field-based mentoring,⁸⁹ occurring in the homes and communities of MST-EA clients. It is a cross-age peer mentoring approach,⁹⁰ in which slightly older emerging adults (without disabilities) provide instrumental mentoring⁹¹ that is both relationship and transition skill-focused. The skill component targets skills that are newly developing in emerging adulthood (e.g., finding appropriate housing, identifying and applying for jobs, setting and achieving goals, managing money and a household, staying healthy). The coach curriculum covers a total of 13 domains, and each domain includes curriculum for three to seven sessions. Sessions contain information, exercises, and activities. Coaches generally meet with clients twice a week, with part of one visit focused on the transition skill curriculum and the remaining time engaged in recreation or other enjoyable activities during which coaches model problem solving and relationship skills. Coaches are supervised by the MST-EA clinical supervisor, and the transition skill corresponds with the goals set by the client and MST-EA therapist. Service duration was extended from the 3–5 months of standard MST to 4–12 months with MST-EA therapists, with support from coaches lasting for up to an additional 2–4 months, as needed.

As with standard MST, an intensive training and quality assurance system was used,⁷⁵ which includes an off-site MST-EA expert (second and third authors) who conducts weekly telephone consultation and quarterly booster trainings with the team. MST-EA therapists were trained in standard MST plus the adaptations. Clinical supervisors trained the coaches (4 h) and provided weekly supervision.

The purpose of the current study was to investigate the feasibility of MST-EA and the research methods for investigating MST-EA efficacy. The primary goal of MST-EA is to reduce recidivism and symptoms of SMHC, and the secondary goals are reducing substance use (when present) and strengthening residential stability, engagement in age-appropriate activities (i.e., school and work), and social support.

Method

Participants

Recruitment Recruitment for an open trial of MST-EA occurred in two research phases (described below). Recruitment for the first phase (phase 1) occurred from 10/1/09 to 11/30/10, and for the second phase (phase 2) from 3/1/11 to 1/31/13. Eligibility criteria included the following: ages 17–20 at intake, recent arrest or release from incarceration (defined as within the past 18 months), presence of an Axis I mental health diagnosis (i.e., mood, anxiety, psychotic, and/or eating disorder), able to reside in a stable community setting (i.e., not currently homeless, not currently inpatient; can include individual ready for discharge to the community). Exclusion criteria included the following: actively psychotic, suicidal, or homicidal, and, because of the cognitive nature of the treatments, the presence of a pervasive developmental disorder or intellectual disability.

Participants were recruited from individuals receiving case management through child welfare or mental health services or receiving juvenile or adult justice system supervision services (e.g., probation) in an urban/suburban region of a Northeastern state. Program and research staff explained MST-EA and the research study to staff at child welfare and mental health area offices, corrections and juvenile facilities, and community mental health centers. The nature of the MST-EA intervention, research activities and research participation, and inclusion/exclusion criteria were described. Case managers, probation and parole officers, and service providers such as therapists (collectively, the referral sources) were asked to identify individuals on their caseloads that would be appropriate, and were provided information to help them identify the likely presence of a mental health condition since many individuals on their caseloads (other than for mental health case managers or mental health service providers) would not have mental health conditions. To refer an individual for the study, referral sources contacted research staff to verify likelihood of the emerging adult's eligibility (while maintaining client confidentiality) and availability of an opening in the intervention before contacting the emerging adult about study participation. Once likely eligibility was confirmed, referral sources contacted potential participants, briefly described the intervention, research, and the voluntary nature of participating, and asked for permission to provide contact information to researchers who would tell them the details of participation and the intervention. For 17 year olds, referral sources were required to obtain legal guardian permission before describing the research and intervention to the potential participant, and for providing researchers any contact information. Researchers then contacted the potential participant for screening and consenting.

Screening procedures included a formal assessment for the presence of a mental health condition, as well as confirmation of remaining eligibility criteria. Individuals who had previously met criteria for the state's public adult mental health services were considered to have met the criteria for having a mental health condition (one individual met this criteria). Screening by research staff for a mental health condition was achieved using the K-6⁹² initially (first four referrals), but was deemed inadequate after being in conflict with multiple other sources' findings (e.g., recent in-depth psychiatric interviews and evaluations). For all subsequent screens, the Electronic Mini International Neuropsychiatric Interview (eM.I.N.I.;⁹³) was used. To minimize the time required by screening, individuals were deemed to have met the mental health criteria once they met the criteria for any qualifying diagnosis (i.e., the first diagnosis for which they met criteria, without completing items for any additional diagnoses). For those who screened in, informed consent for study participation was conducted by a research assistant. Research assistants emphasized the voluntary and confidential nature of participation, and that the study had obtained an NIH certificate of confidentiality to provide further protections for this justice-involved population. All procedures were reviewed and approved by the institutional review boards of the first author's institution and the state agency funding the clinical services, as well as a review board for the state agency that provides adult probation.

Of the 69 individuals that referral sources discussed with research staff for initial review of eligibility, 8 did not meet preliminary eligibility (referral source's misunderstanding of age requirement, length of time since justice involvement, catchment area for the team, meaning of "stable community residence," or characteristics of mental illness). Of the remaining 61 individuals, all provided permission to the referral source for researchers to make contact and provided consent to undergo a formal eligibility screen. Eligibility screening indicated that 41 of the 61 cases (67.6%) met the study inclusion criteria, and all consented to participate in the research. The current paper summarizes the feasibility and outcome data from the 16 participants from phase 1 and 25 from phase 2.

Study phases Study phases are a product of the investigators enhancing the research protocol to test feasibility of the changes prior to proposing a randomized controlled trial, as well as testing the feasibility of increasing the vocational emphasis within the model in response to early focus group data from MST-EA therapists. In phase 1, participants were recruited into the study and all were provided with MST-EA. Data were collected at baseline (within 1 week before starting the intervention), and monthly for 12 months, with some additional measures obtained at baseline, 6, and 12 months.

As part of the feasibility work for MST-EA, we were interested in examining the relative strength of providing clients with different types of vocational support. Thus, for phase 2, participants were recruited into the study and provided MST-EA, but were randomized into one of two "vocational conditions." In one condition, the MST-EA coaches (see subsequent explanation of MST-EA coaches in the "[Clinical procedures](#)" section) provided participants with extended vocational support. In the other condition, participants were referred to state vocational rehabilitation services for vocational support, and the MST-EA coaches focused solely on standard independent living issues. Data during phase 2 were collected at baseline (within 1 week before starting the intervention), bimonthly during the intervention, and at 1 and 4 months post-intervention. Based on feedback from participants in phase 1, the amount of data collected, along with frequency and length of interviews, was shortened for phase 2.

Research attrition Of the 41 individuals in the study, all completed baseline interviews, and 37 completed a post-intervention interview. One individual could not be located, one individual declined to be interviewed post-intervention, and two individuals (from phase 1) completed the final interview but were still receiving services with the MST-EA coach, so no "post-intervention" assessments were available. Analyses of outcomes are based on the 37 individuals for whom there are pre- and post-intervention data. Participants completed 91% of all scheduled interviews. Data on intervention attrition, satisfaction, and recidivism, which are not based on post-intervention interviews, are presented for the full sample ($N=41$).

Clinical procedures

MST-EA was the clinical intervention provided to all participants. As is typical practice in the state in which MST-EA was developed and for many standard MST teams, the state agency charged with treatment of justice-involved adolescents and emerging adults contracted with a private nonprofit provider to offer the MST-EA intervention. This community-based contractor delivered MST-EA, with therapists, the supervisor, and coaches as employees of the contractor and with training and quality assurance provided by the MST-EA developers (second and third authors). In phase 1, coaches had a modest curriculum addressing employment. For phase 2, coaches were randomly assigned to one of the vocational conditions (i.e., standard coach conducting only the standard independent living curriculum, with no curriculum on employment or

career exploration [vocational rehabilitation providing all vocational support] or vocational-enhanced coach conducting both standard and vocational curricula). For the vocational-enhanced coaches, the vocational curriculum was greatly enhanced from the modest one in Phase 1, and included 39 sessions covering five domains of employment (e.g., career exploration, job interviewing, keeping a job). Each coach was trained only in the curriculum available for his/her assigned condition. In total, 3 individuals served as clinical supervisors, 6 as therapists, and 12 as coaches in the course of serving the 41 study participants.

Data collection procedures

Data for this study were collected from (1) participants, (2) therapist logs and clinical supervisor reports of intervention exposure, and (3) official arrest records. Participants completed a baseline interview. As described above, participants completed either monthly or bimonthly interviews, with phase 1 participants completing a final interview at 12 months (referred to herein as a post-intervention interview), and phase 2 participants completing a post-intervention interview at 1 and 4 months following the end of MST-EA service. For these analyses, the interview furthest post-intervention was used (i.e., 4 months or 1 month if the 4-month assessment was not completed). The mean number of weeks post-intervention of the final interview across phases was 13.4 (SD = 7.5). The 2-h baseline interviews assessed demographic and significant history factors, mental health and substance use symptoms, school and work functioning, residential quality, and quality of social supports. Post-intervention interviews assessed the same factors sans historic and demographic factors. Interviews were conducted face-to-face in participants' homes or another convenient place of their choice, by trained research interviewers. Responses were entered into a RedCap™ web-based database, thus responses were automatically checked and stored. For sensitive items, such as substance use or peer delinquency, researchers had participants read and select responses on their own, with the researcher present to clarify items if needed, to increase participant willingness to report socially undesirable behavior. Researchers obtained therapist logs and clinical supervisor reports weekly and entered the data into a database. Arrest records were obtained from the state's criminal and juvenile justice record systems for arrests that occurred up to 6 months prior to baseline and for 6 months post-intervention.

In both phases, participants were given a \$10 gift card for completing screening procedures. In phase 1, participants were given a \$50 gift card for completing the baseline and final interview, and they were given a \$40 and \$30 gift card for the baseline and final interview, respectively, in phase 2. Compensation was based on an estimate of the time to complete each assessment, at a rate of \$20/h. compensation, the standard at the first author's institution.

Demographic measures

A variety of demographic and significant history variables were measured via a modified *Structured Adolescent Interview*,⁹⁴ used in previous MST studies to assess demography and significant history. Modifications reflected the adult status of participants. Baseline functional status was also assessed using the mental health scale of the Medical Outcomes Health Survey Short Form 36 (SF-36), validated extensively with community and clinical samples,⁹⁵ including those with mental illness.^{96,97}

Implementation measures

Attrition and dose The amount of therapist face-to-face and telephone time was recorded using therapist activity logs. Clinical supervisors reported coach activity weekly. Therapists recorded the

reason for client discharge, which was reviewed by the on-site MST-EA supervisor and the off-site clinical consultant to ensure accuracy (see Definitions in Table 1).

Satisfaction Three items were used from the Client Satisfaction Questionnaire short form⁹⁸ to assess satisfaction with MST-EA services: Overall, how satisfied were you with this service? If you had the same problem again, would you return to this service? If you had a friend with a similar problem to yours, would you recommend this service to him or her? These three items account for >85% of the variance in satisfaction scores using the CSQ-SF and are considered a global measure of satisfaction.⁹⁹

Fidelity Within MST programs, treatment adherence is measured through a monthly 28-item adherence questionnaire (Therapist Adherence Measure-Revised; TAM-R;¹⁰⁰). Nineteen TAM-R items are based on the nine MST treatment principles and whether treatment sessions focused on important aspects of the youths' school, peer, and neighborhood/social support systems, consistent with the MST model. These TAM-R items were examined for adherence to modifications in the MST-EA approach, resulting in the TAM-EA.

Table 1
Definitions of discharge reasons

Therapist and supervisor can *Select only 1*:

Finished full treatment

1. Treatment completed with *all* goals met *and* sustainable—The client was discharged based on the mutual agreement of the team and client. All treatment goals were met and were sustainable.
2. Treatment completed with *majority* of goals met *and* sustainable—The client was discharged based on the mutual agreement of the team and client. More than 65% of goals were met and were sustainable.

Incomplete treatment

3. Administrative removal/withdrawal—Young adult was removed from the program by the MST program administration due to administrative issues or decisions unrelated to the progress of the case.
 4. Restrictive placement—The young adult was placed in a restrictive setting (e.g. detention center, residential placement) for a duration of time that precluded further MST involvement.
 5. Placement, prior event—The young adult was placed in a restrictive setting (e.g. detention center, residential placement) due to an event or offense that occurred prior to the beginning of MST treatment.
 6. Funding/referral source administrative removal/withdrawal—Young adult was removed from the program by the funding or referral source due to administrative issues or decisions unrelated to the progress of the case.
 7. Moved—The young adult moved out of the program's service area.
 8. Client explicit ending—Team decision to discharge due to client *stated* desire to end or *stated* lack of willingness to continue.
 9. Client indirect ending—Decision to discharge client because team was not able to engage the client in treatment, despite persistence on the therapist's part to engage and align with the client.
 10. Team directed ending—Team decision to discharge the client for reasons other than #9.
 11. Mutually initiated ending—Team and client both agreed that further progress was unlikely at this point and treatment would end, though not all treatment goals had been met or were not all sustainable (i.e., mutual judgment that further treatment would produce diminishing returns).
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Initial item wording was reviewed by two youth with lived experience and alpha tested with one study participant. The resulting TAM-EA was beta tested with 9 participants in 18 monthly administrations. Initial feedback resulted in rewording of some items, splitting complex items into two separate items, and reorganizing items for domain clarity. This version was used with the 20 participants completing interviews between 4/28/10 and 11/28/11, in 101 monthly administrations regarding 3 therapists (therapists B, C, and D). Based on analysis of item intercorrelations and a review of the concreteness of the participant-rated therapist behaviors, the TAM-EA was revised slightly to form the final version, which was administered to the 18 participants completing interviews between 11/29/11 and the end of the study, in 41 monthly administrations (some participants completed more than one version of the TAM-EA) regarding 3 therapists (therapists C, D, and E). Two therapists (A and F) had insufficient data to include in the analysis. One took another job shortly after beta testing was completed, and the other was hired shortly before the end of the study. In addition to the TAM-EA, a separate measure was developed to examine coach adherence (CAM-EA). Because there were two different coach approaches utilized in phase 2, the second version of the CAM-EA (utilized with the 25 phase 2 participants) included additional items to ensure differentiation of the two coaching conditions.

Ultimate outcomes measures

Mental health Mental health symptoms were assessed using the Brief Symptom Inventory (BSI¹⁰¹), a 53-item self-report inventory designed to provide multidimensional mental health symptom measurement in less than 10 min. Internal consistency is acceptable (Cronbach's alphas=0.71–0.83), and test-retest reliability is good (0.68–0.91).

Recidivism Recidivism was assessed using state justice system records.

Instrumental outcomes measures

Relationships Antisocial peer relationships were measured using the Peer Delinquency section from the Pathways to Desistance Study.¹⁰² These 19 items measure the number of friends who engage in antisocial activity (e.g., During the past month, how many of your friends have hit or threatened to hit someone?). Items were derived from several questionnaires about delinquent peer relationships.^{54,103,104} A one-factor CFA model was fit to the pathways baseline data for this subscale. Quality of social support was assessed with the Norbeck Social Support Questionnaire (NSSQ;^{105,106}), which asks youth to list all individuals that provide them social support and then asks them to rate each relationship on 10 items that tap the affective nature of the relationship, its degree of affirmation, and the aid provided. Items are rated on a 5-point Likert scale from 0 (not at all) to 4 (A great deal). Test-retest reliability is acceptable with both nonclinical ($r>0.85$) and clinical (Cronbach's alphas > 0.90 ;¹⁰⁷) samples. There is adequate evidence of concurrent and predictive validity in nonclinical populations,¹⁰⁸ and concurrent validity in clinical populations.¹⁰⁷

Employment and schooling Participants answered questions about paid employment and schooling during the past 30 days. Employment items assessed (a) days worked, hours per day, and (b) nature of job (e.g., “under the table jobs” such as landscaping and child care vs. jobs that are “on the books”). Participants were also asked if they attended school or training (e.g., job training programs).

Residential status Participants answered questions about where they resided in the past 30 days. Participants selected from a list of 14 residential settings (e.g., home with family, residential

treatment setting, own home) used to describe residential settings in previous MST studies. Residences were categorized into four categories: on own (living alone, with spouse/partner, or with friends), with family (living with immediate or extended family), institutional (any out-of-home setting), or homeless.

Substance use The Global Appraisal of Individual Needs (GAIN;¹⁰⁹) is a standardized biopsychosocial interview that includes more than 100 scales and subscales. The 16-item Substance Problem Scale was used to assess past-month symptoms related to any alcohol or drug use disorders including abuse or dependence. The GAIN has strong psychometric properties and validation data.^{110–113}

Analysis plan

Descriptive statistics were used to explore participant characteristics, as well as different aspects of the MST-EA intervention: participant attrition, duration and amount of intervention received, satisfaction with the intervention, and levels of intervention fidelity for therapists and coaches. Given the relatively small number of participants, nonparametric-related samples tests were used to compare outcomes between baseline and post-intervention assessments (related samples Wilcoxon signed rank tests for continuous data, related samples McNemar test for binary data, related samples homogeneity test for ordinal data).

Results

Participant characteristics

Characteristics of the study sample can be found in Tables 2 and 3. Almost half were age 17 at enrollment, the majority were male, and a substantial portion were Black. Approximately 21% of the sample was Hispanic. The majority of participants had a history of psychiatric hospitalization and juvenile detention. Participants primarily lived on their own or with family in the year prior to recruitment. Participants were most commonly referred by criminal justice sources, followed by child welfare and juvenile justice sources (i.e., the state where this study was conducted maintained some young adult offenders in the juvenile system).

Intervention feasibility

Attrition Reasons for discharge are described in Table 3. Of the 41 participants who enrolled in the study, 21 (51.2%) fully finished the intervention, with 36.5 (range=14.7–64.8) median weeks of intervention. For six participants (14.6%), intervention ended by mutual agreement, though not all goals had been met or were sustainable (median duration = 34.8 weeks, range = 21.2–47.8). Intervention ended with seven participants (17.1%) due to indirect ending by client (median duration=14.4 weeks, range=6.4–23.4). Only one participant explicitly ended prior to achieving goals (treatment duration=10.3 weeks). Entry into restrictive treatment settings resulted in ending for five participants (12.2%; median duration=19.3 weeks, range=8.7–49.6). One individual moved away prior to completing (duration=24.0 weeks).

Intervention amount and satisfaction The median number of weeks receiving MST-EA was 28.0 and ranged widely (6.4–64.8). The median number of weeks of treatment with MST-EA therapists (i.e., not including time with coaches) was 25.0 (range=6.4–48.6). For those who agreed to work

Table 2
Demographics and significant history of study participants

Variable	% (N=41)
Male	71
Age at study enrollment	
16 ^a	2
17	44
18	42
19	7
20	5
Race	
Black/African American	44
Asian	17
White/Caucasian	32
Biracial	5
Other	2
Hispanic	20
Ever homeless	15
Psychiatric hospitalization ever	56
Substance abuse hospitalization ever	15
Juvenile detention ever	61
Jail/prison ever	39
Primary residence past 12 months	
In your own apartment or home	39
In your family's home	44
In your girlfriend's or boyfriend's or spouse's home	5
In another friend's home	2
In a hospital or treatment facility for mental health problems	5
In a boot camp, detention center, prison or jail for juveniles	5
Ever employed	71
Highest education ^b	
<9th grade	13
9th grade	8
10th grade	38
11th grade	33
High school completion or graduate equivalent diploma	8
Referral source	
Criminal justice (probation, corrections)	56
Juvenile justice (detention, parole)	20
Child welfare	20
Other	4
Level of functioning (SF-36; median, range)	45, 18–100
Study protocol	
Phase 1	39
Phase 2	61

^aParticipant began treatment at age 17, but was enrolled in the study <17th birthday

^bn=24

Table 3

Ultimate and instrumental outcomes among participants receiving MST-EA intervention

Variable	Pre	Post	Statistic	<i>p</i> value
Ultimate outcomes				
Number of mental health symptoms (<i>N</i> =35) median (range)	20 (1–48)	6 (0–48)	–3.9 ^a	<0.001
Arrested (<i>N</i> =41)	29%	12%	2.1 (<i>df</i> =1) ^b	>0.10
Number of charges/person (<i>N</i> =41) median (range)	0 (0–9)	0 (0–5)	–2.6 ^a	<0.01
Instrumental outcomes				
Peer delinquency (<i>N</i> =32) median (range)	35 (19–79)	23.7 (19–69)	–2.1 ^a	<0.05
Average emotional support (<i>N</i> =37) median (range)	3.5 (1.0–15.5)	3.8 (0.0–16.0)	1.1 ^a	>0.10
Average instrumental support (<i>N</i> =37) median (range)	3.5 (0.5–22.3)	3.7 (0.0–24.0)	1.4 ^a	>0.10
% Working (<i>N</i> =37) ^c	13%	27%	1.8 (<i>df</i> =1) ^b	>0.10
Original coaching (<i>N</i> =14)	14%	28%	0.6 (<i>df</i> =1) ^b	>0.10
Vocational coaching (<i>N</i> =13)	8%	23%	0.3 (<i>df</i> =1) ^b	>0.10
Nonvocational coaching (<i>N</i> =10)	20%	30%	0.0 (<i>df</i> =1) ^b	>0.10
% In school/training (<i>N</i> =37)	65%	51%	1.8 (<i>df</i> =1) ^b	>0.10
% In school/training or working (<i>N</i> =37)	70%	73%	0.0 (<i>df</i> =1) ^b	>0.10
Residence (<i>N</i> =37)				
% Living in out-of-home setting ^d	27%	11%	2.1 (<i>df</i> =1) ^b	>0.10
% Living with family	65%	70%	0.1 (<i>df</i> =1) ^b	>0.10
% Living on own or with peers	22%	24%	0.0 (<i>df</i> =1) ^b	>0.10
Substance use				
GAIN substance problem scale (<i>N</i> =31) median (range)	2 (0–14)	0 (0–11)	–1.6 ^a	>0.10

^aRelated samples Wilcoxon^bRelated samples McNemar^c1 individual worked full time at baseline, and 2 individuals worked full time post-treatment, all the remaining work was part-time^dOut-of-home refers to hospital or residential treatment settings, jail/prison, or detention centers

with a coach (*n*=33), median weeks of receiving coach services was 28.3 (range=6.4–64.8). The median number of face-to-face meetings participants had with therapists was 29.5 (range=5–76). The median duration of face-to-face therapist meetings was 60 min (range=5–470). Phone contact frequency and duration between therapist and client have not yet been analyzed. The median (across months assessed) score on the client satisfaction index, assessed each month that services were received (*n*=41), was 10.1 (highest possible score=12; range=5.7–12.0).

Intervention fidelity Fidelity scores with the first TAM-EA version after beta testing (*n*=3 therapists [therapists B, C, and E], based on 20 participant ratings in 101 administrations) indicated overall

high fidelity to the MST-EA model. Possible total scores range from 47 (all items rated “never”) to 188 (all items rated “always”), with a median of 149.2 (range=65.2–188.0), demonstrating high treatment fidelity. Differences in scores between therapists approached significance (Kruskal-Wallis test=5.3, $df=2$, $p=0.07$). Correlation between the month of participant treatment and therapist fidelity score was not significant (Pearson $r=0.06$, $p>0.10$). The final TAM-EA version, containing 27 items (possible scores=27–108), assessed three therapists ($n=3$ [therapists C, D, and E]), as administered to 18 participants in 45 administrations. The median total score was 95.0 (range=44–108), indicating implementation with strong fidelity, good variability, and no ceiling or floor effects. There were no significant differences in the scores between therapists (Kruskal-Wallis test=2.0, $df=2$, $p>0.10$), and no significant correlation between month of participant treatment and therapist fidelity score (Pearson $r=0.15$, $p>0.10$).

The original CAM-EA included 4 items assessing coach adherence (possible scores 4–16, $n=7$ [coaches A–G], assessed by 10 participants, in 52 administrations). Use of coaches were encouraged, but not required, and not all participants opted to utilize a coach. The median score was 12.0 (range=4–16), indicating good adherence and variability in scores. There was no correlation between month since participant intervention started and CAM-EA score (Pearson $r=0.05$, $p>0.10$). Additional items were added in phase 2 to reflect differences between standard coaching ($n=3$; coaches H, I, and L) and the vocational-enhanced coaching ($n=3$; coaches G, J, and K), and were assessed by 13 participants in 50 administrations. Total possible scores ranged from 7 to 28 (median=23.5, range = 10–28). There was a significant difference between the two types of coaches, indicating differentiation albeit not directly related to vocational skills training. Vocational-enhanced coaches had higher total scores (median=25.0, range=10–28) than standard coaches (median=22.0, range=12–27; independent samples median test=8.1, $df=1$, $p<0.005$). This difference reflected significantly lower scores among standard coaches for teaching needed skills ($\chi^2=13.2$, $df=3$, $p<0.005$), having fun with the coach ($\chi^2=8.2$, $df=3$, $p<0.05$), and coaches knowing client’s strengths ($\chi^2=8.8$, $df=3$, $p<0.05$). Because coaches had different skills they could teach, additional items asked about 20 specific skills that could be addressed. As expected, participants with vocational-enhanced coaches reported their coaches addressed skills related to working more often than participants with standard coaches. Indeed, the vocational-enhanced coaches were more likely than the standard coaches to determine the kinds of work that interested participants (35.7 vs. 4.5%, $\chi^2=7.0$, $df=1$, $p<0.01$) and to assist participants in obtaining a job (60.7 vs. 18.2%, $\chi^2=9.1$, $df=1$, $p<0.005$). The only other skill that was significantly different between conditions in favor of standard coaches was working on getting or using transportation (21.4 vs. 54.5%, $\chi^2=5.9$, $df=1$, $p<0.05$).

Intervention outcomes

Change in ultimate outcomes As can be seen in Table 3, there was a significant reduction in mental health symptoms, with the median number falling substantially from 20 symptoms to between 5 and 6. The number of criminal and juvenile charges in the 6 months post-intervention was less than those in the 6 months prior to baseline. Although the median for both timeframes was 0, the range reported in Table 3 highlights the reduction picked up by the nonparametric statistic. While the rate of arrests dropped by 17 points in the 6 months post-intervention compared to the 6 months prior to treatment, this reduction did not reach statistical significance. Of note, this population has high rates of suicidality and homicidality, but no deaths (of MST-EA clients or as a result of MST-EA clients) occurred during the study.

All pre- to post-comparisons were conducted with nonparametric tests due to the small sample size, but results of parametric tests (not shown) yielded the same findings of significance.

Change in instrumental outcomes As can be seen in Table 3, participants had a significant reduction in exposure to peer delinquency. There were no other significant changes in instrumental outcomes, though change was in the anticipated direction for social support, working, living in out-of-home settings, and substance use. For example, the percent of participants working doubled and the percent of participants in out-of-home placements was cut by more than half. No participants were homeless at baseline (criteria for eligibility), and only one participant reported being homeless post-intervention.

Discussion

This feasibility study of an adaptation of MST for use with emerging adults with SMHC and recent justice system involvement indicates positive findings that justify subsequent testing of MST-EA in a large clinical trial. Importantly, the changes in ultimate outcomes for mental health symptoms and criminality were positive and, with one exception, statistically significant, even with a small sample size. The changes in instrumental outcomes, which focus on positive functioning, also were modestly in a positive direction and reductions in exposure to delinquent peers reached statistical significance.

There are few interventions with which to compare the 51% MST-EA intervention completion rates. However, the array of retention rates in individual, outpatient cognitive behavioral therapies ranges widely including 55% for eating disorders,¹¹⁴ 61% for medication adherence in adults with HIV and serious alcohol use problems,¹¹⁵ and 83% for obsessive compulsive disorder in adults.¹¹⁶ Given that young adults have the highest outpatient mental health treatment dropout rates among adults,^{117,118} and substance use contributes to treatment dropout (e.g.,¹¹⁹), the high MST-EA recruitment rate overall and the long lengths of stay observed, even for cases that did not complete treatment successfully, are positive, as are the client satisfaction results. Notably, though clients could continue with a coach for up to 4 months after ending with therapists, coaches and clients generally ended their work about a month after ending with the therapists. This may suggest that extensive work with coaches to sustain the changes made during treatment is either not needed or not desired by clients. It also could be that the longer length of time working with the MST-EA therapist, compared to standard MST, provides adequate time to solidify sustainability for the client. The coach component of the MST-EA model is probably the most innovative adaptation element, so continued evaluation and possibly improvement is necessary. The preliminary and final fidelity measures for both the coaches and the therapists indicated implementation with good fidelity. Thus, although this population is much more complex to treat and has greater safety needs, the MST-EA model provided a safe and potentially efficacious intervention. The model, although more complex than standard MST, can feasibly and safely be implemented in a community-based agency by “real world” therapists.

Vocational success is a key outcome during the years when youth transition to adulthood. Employment and mental health status are correlated during young adulthood,⁶⁶ and working is associated with reduced or delayed recidivism (e.g.,^{16,53}). However, vocational outcomes for emerging adults with mental health conditions are poorer than (a) emerging adults without mental health conditions (e.g.,⁶) and (b) more mature adults with mental health conditions.¹²⁰ While there were no significant changes in the work outcomes, the lowest rate of increase was for those clients who had a standard MST-EA coach and had to obtain vocational assistance from the state vocational rehabilitation agency. The MST-EA team members expressed consistent frustration with the slowness of access to state vocational rehabilitation services, lack of outreach by the rehabilitation agency, and few actual supports provided. Given this experience, the relatively less robust increase in employment in this group, the feasibility of MST-EA coaches providing vocational skills, and the positive reports on the CAM-EA by clients receiving this enhancement,

future MST-EA versions will implement the vocational-enhanced coach as standard practice in the MST-EA model. As is the case with standard MST, connecting clients with other services such as vocational rehabilitation services will be done as needed during treatment or discharge (or continued during treatment if clients are already engaged and satisfied with such services).

In addition to the clinical findings in this feasibility trial, the feasibility findings for the research methods were also encouraging. Recruitment rates into the research were high, and research retention rates were also very strong, as were interview completion rates. Selected measures showed good variability with results generally detecting change. The final fidelity measure captured adequate variability, and participants expressed no confusion about final items.

Given that the essential purpose of feasibility trials is to refine the clinical approach and research methods, study limitations include the absence of a control group, and the absence of examining the feasibility of randomization to a control condition. The absence of a control group limits understanding the relative strengths or weaknesses of the outcomes; however, that would be the main goal of a larger randomized controlled trial. The absence of employing randomization procedures limits the ability to specifically predict recruitment and retention issues that may arise as a result of either randomization or being assigned to a control condition.

Implications for Behavioral Health

There are currently no interventions with strong evidence of efficacy for recidivism reduction and delivery of good mental health care for emerging adults with SMHC and justice system involvement. The current study demonstrates that an adaptation of MST that addresses the likely causes of recidivism in emerging adults and delivers good quality mental health treatment is feasible. Further, results demonstrate that emerging adults with SMHC and justice system involvement who received MST-EA had positive changes from baseline to post-intervention in the ultimate outcomes of recidivism reduction and mental health symptoms. These findings suggest that research on MST-EA should progress to large clinical trials to determine its efficacy.

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