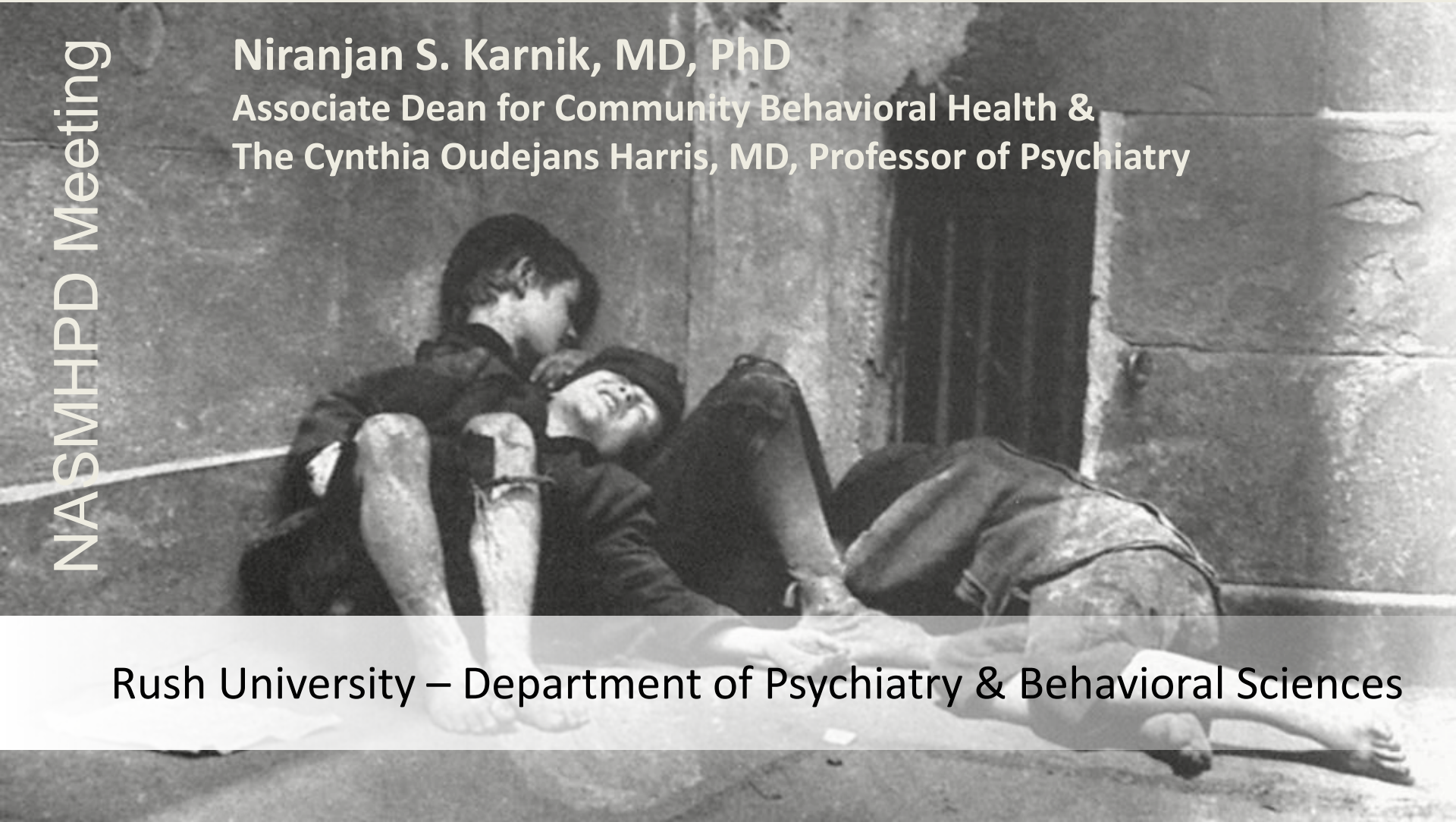# Homeless Youth: New Models of Intervention and Engagement

Niranjan S. Karnik, MD, PhD
Associate Dean for Community Behavioral Health &
The Cynthia Oudejans Harris, MD, Professor of Psychiatry

NASMHPD Meeting

Rush University – Department of Psychiatry & Behavioral Sciences

Conflicts & Grant Support

Conflicts of Interest / Support

introduction

- State of Illinois, Department of Human Services (MPI: Zalta & Karnik)

- Hedge Funds Care (MPI: Zalta & Karnik)

- NIH R01-DA041071 (MPI: Garofalo & Karnik)

- NIH UG1-DA049467 (MPI: Karnik & Pollack)

- SAMHSA H79-AM082299 (MPI: Wainer & Karnik)

- SAMHSA U79-TI025387 (MPI: Karnik & Delaney)

- Grants from Wounded Warrior Project, Tawani Foundation, Michael Reese Trust, McCormick Foundation, Bob Woodruff Foundation, Crown Family Philanthropies, Blowitz Ridgeway Foundation

- NIH UL1-TR002398 (MPI: Solway, Ross & Jacobs)

- NIH KL2-TR002387 (PI: Beyer)

Today's presentation

• Needs & background on homeless youth

• Homeless youth research projects (UCSF, U of C & Rush)

• Stepping Stone Project

• Stepping Stone Project 2.0
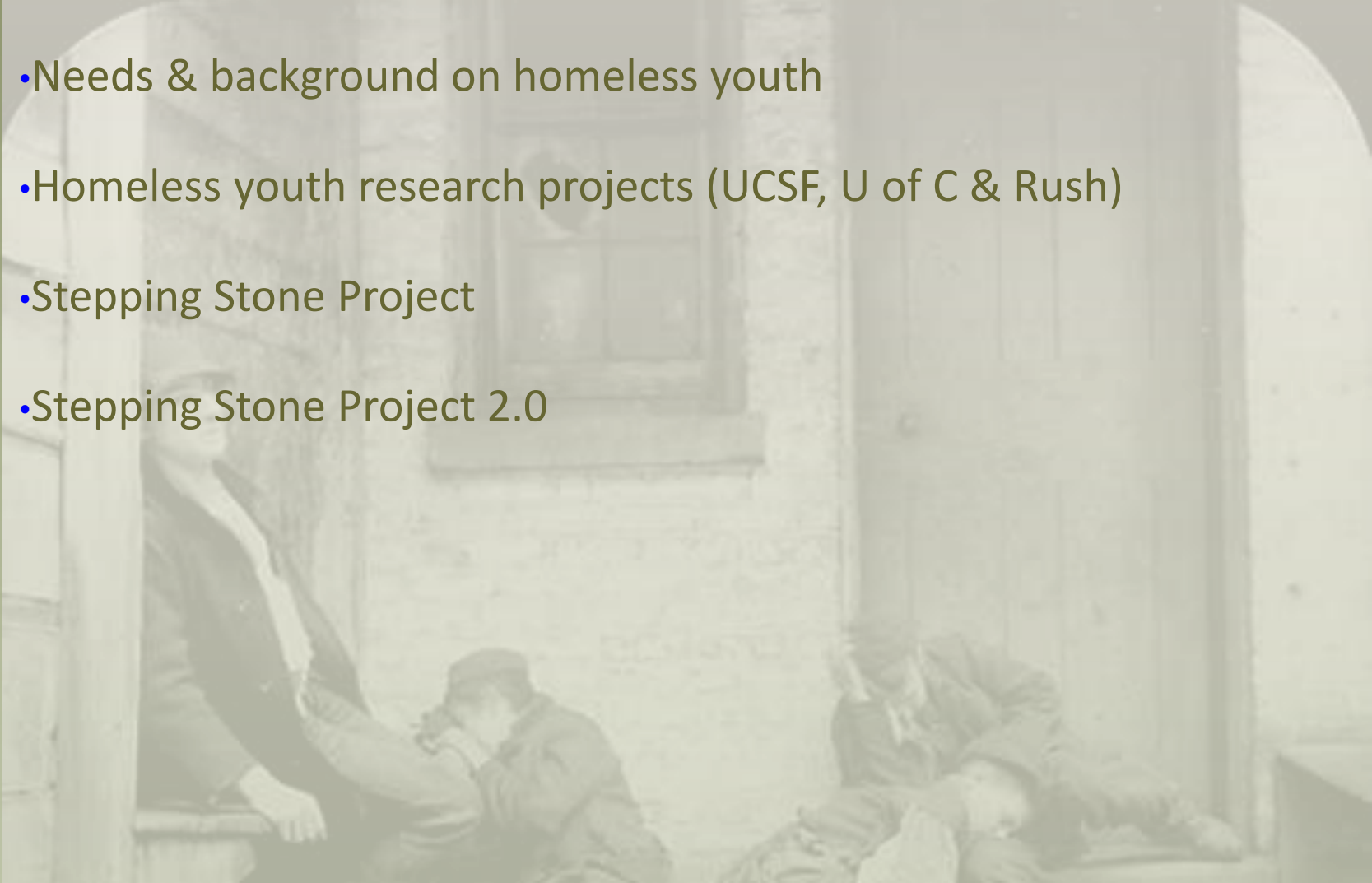
Homeless youth

- Chronic lifetime trauma exposure: physical, sexual and emotional

- Substance use disorders

- HIV secondary to abuse and/or prostitution

- Secondary effects of early drug exposure (*in utero*)

- Effects of violence: domestic, interpersonal and community

- Mental health difficulties with limited access to care

Marsiglia FF, Nieri T, Valdez E, Gurrola M, Marrs C. History of Violence as a Predictor of HIV Risk among Multi-Ethnic, Urban Youth in the Southwest. J HIV/AIDS Soc Serv. 2009 Apr 1;8(2):144-165. PubMed PMID: 20016770; PubMed Central PMCID: PMC2794203.

Parriott AM, Auerswald CL. Incidence and predictors of onset of injection drug use in a San Francisco cohort of homeless youth. Subst Use Misuse. 2009;44(13):1958-70. PubMed PMID: 20001291.

Shannon K, Kerr T, Marshall B, Li K, Zhang R, Strathdee SA, Tyndall MW, Montaner JG, Wood E. Survival sex work involvement as a primary risk factor for hepatitis C virus acquisition in drug-using youths in a canadian setting. Arch Pediatr Adolesc Med. 2010 Jan;164(1):61-5. PubMed PMID: 20048243.

Reviewing the Homeless Youth Literature

The Mental and Physical Health of Homeless Youth: A Literature Review

Jennifer P. Edidin · Zoe Ganim · Scott J. Hunter · Niranjan S. Karnik

Preliminary Studies

Psychiatric Disorders, High-Risk Behaviors, and Chronicity of Episodes Among Predominantly African American Homeless Chicago Youth

Anne L. Castro, BA
Erika L. Gustafson, BA
Ashley E. Ford, BS
Jennifer P. Edidin, PhD
Dale L. Smith, PhD
Scott J. Hunter, PhD
Niranjan S. Karnik, MD, PhD

...nal study investigated the relationships between psy-...ers, high-risk behaviors, and the onset, duration, and ...neless youth in Chicago. **Methods.** Sixty-six homeless ...rs in Chicago. Demographic characteristics, psycho-...ehaviors were assessed for each participant. **Results.** ...omeless episodes were positively correlated with higher ...sed number of psychiatric diagnoses was positively ...ehaviors. Participants with diagnoses of Current Sui-...ompulsive Disorder, Substance Abuse, and Psychotic ...homelessness than those without diagnoses. **Conclu-**...ident between the three time parameters, suggesting ...t time variables may benefit homelessness research ...who may benefit from individualized interventions.

...chopathology, substance use.

Article

Psychiatric Disorders and Substance Use in Homeless Youth: A Preliminary Comparison of San Francisco and Chicago

Ernika G. Quimby [1], Jennifer P. Edidin [2], Zoe Ganim [3], Erika Gustafson [2], Scott J. Hunter [2] and Niranjan S. Karnik [2,*]

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[3] Department of Education and Early Childhood Development, Government of Australia, Victoria 3001, Australia; E-Mail: zoeganim@gmail.com

RUSH UNIVERSITY

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- Community-based

- Housing, support

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Watch TLP on Fox News Chicago

Belfort Resident, age 16
"I'm learning how to have fun in my free time instead of finding trouble."

- The Night Ministry (West Town, Chicago)

- Teen Living Program (Bronzeville, Chicago)

Description of Sites

- **Teen Living Program**

  - Programs: Street outreach, Emergency shelter, Transitional living program, After care

  - Services: Education and employment, Life skills, Mental health and medical care

  - Population: 500 youth/year, 85% AA, 50% LGBT

- **Night Ministry**

  - Programs: Youth outreach, Interim housing, Pregnant and parenting youth housing, Transitional living, Continuing care

  - Population: >2400 youth/year, 50% AA, 18% Mexican, 14% White, and 14% Puerto Rican

  - Services: Rush-run mental health clinic provides psychological and psychiatric care at West Town Shelter

Epidemiology Study (UCSF and U of C)

Population Demographics (N=116)

Average Age (yrs.)	19.3 (SD 1.0)
Female	54%
Male	46%
African American	74%
Caucasian	5%
Latino	5%
Multiracial/Other	16%

Age at first homeless episode		Mean 16.5 (SD 3.5 yrs.)
Length of longest episode		Mean 14.4 (SD 21.1 mos.)
Total lifetime episodes		
	1 - 3	68%
	4 - 6	16%
	7 - 9	3%
	> 9	12%

Epidemiology Study

Psychiatric Diagnosis Results

Diagnosis	N=116	%
Major Depressive Episode	63	54
Suicidality, Current	66	57
Manic Episode	20	17
Hypomanic Episode	11	10
Panic Disorder Current	6	5
Agoraphobia w/o history of Panic Disorder Current	17	15
Social Phobia Current (Social Anxiety Disorder)	13	11
Obsessive Compulsive Disorder	10	9
Posttraumatic Stress Disorder	11	10

Diagnosis	N=116	%
Psychotic Disorder	17	15
Mood Disorder, with psychotic features	4	3
Anorexia Nervosa	0	0
Bulimia Nervosa	4	3
Generalized Anxiety Disorder	11	10
Anti-Social Personality Disorder	26	22
Substance Dependence Current	20	17
Substance Abuse Current	15	13
Alcohol Dependence Current	12	10
Alcohol Abuse Current	12	10

Cell Phone Use Among Homeless Youth (LA 2009)

Cell Phone Use among Homeless Youth: Potential for New Health Interventions and Research

Eric Rice, Alex Lee, and Sean Taitt

Cell Phone Use Among Homeless Youth (LA 2009)

TABLE 1 Cell phone access among homeless youth ($n=169$), Los Angeles, CA 2009

	Number	Percent (%)
Right now, pick the sentence that best describes your cell phone access?		
I have my own cell phone and use it every day	67	39.64
I have my own cell phone, but no minutes	26	15.38
I share a cell phone with a friend	12	7.10
I don't have my own cell phone, but I can borrow one from a friend or associate	26	15.38
I don't have a cell phone and I cannot borrow one	38	22.49
Missing responses=0		
How often do you use a cell phone?		
Several times a day	87	51.48
Once a day	17	10.06
Once every couple of days	7	4.14
About once a week	4	2.37
Less than once a week	16	9.47
Never, I don't have any access to a cell phone	38	22.49
Missing responses=0.		
What kind of cell phone plan do you have?		
I buy minutes	39	23.35
I have a contract, so I pay a bill each month	64	38.32
I don't have a cell phone	64	38.32
Missing responses=2		

BRIEF REPORT

Homeless But Connected: The Role of Heterogeneous Social Network Ties and Social Networking Technology in the Mental Health Outcomes of Street-Living Adolescents

Eric Rice · Seth Kurzban · Diana Ray

Homeless Youth Social Network

Table 2 Network properties of homeless adolescents (n = 136), Hollywood, CA 2008

	Mean	SD
All relationships		
Total network size	13.46	8.09
Total "friends"	7.15	6.14
Face-to-face relationships		
Street-based peers	6.34	6.14
Street-based "friends"	4.10	4.44
Home-based peers	2.78	3.37
Home-based "friends"	1.41	2.35
Social networking relationships		
Street-based peers	0.57	1.15
Street-based "friends"	0.38	0.89
Home-based peers	1.54	2.21
Home-based "friends"	0.59	1.22
	n	%
No "friends"	13	9.6

Face-to-face street-based peer relationship increased the risk of anxiety & depression

Home-based social networked peers were protective for depression

Attention needs to be paid to the 10% of homeless youth who lack friends

Pilot Qualitative Study

Exploring the Potential of Technology-Based Mental Health Services for Homeless Youth: A Qualitative Study

Elizabeth C. Adkins
Northwestern University

Alyson K. Zalta, Randy A. Boley, Angela Glover, and Niranjan S. Karnik
Rush University Medical Center

Stephen M. Schueller
Northwestern University

Homelessness has serious consequences for youth that heighten the need for mental health services; however, these individuals face significant barriers to access. New models of intervention delivery are required to improve the dissemination of mental health interventions that tailor these services to the unique challenges faced by homeless youth. The purpose of this study was to better understand homeless youths' use of technology, mental health experiences and needs, and willingness to engage with technology-supported mental health interventions to help guide the development of future youth-facing technology-supported interventions. Five focus groups were conducted with 24 homeless youth (62.5% female) in an urban shelter. Youth were 18- to 20-years-old with current periods of homelessness ranging from 6 days to 4 years. Transcripts of these focus groups were coded to identify themes. Homeless youth reported using mobile phones frequently for communication, music, and social media. They indicated a lack of trust and a history of poor relationships with mental health providers despite recognizing the need for general support as well as help for specific mental health problems. Although initial feelings toward technology that share information with a provider were mixed, they reported an acceptance of tracking and sharing information under certain circumstances. Based on these results, we provide recommendations for the development of mental health interventions for this population focusing on technology-based treatment options.

Stepping Stone 1.0

Schueller et al

Original Paper

A Mobile Phone–Based Intervention to Improve Mental Health Among Homeless Young Adults: Pilot Feasibility Trial

Stephen M Schueller[1,2], PhD; Angela C Glover[3], BA; Anne K Rufa[3], PhD; Claire L Dowdle[4], PhD; Gregory D Gross[5], AM, MDiv; Niranjan S Karnik[3], MD, PhD; Alyson K Zalta[1,3], PhD

[1]Department of Psychological Science, University of California Irvine, Irvine, CA, United States
[2]Center for Behavioral Intervention Technologies, Department of Preventive Medicine, Northwestern University, Chicago, IL, United States
[3]Department of Psychiatry and Behavioral Sciences, Rush University Medical Center, Chicago, IL, United States
[4]Stepwell Mental Health and Wellness, Boulder, CO, United States
[5]The Night Ministry, Chicago, IL, United States

The Stepping Stone Project
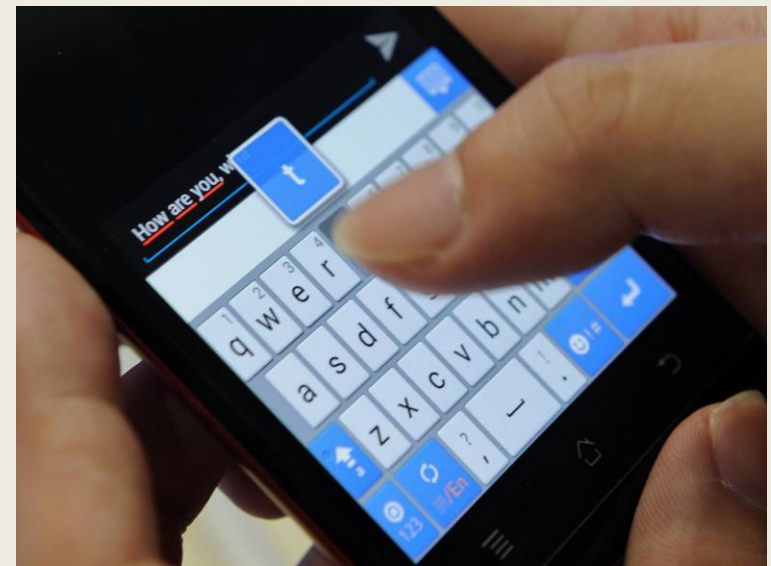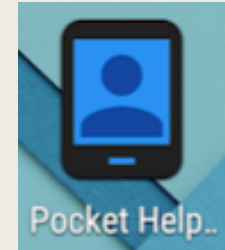
Project Elements

Project Description: All participants received a smartphone preloaded with three mental health apps developed at the Center for Behavioral Intervention Technologies (Pocket Helper, Purple Chill, Slumber Time), a service and data plan for 6 months, and 1 month of support from a therapist in the form of three 30-minute phone sessions, as well as opportunities to contact the therapist outside of these sessions by phone and text.

The therapist has access to a web portal that displays information collected via Pocket Helper affording the opportunity to tailor outreaches to participants' current needs and issues.
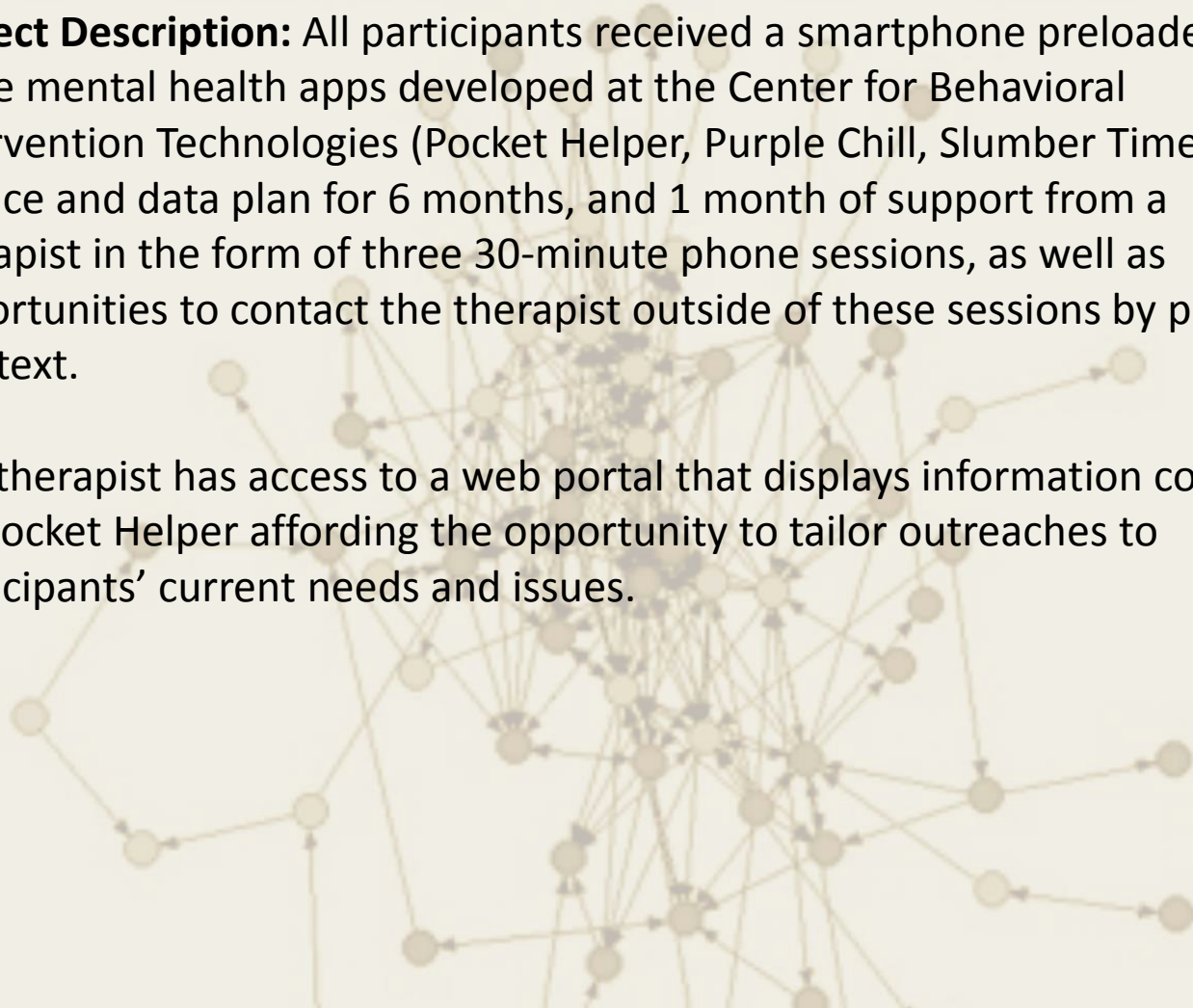
Participant baseline phone usage

- Many participants already had cell phones (71%)

  - Of those who reported having cell phones, 100% reported having a smartphone

  - 48.6% carry the phone all hours of the day

  - 65.7% sent texts a few times a day to every few mins

  - 62.9% receive texts a few times a day to every few mins

  - 54.3% used an app every few minutes

Pocket Helper

Stepping Stone Participants

- 35 participants enrolled
  - Ages 18-21 (*M* = 19, *SD* = .85)
  - 23 women, 11 men, 1 MTF transgender
  - 7 (20%) Hispanic or Latino
  - 23 (65.7%) African-American, 3 (8.6%) white, 6 (17.1%) mixed race, 1 (2.8%) other, 1 (2.8%) not reported, 1 (2.8%) don't know

- On average participants had been:
  - Homeless 3 times (*SD* = 2.57)
  - 60.0% currently homeless between 1 month and 1 year
    - *M* = 7.3 months, *SD* = 11.3, Median = 4 months
  - 57.1% longest length homeless between 1 month and 1 year
    - *M* = 13.6 months, *SD* = 28.1, Median = 7 months

Stepping Stone Participants

Figure 3. Participant flow through recruitment and intervention.

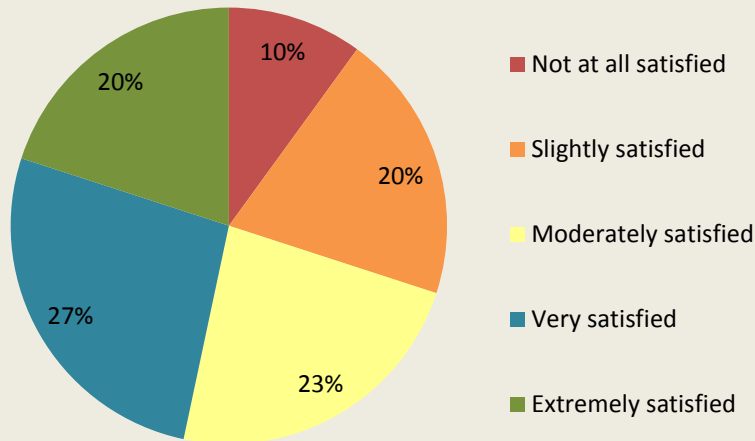# Use of Stepping Stone

- 57.1% of participants complete all three 30-minute phone sessions (M = 2.09, SD = 1.22, Median = 3)

- Participants sent an average of 15.06 text messages (SD = 12.62)
  - Therapist sent an average of 19.34 (SD = 12.70).

- Session content:
  - Stress management / emotion regulation: 44%
  - Interpersonal issues / skills: 33%
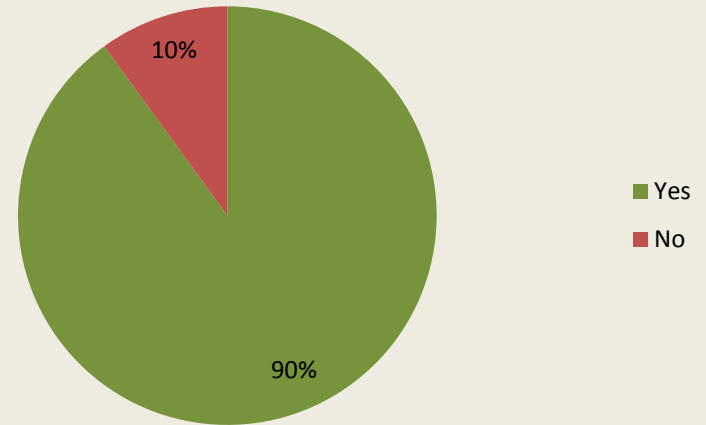 - Goal setting /problem solving: 23%

Acceptability

- Participants have been enthusiastic about the project

- Participants liked **tips the best**, apps the least

Study Satisfaction

- Not at all satisfied
- Slightly satisfied
- Moderately satisfied
- Very satisfied
- Extremely satisfied

Recommend Study

- Yes
- No

Benefits from Stepping Stone

Table 1. Clinical characteristics of sample at baseline and endpoint (1 month).

Outcome	Baseline, mean (SD)	Endpoint, mean (SD)	Probable disorder at baseline, n (%)	Probable disorder at endpoint, n (%)
Depression[a]	11.2 (8.0)	10.1 (8.2)	10 (46)	10 (50)
Post-traumatic stress disorder[b]	32.4 (23.8)	28.2 (23.1)	11 (50)	9 (42)
Emotion regulation	88.9 (30.6)	87.0 (34.6)	No clinical cutoff exists	No clinical cutoff exists

[a]Clinical cutoff for probable depression ≥ 10.
[b]Clinical cutoff for probable post-traumatic stress disorder ≥ 33.

- PTSD, $t(20) = 0.39$, $p = .70$, $d = .09$
- Depression, $t(19) = .59$, $p = .56$, $d = .13$
- Anxiety, $t(19) = .16$, $p = .87$, $d = .04$

- Null to small effect sizes across different symptom measures, but large variation

Lessons Learned from Stepping Stone Project

- Mental health care is needed and wanted in this population
- Even with providing phones, technology infrastructure is mixed
  - Wi-Fi Access, Charging, Phone Safety
- Availability of therapist needs to match schedule of youth, which is a challenge
- Many concerns focus on **interpersonal issues** and **emotional regulation**

Stepping Stone 2.0

PI: Dominika A. Winiarski (Rush)

Co-PI: Alyson Zalta (UCI)

Co-PI: Niranjan Karnik (Rush)

Co-I: Stephen Schueller (UCI)

Study Team:

Crissy Glover, Randy Boley, Jessica Vergara, Anne Rufa

Project Elements

Current Project: All participants in our project receive a smartphone with paid service and a data plan for 6 months. Phones are preloaded with 14 mental health apps developed at the Center for Behavioral Intervention Technologies, and one app with extensive information on resources and services developed by Young Invincibles.

These apps provide easy access to skill-building exercises focused on **stress-management and coping**. Various apps also connect youth to services allowing them to receive real-time emotional support in times of distress, and let them view up-to-date information for homeless youth regarding shelters, health and mental health services, emergency contacts and more.

Participants receive a daily tip and a daily survey asking them to rate their mood and reflect on their challenges. Good engagement with these surveys allows each participant to receive a $5 gift card every two weeks while in the study.

Data collection ongoing: 100 youth currently enrolled, drawn from six Chicago-based shelters.

Stepping Stone 2.0 Participants

- 100 participants enrolled, 99 analyzed – 1 lost due to data loss
  - Ages 16-24 (M = 20, SD = 1.8, range 16-24)
  - 39 women, 53 men, 3 MTF transgender, 4 FTM transgender
  - 23 (23.2%) Hispanic or Latino
  - 57 (57.6%) African-American, 10 (10.1%) white, 19 (19.2%) mixed race, 5 (5.1%) other, 4 (4%) not reported or don't know
  - 75 (75.8%) straight/heterosexual, 9 (9.1%) gay or lesbian, 8 (8.1%) bisexual, 7 (7.1%) other/refused/don't know

- On average participants have been:
  - Homeless 3.4 times (SD=3.5) lifetime, 2.3 times (SD=2.7) in the past year
  - Average age of first homelessness episode was 17.0 years (SD=3.9)
  - Mean length of current homeless episode was 8.2 months (SD=13.3)
  - 90% reported a history of physical, emotional or sexual abuse
 - 71% of youth reported current counseling or therapy

Participant Baseline Phone Access

- A smaller percentage of participants than in our pilot study already had cell phones at the time of enrollment (39.7%)

- Of those who had phones, most had smartphones (89.7%)

Preliminary Acceptability

- Participants complete a follow-up survey 3 months in to the study where they can provide feedback (*n=48, 48% response rate*)

- 6 month follow-up (*n=19, 40% response rate*)

- Most participants find the study helpful

- In the main study app, Pocket Helper, they like **daily surveys and tips best**, and the in-app support system least
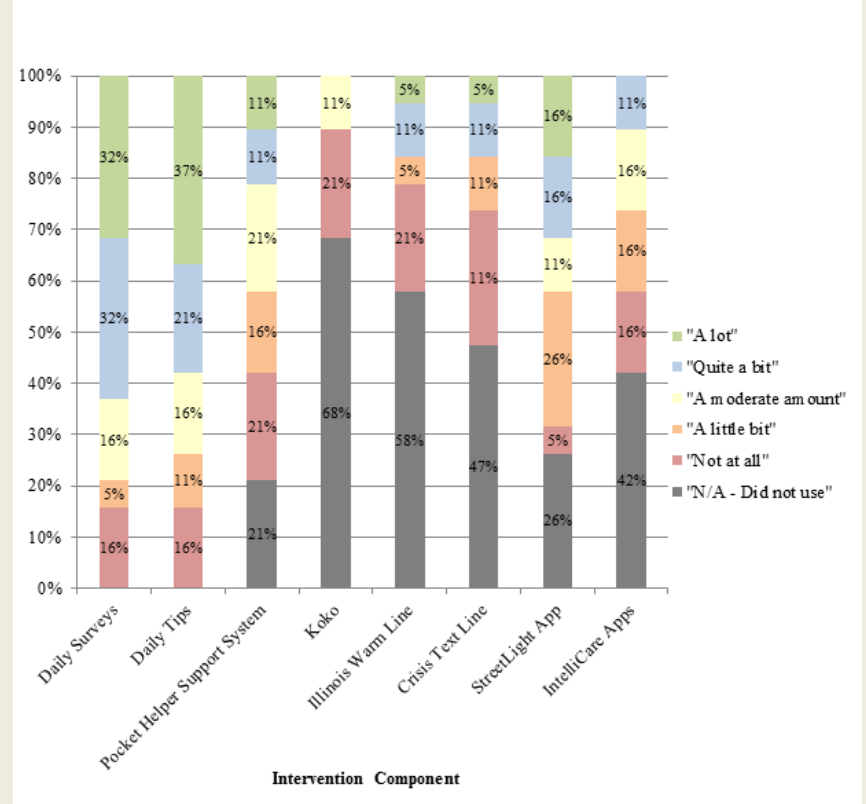
CONSORT
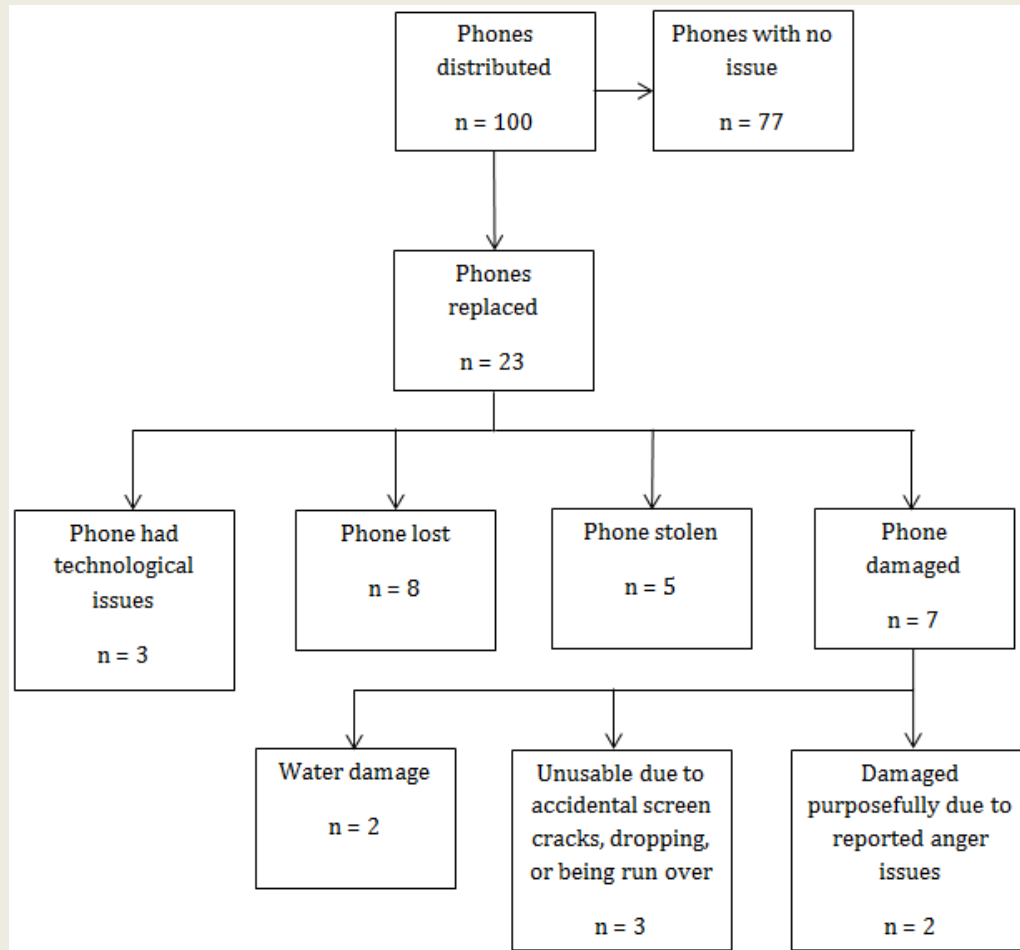
Outcomes/Findings


3 Months
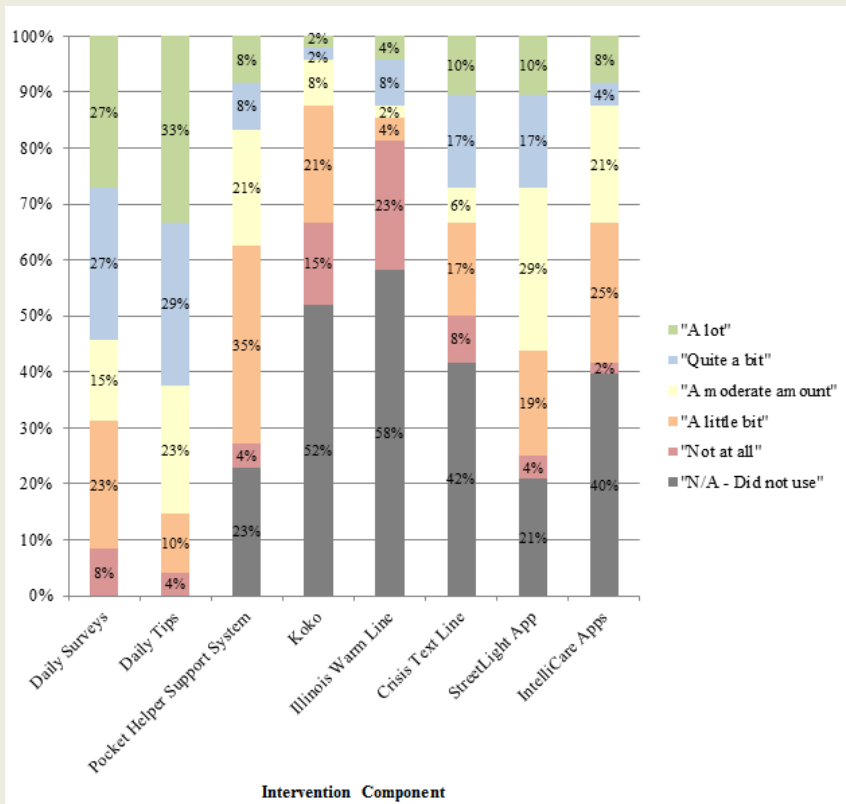
6 months

Common Themes

- Tips most highly accepted across both studies
- Emotion regulation, stress management, and interpersonal difficulties most common challenges
- Collectively, studies illustrate need to:
  - Increase accessibility of interventions
  - Develop more "palatable" intervention tools
  - Explore brief, single time-point interventions

Future Directions

- Expanding technological infrastructure in shelters
  - Wi-Fi, Charging Station, Phone Lockers
- Increasing access to targeted interventions
- Developing "adaptive e-interventions"
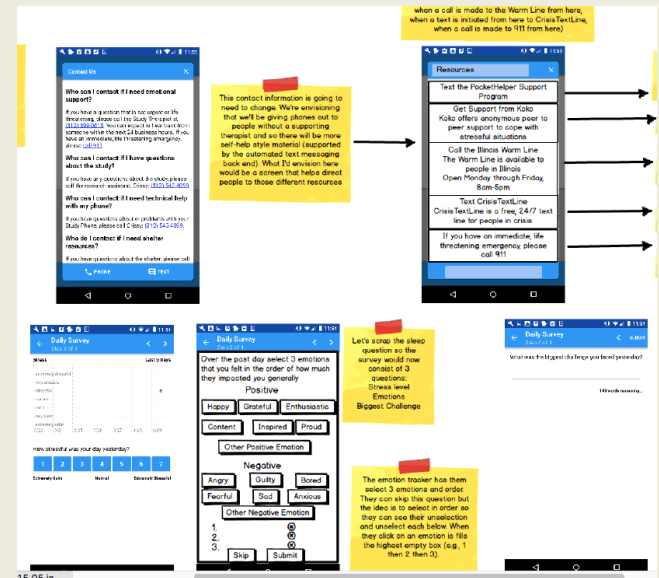
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  - Randy Boley
  - Anne Rufa
  - Chris Karr
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  - Elizabeth Kaiser
  - Seth Solway

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  - Sparrow: Mobile for All.
  - The Cynthia Oudejans Harris Chair, Rush University

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- Chris Karr for programming and technical support
- IntelliCare Apps available on the Google Play Store, Apple iOS or intellicare.cbits.northwestern.edu

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