Utilizing Technology for Longitudinal Communication With Homeless Youth

Kimberly Bender PhD\textsuperscript{a}, Stephanie Begun MSW\textsuperscript{a}, Anne DePrince PhD\textsuperscript{b}, Badiah Haffejee MSW\textsuperscript{a} & Sarah Kaufmann MSW\textsuperscript{a}

\textsuperscript{a} Graduate School of Social Work, University of Denver, Denver, Colorado, USA
\textsuperscript{b} Department of Psychology, University of Denver, Denver, Colorado, USA

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Utilizing Technology for Longitudinal Communication With Homeless Youth

KIMBERLY BENDER, PhD and STEPHANIE BEGUN, MSW
Graduate School of Social Work, University of Denver, Denver, Colorado, USA

ANNE DEPRINCE, PhD
Department of Psychology, University of Denver, Denver, Colorado, USA

BADIAH HAFFEJEE, MSW and SARAH KAUFMANN, MSW
Graduate School of Social Work, University of Denver, Denver, Colorado, USA

The current study investigated forms of technology (phone calls, texts, email and Facebook) for maintaining contact with homeless youth over baseline, 1-week, 6-week, and 3-month follow-up interviews. The study combined quantitative tracking of youths’ response patterns and open-ended interviews regarding youths’ preferred methods of communication. Results indicate that maintaining communication with homeless youth requires persistence, including frequent contact attempts over several days. Cell phone contacts (calls or texts) were most successful in communicating with youth, with e-mail and Facebook messaging useful when phones were lost or stolen. Youth who maintained contact were strikingly similar to youth who discontinued contact.

KEYWORDS homeless, youth, longitudinal, tracking, communication, retention

INTRODUCTION

Homeless youth have been described as a hidden population, as they are often highly mobile, are widely dispersed across communities, and fluctuate in and out of the domain of various public institutions and shelters (Ringwalt,
Greene, Robertson, & McPheeters, 1998). The frequent transience and lack of stable contact information experienced by homeless youth affects both research and practice. From a research perspective, such challenges affect the quality of research data and causal conclusions that can be drawn (e.g., in intervention research where testing the longitudinal impact of interventions has been difficult). From a practice perspective, the mobility of homeless youth challenges providers to reconsider delivery of services, particularly the potential role that technology can play in maintaining contact with youth. From both research and practice perspectives, more information is needed to inform how social workers are trained to use innovative technologies for connecting with homeless youth. Thus, research is urgently needed to identify the best methods for maintaining longitudinal contact with this transient and difficult-to-reach population. Burgeoning investigations of technology use among homeless youth suggest novel approaches to successfully maintaining research and/or service contact with this vulnerable population, but few research studies have analyzed the best methods for doing so (e.g., texting versus social media). The current study examined the utility of various technological approaches for maintaining contact with homeless youth in longitudinal research, implications of which are relevant to both research and practice as well as effective training of social workers serving this population.

**LITERATURE REVIEW**

Numbering approximately 1.6 million (Ringwalt et al., 1998), homeless youth represent a highly vulnerable population. In 2013, approximately 50,000 youth were unaccompanied and homeless on any given night, and nearly 90% were youth or young adults (ages 18 to 24) (Henry, Cortes, & Morris, 2013). Homeless youth have been defined in different ways by governmental agencies and private services; here, the broadest federal definition of youth homelessness is used and includes, “an individual who is less than 21 years of age, for whom it is not possible to live in a safe environment with a relative, and who has no other safe alternative living arrangement” (42 U.S.C. § 5732(a)). Compared to their housed peers, homeless youth experience increased risks for mental health challenges (Unger, Kipke, Simon, Montgomery, & Johnson, 1997; Whitbeck, Hoyt, & Bao, 2000), substance use (Greene, Ennett, & Ringwalt, 1997; Unger et al., 1997; Whitbeck et al., 2000), and HIV and other sexually transmitted infections (Gangamma, Slesnick, Toviessi, & Serovich, 2008; Solorio et al., 2008; Tyler, Whitbeck, Hoyt, & Yoder, 2000). They also report elevated rates of violence perpetration (Gaetz, 2004; Kipke, Simon, Montgomery, Unger, & Iversen, 1997), victimization (Stewart et al., 2004; Whitbeck et al., 2000), and trauma/post-traumatic stress disorder (Bender, Ferguson, Thompson, Komlo, & Pollio, 2010; Stewart et al., 2004).
Advancing research to reduce the aforementioned risks is of urgent importance, yet studying and serving homeless youth are particularly challenging. In addition to high rates of transience (Ferguson, Bender, & Thompson, 2013), homeless youth often congregate in locations on the streets or in abandoned buildings, which are not easily accessed by traditional research methodologies (Ringwalt et al., 1998) or service delivery systems. Homeless youth are often hesitant to admit homelessness and frequently circumvent interviews and surveys out of suspicion that interviewers are representatives of the social services or police systems, or conversely, are individuals who pose risks as potential victimizers (Ringwalt et al., 1998). According to a systematic review evaluating intervention studies with homeless youth, the authors concluded that more methodologically sound research is needed with this population given infrequent longitudinal designs (Altena, Brillesliiper-Kater, & Wolf, 2010) and lack of intervention studies (e.g., only 11 intervention studies focused on homeless youth).

Advances in, and increased availability of, technologies, including mobile phones, social networks, and other forms of digital media introduce novel methods for tracking homeless youth longitudinally for research and service provision. Previous research demonstrates that homeless youth have access and utilize technology consistently and frequently (North, Black, & Pollio, 2012; Pollio, Batey, Bender, Ferguson, & Thompson, 2013). Approximately 46% of homeless youth report daily access and 93% weekly access (Pollio et al., 2013)—rates that exceed use by adult homeless populations (Redpath et al., 2006). Homeless youths’ technology access varies little by demographic or risk characteristics (Pollio et al., 2013) and is comparable to that of college students, leading experts in the field to claim that the “digital divide” based on socioeconomic status has narrowed considerably (Guadagno, Muscanell, & Pollio, 2012). Youth most commonly access technology via social service agencies (60%), libraries (54%), and, to a lesser extent, through Internet cafés (14%), friends’ or families’ computers (12%), or their own cell phones and computers (6%) (Pollio et al., 2013). A recent study found 44–62% of homeless youth report cell phone ownership (Rice, Lee, & Taitt, 2011) where they typically make calls (100%), but also text (61%), and access the Internet (20%) (Eyrich-Garg, 2011).

Homeless youth often use technology to maintain personal connections (Eyrich-Garg, 2011). Many youth describe using phones to contact home-based peers (51%) and parents (41%) (Rice, Lee, & Taitt, 2011). This connection, particularly through social networking, to home-based stable friends and family has been shown to buffer youth from depression (Rice et al., 2012), substance use (Rice, Milburn, & Monro, 2011), and sexual risk behaviors (Rice, 2010). Technology also enables youth to connect to services. Youth report using mobile phones to find housing (Eyrich-Garg, 2011), communicate with case managers, reach potential employers (Eyrich-Garg, 2011; Pollio et al., 2013; Rice et al., 2011) and access health-related information.
Interventions are being developed to enhance youths’ use of digital media in drop-in centers in order to develop life skills, increase self-efficacy, and connect with adults and peers for support (Hendry et al., 2011).

With inherent challenges in studying homeless youth longitudinally, several scholars have suggested cell phones, texting, and online social networks hold promise in maintaining connections with this highly transient population (Eyrich-Garg, 2011; Rice et al., 2011, 2012). However, few studies have examined the utility and efficiency of using these different technological modalities to retain homeless youth research participants. The current study investigated different forms of technology for their utility in retaining homeless youth in longitudinal research. Research questions addressed, among homeless youth: (1) how many contact attempts, over what period of time, are necessary to maintain contact; (2) which contact methods are preferred over time; and (3) how do youth retained via technology differ from those not retained?

**METHODODOLOGY**

**Sampling and Recruitment**

As part of a clinical trial for homeless youth, data were collected from youth ages 18–21 ($N = 98$) accessing services in a homeless youth shelter in a midsized city in the Southwestern United States. The 40-bed overnight shelter offered dormitories, medical clinic, mental health assessment, and case management aimed at helping youth achieve family reunification or self-sufficiency. The shelter served primarily 18–21-year-old homeless youth, thus this comprised the current study sample.

Research assistants (RAs) approached youth staying in the shelter and screened for interest in study participation and age 18 or older inclusion criteria. Youth interested in participating and willing to sign an informed consent form were invited to participate in a randomized control study of a curriculum that targeted safety on the streets. Youth were informed that they would be randomly assigned to receive the curriculum or usual care as well as be invited to take part in four individual interviews: baseline, as well as 1-week (after half the youth had received the curriculum), 6-week, and 3-month follow-up interviews. At the 1-week interview, participants were given active cell phones (pre-paid for 3 months with unlimited talk and text), and participants’ e-mail and Facebook information were collected. Because all participants received cell phones and the curriculum was unrelated to technology use, the intervention and usual care groups are combined for the purposes of this article; only data related to technology use are described here and not outcomes of the randomized trial on safety.
Youth were contacted via phone, text, e-mail, or Facebook to participate in the 6-week and 3-month follow-up interviews. To structure retention efforts as well as systematically track technology use, the following contact protocol was implemented. Social work research assistants (RAs) first contacted youth by phone. If they received no response within 24 hours, they contacted youth again by phone and also by text. If they received no response within another 24 hours, they contacted youth by phone, text, Facebook, and e-mail (as available). RAs recorded contact methods and youths’ responses to these efforts. In addition, during follow-up interviews, youth were asked open-ended questions regarding communications with the research team and their preferred method(s) of contact. Beyond the planned protocol, RAs had contact with some youth through unplanned exchanges at the service site (shelter); these contacts were also systematically tracked.

Measures

EXCHANGES WITH YOUTH

RAs documented each attempt at contacting youth, including the number of attempts, when each occurred, as well as the method of contact (phone call, text, e-mail, Facebook message) in a contact log. They also documented every response back from youth, including number, timing, and method of contact. Each communication was recorded in a contact log as a string of exchanges coded by type and inbound/outbound status (1 = outbound call, 2 = inbound call, 3 = outbound text, 4 = inbound text, 5 = outbound email, 6 = inbound email, 7 = outbound Facebook message, 8 = inbound Facebook message). RAs also documented, for each participant, whether a follow-up interview was completed at each time point and whether completed interviews took place in person (typically at the shelter) or by phone.

SELF-REPORTED PREFERENCES

RAs asked youth at baseline interviews, before youth were given phones, “what is the best way to reach you?” and documented this preference in the contact log. As part of the follow-up interviews, youth were asked a series of open-ended questions about their experiences and preferences in communicating with research team members, including: (1) What was the easiest or best way to communicate during this study? Why? (2) Tell me what you thought about getting cell-phone calls to check in between interviews. (3) Tell me what you thought about text messages to check in between interviews. (4) What things happened that made it difficult or annoying to participate? (5) What things happened that encouraged you to participate?
Basic demographics and background variables were collected to characterize the sample and investigate characteristics that differentiate those youth retained by the technology used in this study versus those not retained. Demographic variables included: age, gender (0 = male, 1 = female, 2 = other), and ethnicity (1 = White, 2 = Black, 3 = Latino, 4 = other). Background variables included: highest completed grade in school, number of days in past week slept on the streets, transience (number of inter-city moves since leaving home for the first time), utilization of other services (e.g., case management, GED, job training; 0 = no, 1 = yes), length of time homeless (calculated by the number of months between interview date and the date the youth last left home), and assigned group in the larger clinical trial (0 = control, 1 = experimental). In addition, as part of the baseline interview, RAs administered the Mini International Neuropsychiatry Interview (MINI) (Sheehan et al., 1998) to determine whether youth met DSM-IV-TR criteria for substance use disorders (alcohol/drugs dependence/abuse) and for post-traumatic stress disorder (PTSD). MINI questions are asked in a decision-tree manner in which positive answers were explored with more in-depth questions in order to distinguish between specific criteria for disorders.

Data Analysis

Descriptive statistics (frequencies, percentages, means, standard deviations) were used to describe the number of attempts to reach youth, number of days of contact, technology methods used, interview format, and whether youth were retained in the study at each follow-up. Contact efforts were analyzed separately for youth retained in the study and study dropouts. Bivariate analyses (chi-square, t-tests) were used to compare youth retained in the study via technology with study dropouts on demographic and risk. Brief answers to open-ended questions were categorized using an iterative content analysis process by three coders. Categories were compared across coders, and divergent codes were discussed and reconciled. Qualitative field notes supplemented quantitative data by describing the challenges RAs encountered in maintaining contact with youth using various technologies.

RESULTS

Sample Characteristics

Table 1 displays detailed sample characteristics. The baseline sample consisted of youth (N = 98) ranging in age from 17 to 20 (M = 18.98, SD = .80). Approximately 61.2% of youth identified as male, 36.7% as female, and 3.1% as other. Youth identified as White (39.8%), Biracial (27.3%), Black (23.5%),
### TABLE 1 Sample Characteristics at Baseline Interview ($N = 98$)

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>60</td>
<td>61.2</td>
</tr>
<tr>
<td>Female</td>
<td>36</td>
<td>36.7</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>3.1</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>39</td>
<td>39.8</td>
</tr>
<tr>
<td>Black</td>
<td>23</td>
<td>23.5</td>
</tr>
<tr>
<td>Latino</td>
<td>3</td>
<td>3.1</td>
</tr>
<tr>
<td>Other (American Indian, Asian, Biracial)</td>
<td>34</td>
<td>34.7</td>
</tr>
<tr>
<td><strong>Sexual Orientation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Straight</td>
<td>77</td>
<td>78.6</td>
</tr>
<tr>
<td>Gay/Lesbian</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Bisexual</td>
<td>13</td>
<td>13.3</td>
</tr>
<tr>
<td>Other (questioning, pansexual)</td>
<td>6</td>
<td>6.1</td>
</tr>
<tr>
<td><strong>Current living situation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homeless (streets or temporary shelter)</td>
<td>64</td>
<td>65.3</td>
</tr>
<tr>
<td>Housed (with relatives, friends, transitional housing, facility)</td>
<td>35</td>
<td>35.7</td>
</tr>
<tr>
<td><strong>Experienced victimization on streets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct victimization</td>
<td>47</td>
<td>50</td>
</tr>
<tr>
<td>Indirect victimization</td>
<td>66</td>
<td>67.3</td>
</tr>
<tr>
<td><strong>Mean SD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>19.4</td>
<td>0.8</td>
</tr>
<tr>
<td>Months homeless</td>
<td>16.4</td>
<td>20.2</td>
</tr>
<tr>
<td>Intercity moves since homeless</td>
<td>1.4</td>
<td>2.2</td>
</tr>
<tr>
<td>Last grade finished in school</td>
<td>11.1</td>
<td>1.0</td>
</tr>
<tr>
<td>Number of nights in last week spent on the streets</td>
<td>.2</td>
<td>.9</td>
</tr>
</tbody>
</table>

American Indian (5.1%), Latino (3.1%) and Asian (2.3%). Participants reported living away from their home of origin for an average of 16.4 months ($SD = 20.2$) and having moved between cities an average of 1.4 times ($SD = 2.2$). As their primary residence, 65.3% reported living mostly on the streets or in temporary shelter, while 35.7% reported living with a friend, relative, or in a facility.

**RQ 1: How Many Contact Attempts, Over What Period of Time, are Necessary to Maintain Contact?**

Our research team was moderately successful in retaining homeless youth participants. Of the 98 youth initially recruited into the study, 92.9% ($n = 91$) were retained at 1-week follow-up, with 7 youth leaving the shelter before being given a project cell phone, with no other active contact information or were discontinued due to mental health risk as advised by the shelter. Retention at later time points was 77.6% ($n = 76$) for 6-week follow-up interviews and 69.4% ($n = 68$) for 3-month follow-up interviews. Attrition
was greatest from 1-week to 6-week follow-up; of youth who participated at 6 weeks, 89.5% continued to participate at 3 months. Such retention rates were in line with prior studies of vulnerable and transient populations (including homeless youth), which report retention rates ranging from 67% to 97% (Coen, Patrick, & Shern, 1996; Cohen et al., 1993; Cotter, Burke, Loebner, & Navratil, 2002; Des Jarlais, Perlis, & Settembrino, 2005; Ferguson & Xie, 2007; Hobden, Curtis Forney, Wyszacki Durham, & Toro, 2011).

Achieving these retention rates involved numerous attempts at contacting youth and several back-and-forth exchanges over several days before interviews were completed. Youth typically did not respond to RAs’ first contact attempts, requiring RAs to persistently contact youth before a participant would return a call, text, Facebook message or e-mail. On average, among those who completed interviews, youth were contacted 2.3 times ($SD = 1.7$) before they responded at all for 6-week follow-up and 3.0 times ($SD = 1.9$) before they responded at all for 3-month follow-up.

Completing the interview then required back-and-forth exchanges between RAs and youth. On average, it took 3.95 ($SD = 2.76$) back-and-forth exchanges (any communication from RA to youth or youth to RA) to achieve 6-week interviews, with cases requiring as little as 1 to as many as 13 exchanges. Research assistants successfully engaged youth in 6-week follow-up interviews after an average of 2.36 ($SD = 2.56$) days; with cases ranging from 1 to 11 days of exchanges. Greater effort was required to achieve 3-month follow-up interviews, averaging 5.24 ($SD = 3.43$) exchanges (range 1-18) over 3.99 ($SD = 4.16$) days (range 0-24). Figure 1 graphically displays number of exchanges and days over time for interview participants.

**FIGURE 1** Average number of exchanges and days required to achieve interview over time.
Although youth who dropped out of the study were typically unresponsive to RAs' attempts at contact, a subgroup did exchange contact with the research team. At 6-week follow-up, RAs followed research protocol and contacted youth an average of 6 times, and 15 youth dropped out of the study. The majority of 6-week study dropouts (87%, n = 13) did not respond to any contact efforts. A small subgroup (13%, n = 2) interacted with RAs; each youth responded once to RAs but did not complete an interview. Of youth who dropped out of the study at 3-months (n = 11), a smaller majority (64%, n = 7) did not respond to any contact attempts by RAs, and a larger subgroup (36%, n = 4) responded to RA contacts but did not complete 3-month interviews. Those who responded, typically contacted RAs twice through back and forth exchanges before discontinuing contact. Thus, a subgroup of youth who were lost to attrition, particularly those who were lost late in the study, were still engaged with RAs in repeated communication, suggesting that additional efforts to contact these youth (beyond the study protocol) or additional contact methods may have resulted in greater study retention.

RQ 2: Which Contact Methods Do Youth Prefer Over Time?

Youths' preferred methods of communication were assessed in two ways: via observing the methods by which youth responded to RAs and self-reported preferences. Figure 2 displays youths’ methods of responding to RAs over time.

![Figure 2: Percentage of youth who responded utilizing each technology type over time.](image-url)
EXCHANGES WITH YOUTH

At 6-week follow-up, youth retained in the study ($n = 76$) were much more likely to respond to RAs via text ($n = 23$, 30.3%) or phone call ($n = 22$, 28.9%) rather than via Facebook ($n = 4$, 5.3%) or e-mail ($n = 1$, 1%). By 3-month follow-up, youth ($n = 68$) responded more often by phone call ($n = 27$, 39.7%) than text ($n = 18$, 26.5%) followed by Facebook ($n = 6$, 8.8%) or e-mail ($n = 3$, 4.4%). Among the few study dropouts who corresponded with RAs, these youth responded by phone at 6 weeks and by phone and by text at 3 months.

Differentiating patterns in types of technology used was challenging due to complex combinations of multiple types of exchanges between RAs and youth. Clearly, communication patterns were diverse and had to be individualized to fit individuals’ needs and preferences. RAs strategically adjusted their correspondence to best meet each youth’s mode of communication. However, three clear patterns emerged from the data with youth retained in the study. First, youth responded with texts often, regardless of how they were contacted. Youth, particularly at 6 weeks, were as likely to respond to RAs' phone calls with a return text as with a return phone call and RAs attempts to contact youth by text almost always elicited a return text. Second, as time passed in the study, RAs had to contact youth more times before receiving a response; in doing so, they utilized more types of contact (more often e-mailing or Facebooking youth at 3-month follow-up when compared to at 6-week follow-up). Youth responded to these alternate forms of contact, but most often responded with calls or texts back to RAs.

Finally, a substantial number (43% during 6-week follow-up and 29% at 3-month follow-up) of contacts with youth were made through in-person contact at the youth shelter. Often, RAs would “run into” youth at the shelter while there for other interviews and would conduct spontaneous follow-up interviews as youth were available. Youth also sometimes pre-arranged to meet RAs at the shelter to conduct interviews. In-person contact was more common at 6-week interview, when youth were more likely to still be residing at the shelter, and became less likely at 3 months. Figure 3 displays the percentage of participants (who completed interviews) by in-person versus by-phone methods. At 6-weeks, in-person interviews (55.3%, $n = 42$) were favored over phone interviews (44.4%, $n = 33$). By 3-months, these proportions were reversed, such that more interviews were conducted by phone (55.9%, $n = 38$) rather than in-person (44.1%, $n = 30$).

SELF-REPORTED PREFERENCES

When asked their preferred way to be contacted at baseline interview, prior to being given a project phone, the majority of youth preferred e-mail (40%) followed by phone calls to their personal phones (21%), Facebook (20%),
texts (12%), or leaving messages at the shelter (7%). During the 1-week follow-up interviews, after youth had been given project phones, youth indicated a preference to communicate via phone calls (53%) and face to face/shelter (17%), and a smaller group (30%) preferred indirect methods such as Facebook, texting, and e-mail.

The majority of youth interviewed (87.5%) described their receipt of phone calls during the study extremely positive using words such as “awesome,” “liked it a lot,” and “helpful.” For most youth just having someone check in on them made them feel “important”—like they “mattered” and were cared about. A few articulated they “felt connected and had someone to talk to about things going on in [their] life.” A smaller percentage (12.5%) of youth responded negatively saying that it was “a little annoying,” “inconvenient,” or “bothersome” to receive study phone calls primarily because the calls sometimes conflicted with their work schedules, it was not their preferred method of communicating, or they just did “not like talking on the phone.” Most youth (70%) described receiving texts during the study as “a lot easier,” “convenient,” and a “helpful reminder” for scheduling a “good day/time to talk.” In fact, several youth emphasized that it was “better than phone calls” and that it was “cool/awesome” to “see [research interventionist] texting.” Furthermore, texting was especially convenient for youth not in a position to talk due to work or school commitments. A few youth mentioned that they tended to not answer calls from unknown numbers and were much more likely to respond to a text message because they could see the intent of the message.

Youth interviewed generally described study participation as positive and beneficial. Youth were encouraged to participate because they felt supported (i.e., someone to talk to, someone who cares) because RAs
were frequently communicating (i.e., phone or in person) with them. One youth commented, “talking to someone who cares about homeless youth [gives me] hope.” When asked what was difficult or annoying about participating in the study, 76% reported “nothing”; while a smaller percentage (15%) described life circumstances (i.e., getting robbed, lost phone, relocating, being hospitalized, and incarceration) to create challenges to their participating.

Youth reported various motivations and benefits to participating in the study. Incentives played a large role in retaining youth, with 33% stating that they were encouraged to participate in the study because they were given a project phone and gift cards (the latter as compensation for their time for interviews). Project phones were particularly helpful to youth; for example, one youth said, “the phone has built stability in my life because it’s hard to... do job interviews on the streets and it has helped my life a lot.” Several youth shared these sentiments saying that the phone “helped [them] stay connected and access outside resources” (i.e., looking for a job and going on an interview). Youth also reported that the study phone “helps to keep me safe” and “... got me on my feet for a little while.” Aside from incentives, about half of the youth sample (52%) stated a commitment to the larger cause (i.e., increased awareness about self, contributing to science, the sharing of knowledge and giving back to their community) as reasons for participating. Youth (15%) also reported an intrinsic commitment to continue what they had started—that is, to be a part of advancing research so that “others may better understand” the issues of homelessness.

RQ 3: How Do Youth Retained Via Technology Differ From Those Not Retained?

One concern in conducting longitudinal research with difficult-to-reach populations is that participants will differ significantly from study dropouts. This brings into question whether study results can be generalized to youth who chose not to remain in the study. This is a particular concern as researchers begin to use new technologies to maintain youth in studies or services. One may wonder whether the youth retained via these technologies differ from those who do not respond to technologies and instead drop out, bringing into question the validity of study findings. As such, utilizing bivariate analyses, we investigated whether youth retained at 6 weeks and at 3 months varied characteristically from youth who dropped out of the study. We found few differences. Retained youth did not differ significantly from study dropouts in regards to: utilization of other services (e.g., case management, General Educational Development [GED], job training), randomized group (experimental vs. control), time homeless, number of nights spent on the street, transience (number of inter-city moves), nor whether they met...
criteria for a substance use disorder or PTSD. Retained youth did not differ from study dropouts on demographic variables (age, ethnicity, education, sexual orientation) with the exception of gender. Although no gender differences were found at 6 weeks, at 3 months a greater proportion of females (86.1%) than males (58.3%) were retained in the study ($X^2[2] = 9.56, p < .01$).

**DISCUSSION**

The current study found several methodologies useful in maintaining contact with homeless youth in longitudinal research, with implications for maintaining service contact with youth. First, cell phones demonstrated perhaps the most promise in retaining participants when compared to e-mail and Facebook, as youth were likely to become increasingly transient and difficult-to-reach as time passed. Cell phone calls and texts were more consistently utilized by youth than e-mail or Facebook, regardless of data collection time point. Cell phones had clear relevance to service goals, with youth describing, for example, that phones were linked with perceptions of stability and were of concrete assistance (e.g., around job searches).

Cell phones did not, however, serve as a panacea against attrition; by extension, phones would not necessarily keep all youth connected to service providers either. At baseline, a small proportion of youth suggested contacting them on their personal phones (20%) and thus, without resources to provide project phones and phone service to youth, phones would not have been the best method of contact. Previous research similarly finds a minority of homeless youth has working phones, suggesting that many homeless youth lack consistent cell phone service for use (Rice et al., 2011). As such, research interventions that include the provision of cell phones to participants should also provide paid phone and texting service for the duration of the study in order to achieve optimal retention. It should be noted that, when project phones and service were provided for youth, qualitative field notes revealed that, although youth highly valued being given phones, several ($n = 6$) lost, gave away, broke or experienced theft of their phones, necessitating the use of back-up contact methods.

Our study also finds, while longitudinal studies with transient and difficult-to-reach populations such as homeless youth are feasible, persistence is requisite to successfully retaining participants in such studies. For example, frequent attempts at contact were made by research assistants (RAs) prior to receiving responses from youth in this study. Once an initial response was achieved, several additional back-and-forth exchanges were typically required in order to complete any given interview. Retention was further bolstered through the emphasis that RAs placed on building rapport with youth over time. RAs adhered to the follow-up methods protocol as rigidly as possible in order to avoid coercing youth to remain in the study,
while, at the same time, remaining flexible to the unique barriers to participation faced by study participants (e.g., transportation access, health concerns, coordination of interviews around youths’ employment/case management schedules, lost/stolen phones). By extension, service providers seeking to use technology to engage youth over time would likely also have to be flexible and persistent. This research points to the need for social worker training to directly address how to flexibly use technology while considering the need for agency protocols to guide (social worker and client) expectations and implementation. Longitudinal service contact may be more feasible in settings where service providers have good rapport, established over time, with youth.

Along with building rapport, came RAs’ increased awareness of youths’ personal problems—ranging from mental health crises, psychoses, suicidal thoughts, unintended pregnancy, incarceration, to hospitalization—as such problems were at times divulged directly to RAs by youth, or as personal information was publicly posted on youths’ Facebook walls and discovered by RAs while attempting to conduct follow-up interviews. Following youth longitudinally thus involved detailed safety protocols established in coordination with institutional review boards as well as collaboration with data collection site service providers; RAs reported youths’ service needs to the shelter’s case managers and service providers as appropriate. From a service perspective, such access to information may be extremely useful in case management and interventions; however, agencies and the larger field will need to grapple with how to develop and train social workers on protocols around informing clients about how the wealth of information available via social media will be used.

While phones were useful for reaching and maintaining contact with youth, conducting interviews by phone presented some longitudinal research challenges, particularly as some survey instruments required face-to-face contact (e.g., behavioral and visually identified tasks, read-along vignettes). Because homeless youth often lack stable shelter, interviews were often difficult to conduct, as youth were often located in loud or distracting environments during their phone interviews (e.g., on the streets, in crowded shelters, or while using public transportation), thus inhibiting youths’ and research interventionists’ abilities to hear and comprehend questions and responses. Additionally, as some follow-up interviews were conducted in-person at the shelter and some were conducted by phone, interview location must be considered when conducting repeated measures intervention effects analyses.

E-mail and Facebook elicited inconsistent responses from youth, particularly as youth frequently changed e-mail addresses, forgot passwords, or were reticent to provide such information to researchers until rapport and trust were further established. Nonetheless, both e-mail and Facebook played an important part in maintaining contact with youth as the study progressed, and also as cell phones were lost or stolen.
RAs’ regular presence at the shelter was crucial to establishing and maintaining rapport with youth, and also as RAs randomly “ran into” youth, follow-up interviews were more likely to be successfully completed. Throughout the study, many youth stayed at the shelter longer or returned to the shelter more frequently than anticipated, which allowed interviewers to maintain longer-term direct contact with youth. Almost all of the interviews that were conducted in-person were done so at the shelter, implying that youth felt comfortable returning to the shelter to meet with interviewers, and also that the shelter was considered a safe place by most of the youth in the study. As such, retention efforts may have been less successful if this study did not possess access to this well-regarded shelter.

The similarities (regarding sociodemographic identities, experiences of homelessness, service usage, etc.) found between youth who were retained via these technologies versus those who dropped out of the study were surprising. Yet these findings are promising in terms of generalizing findings to other service-seeking youth, and may assuage concerns that youth retained longitudinally (particularly those responding to technology-based retention efforts) represent a higher-functioning, more motivated group of youth.

Certain limitations should be considered when reviewing these findings. As the aim of the broader study was to implement an intervention rather than test specific methods of retention, youth were not randomly assigned to receive specific technological methods of communication. The results are therefore observational and could be influenced by the communication protocol established for the study. For example, greater use of phones and texts by participants may be related to calls and texts appearing earlier in the protocol, as phone calls were employed first, followed by texts, and then final attempts at reaching youth were made via e-mail and Facebook. As such, if the protocol order had been reversed, e-mail and Facebook may have shown greater promise than what was observed in our study merely due to protocol order. Future research would benefit from testing comparatively how each technological approach influences study retention. Future research should also more explicitly test retention rates and characteristics associated with specific demographic and risk factors. Furthermore, this study sampled youth seeking services at a shelter; whether the findings are applicable to non-service using youth is questionable and should be investigated further, as service-connected youth may be easier to engage in communication and retain in studies compared to street-living peers detached from services.

Despite these limitations, the current study has several implications for future research and work with homeless youth. Future longitudinal research with this difficult-to-track population would benefit from providing phone access, while concurrently collecting back-up contact methods from youth, as despite youths’ unique identities and life experiences, these methods appear to aid in the longitudinal retention of homeless youth in research studies.
In utilizing social networks to maintain contact, researchers will need to carefully consider the ethical considerations involved. Our consent procedures clarified that all information provided to the research team would be kept confidential unless youth indicated significant risk to themselves or others (per standard consent language); however, viewing of emotionally volatile information posted on youths’ Facebook walls was unanticipated. Youth were told “friending” the research team was voluntary, and the team would only use Facebook to send private messages, not to view or communicate via youths’ more public Facebook walls. However, youths’ personal challenges were clearly visible to research team members. As this information did not explicitly indicate suicidal/homicidal risk, and was not stated directly to the research team, it was deemed outside the purview of the consent agreement. Future research studies will need to decide whether to address Facebook “status updates” and similar public posts explicitly in consent forms and consider whether they are ethnically responsible to respond to safety risks posted in this venue.

Finally, some of the aforementioned challenges of conducting interviews by phone with youth who are no longer in the area or available for face-to-face follow-up may be overcome by using additional innovative technologies, such as video clips, online surveys, and Internet-based calling services such as Skype, Google Hangout, or other similar services. Such methods may further foster researchers’ abilities to not only collect data through visually based technologies, but may also aid in the establishment of rapport with youth when meeting in person is not possible. Future research should investigate the addition of such technological approaches for researching and serving this highly vulnerable population.

REFERENCES


