

Voices of Hope: A Randomized Controlled Trial of a Peer-Delivered Telephone Recovery Support Program

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Abstract

Introduction: Substance Use Disorder (SUD) is a chronic disorder that is often inadequately managed with acute care. As treatment practices catch up with research on the chronicity of SUD, new modalities are emerging which utilize peer-delivered services to provide ongoing recovery support. One such intervention, telephone recovery support (TRS), is comprised of weekly calls from volunteers to people in recovery. TRS aims to provide support and to connect participants with recovery resources. The aim of this randomized controlled trial (RCT) was to explore the effects of TRS on participants' perceived support, well-being, recovery engagement, and recovery capital.

Methods: Participants (n = 100) were recruited from an outpatient medication for opioid use disorder (MOUD) provider, randomly assigned to treatment and control conditions, and administered baseline and 30-day assessments. Results: TRS did not statistically significantly reduce substance use or the related recovery test variables. However, participants indicated high acceptability, high perceived support, and high resource uptake as a result of TRS calls.

Conclusion: TRS confers benefits to people in SUD recovery, primarily by providing both social and tangible support.

Keywords

Recovery support, Recovery capital, Telephone recovery support, Aftercare, Relapse prevention

Introduction

Substance use disorders

Substance use disorder (SUD) is one of the most pervasive public health problems in the United States [1]. SUD is associated with an abundance of negative outcomes including reduced quality of life, increased criminal activity, spread of infectious diseases, child neglect, job loss, loss of productivity and much more [1]. Despite the detriment that addiction poses to virtually all facets of society, the addiction treatment paradigm in the United States lags significantly behind the research [2, 3].

Current treatment paradigm

Simply put, the current treatment paradigm is ill-suited for long-term care. This current system focuses on intensive, rather than extensive, care. Research

shows that full remission from SUDs is not achieved until 3-5 years of sustained remission [4, 5] and yet only about 20% of clients will engage in any form of aftercare following treatment (Kelly et al., 2017; Donovan, 1998). The ramifications of mismatching a chronic disease with acute care is that individuals leave periods of intensive, acute treatment and return to their communities lacking support and lacking chronic disease management. Consequently, relapse rates remain high. In fact, research shows that about 65% of people with SUDs will return to use within a year and 80% of those will relapse in the first 90 days [5, 6, 7]. Even after an individual achieves sustained remission, whether by treatment or otherwise, the risk of relapse doesn't fall below 15% until five years of sustained remission [4]. Risk of relapse falling below 15% is a significant threshold to cross because it is the general level of the risk of SUD in the general population [8].

Recovery capital

As a conceptual framework, recovery capital is considered "the emerging international construct for the addiction field" [9]. It refers to "the breadth and depth of internal and external resources that can be drawn upon to initiate and sustain recovery from severe alcohol and other drug problems" [10]. In other words, recovery capital is the multitude of factors (personal, social, and community) that support recovery from SUD. Personal recovery capital combines two sub-domains, physical recovery capital and human recovery capital. The former refers to tangible assets that individuals may leverage to support their recovery. In some literature, physical recovery capital has also been conceptualized as financial recovery capital due to its focus on tangible assets [11]. Financial stability expands opportunities for people in recovery who have health insurance, can afford treatment, and have the privilege to take a leave of absence from work and family to focus on treatment and recovery [12].

The second sub-domain of personal recovery capital is most often referred to as human recovery capital. This category includes personal characteristics that may facilitate or hinder recovery goals [10, 13]. Human recovery capital tends to include individuals level factors that vary from person to person, including knowledge, skills, training, etc. For example, individuals with co-morbid mental illness face a more complex recovery and generally suffer less favorable recovery outcomes [14, 15]. Similarly, individuals who have job skills or advanced training have a material advantage in terms of recovery [16]. Researchers have even suggested that basic life skills such as budgeting, cooking, and cleaning be included in human recovery capital [17].

Moving beyond individual level characteristics that influence recovery and into the macro-level, social recovery capital describes resources that are afforded to an individual as a result of the "structure and reciprocal functions of social relationships within which they are embedded". Social recovery capital describes the quality and quantity of relationships. For instance, individuals do better in recovery when they leave behind social networks of active users and integrate into new, sober social networks. Family and social ties can be leveraged

in times of need to provide various kinds of tangible and emotional support [18-20].

This final domain is variously referred to as community, cultural, or even collective recovery capital. Community recovery capital comprises attitudes, policies, systems, environments, and resources [10]. Community recovery capital describes meso-level, cultural and contextual factors, such as stigma, that may influence recovery.

Recovery community organizations

As interest in the utility of recovery capital continues to expand [21], so too do organizations who focus on building it. "A recovery community organization is an independent, non-profit organization led and governed by representatives of local communities of recovery" and its sole mission "is to mobilize resources within and outside of the recovery community to increase the prevalence and quality of long-term recovery from alcohol and other drug addiction". In other words, RCOs aim to build recovery capital. RCOs borrow from the "nothing about us without us" grassroots philosophy in attempting to create a self-sustaining ecology of people in recovery helping people in recovery. There is a paucity of existing literature on RCOs, despite the fact that there are more than 100 established members of the Association of Recovery Community Organizations [22].

Peer-based recovery support services (P-BRSSs)

The primary purpose of an RCO is to build recovery capital in a community and that mission is achieved through education, advocacy, research, and the delivery of peer-based recovery support services [23]. These PB-RSSs are delivered by non-professional, non-clinical individuals, many of whom are in recovery from SUDs. In many ways, PB-RSSs delivered in an RCO context are the poster child for de-professionalized services and long-term models of care. Referred to as recovery coaches, recovery mentors, or peer support specialists, these peer workers have lived experience and experiential knowledge that they marshal to help people initiate and sustain recovery as well as build recovery capital [24, 25]. These peer workers typically have some training, albeit no professional credentials, thereby positioning themselves in the space between professional services and mutual aid societies.

Evidence for P-BRSSs

Empirical evidence on P-BRSSs is still emerging. Eddie et al., executed the most recent systematic review of the literature on P-BRSSs [26]. The authors sorted existing research on P-BRSSs based on methodological approach. They identified seven RCTs, four quasi-experimental studies, eight prospective or retrospective studies, and two cross-sectional designs, all considered a limited sample. Given the variability in methodology, the various roles of the peer workers, the various interventions being implemented, the various settings in which they were implemented, and the various data points collected, few conclusions could be drawn from the research in terms of the efficacy of P-BRSSs [26]. This echoes findings from the penultimate systematic review on P-BRSSs by Bassuk et

al., which also found strong theoretical support but limited empirical support [24]. The authors of that study argued that questions remain regarding the intensity of P-BRSSs, the desirable contexts for incorporating P-BRSSs, and the necessary skill level for peers [24].

Telephone-based addiction services

The telephone has long been used as an instrument of tobacco cessation programs [27-29] and has been adapted for smokeless tobacco cessation as well [30]. These interventions help to initiate and maintain quit attempts [31, 32] while demonstrating cost effectiveness [33]. Similarly, research on telephonic interventions for alcohol use disorder (AUD) have demonstrated effectiveness as well [34-38]. AUD interventions have also been adapted to support other modalities of telephonic support such as text messaging [39-41]. Despite the overwhelming evidence for telephone-based tobacco cessation and AUD interventions, there is limited research on telephone support for SUD. Compared to standard relapse prevention or counseling, telephone-based interventions for SUD are at least as effective in terms of long-term abstinence and results are amplified when telephone-based services are combined with counseling [42, 43]. And, given that they cause less disruption, incur less cost, and offer more convenience, they are likely more cost-effective as well [44].

Gaps in the literature on telephone-based addiction services

However, most of the existing literature on the use of the telephone in addiction and recovery has implemented interventions administered by clinicians or treatment providers. For example, McKay et al., tested an 18-month telephone-based continuing care intervention delivered by clinicians that compared a telephone-based counseling intervention (TMC) to treatment as usual (TAU) [45]. The intervention was found to be particularly effective for individuals with social support for drinking, low readiness to change, and prior treatment attempts [45]. A similar study found telephone-based continuing care to be an effective supplement to intensive outpatient treatment in terms of reducing days drinking, heavy drinking, and overall alcohol use [43].

In contrast, research on the use of the telephone as an instrument of peer-delivered services has been uncommon. Whether telephone-based interventions for SUDs are more effective when made by peer workers remains an empirical question.

There are three important gaps in the literature regarding P-BRSSs that utilize the telephone. First, few studies have tested the usefulness of telephone-based interventions that are peer-delivered as a means of long-term recovery support. Godley et al., tested a telephone continuing care (TCC) intervention in which paraprofessionals or volunteers made weekly telephone support calls to clients leaving an inpatient treatment center and compared results to a usual continuing care (UCC) condition [46]. Despite the fact that the TCC sample had more severe SUDs on average, they were more likely to receive continuing care sessions relative to the UCC groups, they produced better outcomes at a 3 month follow up, and

the intervention recorded high acceptability as 89% of patients participating in the TCC condition liked receiving the calls [46]. The studies that have tested this specific telephone-based P-BRSS, called telephone recovery support (TRS), were either a qualitative feasibility study or rudimentary utilization data [23, 47]. No existing research has tested outcomes measures to determine the effectiveness of TRS as a means of long-term recovery support.

Second, engagement is an important construct in the era of long-term, de-professionalized care. The theoretical literature indicates that engagement is a primary function of P-BRSSs. Moreover, studies of Alcoholics Anonymous have identified a participation effect [48]. Recovery outcomes are improved by virtue of increasing engagement in recovery support services. However, existing research has not tested the capacity of telephone interventions to increase participation in recovery support services. The present study sought to fill this gap in the literature by testing TRS not only for proximal outcomes such as substance use, but also for important distal outcomes including support, engagement, and well-being.

Third, few studies examining the utility of the telephone in addiction treatment and recovery have focused on individuals with opioid use disorder (OUD), while a majority of the research has focused on individuals with alcohol use disorder (AUD) [43, 45, 49]. However, the limited research that has focused on telephonic interventions for people with OUD has called for further exploration of its utility and effectiveness [50, 51].

Present study

This study is an exploratory quantitative analysis of a novel intervention aimed at providing recovery support. An RCT was implemented to isolate the effects of using TRS to promote engagement with recovery support services and to help sustain long-term recovery. This study attempted to discern what benefit, if any, was being conferred to TRS clients and how that benefit may support recovery. Although TRS is being implemented throughout the United States as a form of recovery support, little is known about its effectiveness. To address this gap in the literature, this exploratory study is guided by the following research questions:

RQ1: How does TRS support recovery?

RQ2: How do participants perceive TRS?

RQ3: How does TRS impact participant's recovery capital?

RQ4: How does TRS impact participant's perceived support?

Method

Community-academic partnership

Two significant community-academic partnerships made this research possible. First, the author of this paper is the co-founder of an RCO in Central Kentucky called Voices of Hope. Voices of Hope has had a TRS program in existence for approximately two years (as of this writing) and has served

more than 1,000 unique individuals. This TRS program was tested in partnership with an outpatient treatment center in Central Kentucky that provides medication for opioid use disorder.

Telephone recovery support

The following is a description of the Voices of Hope TRS standard operating procedure. The protocol for this study varied slightly and deviations from standard operating procedure are noted throughout.

TRS is a telephone-based service in which volunteers, many of whom identify as people in recovery, make weekly calls to people in recovery. Each call begins with the question “How is your recovery going today?” followed by the second question, “How can I help you with your recovery today?” The Voices of Hope TRS program recruits individuals from detention centers, halfway houses, drug courts, and treatment centers. However, participants in this study were recruited exclusively from the aforementioned outpatient treatment center. As a standard part of recruitment, a Voices of Hope volunteer who is in recovery shares a brief testimony and talks about the potential value of TRS. Individuals who wish to participate can be enrolled via pen and paper and later entered into the database or may enroll online at the Voices of Hope website. Voices of Hope uses a telemarketing software called CRM to track participants.

Upon being enrolled, participants begin receiving weekly calls which continue until the person fails to answer or return three consecutive calls or requests to discontinue the service. On the enrollment form, participants can indicate the time of day they prefer to be called.

Volunteers who make the calls are people in recovery or people who have been impacted by addiction, each of whom identify as peers. Volunteer recruitment has been unnecessary due to overwhelming interest in helping the program. Volunteers underwent a two-part training process. Part one was a Voices of Hope training that oriented volunteers to the organization’s core values such as respecting all paths to recovery (faith-based, medication assisted treatment, natural recovery, etc.) and that people are in recovery when they say they are. Not only are these consistent with Voices of Hope’s values, but they are also in accordance with the values of the RCO model. Part two consisted of an overview of the TRS protocol, role playing a TRS call, shadowing a TRS call, and then making calls themselves. Calls are not recorded for quality assurance or implementation fidelity, but a Voices of Hope staff member is physically present and provides oversight on the calls.

Participants

After securing approval from the Institutional Review Board at the University of Kentucky, study recruitment began at the outpatient clinic. Participants in this study were recruited on-site by the study PI between January and February 2020. Using an IRB-approved recruiting script, potential participants were invited to participate in the study during the normal course of patients’ visits at the outpatient

clinic. Inclusion criteria dictated that participants be: (1) at least 18 years old; (2) a patient at the outpatient clinic (i.e. primary OUD diagnosis); (3) have an existing telephone contact; and (4) speak English. Participants were excluded from the study if they were pregnant or had a serious mental illness (i.e. schizophrenia, bipolar disorder with active mania or active psychosis, etc.).

Sample

A total of ($n = 128$) individuals were approached on-site for participation in this study, some of those approached chose not to participate ($n = 27$), and another individual ($n = 1$) was not eligible to participate when she indicated that she was pregnant. Sample characteristics are displayed in **table 1**. The final sample ($n = 100$) was majority female (55%), overwhelmingly White (90%), and overwhelmingly heterosexual (93%).

Table 1: Demographic Characteristics of Total Sample (N = 101).

Characteristic	<i>n</i>	%
Gender		
Female	54	55.0
Male	45	45.0
Race/Ethnicity		
Asian	1	1.0
Black	5	5.0
Other	4	4.0
White	90	90.0
Sexual orientation		
Bisexual	4	4.0
Gay/lesbian	1	1.0
Heterosexual	93	93.0
Queer	1	1.0
Education		
Less than high school graduate	19	19.0
High school graduate	36	36.0
Some college	31	31.0
2 year degree	10	10.0
4 year degree	3	3.0
More than 4 year degree	1	1.0
Employment status		
Full-time job	33	32.7
Part-time job	18	18.4
Unemployed	47	48.0
Personal annual income		
\$0-\$10,000	47	47.5
\$10,001-\$25,000	27	27.3
\$25,001-\$50,000	22	22.2
\$50,001-\$75,000	2	2.0
More than \$75,000	1	1.0
Time in recovery		
Less than 6 months	20	20.2
6 months-1 year	18	18.2
1 year-2 years	22	22.2
2 years-5 years	25	25.3
More than 5 years	14	14.1
	<i>M</i>	<i>SD</i>
Age (years)	38.23	9.06

Participants in this sample had relatively low levels of educational attainment, as a majority of the sample had graduated high school (36%) or less (19%). Participants also had extraordinarily high rates of unemployment (47%). Consequently, nearly half the sample (47%) reported a personal annual income of less than \$10,000. The mean age of this sample was 38.24 years ($SD = 9.06$). Time in recovery was variable as 39% of the sample had less than one year of recovery and 39% of the sample had more than two years of recovery.

Continuing care treatment conditions

The control group in this study continued treatment as usual for the one-month testing period. At this outpatient

clinic, treatment as usual indicated group therapy, individual counseling, peer support, and medication monitoring. In contrast, and in addition to treatment as usual, the treatment group began receiving TRS calls immediately upon being enrolled in the study and for the duration of the 30-day testing window. Because research suggests TRS may be an effective form of recovery support, we did not want to preclude the control group from benefiting from the service. We felt that withholding a potentially effective intervention would be unethical. Therefore, following their one-month data collection interval, the control group then began receiving the TRS intervention and continued receiving TRS calls until they chose to discontinue.

Measures

Recovery capital

The Assessment of Recovery Capital is a self-report, strength-based measure of a person’s resources that can support recovery [52]. The scale has 50 items with binary response options (agree/disagree). The 50 items are divided into 10 subscales which assess various conceptual domains of recovery capital (i.e. substance use, housing, etc.). The subscales are scored and then added together for a total scale score that ranges from 0 to 50 with higher scores indicating greater levels of recovery capital.

The Brief Assessment of Recovery Capital (BARC-10) is a condensed version of the Assessment of Recovery Capital (ARC). The BARC-10 was developed to be a measure of recovery capital with greater clinical utility than the ARC because it is less cumbersome and easier to administer [53]. The BARC-10 is a 10-item scale with one item adapted to account for each subscale in the ARC. The questionnaire uses a Likert scale with six response options ranging from strongly disagree to strongly agree. These responses are then totaled together for a total scale score ranging from 10 to 60 with higher scores indicating greater levels of recovery capital. The items are typified by statements such as “There are more important things to me in life than using substances.” The BARC-10 has demonstrated high predictive validity with sustained remission as well as high internal reliability ($\alpha = .90$) and high concurrent validity with the original measure ($r_{pb} = .90$) [53].

Perceived support

The Interpersonal Support Evaluation List (ISEL-12) is a 12-item measure of perceived social support. The ISEL-12 is an abbreviated version of the original 40-item ISEL [54]. The questionnaire contains three separate subscales that are designed to measure three distinct dimensions of perceived social support: (1) appraisal support; (2) belonging support; and (3) tangible support. Four response options are provided ranging from “definitely false” to “definitely true” such that the total scale score ranges from 12 to 48 with higher scores indicating greater levels of perceived social support. Items are typified by statements such as “If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.” The ISEL-12 has demonstrated high internal consistency ($\alpha = .82$) and high convergent validity with scales measuring related constructs [55].

Table 2: Demographic Characteristics by Treatment Groups (N = 100).

Characteristic	Control (n=49)		Treatment (n=51)	
	n	%	n	%
Gender				
Female	22	54.2	32	37.3
Male	26	45.8	19	62.7
Race				
Asian	1	2.0	0	0.0
Black	3	6.1	2	3.9
Other	1	2.0	3	5.9
White	44	89.8	46	90.2
Sexual orientation				
Bisexual	1	2.0	3	6.0
Gay/lesbian	1	2.0	0	0.0
Heterosexual	46	93.9	47	94.0
Queer	1	2.0	0	0.0
Education				
Less than high school graduate	9	18.4	10	19.6
High school graduate	15	30.6	21	41.2
Some college	18	36.7	13	25.5
2 year degree	4	8.2	6	11.8
4 year degree	3	6.1	0	0.0
More than 4 year degree	0	0.0	1	2.0
Employment status				
Full-time job	15	31.3	18	36.0
Part-time job	9	18.8	9	18.0
Unemployed	24	50.0	23	46.0
Personal annual income				
\$0-\$10,000	22	45.8	25	49.0
\$10,001-\$25,000	16	33.3	11	21.6
\$25,001-\$50,000	9	18.8	13	25.5
\$50,001-\$75,000	1	2.1	1	2.0
More than \$75,000	0	0.0	1	2.0
Time in recovery				
Less than 6 months	8	16.7	12	23.5
6 months-1 year	8	16.7	10	19.6
1 year-2 years	10	20.8	12	23.5
2 years-5 years	12	25.0	13	25.5
More than 5 years	10	20.8	4	7.8
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age (years)	38.61	7.98	37.87	10.04
Time in active use (years)	17.1	19.00	15.7	19.58

Substance use

The shorter version of the Addiction Severity Index (ASI-Lite) was administered to measure participants' substance use [56]. The ASI-lite collects data on past 30-day substance use (in number of days using), lifetime use (in number of years using), and route of administration (most commonly used). Furthermore, the ASI-lite tracks the use of more than a dozen different substances. The ASI-lite is an abbreviated version of the original, long-form Addiction Severity Index (ASI). The original ASI demonstrated adequate internal consistency ($\alpha > .70$) as well as strong concurrent validity with external measures. Furthermore, preliminary evidence supports the general equivalency of the ASI and the ASI-Lite [57].

Quality of life

The World Health Organization Quality of Life brief scale (WHOQOL-BREF) was administered to track participants' overall quality of life. The WHOQOL-BREF is a 26-item self-report scale [58]. There are five response options on a Likert scale ranging from "never" to "always." Total scale scores range from 26 to 130 and, once reverse scored, higher values indicate greater levels of quality of life. The items are typified by questions such as "How satisfied are you with your health?" The WHOQOL-BREF has demonstrated adequate internal consistency and acceptable correlations with corresponding domain scores ($r = 0.32-0.73$) [59]. Moreover, the WHOQOL-BREF has previously been adequately tested for use with individuals with SUDs [60].

Recovery engagement

A supplemental questionnaire was developed by the PI to capture information related to recovery engagement. The questionnaire poses questions about how often participants have been involved with various forms of recovery support over the past 30 days typified by items such as "In the past 30 days, have you attended a support group or self-help group? If so, how often?". The four-item measure was tested within the original sample ($M = 2.49$, $SD = 1.14$), which demonstrated low to moderate reliability (tables 3 and 4) for item total statistics and intraclass correlation coefficients for the recovery engagement measure.

Table 3: Item total statistics for recovery engagement questionnaire.

Variable	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Attend Support Group	2.04	0.858	0.199	0.044	0.374
Speak to someone supportive of recovery	1.74	0.933	0.196	0.044	0.372
Exercise	1.9	0.81	0.266	0.089	0.298
Self-care	1.77	0.878	0.244	0.08	0.324

Note. * indicates $p < .05$

Table 4: Intraclass correlation coefficient for recovery engagement questionnaire.

Variable	Intraclass Correlation	95% CI	Value	df1	df2	Sig
Single Measures	0.148	[0.06, 0.26]	1.7	100	300	$p < .001^*$
Average Measures	0.41	[0.20, 0.58]	1.7	100	300	$p < .001^*$

Note. * indicates $p < .05$

Procedure

Upon being enrolled in the study, participants were immediately consented and then randomized using Google's Random Number Generator function. Individuals are assigned to the treatment condition when the number one is generated and assigned to the control condition when the number two is generated. Participants in both treatment and control groups were then instructed to complete a series of questionnaires aimed at assessing various indicators of their recovery. The questionnaires were conducted on a university owned iPad and entered into a Qualtrics survey.

Baseline and follow-up assessments

Baseline assessments (wave 1) were administered on the day of enrollment in the study and these same assessments were subsequently re-administered at follow-up (wave 2) one month later via telephone. Participants received a \$25 check for completing the baseline assessment and a \$25 check for each additional assessment they completed. All study interviews were conducted by the project PI (Alex Elswick). The wave two attrition rate was 54% as almost half of the sample ($n = 46$) completed surveys at the second wave.

Data analysis

In order to ensure no systematic differences exist in the data, independent samples t tests were conducted to compare treatment and control groups at baseline and at wave 2 as well as to compare dropout and continuing participants at baseline. A chi squared test was conducted to compare dropout and continuing participants at wave 2. To provide additional descriptive information, bivariate correlations were conducted on test variables.

Results

Independent Samples t test of treatment vs. control at baseline

An independent samples t test was conducted to evaluate the difference between treatment and control groups at baseline on multiple variables including: past 30-day substance use ($p > .05$, $t(90) = 0.22$); recovery capital ($p > .05$, $t(97) = -0.41$); recovery engagement ($p > .05$, $t(98) = -1.50$); as well as for each of the perceived support subscales, appraisal ($p > .05$, $t(97) = -0.66$); belonging ($p > .05$, $t(97) = -0.29$); and tangi-

ble ($p > .05$, $t(97) = 0.01$). No differences were found between treatment and control groups at baseline.

Independent Samples t test of dropout vs. continue at baseline

An independent samples t test was conducted to evaluate the difference between those who dropped out of the study and those who remained enrolled as measured at baseline on multiple variables including: past 30-day substance use ($p > .05$, $t(90) = -0.74$); recovery capital ($p > .05$, $t(97) = -1.06$); recovery engagement ($p > .05$, $t(98) = 0.11$); as well as for each of the perceived support subscales, appraisal ($p > .05$, $t(97) = -0.45$); belonging ($p > .05$, $t(97) = -0.22$); and tangible ($p > .05$, $t(97) = -0.21$). No differences were found at baseline between participants who dropped out of the study prior to wave 2 and those who remained in the study.

Independent Samples t test of treatment vs. control at wave 2

Means, standard deviations, and intercorrelations for study variables in the treatment and control conditions are dis-

played in tables 5 and 6, respectively. An independent samples t test was conducted to evaluate the difference between the treatment and control conditions at wave 2 on multiple variables including: past 30-day substance use, recovery capital, recovery engagement, as well as for each of the perceived support subscales, appraisal, belonging, and tangible. There were no significant differences at wave two in past 30-day substance use between treatment and control conditions (Table 7).

Chi-squared test of dropout in treatment vs. control

Where it was possible that attrition could have influenced the results of the study (54% dropped out by wave two), a Chi-Squared test was conducted to determine whether the proportion of dropout was different between treatment and control groups based on treatment condition. The results indicated no statistical difference between treatment and control conditions (Table 8). Furthermore, participants who did not complete the wave two survey were compared to those who did via an independent samples t-test on the following variables: past 30-day substance use, lifetime substance use, recovery capital, recovery engagement, as well as for each of the quality of life subscales

Table 5: Means, standard deviations, and intercorrelations for treatment group at wave 2 (n = 21).

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. ASI past 30 days	5.43	10.3	-										
2. ISEL: appraisal	13.3	2.31	0.414	-									
3. ISEL: belongingness	12.8	2.02	0.278	0	-								
4. ISEL: tangible	13.3	3.11	-0	2.54	0.16	-							
5. QOL: physical	25.9	5.43	-0.11	0.007	-0.1	.451*							
6. QOL: psychological	22.7	4.6	-0.26	0.081	0.185	0.23	.732**	-					
7. QOL: social	12.4	2.3	-0.17	0.112	0.087	.522*	.698**	.593**	-				
8. QOL: environment	30.9	6.33	-0.18	-0.18	-0.1	0.33	.707**	.759**	.734**	-			
9. QOL: total	99.5	18.3	-0.21	-0.04	-0.15	0.41	.890**	.891**	.816**	.913**	-		
10. Recovery capital	47.5	6.07	0.003	0.193	0.069	.453*	.746**	.567**	.637**	.701**	.775**	-	
11. Recovery engagement	3.24	0.99	-0.15	-0.15	0.368	-0.05	0.088	0.064	-0.13	-0.11	-0.01	0.17	-

Note. * indicates $p < .05$, ** indicates $p < .01$

Table 6: Means, standard deviations, and intercorrelations for control group at wave 2 (n = 24)

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. ASI past 30 days	7	11.7	-										
2. ISEL: appraisal	12.52	2.31	0.281	-									
3. ISEL: belongingness	12.91	2.71	0.318	.486*	-								
4. ISEL: tangible	12.48	2.57	0.019	0.368	.670*	-							
5. QOL: physical	25.83	5.47	-0.153	0.219	0.296	0.171							
6. QOL: psychological	22.91	13.84	-0.146	0.307	0.422	0.275	0.254	-					
7. QOL: social	11.9	2.6	0.165	.753**	.585**	0.302	0.279	.635**	-				
8. QOL: environment	30.26	6	-0.093	.458**	0.364	.445*	0.403	0.384	.572**	-			
9. QOL: total	98.83	14.13	-0.096	.531**	.525**	.420*	.719**	.707**	.736**	.805**	-		
10. Recovery capital	47.57	5.76	-0.031	.495*	0.248	0.217	0.188	0.212	.588**	.710**	.536**	-	
11. Recovery engagement	3.42	0.83	-0.013	0.022	-0.352	-0.26	0.238	0.125	0.199	0.331	0.31	.525*	-

Table 7: Independent samples t tests for differences between treatment groups at wave 2 (N = 46).

Variable	Treatment		Control		df	t	p	95% CI
	M	SD	M	SD				
ISEL: appraisal	13.25	2.31	12.52	2.31	41	1.03	0.309	[-.070, 2.16]
ISEL: belonging	12.8	2.02	12.91	2.71	41	-0.156	0.877	[-1.57, 1.35]
ISEL: tangible	13.25	3.11	12.48	2.57	41	0.88	0.385	[-1.01, 2.55]
ASI past 30 days	5.43	10.32	7	11.7	43	-0.48	0.634	[-.819, 5.04]
Recovery capital	47.5	6.07	47.57	5.8	41	-0.036	0.971	[-3.73, 3.60]
Recovery engagement	3.24	1	3.42	0.83	43	-0.648	0.521	[-.736, .378]

Note. * indicates $p < .05$

Table 8: Crosstabulation for dropout by treatment condition

Condition		Dropout	Continue	Total
Treatment	Count	31	21	52
	Expected Count	28.8	23.2	52
Control	Count	25	24	49
	Expected Count	27.2	21.8	49
Total	Count	56	45	101
	Expected Count	56	45	101

and the total WHOQOL score (Table 9). Wave two past 30-day substance use was slightly higher for the Continue group ($M = 8.02$ $SD = 4.93$) than the Dropout group ($M = 7.02$ $SD = 5.40$) but that difference cannot be assumed to exist in the population $t(99) = -0.97, p = .337, d = .14$. Additionally, recovery capital was higher in the Continue group ($M = 45.02, SD = 6.19$) than the Dropout group ($M = 43.64, SD = 5.78$), but this difference also cannot be assumed to exist in the population $t(98) = -1.16, p = .251, d = .23$.

Bivariate correlations

Given a lack of significant results from the independent samples *t* test for the treatment and control groups, we next compared bivariate correlations of test variables to examine differences between treatment and control conditions. It

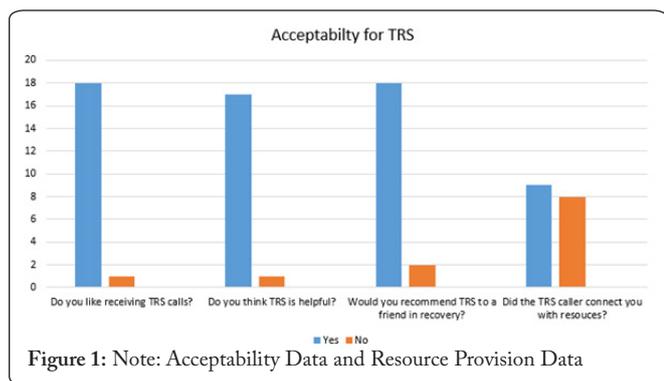
is worth noting that, within an exploratory framework, and particularly among studies that have small sample sizes, the American Psychological Association suggests researchers to rely on more than just statistical significance to determine practical or theoretical significance. Because statistical significance is inextricably linked to sample size, studies with small samples require the triangulation of data. Moreover, it is not uncommon for marginally significant results to be discussed, albeit when tempered appropriately, because they may still indicate trends in the data. Finally, in social science research, the conventionally accepted threshold for moderate correlations range between 0.3 and 0.5, with high correlations about 0.6 [54]. These statistical conventions were applied to the present study.

Correlations were tested using Pearson’s correlation coefficients. Results indicated no statistically significant association between past 30-day substance use and any of the study variables for either the treatment or control condition. Within the treatment group, recovery capital was positively and moderately associated with perceived tangible support $r(21) = .45, p < .05$ as well as quality of life $r(21) = .78, p < .01$. Conversely, in the control condition, no statistically significant relationship was found between recovery capital and perceived support $r(24) = .22, p > .05$; however, (unlike in the treatment condition) a statistically significant relationship was found between recovery capital and recovery engagement $r(24) = .525, p < .05$.

Table 9: Independent samples t tests for differences between participants who dropout vs. continue at wave 2 (N = 46)

Variable	Dropout		Continue		df	t	p	95% CI	d
	M	SD	M	SD					
ASI past 30 days	7.02	5.4	8.02	4.93	99	-0.97	0.337	[-3.09, 1.06]	0.19
ASI lifetime	16.67	19.8	16.25	18.74	39	0.07	0.945	[-11.77, 12.61]	0.02
WHOQOL physical	23	5.46	23.56	5.45	97	-0.5	0.615	[-2.74, 1.63]	0.1
WHOQOL psychological	19.07	4.96	20.44	4.56	97	-1.42	0.159	[-3.29, 0.55]	0.29
WHOQOL social	10.19	2.69	10.84	3.03	97	-1.15	0.254	[-1.80, 0.48]	0.23
WHOQOL environment	25.96	5.7	27.8	6.2	97	-0.65	0.128	[-4.21, 0.54]	0.31
WHOQOL total	84.78	17.72	89.53	17.87	97	-1.32	0.189	[-11.88, 2.37]	0.27
Recovery capital	43.64	5.78	45.02	6.19	98	-1.16	0.251	[-3.77, 1.00]	0.23
Recovery engagement	2.5	1.18	2.47	1.1	99	0.15	0.884	[-0.42, 0.49]	0.03

* CI = confidence interval for the mean difference between treatment and control.



Acceptability

In addition, participants indicated a high degree of acceptability for TRS with respect to all acceptability indicators (Figure 1). Furthermore, results indicated that more than half of the sample was connected with tangible resources.

Discussion

Acceptability of telephone recovery support

The acceptability data for TRS suggest it has been received favorably by participants who received support calls. Overwhelmingly, participants liked TRS and found it beneficial to their recovery. Although these perceived benefits to participants were not substantiated by comparison of means, they are consistent with preliminary findings from a feasibility study of TRS [47]. Prior to this study, existing research has not previously established acceptability of TRS. Therefore, the finding that participants like TRS and perceive benefits represents one of the more meaningful contributions to the literature on P-BRSSs.

High acceptability for TRS suggests that participants will continue to use TRS as form of recovery support. As a result, TRS contributes to client’s social recovery capital and therefore sustained recovery.

Resource uptake

The acceptability data also provides insight into resource uptake within this population. Slightly more than half of the treatment group (52.9%) was connected with resources by a TRS caller. This result is relatively high given that resourcing participants is not the primary goal of TRS. As its name implies, support is the focus of TRS and connecting with resources is secondary. However, that over half of the treatment group was connected with resources in just a one-month timespan indicates that TRS is an effective modality to connect participants with resources. The high rate of resource utilization in a short amount of time suggests that, by virtue of participating in TRS, participants receive tangible support.

High resource uptake indicates that TRS is effective in building not only social recovery capital, but physical recovery capital as well. Via TRS, participants gain access to a variety of community-based resources that may otherwise be unavailable, inaccessible, or unbeknownst to the participant.

Perceived support

The principle aim of TRS is not connecting with resources nor initiating treatment but providing support. Therefore, measures of perceived support were of particular importance in this study. On the whole, the inferential results did not indicate statistically significant relationships among TRS, perceived support, and substance use. However, the correlations did present some compelling findings. A positive statistical relationship was established between recovery capital and tangible support for the treatment group. In contrast, the control group did not demonstrate the same relationship. It could be the case that tangible support was meaningfully associated with recovery capital in the treatment group because they were, in fact, receiving support. This relationship is further evidenced by the fact that approximately half of the treatment group were connected with resources. This data, combined with the increase in BARC-10 scores from wave one ($M = 44.26, SD = 5.97$) to wave two ($M = 47.54, SD = 5.84$), suggests that TRS may increase recovery capital by providing tangible support. Furthermore, research shows that perceived support is associated with reduced substance use [61]. Therefore, given that individuals do indeed experience tangible support, TRS is likely a beneficial form of recovery support.

A strong, positive relationship has already been established between recovery capital and long-term, sustained recovery from SUDs [62]. Moreover, the nature of the relationship between recovery capital and remission is bidirectional [63]. In other words, while greater recovery capital does indeed increase the likelihood of recovery, so too does recovery capital build with time in recovery. Therefore, the longer an individual sustains recovery, the greater their recovery capital, the greater their life satisfaction, and the lower their levels of stress [62]. Accordingly, we found statistically significant moderate and positive correlations among quality of life, perceived tangible support, and recovery capital.

Financial recovery capital

Participants in this study reported markedly high rates of unemployment (48%) and poverty (75% earning below the FPL). Previous research shows that OUD prevalence is higher among rural, white, unemployed/low-income, working-age adults experiencing psychosocial stressors [64]. Moreover, following the expansion of the Affordable Care Act, access to MOUD increased significantly, which led to significant uptake by this previously described population [65]. Therefore, it is not surprising that the MOUD patients in this study reported high unemployment, low annual income, and low recovery capital.

Taken together, the rate of unemployment and low income in this sample suggest this population likely faces stark economic barriers to recovery. The socioeconomic barriers reported by this sample are striking, particularly given that this sample was recruited immediately prior to the onset of the COVID-19 Pandemic in January 2020. The high rates of unemployment and poverty were almost certainly exacerbated as a result of Coronavirus.

Previous research has identified a bevy of financial barriers including insurmountable debt, bad credit, depleted retirement accounts, medical and legal expenses, wage garnishment, and difficulty managing money [66]. Moreover, research suggests a strong and robust relationship between unemployment and problematic substance use [67]. In fact, not only does unemployment predict problematic alcohol and substance use, but it is a statistically significant predictor of relapse as well [68]. Considering what is known in the existing literature about the relationship among unemployment, low income, and recovery capital, this sample should be considered a high-risk sample.

Given the high risk of relapse that is indicated by these economic disparities, free and low-cost SUD interventions are vital for this population. Since RCOs, PB-RSSs, and even TRS are derived from natural recovery and a recovery management model, they are uniquely suited to address the socioeconomic barriers faced by people in recovery. Previous research has shown that telephone interventions may improve engagement and retention for hard to reach populations [69].

Limitations

Attrition presented analytical challenges in this study. In addition to an already relatively small sample size, the 54% attrition rate severely limited statistical power in this study. The attrition rate for this study is not dissimilar to attrition rates in other addiction research. A recent meta-analysis of attrition rates in addiction treatment studies found a mean attrition rate of 30.4% [70]. However, studies of telephonic services have yielded attrition rates more consistent with the attrition rate found in this study [49]. Additionally, research identifying predictors of dropout has shown that continued tobacco use and males with low levels of education are most likely to drop-out [71]. The sample characteristics in this study bear numerous similarities to that study in terms of level of education and patterns of substance use. And, since individuals who relapse are overrepresented among those who drop-out [72], extensive testing of the sample was critically necessary to ensure that the results were not compromised. Nevertheless, extensive testing of such a small sample is a limitation of this study.

In addition to the small sample size, the testing period was confined to 30 days. Given the small-to-moderate effect size of telephone interventions that has been found in previous literature, it is likely that 30 days was an insufficient time period to register an effect [46, 49]. In fact, given that the TRS protocol involves weekly phone calls, individuals in the treatment group received, at most, four phone calls over the thirty-day period. This, in addition to the 54% attrition in wave two, suggests our study was insufficiently powered to discern the small-to-moderate effect sizes that may have been elicited by TRS.

Second, the heterogeneity of the sample challenges the external validity of this study. Because we conducted extensive testing of the sample and thorough investigation of the descriptive data, the heterogeneity of the data is not so problematic. What is concerning is the nature of that heterogeneity. Given the racial disparities identified in previous literature

[73, 74], and the fact that the sample in this study was overwhelmingly white, racial minorities are ostensibly underrepresented in addiction and recovery research. Findings in this study can only reliably be applied to individuals who are white and have low income.

Third, the sample for this study only included people on MOUD to the exclusion of other pathways to recovery. This limits the generalizability of findings to a subset of recovering individuals.

Conclusion

Novel telephone-based interventions are increasingly incorporated into programs of recovery support. This RCT provided a descriptive analysis of a TRS intervention aimed at developing a better understanding of how and why TRS may support long term recovery. In sum, the results of this study suggest that TRS is a viable form of long-term recovery support and is well-liked by those who experience it. TRS may support long-term recovery by connecting participants with resources, thereby increasing both perceived support and recovery capital. Furthermore, as a free intervention, TRS may have particular utility for individuals with low-income and low recovery capital.

Conflict of interest

Drs. Elswick and Fallin-Bennett are co-founders of Voices of Hope-Lexington Inc.

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