MULTISOURCE RECRUITMENT STRATEGIES FOR ADVANCING ADDICTION RECOVERY RESEARCH BEYOND TREATED SAMPLES

Meenakshi Sabina Subbaraman
Alcohol Research Group

Alexandre B. Laudet
National Development and Research Institutes, Inc.

Lois A. Ritter and Aina Stunz
Alcohol Research Group

Lee Ann Kaskutas
Alcohol Research Group and University of California, Berkeley

The lack of established sampling frames makes reaching individuals in recovery from substance problems difficult. Although general population studies are most generalizable, the low prevalence of individuals in recovery makes this strategy costly and inefficient. Though more efficient, treatment samples are biased. The current study describes multisource recruitment for capturing participants from heterogeneous pathways to recovery; assesses which sources produced the most respondents within subgroups; and compares treatment and nontreatment samples to address generalizability. Results indicated that family and friends, Craigslist, social media, and non-12-step groups produced the most respondents from hard-to-reach groups, such as racial minorities and treatment-naïve individuals. Recovery organizations yielded twice as many African Americans and more rural dwellers, while social media yielded twice as many young people than other sources. Treatment samples had proportionally fewer females and

older individuals compared to nontreated samples. Future research on recovery should utilize previously neglected recruiting strategies to maximize the representativeness of samples. © 2015 Wiley Periodicals, Inc.

INTRODUCTION

Substance abuse policy and services are increasingly embracing a recovery focus, which acknowledges the need for ongoing supports for recovery (Laudet & Humphreys, 2013). However, we currently lack an empirical understanding of persons in recovery to adequately inform and evaluate recovery-oriented efforts. A first and challenging step towards building the science of recovery is to identify strategies to engage a population that is, for many reasons—e.g., stigma or other barriers to professional services— often "hidden" though in plain sight. Here we describe a multisource recruiting strategy designed to maximize the generalizability of participants in research on addiction recovery.

For optimal generalizability of any sample, proper sampling frames must be used. Generally speaking, the ideal sampling frame would provide access to every single individual within a specified target population (Kalton, 1983); for studies of recovery from substance use disorders (SUDs), the ideal sampling frame would include every individual in recovery without duplicates and exclude all individuals who are not in recovery. Since such a comprehensive list does not exist, researchers must rely on individual sampling frames that yield slices of the recovering community. For example, treatment alumni and recovery organization lists are convenient and efficient ways to reach individuals in recovery who have registered with the groups for events and newsletters.

Longitudinal treatment studies offer another slice of the population, although reliance on treatment samples for understanding recovery limits the external validity of findings since most treatment studies use multiple strict eligibility and exclusion criteria that can lead to biased conclusions (Humphreys, Harris, & Weingardt, 2008). Since different studies focus on distinct research questions and may require specific types of individuals (based, say, on drug of choice), the resultant samples inherently vary; thus, no single treatment study can be representative of the entire population of treatment seekers.

Finally, the majority of people who recover from SUDs do so without specialized professional treatment: the National Longitudinal Alcohol Epidemiologic Survey (NLAES) showed that only 28% of individuals with a past diagnosis of alcohol dependence reported ever receiving any kind of alcohol treatment (Russell et al., 2001). Results from the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) were similar, with 26% of those with prior-to-past-year alcohol dependence (Dawson et al., 2006) and 20% of those with past-year drug dependence having sought treatment (Compton, Thomas, Stinson, & Grant, 2007). In addition, lower rates of psychiatric comorbidity have been reported among treatment-naïve individuals with SUD compared to those who have received treatment (Compton et al., 2007; Di Sclafani, Finn, & Fein, 2008; Hasin, Stinson, Ogburn, & Grant, 2007; Kessler et al., 1996; Wang et al., 2005). Clinical samples often yield lower recovery rates than general population samples because they comprise more severely dependent individuals and exclude those who can recover without treatment (Dawson, et al., 2006).

Another approach to reaching individuals in recovery is the general population survey, which draws a probability sample from which individuals in recovery can be identified. General population studies such as NLAES and NESARC are considered the gold standard for generalizable samples. However, the low prevalence of individuals in recovery makes general population surveys prohibitively costly and inefficient for obtaining a large sample of recovering individuals. For example, only 4.9% of the individuals interviewed for NESARC's Wave 1 survey, were in remission from alcohol dependence; thus, obtaining a large sample of individuals in recovery through general population sampling techniques would require screening at least 20 people for every one eligible participant.

We know of no large national study that has successfully and efficiently recruited individuals across treated, treatment-naïve, and informally treated (i.e., those who have attended self-help) groups. The smaller studies that do exist are limited to a single self-help group or are regionally circumscribed. Consequently, our knowledge about recovery processes and outcomes does not necessarily represent the broad yet unquantified and underinvestigated recovery population. This knowledge gap has hindered the development of recovery-oriented services and supports (Laudet & Humphreys, 2013).

Study Objectives

The current study was conducted in the context of a national project, the What Is Recovery? (WIR) study, which sought to develop a psychometrically sound recovery definition reflecting the heterogeneity of recovery experiences *associated with different pathways to recovery* (e.g., treatment, 12-step, pharmacotherapy, natural recovery). Here, we examine the feasibility of recruiting strategies that may contribute to engage in research, individuals in SUD recovery who are typically underrepresented in SUD research (e.g., untreated individuals, individuals not participating in 12-step groups).

The three overarching goals of this study are (a) to describe multisource recruitment sources for reaching a large, diverse sample of persons in recovery from SUD, (b) to determine demographic differences across recruitment sources to assess which sources yielded the most respondents from traditionally hard-to-reach subgroups (e.g., racial minorities), and (c) to compare the demographics across several treatment and nontreatment study samples to understand what subgroups are missed with single-source recruiting methods.

MATERIALS AND METHODS

Recruitment Methodology

To maximize our reach to various segments of the recovery community with regard to race and ethnicity, other sociodemographics, and recovery path (treated and nontreated; 12-step and non-12-step mutual aid participation; medication-assisted; etc.), we worked in collaboration with grassroots organizations and treatment programs. Research partner organizations were recruited into the project several months before the survey dissemination and asked to help with outreach in three key ways: (a) posting announcements about the study on their websites, (b) posting the study link on their websites, and (c) disseminating e-mails voicing their support for the study with a link to the survey to their constituents. Depending on technological savvy, partners also tweeted about the study, posted information on their Facebook pages, "liked" our study's Facebook page, and made announcements at events, conferences, and meetings.

Many of our partners could be categorized as recovery organizations (involved in advocacy, education, prevention, and referrals and included governmental units and nongovernmental organizations) or treatment and alumni organizations (whether 12-step based, non-12-step based, medically assisted, or specifically targeted groups such as Christian recovery or minority focused). Partnering organizations are as follows: the National Council on Alcoholism and Drug Dependence, the National Alliance for Medication Assisted Recovery, Harm Reduction for Alcohol, dozens of 12-step treatment and sober living alumni groups, several state and regional departments of behavioral health across the country, Faces & Voices of Recovery, and popular non-12-step mutual aid groups, such as Women For Sobriety, LifeRing, and Secular Organizations for Sobriety. The full list of partnering organizations is posted at www.whatisrecovery.org.

We also collaborated with informal partners that included physician groups, addictions magazines, websites and radio programs, friends of the study team, the study's expert panel of physicians and researchers, and other personal contacts. We sent e-mails to all partners several times before and during the 3-month recruitment period, updating about recruitment progress and asking them to again please disseminate the survey link to their constituents and audiences. Because so many formal and informal partners contacted other organizations and individuals that also posted notices about the survey, we cannot specify the actual number of recruitment sources or potentially eligible individuals who were exposed to our study link or informational materials. Thus we cannot calculate an actual response rate. Furthermore, most of the WIR study team had added signature lines on their e-mails that referenced the survey, and many people who saw information about the survey and passed it along to others.

More than 155 treatment-oriented organizations and individuals were e-mailed with offers to use WIR-prepared recruitment materials (e.g., e-mails and fliers) for spreading the word. One of our partners, CRC Health Services, has 133 clinics and material was rewritten and sent to each clinic for its particular clientele. Links to the study website were posted on many of these websites, not just our partnering organizations. Many sites requested posters with tear-off strips providing the URL, announcements for staff meetings, blog posts, and newsletter items. In addition to recruiting through these partner organizations, we also posted ads with links to the survey on Craigslist. Thirty-three cities were selected for posting in four categories: community groups, community local news, community volunteers, and jobs.

Individuals in Alcoholics Anonymous (AA) who were familiar with the study team chose to hand out cards at meetings, picnics, after meeting announcements, AA retreats, symposiums, and clearinghouses. Because of the strict 12-step traditions against aligning with any organization or research or cause (e.g., the Sixth Tradition), individuals were able to post information in some central offices on a case-to-case basis. After discussing the issue with two central office managers, we mailed information to 300 Alano Club addresses and 400 AA Central Directory of state offices. The remaining AA offices were contacted via e-mail.

Finally, we employed a variety of ancillary communication strategies that fall into our other recruitment category: electronic media (e.g., blogs, webcasts, magazine articles); print media (e.g., the *San Francisco Chronicle* ran a story on the study in its weekly Health section); and television and radio (e.g., a 30-minute interview on the Hispanic Univision channel in Northern California, public service announcements on a Christian radio program in the South, and radio interviews throughout the recruitment period). We distributed 15,000 cards printed with the website and basic information about the survey during Recovery Month events (September), workshops, and conferences, and in front of

theaters playing the movie Bill W. We had a strong presence at National Recovery Month walks in Washington DC, Detroit, Philadelphia, Las Vegas, and Charlotte and at regional walks such as Contra Costa County (CA) and in Vermont.

Analyses

Demographic comparisons across recruitment sources. In addition to describing the sample, we compared demographics (e.g., sex, age, education, and race and ethnicity) and recovery characteristics (e.g., attended treatment, nonabstainer) across recruitment source subgroups. We then ranked the 17 recruitment sources according to their respective respondent yield within specific subgroups (e.g., nontreated, minorities). Rankings were determined by calculating frequencies of respondents from each subgroup within each recruitment source, and then ordering sources according to which yielded the most (1) to least (17) respondents from each subgroup.

Demographic comparisons across recovery samples. We then compared the demographics of the WIR sample to four other samples of individuals who consider themselves to be in recovery or as having had a problem with alcohol or drugs. The first comparison sample was collected by the New York State Office of Alcoholism and Substance Abuse Services (OASAS), who conducted a nationally representative random digit dial survey in 2011 of 2,526 adults (aged 18 years and older). Both unlisted and listed landline telephone numbers were sampled. The data were weighted to U.S. Census Bureau data for age, gender, geographic region, education, and race. Our analyses focused on those who answered yes to the OASAS question, "Did you used to have a problem with drugs or alcohol, but no longer do?" ($N = 239$, or 10% of the original OASAS sample). Demographic frequencies for this group came from the OASAS group (Feliz, 2013).

The second comparison sample came from the 2010 National Alcohol Survey (NAS N12). The NAS N12 is a multistage-area probability sample of 7,969 individuals aged 18 years and older in households within all 50 states and Washington, DC. Blacks and Hispanics were oversampled. We focused on those in NAS N12 who answered yes to the question, "Whether or not you have ever talked to anyone or whether you have ever been treated, do you consider yourself to be in recovery from an alcohol problem?" ($N = 462$, or 6% of the original NAS N12 sample). Demographic frequencies for this group were run in Stata (v11) using data obtained from the Alcohol Research Group; data were weighted to the U.S. Census Bureau age-by-gender distributions.

The third comparison sample comes from Faces and Voices of Recovery's Life in Recovery (LIR) survey (Hill & Laudet, 2013; Laudet 2013). The brief anonymous online survey, conducted between November 1 and December 31, 2012, was a first step in quantifying the costs of addictions and the benefits of recovery to both individuals and the nation's health and economy. The LIR survey link was disseminated via the Faces & Voices' website and social media sites, and shared (e.g., retweeted) by interested parties. To maximize the representation of Spanish-speaking individuals, who are typically underrepresented in research, the LIR survey was translated into Spanish and administered in Spanish through a separate website link. A total of 3,208 surveys were completed in English and 10 in Spanish.

The final comparison sample is the U.S. general population (aged 18 years and older only). We used 2010 U.S. Census Bureau data for sex, age, and race and ethnicity, as well as 2009 Current Population Survey Data on Educational Attainment for education US Census Bureau, 2010. Demographic frequencies for this group either were directly from

U.S. Census Bureau data or required minor calculations using the U.S. Census Bureau tables.

Demographic comparisons across treatment samples. As a final step in understanding differences between treated and untreated samples, we compared those within WIR who had sought or received formal treatment ($N= 6,649$) to three other treatment samples. The first comes from the COMBINE Study, a large ($N = 1,383$), multisite, NIAAA-funded randomized control trial of medications and behavioral treatments for alcohol dependence. The second comes from Project MATCH study sample, a large ($N = 1,726$) multisite trial of behavioral interventions. The third treatment comparison sample comprised those who answered yes to the question "Have you sought formal treatment for alcohol dependence?" in the 2010 National Alcohol Survey ($N = 143$).

RESULTS

Sample Descriptives

Overall, the WIR sample was diverse in gender (54% female), age (range: 18 to > 65), education (12% high school only, 39% some college or vocational school, 50% college graduates), and residential setting (36% urban, 44% suburban, 20% rural dwellers–Table 1, first column). Most respondents were White, 8% African American, 5% Hispanic, and 2% Native American. Almost all (98%) had met criteria for lifetime substance use dependence disorder as defined by the Mini International Neuropsychiatric Interview (Lecrubier et al., 1997; Sheehan et al., 1997); recovery duration ranged from < 1 to > 20 years. More than half (56%) had been in recovery for more than 5 years, and 59% of the sample reported that alcohol had been their primary problem. The majority (87%) considered total abstinence from all substance as a part of recovery. In terms of recovery paths, 71% had received addiction treatment, 95% had attended (or are currently attending) mutual help group meetings (e.g., 12-step), 70% had gone to treatment and mutual help group meetings, 25% had gone to mutual help group meetings only, 1% had gone to treatment only, and 4% reported neither. All 50 U.S. states were represented (not shown).

Comparisons Across Recruitment Sources

Respondents could select one of 16 sources provided when asked about how they heard about the study (Table 2); another category, which captures blogs, webcasts, magazine articles, TV, and radio, was provided as well. Together the five largest yielding sources produced almost two thirds of the entire sample: other (24%), family and friends (15%), Craigslist (12%), social media (7%), and non-12-step self-help groups (7%).

Key differences in demographics and recovery characteristics were noted across recruitment sources (Table 1). Notably, media sources were more successful than other sources in reaching typically untapped recovery subgroups, i.e., those who are younger, less educated, or earlier in recovery. Compared to individuals recruited from other sources, fewer of the media-recruited participants selected total abstinence as their recovery definition (vs. more moderate goals); media also yielded more persons in natural recovery (i.e., no exposure to either treatment or mutual aid and self-help groups) than other sources. Recovery organizations (12%) yielded nearly twice as many African Americans and more rural dwellers than other sources. Perhaps not surprisingly, social and electronic media (34%) yielded twice as many young people than other sources.

Table 1. WIR Sample Descriptives: Overall and By Recruitment Source

	WIR overall (N= 9,341) %	Recovery organizations (N= 1,113) %	Social media (N= 2,154) %	Treatment alumni/ recovery services (N= 1,084) %	Word of mouth (N= 1,473) %	Self-help groups (N= 1,109) %	Other sources (N= 2,168) %
Gender							
Female	54	52	58	46	54	62	53
Race							
Other	4	4	7	2	2	2	3
African American	8	13	8	8	7	3	8
White	88	83	85	90	91	95	89
Ethnicity							
Hispanic	5	4	8	4	3	3	8
Age							
< 35	18	12	34	16	14	13	13
36—50	32	33	38	32	29	30	31
> 50	49	54	28	52	57	58	56
Education							
No college	11	12	16	11	8	9	9
Some college	38	35	49	30	35	34	38
College grad or more	51	53	36	59	57	57	53
Residential setting							
Urban	36	36	45	33	34	28	35
Suburban	44	41	40	47	46	52	41
Rural	20	22	16	20	20	20	24
Primary substance							
Alcohol only	59	53	47	66	63	79	58
One drug only	36	43	47	32	32	18	36
Polydrug	5	5	6	2	5	3	6

(Continued)

Table 1. Continued

	WIR overall (N = 9,341) %	Recovery organizations (N = 1,113) %	Social media (N = 2,154) %	Treatment alumni/ recovery services (N = 1,084) %	Word of mouth (N = 1,473) %	Self-help groups (N = 1,109) %	Other sources (N = 2,168) %
Length of recovery							
< 1 year	15	10	20	19	6	25	12
1–2 years	10	7	15	12	5	14	8
2–5 years	19	16	22	23	16	21	16
> 5 years	56	68	43	46	73	40	64
Recovery path							
Neither treatment nor 12-step	5	3	9	1	1	9	4
12-step only	24	22	21	8	33	29	25
Treatment only	2	1	2	2	1	3	1
Treatment + 12-step	70	74	68	89	65	59	70
Recovery definition							
No use of any substance	86	90	77	90	93	84	88
Options other than abstinence	14	10	23	10	7	16	12

Note. WIR = What Is Recovery.

Table 2. Percentage of WIR Sample From Each Recruitment Source

Recruitment source	Individual source %
Other	24
Social/electronic media	
Craigslist	12
Social media	7
Advertisements	4
Word of mouth	
Family and friends	15
Conferences	1
Recovery organizations	
Faces and Voices	6
Recovery Community Organizations	5
National Assn. for Medicated Assisted	< 1
White Bison	< 1
Northstar Community Recovery	< 1
Self-help groups	
Non-12-step groups	7
12-step groups	5
Alano clubs	< 1
Treatment and alumni groups	
Treatment facilities	6
Alumni groups	5
Veteran's administration	< 1

Table 3. Rankings of Success of Recruitment Sources in Recruiting Hard-To-Reach Groups

	Recruitment source				
Group	Other sources	Family and friends	Craigslist	Social media	Non-12-step self-help
Help seeking and substance use					
Never treated	2[a]	4	1	6	3
No 12-step exposure	1	4	3	7	2
Not abstaining (harm reducer)	2	4	1	5	3
Race					
Hispanic	2	3	1	4	10
Asian	3	–	1	2	4
Black	1	3	2	9	8
Hawaiian/Pacific Islander	2/3	2/3	1	–	–

Note. [a]Frequencies of respondents from each group were cross-tabbed with the recruitment source to produce rankings for sources that yield most (1) to least (5) respondents in each group.

Table 3 ranks the five recruitment sources that yielded the most respondents from traditionally hard-to-reach groups, such as racial minorities and treatment-naïve individuals. With some small variation, the five largest yielding recruitment sources (family and friends, Craigslist, social media, non-12-step self-help groups, and other sources) were the most important recruitment sources for minority respondents, nonabstainers who moderate their substance use but do not necessarily abstain, and natural recovery (i.e., no treatment or help seeking) populations.

Demographic Comparisons Across Recovery Samples

More than half of the WIR and LIR samples were female (54% and 57%, respectively), while the OASAS (37%) and NAS (41%) had fewer women. The WIR and LIR samples were somewhat racially diverse, but with more Native Americans and Whites than the U.S. general population. The general population of the OASAS and NAS samples had about the same proportion of Hispanics as the U.S. general population. All four recovery samples contained proportionally more persons aged 35 to 65 years (64% to 73%) than the U.S. general population (52%). In summary, although the Internet survey samples (WIR and LIR) matched very closely, they produced different demographic profiles than the non-Internet general population samples (OASAS and NAS). None of the four recovery samples matched the demographic breakdown of the general population.

Demographic Comparisons Across Treated Samples

Among those who had sought treatment, more than 50% of WIR samples were female, compared to about a third seen in the other samples (Table 5). The WIR and NAS treated samples had the oldest participants, while treatment samples COMBINE and MATCH had proportionally more participants aged 21–35 years and fewer participants aged 65 years and older. Slightly more than 10% of the COMBINE, MATCH outpatient, and NAS treated samples were Hispanic, twice the number than that of the WIR treated sample (5% Hispanic), while only 3% of the MATCH aftercare sample was Hispanic. Both the WIR and COMBINE samples were more than 40% college graduates. Other samples were all similarly educated, with about three-quarters or more having at least a high school education. The NAS sample was the most racially diverse, with a fifth African American and slightly more than half White; WIR, COMBINE, and MATCH samples had similar racial breakdowns to one another. Importantly, the treatment groups differed from one another: There are gender and age differences between those recruited in treatment (COMBINE, MATCH) and those reporting treatment in national surveys (WIR, NAS). Furthermore, COMBINE and MATCH, which both recruited directly from treatment sites, differed in terms of education.

Treated Versus Recovery Samples

Compared to the recovery (nontreated) samples shown in Table 4, the treatment samples shown in Table 5 consistently had proportionally fewer females and fewer individuals aged 65 years and older. While all of the recovery samples were about half female, all of the treated samples except WIR were 20%–36% female. In terms of age groups, the COMBINE and MATCH samples were only 1%–4% 65 years of age and older, while the age breakdowns for the WIR (8% 65 years of age and older) and NAS (11% 65 years of age and older) treated samples more closely resembled those of the recovery samples (8%–18%). Comparisons across education, race, and ethnicity categories were less consistent because the proportions of individuals within each category varied considerably across both the treated and the recovery samples.

DISCUSSION

The need for research among people in recovery is growing as federal agencies, services, and policies dealing with substance use disorders are increasingly shifting to a

Table 4. Comparison of the What Is Recovery Sample With Other Recovery Samples

	WIR overall (N = 9341) %	OASAS (N = 239)[a] %	NAS (N = 462)[b] %	Life in Recovery (N = 3,228)	U.S.general population[c] %
Sex					
Female	54	37	41	57	51
Male	46	63	59	43	49
Age[d]					
18–34/35	18	25	12	15	31
34/35–64/65	73	64	70	79	52
65/66+	9	10	18	7	17
Education					
< High school	3	30	18	2	14
High school	8	37	33	8	32
Some college	31	21	26	28	20
Vocational school	8	—	—	8	4
College or more	50	11	23	56	29
Ethnicity[d]					
Hispanic	5	15	20	5	17
Non-Hispanic	95	85	80	95	83
Race[d]					
Native	2	—	—	10	< 1
American/Alaskan	1	—	1	0.4	5
Asian	< 1	—	—	0.3	< 1
Native					
Hawaiian/Pacific	8	12 (NH)	22 (NH)	8	12
Islander	88	73 (NH)	55 (NH)	82	81
Black					
White					

Note. NH = Non-Hispanic; WIR = What Is Recovery; OASAS = New York State Office of Alcoholism and Substance Abuse Services; NAS = National Alcohol Survey.
[a]Sample comes from a nationally representative survey (weighted to U.S. Census Bureau data for age, gender, geographic region, education, and race) and comprises those who answered yes to "Did you used to have a problem with drugs or alcohol, but no longer do?"
[b]Sample comes from a nationally representative survey (weighted to U.S. Census Bureau data for age, gender, geographic region, education, and race) and comprises those who answered yes to "Whether or not you have ever talked to anyone or whether you have ever been treated, do you consider yourself to be in recovery from an alcohol problem?"
[c]2010 U.S. Census Bureau data for residents18 years and older; 24.4% of U.S. general population was aged 0–17 years in 2010.
[d]Age and race and ethnicity categories not consistent across samples.

recovery-oriented paradigm (Laudet & Humphreys, 2013). Findings suggest that the broad outreach strategy used in the WIR study yielded a diverse sample of individuals in terms of both individual characteristics and recovery experiences. Media recruiting, which does not rely on a specific recovery path (e.g., formal treatment or 12-step membership), appeared particularly effective at engaging traditionally untapped segments of the recovery community in research, such as nonabstainers and minorities.

In contrast, treatment studies usually do not employ broad recruiting strategies, thus limiting the generalizability of their results. For example, we found that treatment samples (e.g., COMBINE, MATCH) may underrepresent women and individuals aged 65 years and older. In terms of our comparison between the WIR and other recovery samples and the treated samples, we did expect demographic differences: WIR, NAS, and LIR come from large national surveys, while the treatment samples are more geographically constrained. Most notably, WIR demographics were almost identical to those of the LIR

Table 5. Demographic Comparisons Between What Is Recovery Treated Subsample and Other Treated Samples

| | WIR treated (N = 6,649) % | COMBINE (N = 1,383) % | Project MATCH (N = 1,726) | | NAS treated[a] (N = 143) % |
			Outpatient (N = 952) %	Aftercare (N = 774) %	
Sex					
Female	52	31	28	20	36
Male	49	69	72	80	64
Age					
18–20	< 1	< 1	1	< 1	1
21–35	18	19	43	31	8
36–50	34	53	42	49	33
51–65	40	26	14	16	46
65+	8	2	1	4	11
Education					
< High school	3	6	11	12	12
High school	9	23	34	37	32
Some college/voc. school	41	30	32	34	32
College or more	47	41	24	17	24
Ethnicity[b]					
Hispanic	5	11	12	3	16
Non-Hispanic	95	89	88	97	84
Race[b]					
Native American/Alaskan	2	1	2	1	6
Asian	1	< 1	< 1	0	—
Native Hawaiian/Pacific Islander	< 1	—	—	—	—
Black	9	8	6	15	21
White	88	76 (NH)	80 (NH)	80 (NH)	57

Note Demographics by treatment sample (shown in %s). NH = Non-Hispanic; WIR = What Is Recovery; NAS = National Alcohol Survey.
[a]Sample comes from a nationally representative survey (weighted to U.S. Census Bureau data for age, gender, geographic region, education, and race) and comprises those who answered yes to both of the following questions: "Whether or not you have ever talked to anyone or whether you have ever been treated, do you consider yourself to be in recovery from an alcohol problem?" and "Did you ever receive treatment from a chemical dependency or substance abuse program for either alcohol or drugs?"
[b]Race and ethnicity categories not consistent across samples.

Internet survey sample; although we have no way of knowing whether either of these samples could represent the recovery population as a whole, the consistency between the WIR and LIR samples suggests that Internet-based recruiting is reliable.

Importantly, the online population does not represent the U.S. general population because of upward bias in socioeconomic status among Internet users. Similarly, not all racial and ethnic groups access the Internet at similar rates, which may preclude the use of web-based surveys for research on populations that are not well-represented online (Sue & Ritter, 2012). As with our survey, the Internet-based LIR survey reached fewer Hispanics and individuals with lower education levels. A study of web-based respondent-driven sampling in young adults similarly yielded fewer individuals with lower education or

who self-reported as minority race (Bauermeister et al., 2012). Importantly, Bauermeister et al. (2012) did find comparable rates of drug and alcohol use to those found in NSDUH. The authors concluded that online research is a growing trend, and that researchers must identify suitable strategies to reach these underrepresented subpopulations when conducting web-based data collection.

The NAS and OASAS employed population-based sampling and telephone interviews, which may yield a sample more representative of the general population. However, population-based approaches of studying natural remitters have been shown to include higher proportions of less severe problem drinkers than media-solicited samples (Rumpf, Bischof, Hapke, Meyer, & John, 2000). A very high percentage of those in natural recovery in our WIR sample met Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (American Psychiatric Association, 2013) "severe" criteria (90%), which is a bit lower than that of the sample overall (98%; Witbrodt, submitted for publication). The pros and cons of Internet- versus population-based approaches highlight the importance of using multiple recruitment strategies when sampling persons in recovery.

Somewhat unexpectedly, demographics across treatment samples differed in some respects. For example, there were more women in WIR than in both other treatment and other recovery samples (except NAS, which recruited from the general population rather than treatment settings). Therefore, findings imply that results from any one treatment study are not necessarily generalizable to all treatment populations. Comparisons across treatment studies should be interpreted cautiously.

Limitations

Two inconsistencies in data collection across samples warrant explanation. First, OASAS and N12 did not ask about vocational school, which make the education categories slightly less comparable. Similarly, we do not know how many people from each sample (other than WIR) have postcollege graduate degrees; 25% of WIR respondents had graduate degrees, suggesting that the WIR sample may be more highly educated than other recovery samples. However, 41% of the COMBINE sample had at least a college degree, which is similar to the 47% seen in the WIR sample. Future analyses of the recovery scale will examine whether the definition of recovery varies according to holding a graduate degree.

The second inconsistency regards race categories: OASAS and N12 included Hispanic (considered ethnicity, not race, in WIR and the U.S. Census Bureau) but were missing other specific race categories. Race categories across samples may not be comparable because, for example, the 88% of Whites from the WIR sample included Hispanic Whites, while the 65% of Whites in OASAS does not include Hispanic Whites; thus, racial breakdowns may be more similar across samples than they seem, because the OASAS and NAS White category likely underestimates due to exclusion of Hispanics.

We were unable to calculate nonresponse rates in WIR because invitations to participate were open to any individual (18 years and older) who considers herself to be in recovery and the size of the population of eligible respondents is unknown. As in all studies, those who participate in research studies and surveys are often self-selected and may not represent the target population. Finally, only 5% of the WIR sample could be categorized as naturally recovered, i.e., never sought treatment or self-help for substance use. Our results show that media recruiting was most effective at reaching this group; future studies should consider other techniques for reaching naturally recovered individuals.

Lessons Learned

Reaching a representative sample of individuals that reflects the heterogeneity of the population in recovery remains a challenge, but future efforts might benefit from our experience. For example, researchers who plan to use Craigslist should be aware that the site's rules constantly change, especially regarding payment. Other problems included having to change the wording in each posting so as not to be considered duplicates, postings disappearing from some sites, and not being able to rely upon the account management tools within Craigslist itself.

Another valuable lesson is the necessity of using different wording about the targeted audience in all recruitment efforts (including Craigslist). Researchers cannot assume that the individuals they want to reach in a recovery study will consider themselves as being "in recovery"; other popular terms are "recovered", "in medication-assisted recovery", or "used to have a problem with alcohol and drugs." Outreach must reflect this heterogeneity in self-definition if we are to increasingly reach less biased, more representative samples.

We also learned that our research partners appreciated updates of the study's progress and were willing to recontact their constituents and run new stories about the project. These included announcing milestones, such as the number of respondents so far, or a "countdown" to the final days of the survey period, as well as any problems, such as needing to reach more African Americans or Hispanics in recovery. We provided our study partners with a recruitment "toolkit" containing sample wordings for e-mails, websites, and newsletters at the beginning of the study and as we approached these milestones or encountered specific challenges with recruitment progress.

Four additional techniques also may help yield a larger, more representative sample than obtained here. The first is to expand the data collection method to include telephone interviews and possibly paper-and-pencil surveys. The former can be done efficiently using an automated telephone survey system, but both approaches carry costs not required of web-based approaches. However, alternate data collection approaches could make the study accessible to those without Internet access and may yield more minorities and more individuals in lower educational brackets.

Second, a longer recruitment period, or perhaps a second round of recruitment after disseminating the current survey results, might generate sufficient word-of-mouth referrals to reach more ethnic minorities, more individuals in natural recovery, and individuals otherwise not reached by the study team's own recruitment efforts. Third, researchers could provide computers with Internet connections at places where people in recovery come together, e.g., recovery month events. Finally, translating the survey and recruitment materials into Spanish might help recruit more Hispanics.

Conclusion

The WIR study is the largest nationwide survey of persons in addiction recovery ever conducted. The multisource recruiting strategy described here is unprecedented in its breadth; our sample shows great diversity in terms of both individual characteristics and recovery experiences and highlights potential frameworks for recruiting outside of treatment sites. Findings support the notions that specific subgroups respond to various recruitment strategies differently and that recovery-oriented research should include both treated and treatment-naïve individuals if results are to be generalized to the recovery population as a whole.

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