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Using Social Media for Sobriety Recovery: Beliefs, Behaviors, and Surprises From Users of Face-to-Face and Social Media Sobriety Support

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The rapid migration of social life online—including social support—is a topic of current interest. This research reports the development of a survey designed to compare preferences for mediated versus face-to-face (F2F) social support in an important health context: sobriety recovery. The SSPS (Sobriety Support Preference Scale) consisting of 2 parallel subscales representing preference for mediated ($\alpha = 0.94$) versus F2F ($\alpha = 0.91$) support was developed for use in this study. One hundred and ninety-six adults (141 female) who reported using both mediated and face-to-face sobriety support completed the SSPS. Results indicated that respondents preferred F2F over mediated sobriety support, although there were positive reactions to mediated support. Participants reported that they felt it was easier for them to be honest in F2F than mediated settings. However, results also indicated that participants reported specifically (a) lying more about their sobriety success and (b) being drunk or high more often while attending F2F sessions than while participating via mediated sobriety support. Frequency of attendance for F2F, but not mediated, support was positively correlated with sobriety success. Post hoc analyses suggest that results varied based on whether participants were recovery professionals in addition to being in recovery. Future research might profitably adapt the 2 subscales of the SSPS to fit other contexts where comparison of mediated and F2F social support efficacy and attitudes are sought.

Keywords: sobriety support, recovery, alcohol abuse, substance abuse, social media

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The National Institutes of Health (2014) proposed that, "social media are increasingly affecting people's everyday behavior, including their attitudes relevant to health." Understanding the role of social media in health indeed seems pertinent when considering that one in four people in the world currently use social media, with that number predicted to rise from 1.47 billion in 2012 to 2.55 billion in 2017 (Ahmad, 2014; Fredricksen, 2013; Statistica, 2014). In particular, the NIH is interested in the applications of social media to substance abuse; the Institutes recently awarded more than $11 million in grant award funding to "support research exploring the use of social media to advance the scientific understanding, prevention, and treatment of substance use and addiction" (NIH, 2014). In that context, this study addressed the role social media play in sobriety support, with an emphasis on Alcoholics Anonymous (AA). It also introduces the Sobriety Support Preference Scale (see online supplementary material), a new measure specifically designed for this investigation, which can be adapted to study how social support modality (F2F and mediated) plays a part in other social and health issues.

Considering current U.S. substance abuse statistics, combined with the perpetually increasing use (and thus potential information harvesting and networking power) of social me-

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dia, the NIH's interest in financially supporting research of the two together makes smart sense. In 2007, their sister governmental agency the Substance Abuse and Mental Health Services Administration (SAMHSA) estimated that 22.3 persons (or 9% of the population aged 12 or older) were classified with substance (including alcohol) dependence or abuse (SAMHSA, 2008). A 2009 report released by The National Center on Addiction and Substance Abuse at Columbia University also estimated that "substance abuse and addiction cost federal, state and local governments at least $467.7 billion in 2005" alone (CASA, 2009; Erdos, 2009). On the brighter side, *The Partnership for Drug-Free Kids* and *the New York State Office of Alcoholism and Substance Abuse Services* (OASAS) indicated that 10% (approximately 23.5 million) of all American adults aged 18 and older consider themselves in recovery from an alcohol or drug abuse problem (Rondó & Feliz, 2012).

Face-to-Face and Mediated Support Research

Most published studies comparing face-to-face (F2F) and online or computer-mediated communication (CMC) engagement have been directed around differences in academic achievement and experience (Johnson, Aragon, Shaik, & Palma-Rivas, 2000; Langenhorst, 2012; Smith et al., 2011; Wang & Woo, 2007; Yang, Cho, Mathew, & Worth, 2011), with mixed results (Beranek & French, 2011; Dillon, Dworkin, Gengler, & Olson, 2008; Hiltz, Johnson, & Turoff, 1986; Okdie, Guadagno, Bernieri, Geers, & Mclarney-Vesotski, 2011). Other studies have compared and contrasted Web based and F2F weight loss support (Johnson & Wardle, 2011; Johnston, Massey, & DeVaneaux, 2012). The kinship of compromised populations, importance of peer support, liability of "relapse," and commitment to behavioral changes are certainly shared similarities between AA and weight loss programs. Still, there are marked differences between the two support systems (Johnston, 2011; Steakley, 2011), with no studies yet having explored F2F versus mediated sobriety support utilization, practices, or behaviors.

Social Support for Addiction

The unifying assumption of AA is that the most effective path to recovery from alcoholism is via the bond of one alcoholic helping another (Anonymous, 2001; Rudy & Everman, 2008). Guided by the "12-Step" approach, recovery in AA is thus mediated at least partially by personal development through positive social support (Borkman, 2006). Empirical research on the AA group dynamic suggests that the instillation of hope, vicarious learning, modeling, and altruism promoted by both regular meeting attendance and fellowshipping can result in better long-term abstinence outcomes, as well as increased self-esteem, personal relationships, and motivation (Kelly & Yeterian, 2011; Stanton, 2011; Subbaraman, Kaskutas, & Zemore, 2011; Yalom, 1995).

Fear of public or personal embarrassment through association with AA is believed to prevent untold numbers from participating in the program (Anonymous, 2001, 2012a; Colman, 2011; Reigle & Dowd, 2004). A lack of meetings in more remote areas and the inherent problem of relapse also prove strong nemeses to the program (Arkowitz & Lilienfeld, 2011; Hewitt, 2011; Kaskutas, Subbaraman, Witbrodt, & Zemore, 2009; Mueller, Petitjean, Boening, & Wiesbeck, 2007; Yun, 2006). These two factors might promote those in need to seek support via social media.

As AA expanded around the globe and modern technology evolved, many members began using the Internet to share the message of recovery through AA sponsored, anonymously curated, and crowd designed (both commercial and noncommercial based) mediated sobriety support digital platforms (Anonymous, 2012a; VanLear, Sheehan, Withers, & Walker, 2005). Today there exist literally thousands of cyberspace recovery sites, with platforms range in scope from passive general recovery and information URLs (Anonymous, 2012h, 2012i, 2012k; Hunt, 2011; King, 2008), to interactive sites offering opportunities to create and then build new networking alliances with other abstinence-ambitious individuals (Anonymous, 2008b, 2012a, 2012h, 2012j, 2012l, 2012m; VanLear et al., 2005).

Studies have evidenced that "the type of social support specifically given by AA members–such as the potential for 24-hour availability,

role modeling, and experientially based advice for staying sober" (Kaskutas, Bond, & Humphreys, 2002)–can positively influence one's ability to sustain long-term abstinence (Bogenschutz, Tonigan, & Miller, 2006; Kaskutas et al., 2002). Mediated sobriety social media networking platforms—especially their "real time" and 24/7/365 availability facets not always accessible through conventional F2F sobriety resources—now provide an infinite supply of this support, available at almost any place and time (Anonymous, 2008a, 2012e, 2012f, 2012g; Hunt, 2011). A significant difference between mediated and F2F sobriety support, however, is the lack of visual, verbal, or expressive cues. Still, many researchers have been positive about the prospect of online relationships to build social ties and community on the basis of "networked individualism" (Aubrey, Cattopadhyay, & Rill, 2008; Lewis & West, 2009).

Mediated and Face-to-Face Social Interactions

When discussing mediated and F2F interactions, one important factor is how communication differs between them (Drake, 2015; Walther, Van Der Heide, Hamel, & Shulman, 2009). In F2F corporeal copresence, others send a rich array of nonverbal cues, which are more easily read than those available in a mediated situation (Zhao, 2005). Zhao (2005) further posits that, "in the absence of symbolic nonverbal cues that are essential for discerning others' hidden feelings and attitudes, we invariably confront the difficulty of obtaining an accurate knowledge of other's appraisals of our self-presentations" (p. 387). In social presence theory, it is conjectured that the fewer nonverbal and paralinguistic cues supplied through mediated interaction creates a significantly lower feeling of social presence. In other words, "an individual's self-perception is reduced and deindividuation is encouraged" (Whitty, 2008). As social presence declines, communication becomes more uninhibited and even more potentially personal (Hiltz et al., 1986; Sproull & Kiesler, 1986). Evidence-based studies have demonstrated that the "online disinhibition effect" can cause "people to say and do things in cyberspace that they wouldn't ordinarily say and do in the face-to-face world" (Suler, 2004).

This dichotomous phenomenon has been suggested as the reason why those seemingly unable to confide or share intimacies in a F2F situation suddenly find themselves almost easily able to do so when "safely" cloaked behind a computer-mediated "veil" (Suler, 2004). McKenna, Green, and Gleason (2002) theorized that the "relative anonymity of Internet interactions" potentially provides a safer place to disclose core aspects about one's self (p. 10). Baym (2010) agrees that "testing out honest self-disclosure and expressing one's 'real' self online can be empowering and liberating" (p. 15). Supporting the suppositions of both Suler and McKenna et al., Whitty's (2008) work suggests that lack of traditional cues in mediated communication can be overcome and lead to "more personal intimate relationships" that can prove empowering for many people.

Concerns About Mediated Recovery

With more and more people engaging in mediated sobriety support, the recovery community and professionals alike wonder what impact these modern platforms could have on the both the future of F2F AA and its membership (Jackiewicz, 2011; Kiesler, Zubrow, Moses, & Geller, 1985; McCarthy, 2008). Confidentiality protection—a nonnegotiable safeguard upon which the very foundation of AA was originally constructed (Anonymous, 2001)–is also a concern. Critics of mediated recovery have argued that Internet resources only encourage already self-isolated substance abusers to delay treatment or impede their progression toward authentic recovery (Bargh & McKenna, 2004; BBC, 2009; Hall & Tidwell, 2003; Seligman, 2009; Silverman, 2007). They further claim that online social networking is generating a pandemic of unhealthy isolation in general (BBC, 2009). AA traditionalists further point out that commitment to the program demands invested action by participants—including "suiting up and showing up" for F2F meetings—"no matter what" (Alcoholics Anonymous, 2011; Anonymous, 2011, 2012c).

Some researchers also question the efficacy of mediated Internet Recovery Services (IRS) and how successful they truly are in either facilitating or helping maintain short-and long-term sobriety (Aboujaoude, 2010; Hall & Tidwell, 2003). On this point, IRS advocates do

not disagree, but suggest that by carefully combining lessons learned from previous research with emerging recovery technology and measurement methods, it may be possible to further maximize both IRS efficacy and usability (Hall & Tidwell, 2003; Murphy, Dennhardt, Skidmore, Martens, & McDevitt-Murphy, 2010). Detractors challenge that mediated relationships in general result in more weak than strong ties (Donath & Boyd, 2004; Walther et al., 2009; Wright, 2005). Cummings, Butler, and Kraut (2002) contend that mediated communication is less valuable for building and maintaining close social relationships than F2F contact. One of the reasons this study was developed was to address these questions.

Hypothesis and Research Questions

The current investigation was designed to address a number of key issues related to face-to-face versus mediated sobriety support. Some issues relate to preferences, some to beliefs, and still others to behaviors. What follows are the research questions and hypothesis.

RQ_1: Will participants who have engaged in both F2F and mediated sobriety support find it easier to be more honest in the F2F environment than in their mediated participation?

RQ_2: Will people in recovery who have used both mediated and F2F sobriety support be more likely to be using substances while participating in one modality or the other?

RQ_3: Will participants who have engaged in both mediated and F2F sobriety support report having decreased their attendance at F2F sobriety support since engaging with mediated sobriety support?

RQ_4: To what degree will sobriety success be related to the use of mediated and F2F sobriety support?

H_1: Participants who have engaged in both mediated and F2F sobriety support will show a preference for the F2F modality.

Method

Participants

Recruitment. The intended population for this research was adults in recovery from substance abuse who used both F2F and mediated sobriety support modalities. Rather than solicit via F2F recovery groups, recruitment was facilitated online to ensure that all participants had experience with social media-based sobriety recovery support. Because Facebook (FB) will suggest friends to users based upon shared connections and interests (Duff, 2011; Lewis & West, 2009), in preparation for this research, the first author, a recovery professional, spent 5 years accepting unsolicited friend requests on FB from individuals whose profiles strongly suggested their engagement with sobriety recovery. In addition, he joined mediated sobriety support pages in order to build his social media connections with potential study participants. Participants were recruited via posts on these platforms, as well as through individually sent private FB message invitations. Care was taken to present the legitimacy of the study (university-affiliated research) as well as the anonymity of the data, which is crucial in sobriety support.

Demographics. Eight hundred and fifty-seven individual invitations were sent out via FB. From this initial pool, 223 (162 female, 61 male) adults responded—either from these invitations or additional recruitment postings on sobriety support pages. After the removal of incomplete surveys ($N = 27$), the final sample consisted of 196 adults in sobriety recovery who self-reported using both F2F and mediated sobriety support modalities (141 female, 55 male). Age data were collected by category, with the following breakdown: 18–29 (4%), 30–39 (17%), 40–49 (32%), 50–59 (37%), 60+ (10%). In terms of self-identified race, participants were 86% Caucasian, 4% Hispanic, 2% African American, 1% Asian, <1% Asian/Pacific Islander, and <1% Latino, with 6% identifying as "other." Most participants were from the US (86%); 14% were from outside the US.

As a group, most of the participants had been in recovery for a number of years, with 92% reporting they had been in recovery for at least one. In terms of their relationship with the first author, 63% of the sample did not know the first

author personally, 22% were colleagues, 12% were personal friends, and 3% said they were not friends but had met the first author at a recovery-based event. Most participants also self-reported that they regularly attend F2F sobriety support functions. Table 1 gives more detailed statistics for both time in recovery and F2F sobriety support attendance.

Materials

The Sobriety Support Preference Scale (SSPS) was created for use in this study. The SSPS is a 40-item instrument, designed to measure beliefs and behaviors related to mediated and F2F delivery of sobriety support. The SSPS consists of two 20-item subscales. The F2F subscale measures beliefs, behaviors, and preference related to F2F sobriety support, while the Mediated Subscale measures beliefs, behaviors, and preference for mediated sobriety support. For example, the statement "When I am in crisis, I am likely to seek support through Face-to-Face sobriety resources," was posed in the first subset. In the second subset, the statement was reworded to read, "When I am in crisis, I am likely to seek support through online recovery resources." Responses were provided on a 10-point Likert-type scale, with 0 labeled *strongly disagree* and 9 labeled *strongly agree*.

Opinion Data

Following the SSPS, 10 additional questions were asked related to participants' blending of the two support modalities, migration to the mediated modality, reasons for using online versus F2F sobriety support, and beliefs about the future of online recovery. Participants were also presented with an optional open-ended item inviting them to offer additional comments.

Table 1
Habits of the Current Sample Regarding Sobriety Recovery and Face-To-Face Recovery Meeting Attendance

Time in recovery	%	Current attendance at F2F sobriety support	%
Not currently in recovery	2.1	Never	9
1 day to 6 months	9.7	Rarely	11.7
6 months to 1 year	6.2	Sometimes	14.8
1 to 5 years	17.9	Frequently	51.6
5 to 10 years	21.0	Daily	11.6
10 to 25 years	26.2	More than daily	1
25 years +	15.9	—	—

Design and Procedures

This study compared the beliefs, behaviors, and recovery status of participants in their mediated and F2F experiences with sobriety recovery. Because the same participants completed both the subscales of the SSPS (mediated and F2F), dependent-samples *t* tests were conducted to measure the difference between attitudes and beliefs the same individuals held about mediated and about F2F sobriety support. Participants completed the SSPS described above, administered via Survey Monkey, and supplied demographic information.

Results

Scale Development

Scale development involves generating items that experts believe tap into a latent construct that is impossible to measure directly. Because there was no clear precedent in the literature for the measurement of preferences for F2F versus mediated sobriety recovery support, scale development began with a method suggested by DeVellis (2012) involving vetting by multiple experts. Items were developed using the expert knowledge about sobriety support of the first author and then vetted by another recognized expert in the field (E. Hitchcock Scott). Themes covered in the resulting scale included the ability to be honest, the ability to feel close to the community, and the value of multiple facets of the support experience. Specific modality preference for sobriety support was also included.

Factor Analysis

Exploratory factor analysis was performed on the F2F and mediated support subscales. Because study factors were not theorized to be orthogonal, an oblique rotation following DeVellis (2012) and Field (2013) was used. The extraction method utilized was principal components.

Mediated Social Support Subscale

Visual analysis of the correlation matrix following Field (2013) revealed no problem items on the mediated sobriety support subscale; all items in fact were significantly intercorrelated at the 0.001 significance level or lower. Bartlett's test was significant, suggesting that the overall correlations between variables were different from zero ($\chi^2 = 2010.42, 120, p < 0.001$). Analysis of the eigenvalue scree plot (See Figure 1) suggests either a one- or two-factor solution. The observed eigenvalues indicated that the first factor explained, by far, the most variance, at about 46%, followed by the next highest factor at 9%. Next, the pattern matrix (see Figure 2) revealed that most of the items that had factor loadings of .3 or higher loaded on factor 1. Factor loadings lower than .3 were suppressed in this output, following Field (2013). Furthermore, two items loaded negatively on the second factor—the items related to honesty and lying.

Analysis of scree plots, eigenvalue, and the pattern matrix involves interpretation. Being that this is an exploratory factor analysis, it will be important to compare these results to those from another sample and see if this structure is confirmed. For now, results were interpreted as providing preliminary evidence for a one-factor solution for the mediated subscale or perhaps a second factor with the two honesty-related items.

Face-to-Face Sobriety Support Subscale

Again, the correlation matrix was analyzed visually. All but one of the items showed significant intercorrelations with the other items at the 0.001 significance level or better. The item relating to the effectiveness of F2F sobriety support varied in its relationship to the other items, sometimes be-

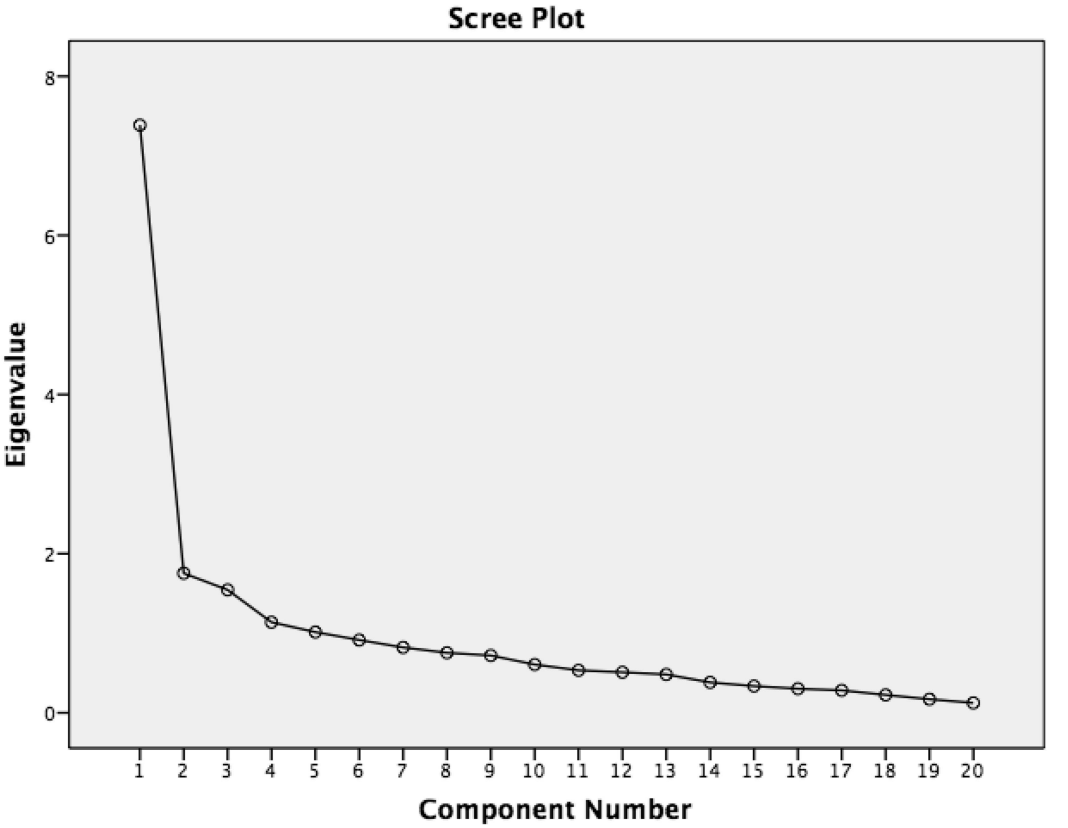

Figure 1. Scree plot of eigenvalues (generated by SPSS) for the mediated subscale.

Pattern Matrix[a]

	Component			
	1	2	3	4
Maccountability	.945			
Msobriety	.866			
Mnetwork	.850			
Mlikeminded	.770			
Mvitalcomponent	.686			.321
Mseriousness	-.648			
Mcommunitycares	.580			
Mrelapse	.553			
Mauthenticity	.537			
Meffectiveness	.479			.337
Mcrisissupport	.400			.313
Mwhiledrunkhigh		.928		
Mlieaboutsobriety		.913		
Mconfidentiality			.809	
Manonymity			-.793	
Mhonesty			-.574	
Mease				.849
Mconvenience				.781
Mcloseness				.737
Mpreferred	.339			.638

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.[a]
a. Rotation converged in 8 iterations.

Figure 2. Pattern matrix (generated by SPSS) for the mediated items. M stands for mediated communication; these are the items from the mediated subscale of the SSPS.

ing significantly varied in its relationship to the other items, sometimes being significantly or marginally related to them, and sometimes being uncorrelated. Still, Bartlett's test was significant, suggesting that the overall correlations between variables were different from zero ($\chi^2 = 1661.54$, 120, $p < 0.001$). Given these findings and the exploratory and developmental nature of the research, the decision was made to retain the item at this time in order to keep the two subscales of equal size and parallel.

Analysis of the scree plot, following the same logic and procedures as described in the previous section, also suggested a one-factor solution. The scree plot is found in Figure 3 and shows an elbow suggesting a one-factor solution. The first factor, with an eigenvalue of 7.39 explained 39% of the variance; and the second largest eigenvalue was 1.75, explaining 8.9% of the variance. The pattern matrix (see Figure 4) shows that most items with a factor loading of 0.3 or greater (absolute value) loaded on the first factor. Again, as noted above, this is an exploratory analysis and should be followed by a confirmatory factor analysis. But preliminary findings suggest that a one-factor solution, or possibly a two-factor solution, is tenable for these data.

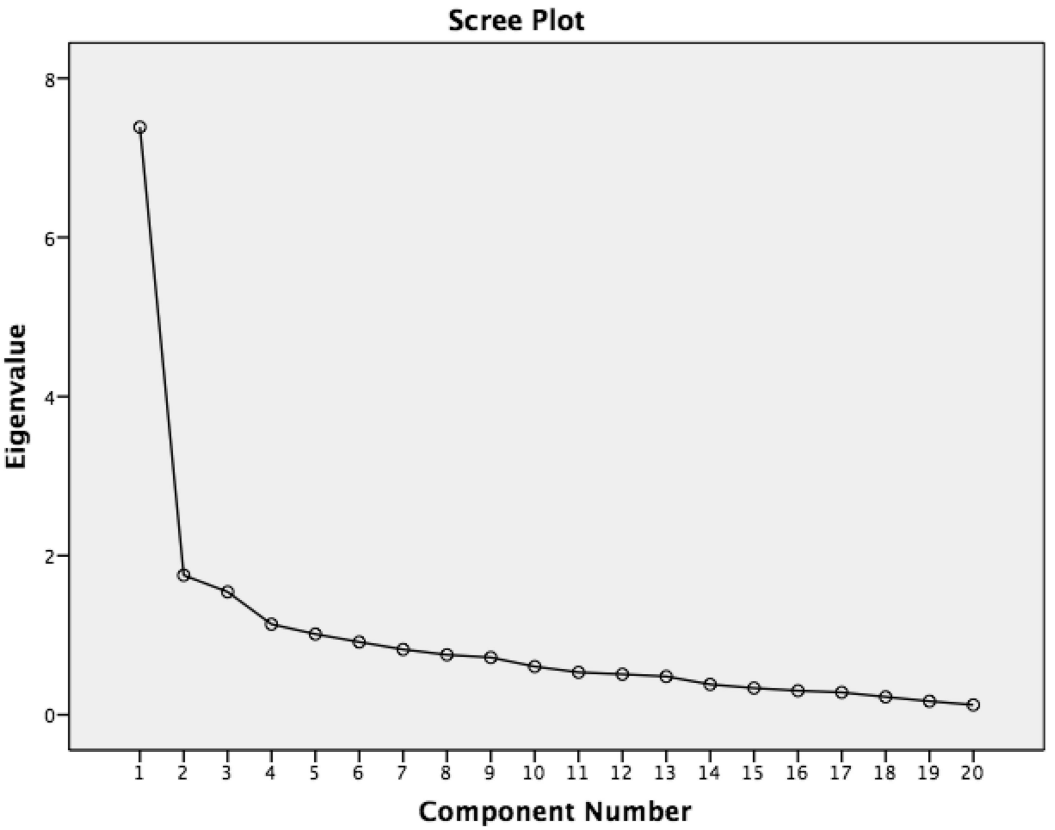

Figure 3. Scree plot of eigenvalues (generated by SPSS) for F2F subscale.

The analyses that follow are organized by hypothesis and research questions. The dependent variables were the two above-described composite variables representing F2F and mediated sobriety support.

Reliability Analysis

Because the modality subscales were constructed as measuring two distinct but parallel latent variables (namely, preference and beliefs about mediated sobriety support, and preferences and beliefs about F2F sobriety support), separate reliability analyses were conducted on the two parallel subscales. Before performing analyses, any reverse-worded items were also reverse scored. Both factor analyses revealed issues with the same four items, namely, those related to problems with confidentiality in the modality, the characterization that the modality was not a serious form of recovery support, and those related to lying or having been drunk/high while seeking this type of support. The item-total correlations for these items revealed that they were either uncorrelated or negatively correlated with the other scale items; therefore, they were removed. Removal of four items each from the two subscales left two 16-item support modality subscales. Reliability was strong for each subscale, with Cronbach's alphas for the standardized items .91 for the F2F support subscale and .94 for the mediated support subscale.

H_1—Modality Preference

Dependent-samples *t* tests (also called paired-samples *t* tests) are appropriate to use when groups of participants are related, including when "the same subjects are present in both groups" (Laerd, 2016). Before conducting the dependent-samples *t* test, dependent measures were verified to ensure they met the four as-

Pattern Matrix[a]

	Component				
	1	2	3	4	5
F2Fpreferred	.879				
F2Fcloseness	.863				
F2Fsobriety	.805				
F2Fvitalcomponent	.786				
F2Fnetwork	.774				
F2Faccountability	.759				
F2Frelapse	.682				
F2Fease	.663				
F2Flikeminded	.476				
F2Flieaboutsobriety		.882			
F2Fwhiledrunkhigh		.871			
F2Fanonymity			-.835		
F2Fhonesty			-.651		
F2Fconfidentiality			.645		-.404
F2Fauthenticity			-.586		
F2Fcommunitycares	.414		-.461		
F2Fseriousness				.775	
F2Fcrisissupport	.339		-.301	-.373	
F2Feffectiveness					.806
F2Fconvenience			-.331	.372	-.540

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.[a]
a. Rotation converged in 13 iterations.

Figure 4. Pattern matrix (generated by SPSS) for the F2F items.

sumptions for the test, which were, briefly, (1) a continuous dependent variable, (2) related participants including the case where the participants responding on each measure are the same, (3) no significant outliers in the differences between the related groups, and (4) normal distribution of these data. Assumptions 1 and 2 refer to the nature of the data and were met in this design. Assumption 3 was confirmed using Tukey's outlier labeling rule (Hoaglin, Iglewicz, & Tukey, 1986; Tukey, 1977). Using g of 2.2 (following Hoaglin et al., 1986), g' was 5.92, which indicated that there were no outliers in these data. Shapiro-Wilk's test of normality revealed that the data were normally distributed ($S\text{-}W_{CMC}$ (192) = 0.97, $p < 0.001$; $S\text{-}W_{F2f}$ (192) = 0.65, $p < 0.0001$) Therefore, a dependent-samples *t* test was conducted to test the difference between participants' attitudes and beliefs about mediated and F2F sobriety support.

The dependent-samples *t* test revealed a significant difference in Modality Preference (Mediated and F2F) such that there was a significantly greater preference for Face-to-Face (F2F) ($M = 7.49$, $SD = 1.48$) over mediated ($M = 4.62$, $SD = 2.03$) modality, $t(191) = 13.15$, $p < 0.0001$. In other words, study participants significantly preferred the F2F to mediated modality. Recall that the maximum response was 9 and the minimum 0, so the affinity for F2F sobriety support was strong, and the affinity for mediated support fell near the scale midpoint.

RQ_1—Honesty

Composite variables of three survey items measuring the ability of participants to be hon-

est in a given modality (i.e., "When I participate in F2F sobriety support, I am able to be completely honest") were created for comparison. Results of a dependent-samples t test indicated that participants felt it was significantly easier to be honest in F2F sobriety support ($M = 8.52$, $SD = 1.92$) than during mediated ($M = 7.24$, $SD = 3.14$), $t(182) = 4.77$, $p < 0.0001$.

A dependent-samples t test was also run to determine if participants reported lying more about their amount of sobriety time in the mediated or F2F modality. Results indicated that participants were more likely to lie about their amount of time sober in the F2F ($M = 2.81$, $SD = 3.23$) than the mediated modality ($M = 1.80$, $SD = 2.21$), $t(180) = 4.17$ $p < 0.0001$).

RQ_2—Drunk/High During Participation

A paired-samples t test was run to determine whether participants were more likely to report being drunk or high in one support modality than the other. Results indicated that participants were significantly more likely to be drunk or high during F2F participation ($M = 2.56$, $SD = 3.03$) than while engaging with mediated sobriety support ($M = 1.87$, $SD = 2.38$), $t(180) = 2.88$, $p < 0.01$. Both lying about one's sobriety and being drunk or high while using sobriety support were reported at a level that indicates their regularity, though not of a high degree.

RQ_3—Potential Migration From F2F to Mediated Sobriety Support

Using the relevant item from the opinion data, descriptive statistics were run to determine the degree to which participants report having decreased their attendance at F2F sobriety support since engaging in the mediated modality. Mean reduction in F2F sobriety support was 3.11 ($SD = 2.76$) on a scale of 0 to 10, indicating that participants reported having decreased their F2F sobriety support attendance a fair amount since engaging in mediated sobriety support.

RQ_4—Sobriety Success

To determine the sobriety success achieved through the use of F2F versus mediated support, composite mean variables of survey questions regarding self-reported sobriety success were created for both F2F and mediated use. Correlational tests were run, with results indicating a significant positive correlation between degree of F2F participation and sobriety success, $r = 0.281$, $N = 199$, $p < 0.001$, but no significant correlation between degree of mediated support participation and sobriety success ($r = -0.093$, $N = 199$, $p < 0.009$). Results of these tests therefore suggested that greater use of F2F sobriety support is associated with greater sobriety success, while greater use of mediated sobriety support is unrelated to success.

In addition, length of time sober was correlated with both F2F and mediated participation. Results indicated a significant positive correlation between F2F sobriety support use and length of time sober, $r = 0.217$, $N = 195$, $p < 0.05$, and a negative correlation between mediated sobriety support use and length of time sober, $r = -0.308$, $N = 192$, $p < 0.0001$. Thus, greater participation in F2F sobriety support is associated with a longer period of time sober, while greater participation in mediated sobriety support is associated with less time sober. There was also a significant positive correlation between age and length of sobriety, with age—not surprisingly—being positively correlated with longer time in sobriety, $r = 0.427$, $N = 195$, $p < 0.0001$.

Post Hoc Analyses: Friendship Status

Initially, no predictions were made regarding the role that relationship with the first author might play in responses; the final survey demographics could not be predicted. Recall that a small group of participants were friends with the first author, a larger group were sobriety support professionals (colleagues), and most did not know the first author personally and were not colleagues. To further explore how factors of the sample may have played a role in responses, the above described analyses were rerun to include these factors. First, all participants who knew the first author personally were dropped. Next, relationship status was recoded into two categories: those who were sobriety support professionals (colleagues of the first author) and those who were nonprofessionals who did not know the author. Colleague status was added to both the models containing each factor reported above (mo-

dality, honesty, lying, and being drunk/high), and also the interaction with each of these factors to each model. Table 2 presents the results of each repeated-measures ANOVA and reports the means broken down by relationship status, and the overall means for each factor. As Table 2 shows, the largest *F* value and highest eta^2 was for the Modality Preference factor. Additionally, while each of the four abovementioned factors remained significant in each model, results for modality preference, lying, and honesty indicated significant interactions of each of these factors with colleague status. Analysis of the means reveals a consistent pattern of no differences between ratings of F2F support, but significant differences based on colleague status for the mediated support ratings. Specifically, the colleagues in sobriety support were less positive about mediated support than were the noncolleagues.

Open-Ended Comments

In the open-ended comments, the trend was to express a preference for F2F sobriety support. Those who expressed support for the mediated modality mentioned its value "in a pinch," how blending it with F2F participation has worked for them, and the ability (through

Table 2
Post Hoc Analyses: Personal Friends Dropped; Analyses by Colleague Status

Variable	*F*-value	*P*-value	Eta^2
Modality preference			
Modality	103.05	0.001*	0.440
Colleague status	9.70	0.002*	0.069
Modality × Colleague status	6.82	0.010*	0.049
Honesty (easy to be honest)			
Honesty	17.75	0.0001*	0.126
Colleague status	3.90	0.05*	0.031
Honesty × Colleague status	3.90	0.05*	0.031
Lying (have lied)			
Lying	8.67	0.01*	0.066
Colleague status	3.90	0.05*	0.031
Lying × Colleague status	3.90	0.05*	0.031
Drunk/high during support			
Drunk/High	3.81	0.05*	0.029
Colleague status	1.86	0.18	0.015
Drunk/High × Colleague status	0.279	0.60	0.002

Descriptive statistics (Means and standard deviations)	F2F	Mediated
Modality preference		
Nonprofessionals ($N = 100$)	7.24 (1.76)	4.97 (2.00)
Sobriety professionals ($N = 33$)	7.42 (1.06)	3.58 (1.70)
Total ($N = 133$)	7.28 (1.61)	4.63 (2.02)
Easy to be honest		
Nonprofessionals ($N = 97$)	8.44 (2.02)	7.63 (2.84)
Sobriety professionals ($N = 28$)	8.39 (1.62)	6.14 (3.23)
Total ($N = 125$)	8.43 (1.93)	7.3 (2.98)
Drunk/High during support		
Nonprofessionals ($N = 99$)	8.44 (2.02)	7.63 (2.84)
Sobriety professionals ($N = 29$)	8.39 (1.62)	6.14 (3.23)
Total ($N = 128$)	8.43 (1.93)	7.3 (2.98)
Have lied		
Nonprofessionals ($N = 99$)	2.56 (2.98)	2.06 (2.65)
Sobriety professionals ($N = 29$)	2.14 (2.61)	1.28 (1.07)
Total ($N = 128$)	2.46 (2.90)	1.88 (2.40)

Note. *P*-values marked with an asterisk are statistically significant.

mediated connectivity) to reach resources and like-minded others that would not otherwise be accessible to them.

Discussion

There is growing interest in whether mediated social support can act as an adjunct to F2F social support, particularly in health contexts. The current investigation is the only known study to date that examines the experiences and preferences of a group of recovering alcoholics and addicts who use both mediated and face-to-face sobriety support. Results indicated that these participants prefer F2F to mediated sobriety support, but that they value mediated sobriety support as well.

The Sobriety Support Preference Scale was created for this investigation and found to be a reliable measure of modality preference. It is therefore suggested that this scale can be adapted to compare preferences for F2F versus mediated social support in a variety of contexts (e.g., coaching and a variety of health applications). This study focused on factors relevant to sobriety recovery, such as general honesty and honesty about sobriety particularly. The results were revealing.

In addition to suggesting attitudes and behaviors related to modality of social support in a health context, these are a rare source of information on sobriety success as related to the amount and type of recovery support. Results indicated that the more often participants attended F2F recovery groups (mainly AA and related 12-Step programs), the greater their reported recovery. Because AA does not conduct internal self-studies, sobriety efficacy statistics are difficult to obtain (Bebbington, 1976). The few external studies that have attempted to measure the effectiveness of the program have often appeared contradictory (Arkowitz & Lilienfeld, 2011; Kaskutas, 2009; Kaskutas, Bond, & Avalos, 2009; Tonigan, Connors, & Miller, 1996; Vaillant, 2005).

Results also predict a future migration toward mediated and away from F2F sobriety support. Interestingly, study results suggested that greater participation in F2F sobriety support predicted greater reported recovery, but greater participation in mediated support predicted less. Furthermore, while those in recovery found it easier to be honest while engaged in the F2F modality, they were also more likely to lie about their length of sobriety, and be drunk or high while seeking support F2F, compared with mediated.

Results in Context

Some factors that may have contributed to a preference for F2F support over mediated support are the age of the participants; the largest age groups represented were those in their 40s and 50s. Also, this is a point in history when mediated social support is relatively new. The current controversy within the ranks of F2F Alcoholics Anonymous and other 12-Step programs regarding mediated sobriety support might also contribute to many members' reservations when considering engaging with mediated sobriety resources.

The prediction then is that future research will reveal an increased modality preference for mediated sobriety support. This is another reason these data are important: they take a historical snapshot of mediated sobriety support. If, as study participants predicted, sobriety support does continue to migrate online, then these data will prove an important benchmark.

Honesty, Using in Recovery, and Modality

The commitment to honesty is a bedrock principle of all 12-Step programs Although it is generally accepted that prior to seeking sobriety, duplicity was often a common practice (or even the "default setting" behavior) for members (Anonymous, 2001; Goldstein & Flett, 2009; Kingree & Thompson, 2011; Sossin-Bergman & Cardoos, 2011), it is also believed that a sober lifestyle demands "rigorous honesty" (Anonymous, 2012b). Thus, the ability to be completely honest within the ranks of the Fellowship—especially with regards to past debauched behavior—is generally endorsed as fundamental to sobriety attainment and maintenance.

With that in mind, one of the strongest arguments by detractors of mediated sobriety support is the concern that it is easier to be more disingenuous in the mediated than the F2F modality. Critics of mediated recovery engagement further highlight: the inherent ability by users to control, edit, or manipulate online postings; the capability to engage usage at will or covertly disenfranchise completely; freedom from ac-

countability; temptation to give false testimony; and a lack of mediated recovery group participation protocol guidelines. Study findings indicated that participants report believing that it is easier to be honest in F2F than mediated sobriety support.

Because results showed that participants found it easier to be honest when F2F than online, the results suggesting that participants lie more about how long they have been sober in F2F engagement might initially appear contradictory. Those having personal experience with both modalities however, understand that to the alcoholic or addict, the concepts of dishonesty and lying (although seemingly synonymous) can sometimes be interpreted very differently (Anonymous, 2001, 2012b, 2012d; Enos, 2012; Reigle & Dowd, 2004). It is important to understand that in the language of 12-Step programs (including AA), honesty implies acting without guile in *all* affairs—including personal, social, business, relationships and, of course, the support program itself. Within F2F meetings, honesty usually relates to self-disclosure while sharing one's "experience, strength and hope" (Anonymous, 2001, p. xxii).

The term lying can refer to different things. In this context, however, it often correlates with fallacious claims of actual time abstinent. A "newcomer," for example, might lie about how much time he currently has clean and sober. Those with significant years (or even decades) of abstinence have also relapsed and then (again due to embarrassment, shame, fear, or myriad other reasons) lied to the Fellowship about their present state of sobriety—or lack thereof.

Still, a contradiction exists: participants believe, in theory, that it is easier to be honest when F2F, but then report actually lying more often when F2F. Part of this could be that they spend more time in F2F recovery, so that there is more time to lie. Another factor is that modality and anonymity are confounded. In other words, anonymity is easier to achieve in a mediated environment than in a F2F context. In fact, it might be said that F2F meetings are not truly anonymous, but rather are carried out in the spirit of anonymity within the larger social context.

Then there is the consideration that the social or professional stakes may be higher in F2F than in mediated recovery. For instance, there may be less perceived social or potential career consequences for embarrassing, demoralizing, or debauched behaviors revealed to those who you are unlikely to meet in person. Perhaps those others you meet online are not in your physical community. Result data reveal that one advantage of mediated over F2F recovery support may be that there is actually less social pressure to lie about sobriety. Again, the contrast revealed in the data is that people may believe that it is easier for them to be honest in a F2F support group, but that their behavior belies this belief—they actually lie more when in F2F groups.

Continuing on the theme of various forms of honesty and their relationship to support modality, there is the intriguing finding that participants reported being more likely to be using substances while participating in F2F rather than mediated forums. As discussed earlier, the greater frequency of F2F participation could be a factor here. A factor that is perhaps more substantive is the issue of whether using substances while seeking sobriety support should be perceived as a flaw in the support system. Some who read these findings may take the fact that those in recovery "fall off the wagon" yet still attend meetings as an indicator that the meetings just do not work. But it is important to remember that addiction is a disease. Thus using while seeking help should not indict either the support system or the user, but simply be accepted as sometimes being a part of the recovery process.

Recovery is just that: a process. If anything, using while seeking support should be seen as a sign of the difficulty of achieving sobriety rather than the failure of the treatment or even of the individual. The only requirement for participation in sobriety-based 12-Step programs is a "desire" to stop drinking or using (Anonymous, 2001). Thus, it is not uncommon for both newcomers and those who have relapsed to attend meetings while still under the influence.

Additionally, it is important to note that the means for both modalities (F2F = 2.57, CMC = 1.84) were still considerably skewed toward "0 = *Strongly Disagree*" for this survey question. Therefore, the number of respondents who self-reported being drunk or high while participating in either is still relatively low in relation to sample size. That noted, the results of this question certainly merit further investigation by future researchers.

Potential Migration From F2F to Mediated Sobriety Support

Critics of the mediated modality fear a rapid migration away from F2F meeting attendance toward mediated sobriety support. Study results, however, suggest that although participants do report decreasing their F2F attendance in favor of mediated sobriety support, this migration is not yet significantly robust. These results should be generalized to the age groups of study participants—in other words, skewing toward middle-aged Digital Immigrants. It seems reasonable then to predict that as the first Digital Natives become adults, sobriety support will continue to see a greater shift in favor of mediated modalities.

Post hoc results related to colleague status. After removing participants who were personal friends with the first author, post hoc analyses with the remaining participants revealed that while colleague status did not alter ratings of F2F sobriety support, it did make a difference in ratings of mediated support. Specifically, sobriety support professionals were less positive about using mediated support than were nonprofessionals. Given that the sample sizes of professionals (33) versus nonprofessionals (100) were uneven, and the sample of professionals was relatively low, these results should be taken as merely suggestive rather than definitive. Furthermore, because of the way the question was framed, colleague status was somewhat confounded with relationship to the first author. For the post hoc analyses, personal friends of the first author were removed, which helped speak to the idea that a personal relationship might have skewed the results. The remaining participants were not personal friends, however, some were colleagues and most simply did not have a personal relationship to the author. The post hoc analyses revealed that many of the major results remained unchanged—but that there were some differences in how professionals responded compared with nonprofessionals. For instance, while professionals and nonprofessionals both preferred F2F support, nonprofessionals were a bit more positive about mediated support. Interestingly, nonprofessionals and professionals alike said they were more likely to be honest in F2F contexts, but nonprofessionals reported greater ease with honesty in the mediated context than did professionals. Colleague status did not make a difference when it came to the question of being drunk or high while seeking support—it was modality where differences emerged.

As these results highlight, study recruitment method had both strengths and limitations. It is a strength that a sample of both professional and nonprofessional individuals in recovery was obtained. It is important to note that participants initiated friendships with a recovery professional of their own accord and not in connection with a research study. It should also be remembered that solicitation of the first author's FB friendship could have been suggested to them by FB itself (Duff, 2011; Lewis & West, 2009).

Because this is a study designed to test F2F versus computer-mediated participation in sobriety support resources, one potential problem is the nature of self-report data: whether the recovery participants claim is accurate cannot be verified. Because of the inherent shame and embarrassment regarding relapse, it is possible that survey responses may be exaggerated or fabricated due to feelings of guilt, fears about mediated privacy, or other personal reasons. Because the study hypothesis and research questions were constructed to test participants' experiences with mediated versus F2F sobriety recovery participation however, any duplicitous survey responses should not significantly affect the results. Furthermore, the anonymity of the survey should have worked in favor of this particular study.

Order effect is another potential limitation. Because all participants were directed to respond to the SSPS items in the order presented (i.e., F2F items, then mediated), they might have potentially rated the F2F items higher because they saw them first. The possibility that order presentation caused participants to use their initial F2F responses as their litmus for responding to the second question subset regarding mediated engagement also could present either a confound (their belief that responses to second question subset should differ from first) or conversely potentially support the authenticity of all responses (participants based their responses to second subset specifically on how they responded to first subset, with first subset responses serving as their "base" upon which to authentically respond to the second). This is a limitation that is inherent to the way we collected the data and the reader must judge the work on its current merits.

Future research. Because this report describes the development and initial psychometric properties of a new scale, future research must test

and validate the themes studied, and should further develop the scale. Future studies might also profitably adapt the two subscales of the SSPS to fit other contexts where comparison of mediated and F2F social support efficacy and attitudes are sought. Scientists interested in this topic must also test and validate the themes studied in this investigation, and should further develop the scales it used. Future longitudinal or cross-sectional research utilizing the survey developed for this study could be created to test its plausible prediction of a further potential migration away from F2F AA. Continued exploration of the beliefs, behaviors, and possible preferences of both current Digital Natives as they continue to maturate, as well as those of their progeny is also suggested to validate both the outcomes delivered and trends portended in this paper.

Future investigations should present the items in other orders, such as presenting their subscales in their two possible orders, randomly mixing the items or pairing each parallel item and varying the order in which the two modalities are presented (e.g., asking about ability to be honest in F2F and then in CMC and for other participants, reversing the presentation of those items). The results can then be compared to those found in this investigation.

As the current NIH grant-funded research exploring how social media might drive, buttress, or support the understanding, prevention, and treatment of substance abuse develops, future studies surrounding this topic might also benefit from reviewing and building upon those outcomes as well.

This investigation also raised questions that should be addressed in future research. For example, future studies could target both recovery professionals and nonprofessionals and continue to explore some of the questions this study left unanswered by recruiting a larger number of professionals. This type of research is relevant because it is common for recovery professionals to have personal experience with sobriety recovery. In fact, they may be taken more seriously than their counterparts who are not in recovery. But being both a professional and a fellow recovered addict may pose extra strains on honesty and anonymity that are critical in recovery circles.

Additionally, the concept of honesty and its different implications can be further explored. Researchers can also elaborate on why those in recovery might be likely to be using during a particular kind of recovery meeting.

Conclusions

We are experiencing a period of cultural transition driven by technology. Currently walking our planet are the very last generations ever to have built social networks primarily through F2F relationships, in the absence of social media. It is important to monitor both the changes in social media and those in the experience users bring with them. Some pundits portend that the increased ease and convenience of mediated communication comes at the cost of social intimacy and authenticity (Aubrey et al., 2008; Caron, 2007; Lyon, 2009; Staff, 2009; Toma, 2013; Whitty, 2008). Other experts argue that mediated accessibility only promotes positive connections and bonds (Keen, 2009; Marshall, 2009; Millat, 2009; Valenzuela, Park, & Kee, 2009).

For those interested in sobriety recovery support, the ability to seek it at any time, anywhere is not just a helpful adjunct to traditional recovery modes, but could even prove life-saving. Still, the importance of close fellowshipping with others and feeling a "part of" a physical community is widely believed to be vital to sobriety success. As technology evolves and the technological perspective of both recovery professionals and nonprofessionals change, the outcomes reported here may change as well. In that case, the legacy of this research may serve (at least in part) as a documentation of where we were with mediated and nonmediated sobriety support at this time in history.

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