



HHS Public Access

Author manuscript

Compr Psychiatry. Author manuscript; available in PMC 2021 November 01.

Published in final edited form as:

Compr Psychiatry. 2020 November ; 103: 152197. doi:10.1016/j.comppsy.2020.152197.

Social Media Recruitment for Mental Health Research: A Systematic Review

Catherine Sanchez, BA^{1,a}, Adrienne Grzenda, M.D., Ph.D.^{2,a}, Andrea Varias, MSHS^{1,b}, Alik S. Widge, M.D., Ph.D.^{3,b}, Linda L. Carpenter, M.D.⁴, William M. McDonald, M.D.⁵, Charles B. Nemeroff, M.D., Ph.D.⁶, Ned H. Kalin, M.D.⁷, Glenn Martin, M.D.⁸, Mauricio Tohen, M.D., DrPH, MBA⁹, Maria Filippou-Frye, M.D., MBS¹, Drew Ramsey, M.D.¹⁰, Eleni Linos, M.D., MPH, DrPH¹¹, Christina Mangurian, M.D., MAS^{12,13,14,c}, Carolyn I. Rodriguez, M.D., Ph.D.^{1,15,c,*}

¹Department of Psychiatry and Behavioral Sciences, Stanford University, Stanford, CA USA

²Department of Psychiatry and Biobehavioral Sciences, David Geffen School of Medicine, University of California, Los Angeles, CA USA

³Department of Psychiatry and Behavioral Sciences, University of Minnesota, MN USA

⁴Department of Psychiatry and Human Behavior, Butler Hospital and Warren Alpert Medical School, Brown University, Providence, RI USA

⁵Department of Psychiatry and Human Behavior, Emory University School of Medicine, Atlanta, GA USA

⁶Department of Psychiatry, University of Texas at Austin Dell Medical School, Austin, TX USA

⁷Department of Psychiatry, University of Wisconsin School of Medicine and Public Health, Madison, WI USA

⁸Department of Psychiatry, Icahn School of Medicine at Mount Sinai, New York, NY USA

⁹Department of Psychiatry and Behavioral Sciences, University of New Mexico Health Sciences Center, Albuquerque, NM USA

¹⁰Department of Psychiatry, Columbia University, New York, NY USA

¹¹Department of Dermatology, Stanford University, Stanford, CA USA

¹²Department of Psychiatry, Weill Institute for Neurosciences, University of California San Francisco, San Francisco, CA USA

*Corresponding author at: Department of Psychiatry and Behavioral Sciences, Stanford University, 401 Quarry Road, Stanford, CA, 94305, carolynrodriguez@stanford.edu.

^aMs. Sanchez and Dr. Grzenda are co-first authors

^bMs. Varias and Dr. Widge are co-second authors

^cDrs. Mangurian and Rodriguez are co-last authors

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

DISCLOSURES

Ms. Sanchez, Dr. Grzenda, Ms. Varias, Dr. Martin, Dr. Ramsey, Dr. Linos, report no conflicts of interest.

¹³UCSF Center for Vulnerable Populations, University of California San Francisco, San Francisco, CA USA

¹⁴UCSF Philip R. Lee Institute for Health Policy Studies, University of California San Francisco, San Francisco, CA USA

¹⁵Veterans Affairs Palo Alto Health Care System, Palo Alto, CA USA

Abstract

Background: Social media holds exciting promise for advancing mental health research recruitment, however, the extent and efficacy to which these platforms are currently in use are underexplored.

Objective: A systematic review was conducted to characterize the current use and efficacy of social media in recruiting participants for mental health research.

Method: A literature review was performed using MEDLINE, EMBASE, and PsychINFO. Only non-duplicative manuscripts written in the English language and published between 1/1/2004–3/31/2019 were selected for further screening. Data extracted included study type and design, participant inclusion criteria, social media platform, advertising strategy, final recruited sample size, recruitment location, year, monetary incentives, comparison to other recruitment methods if performed, and final cost per participant.

Results: A total of 176 unique studies that used social media for mental health research recruitment were reviewed. The majority of studies were cross-sectional (62.5%) in design and recruited adults. Facebook was overwhelmingly the recruitment platform of choice (92.6%), with the use of paid advertisements being the predominant strategy (60.8%). Of the reviewed studies, substance abuse (43.8%) and mood disorders (15.3%) were the primary subjects of investigation. In 68.3% of studies, social media recruitment performed as well as or better than traditional recruitment methods in the number and cost of final enrolled participants. The majority of studies used Facebook for recruitment at a median cost per final recruited study participant of \$19.47. In 55.6% of the studies, social media recruitment was the more cost-effective recruitment method when compared to traditional methods (e.g., referrals, mailing).

Conclusion: Social media appears to be an effective and economical recruitment tool for mental health research. The platform raises methodological and privacy concerns not covered in current research regulations that warrant additional consideration.

Keywords

social media; research; recruitment

1. INTRODUCTION

A perennial issue in mental health research recruitment is the trade-off between sample size, time to recruitment, cost, and representativeness compared to the general population. Traditional recruitment strategies (e.g., flyers, print, and television ads) often generate cohorts of questionable interval validity due to self-selection bias [1]. Recruiting for mental health research is even more complicated, as participation may be hindered by stigma or fear

of negative consequences from self-disclosure. Over the last three decades, participation in population-based research has been steadily declining [1]. Developing new strategies to increase recruitment for mental health research is essential to addressing the field's most pressing problems.

The debut of Myspace in 2003 and Facebook in 2004 fueled a proliferation of online platforms designed to increase social interconnectivity. Facebook, Twitter, YouTube, and Instagram, among others, have rapidly become an avenue for the daily consumption and dissemination of information. More individuals in the US consult social media for news than print newspapers, with 74% of Facebook users checking the website or application daily [2, 3]. While usage is highest among the 18 to 25-year-old demographic, the generational divide is rapidly closing. Approximately 46% of US seniors age 65 and older disclose lifetime Facebook use [2]. The socioeconomic technology gap is slower to close, although decreasing technology costs have made web-enabled smartphones more accessible. A recent study of homeless youth revealed that 90% had a Facebook profile [4]. Studies also suggest increases in racial/ethnic diversity among social media users [5].

In a recent systematic review of 30 studies using Facebook for health research recruitment, *Topolovec-Vranic et al.* reported Facebook performing as well or better than traditional recruitment in 50% of studies [6]. Other reported benefits included relatively low advertising costs, reduced time to meeting recruitment targets, and increased study retention [6–10]. With billions of active users, social media also affords increased access to hard-to-reach, low prevalence populations such as rare diseases and gender and sexual orientation minorities [11, 12].

To date, no systematic reviews have examined the use of social media for research recruitment in mental health research studies. Here, we address this gap by summarizing how social media is currently used in mental health research recruitment and assessing the effectiveness of social media recruitment compared to traditional methods in regard to final sample size and cost [13].

2. METHODS

2.1. Search

For the purposes of this study, social media was defined as websites and/or applications that enable users to create and share content with a network of people. MEDLINE, EMBASE, and PsychINFO were searched using the following terms in the title or abstract: (Facebook OR Twitter OR Instagram OR YouTube OR Tumblr OR Myspace OR Snapchat OR “social media” or “social networking”) AND (recruit* OR advert*) in combination with keywords related to mental health/disorders and MeSH topics relevant to social media, patient selection, and mental health/disorders. The full search strategy is outlined in Supplemental Figure 1. The references of extracted manuscripts were manually reviewed for additional citations. Results were filtered by English language and publication from 1/1/2004–3/31/2019. Studies using pay-for-participation platforms, such as Amazon Mechanical Turk (MTurk), or paid web search results or ads, such as Google, were not included as neither are

social media platforms. Geospatial dating applications (e.g., Grindr, Tinder) were also excluded.

2.2. Screening

After removal of duplicates, titles and abstracts were screened. Manuscripts were included if a study: 1) used social media as a recruitment tool, 2) recruited for mental health research, 3) appeared in a peer-reviewed journal, and 4) reported primary data rather than secondary analysis. General well-being survey studies were included if the investigations incorporated mental health measures. Meta-analyses, systematic reviews, editorials, dissertations, and conference abstracts were excluded (although references were scanned for additional citations). The text of the remaining studies was then screened. Studies were excluded if they: 1) failed to name specific social media platforms, 2) described secondary analysis of data reported elsewhere, or 3) failed to describe the social media recruitment strategy.

2.3. Data Extraction

Data extracted from the relevant studies included study type and design, participant inclusion criteria, social media platform, advertising strategy, final recruited sample size, recruitment location, year, monetary incentives, comparison to other recruitment methods if performed, and final cost per participant. Currencies were converted into US dollar equivalents using the current exchange rate (Supplemental Table 2). Missing metrics were calculated if sufficient data were available.

3. RESULTS

As shown in Figure 1, 2,316 studies were identified through the initial search following removal of duplicates. An additional 24 citations were gathered from reference list review. From these results, manuscripts were excluded by title and abstract screening if unrelated to mental health research, failing to use social media for study recruitment, lacking original data, and/or not published in a peer-reviewed journal. Abstracts ambiguous as to social media use (e.g., “subjects were recruited online”) were retained for full-text screening. The full-text screening of the remaining 355 manuscripts resulted in 179 additional exclusions. Data from the 176 eligible studies were extracted by two reviewers, with a third reviewer utilized to resolve discrepancies.

As shown in Figure 2A, social media recruitment has been steadily increasing over the last decade. Table 1 summarizes the characteristics of the included studies (full details for each study are available in Supplemental Table 2). Studies were primarily conducted in the US (51.7%), Australia (22.7%), and United Kingdom (7.4%) (Figure 2B). The type of research that individuals were recruited to was: 62.5% cross-sectional studies, 20.5% randomized controlled trials, 11.4% non-controlled trials, 5.1% prospective studies, and 0.6% retrospective. Adults were the primary age demographic of interest in 71% of studies, while 5.7% focused exclusively on recruiting adolescents and 18.8% recruited a mixed range. Most studies (79.6%) recruited all genders, 13.1% recruited women exclusively, 5.7% recruited men only, and 1.7% recruited transgendered individuals specifically. Incentives,

either monetary compensation or prize drawing entry, were offered in 41.5% of recruitment efforts, with no compensation offered or reported in the others.

Facebook was the main social media recruitment platform of choice: exclusively (68.8%), or in combination with Twitter (13.6%), Instagram (5.1%), or other platforms (5.1%).

Recruitment methods included paid advertisements (60.8%), free posts on relevant pages/groups (25.0%), study social media pages or profiles (22.7%), posts to the personal social media accounts of the researchers (6.3%), web-based respondent driven sampling (WebRDS) (4%), or direct contact with eligible individuals through the social media platform based on their posted content (4%). Social media was the sole form of recruitment used in 43.2% of studies versus being coupled with traditional recruitment methods (e.g., print ads, clinic or hospital referrals).

Areas of investigation spanned the mental health spectrum: 1) substance use disorder (43.8%), including alcohol, tobacco, cannabis, methamphetamine, MDMA, and opiates, among others [12, 14–88]; 2) mood disorders (15.3%), including bipolar disorder, depression, postpartum anxiety/depression, bereavement [89–115]; 3) general mental health (11.9%) [116–136]; 4) stress, trauma, and/or PTSD (8.5%) [137–150]; 5) suicidal ideation and self-injurious behaviors (4.5%) [151–157]; 6) eating disorders (4%) [158–164]; 7) anxiety disorders (2.8%) [165–167]; 8) impulse control disorders, including gambling and gaming disorder (1.7%) [168–172]; 9) mental health delivery (2.3%) [11, 173, 174]; 10) personality disorders (1.7%) [175–178], 11) pharmacology (1.1%) [179, 180]; 12) developmental disorders (0.6%) [181]; and 13) psychotic disorders (0.6%) [182].

Of the 41 studies that directly compared the performance of social media to other methods, social media performed equally as well or better in 28 (68.3%) in terms of the number of final participants recruited. As Facebook was the primary social media platform utilized (68.8%), we calculated the estimated recruitment costs overall and across study design types for the 49 studies with data available (**Table 3**). The median cost per study participant recruited through Facebook was \$19.47 for all studies, \$6.25 for cross-sectional studies, \$35.68 for non-controlled trials, and \$42.82 for randomized controlled trials. Only a single prospective study had data available, costing \$149.64 per final participant.

4. DISCUSSION

Social media offers a wide variety of recruitment solutions that differ in cost and level of interaction with eligible participants. In some studies, researchers directly contacted users based on review of their profile content. *Tan et al.* screened posts on Weibo (a popular Chinese micro-blogging website equivalent to Twitter) for text suggestive of suicidal ideation and messaged eligible users to participate in a cross-sectional survey [154]. *Kelleher et al.* similarly identified and contacted depressed users on Tumblr by searching posts for variants of “#depressed.” In other studies, investigators posted study information to social media pages or groups related to the demographic or subject area of interest (e.g., new mothers, college students, cannabis) [11, 16, 24, 31, 39–41, 47, 65, 75, 76, 89, 97, 99, 101, 106, 111, 116, 117, 121, 123, 126, 131, 132, 134, 137, 139–141, 143, 147–149, 156, 158, 162, 164, 169, 177, 181, 183, 184]. This method appeared particularly effective when the

platform restricted ads with certain text or images (e.g. cannabis leaf). Some investigators recruited high profile “influencers” (i.e. users with many followers) to post the study to their accounts [118, 157]. Study-specific hashtags (e.g., #depressed) and sharable images were also used to increase secondary recruitment [111, 135, 136]. Less frequently, investigators post the study to their own social media accounts [65, 76, 116, 118, 127, 143, 144, 171, 176]. More common was creating an official social media account for the study [11, 49–51, 57, 63, 70, 73–75, 77–85, 88, 112–115, 128, 129, 131, 133, 136, 145, 149, 157, 161, 167, 172, 179, 185]. Study accounts facilitated promotion to relevant groups, created a centralized area to display more extensive study information, and provided a contact point for questions from interested individuals [117, 140, 159, 176]. Private, closed groups accessible only to enrolled participants were also used to improve retention for longitudinal studies or for the delivery of interventions [57, 58, 136].

Most studies used paid Facebook ads for recruitment. Ads were targeted for display to individuals within the desired range of demographics (e.g., age, location) and contextual interests (e.g., pages/groups to which participants indicated interest, searches). For example, *Borodovsky et al.* limited their Facebook advertisements to US users, 18 years or older, with cannabis-related interests, such as “liking” cannabis-related organizations (e.g., Marijuana Policy Project) or cannabis-related magazines (e.g. High Times) [16]. *Daniulaityte et al.* additionally targeted Twitter users who searched cannabis-related keywords or hashtags (e.g., #marijuana, #weed, #legalizeit) [26].

The median cost per participant for Facebook recruitment for any type of study in the current analysis was \$19.47. This cost is comparable to two prior studies that reported an average cost per participant of \$17.48 and \$19.77 for Facebook recruitment across different types of health studies. Where cost comparisons were made between social media versus traditional recruitment methods, social media was frequently (55.6%) the more cost-effective option [11, 19, 21, 22, 30, 81]. In several cases, investigators indicated recruitment speed using social media was also noted to be faster, although direct calculations were made in a limited number of studies [35, 81, 85]. We generally found a highly variable degree of reporting of social media and comparative traditional recruitment practices. Additionally, we focused exclusively on English-language manuscripts. As such, incomplete retrieval may limit our assessment of the overall perceived benefits to this method.

Cost per participant is highly dependent on the desired final sample size, which is further contingent on study design and the rarity of potential participants within the general population. Post-recruitment statistical adjustment and weighting may impact final cost recruitment. For example, *Bauermeister et. al* recruited participants for a cross-sectional study of alcohol and illicit drug abuse in young adults. The cost per participant increased from \$25.98 to \$108 after weighting the cohort to reflect expected general population distributions [86]. A potentially cost-saving solution is WebRDS (Web Respondent Driven Sampling), in which seed individuals are selected who reflect the desired composition of the final sample. Seed individuals then refer from within their social networks with the supposition that referrals should closely resemble seeds in desired characteristics. A number of studies used this method [48, 59, 86, 88, 136, 186].

Comparable to prior reviews, social media recruitment facilitated increased access to potentially harder-to-reach, hesitant, and/or vulnerable populations, including combat veterans [49–52, 155], sexual or gender minorities [17, 120, 136, 146], African-Americans with OCD [184], natural disaster survivors [139], and rural adolescents [135]. This is quite promising since deriving large study samples of these groups via single or even multi-academic center traditional referral methods can prove challenging given lower prevalence rates. Traditional recruitment methods often require higher motivation (e.g., phone call, in-person appointment) and longer wait times for entry than the click of a mouse. The immediacy of contact may also reduce ambivalence toward participation. In addition, the perceived anonymity and privacy of online interactions may reassure those individuals fearing disclosure. Additionally, social media's impersonal yet connected nature can be theorized to foster a less anxiety-provoking entry for potential study participants.

Not all studies indicated overwhelming success with social media recruitment. Targeted advertising is effective only if the desired population is present on social media or self-discloses sufficient demographic (e.g., age, relationship status) or contextual (e.g., interests, associations) information for identification by the targeting algorithm. The wording and design of ads can also impact recruitment rate. In a depression awareness campaign, *Huiet et al.* found that a happy face illustration garnered significantly more click-throughs than a sad illustration [96]. *Choiet al.* reported that in attempting to recruit men, advertisements worded toward strength outperformed those centered around happiness or resilience [122]. *Schwinn et al.* even found that costs and recruitment efficacy varied based on the day of week and month of the year [61]. To devise a strong advertising campaign, expert consultation may be necessary, a potentially costly additional recruitment cost.

Additional barriers to successful cohort recruitment with social media arise from the potential for misrepresentation by those responding to ads and the need to filter multiple submissions by the same individual respondent. Some studies checked internet protocol (IP) addresses to establish uniqueness of identity [35, 111, 187]. Others reviewed individuals' social media profiles to verify identity [27]. In recruiting US military veterans, *Teo et al.* as well as *Pedersen et al.* employed the use of specific domain knowledge, such as pay grades, to validate individuals [51, 155].

Representativeness of the social media-recruited sample is an additional consideration. Gender, age, and education level are most likely to be imbalanced in social media-recruited cohorts [8, 9]. *Batterham et al.* compared the representativeness of two surveys' samples recruited using Facebook ads compared to two postal-recruited samples as well as a national survey and census data (Australia). The Facebook samples tended to have an overrepresentation of younger and female respondents as well as higher rates of self-reported depression and anxiety [151]. *Thorton et al.* found Facebook-enabled recruitment of a cohort with a higher severity substance abuse compared to non-Facebook methods [188]. *Bauermeister et al.* reported that webRDS-enabled recruitment of a representative sample of young adults with substance use estimates comparable to those found in the National Survey of Drug Use and Mental Health (NSDUH) [86]. The demographic skew of a social media platform may be of consideration depending on the topic of study. *Guillory et al.* found Twitter ads more effective at recruiting younger, more frequent abusers of e-cigarettes than a

Qualtrics online panel [35]. In a study of postpartum depression participants recruited via Facebook versus face-to-face referral, the authors found no differences in sociodemographic, general health, and mental health characteristics between the two samples [119].

Another major challenge associated with social media recruitment is translating and abiding by the federally-mandated requirements for the privacy and security of patients' protected health information (PHI). Penalties for Health Insurance Portability and Accountability Act (HIPAA) violations, even inadvertent ones, can be high and devastating to a healthcare institution and its research enterprise. Civil penalties cannot be imposed in cases where there is no willful neglect if the violation is corrected within 30 days. However, it is unclear how this applies to online data, where retracted material may remain discoverable in perpetuity. The terms of service (TOS) of most social media platforms require their users to grant the company non-exclusive, transferrable license to their posted content[189].

User data may also be sold by the social media platform to interested third-party vendors. Although a user can delete their account, posted information may continue to exist in these purchased repositories. The TOS typically absolves the platform of responsibility for content shared with a third-party vendor prior to the user deleting their account. The lack of control over information exchanged through social media is a critical consideration for researchers planning a recruitment campaign. Social media accounts are common targets for hackers looking to acquire and sell highly lucrative personal information. An estimated 160,000 Facebook accounts are compromised each day [190]. In a data breach, PHI exchanged between researcher and participant may be exposed and rapidly disseminated with little recourse available to either party to facilitate removal.

Finally, the privacy of the research clinicians is also to be considered. In only 5% of studies reviewed here, studies were advertised on the personal profiles of the researchers. Clinicians may have varying attitudes about and comfort levels with their own accessibility to the public and prospective participants through social media. Disclosures of a clinician's personal beliefs, political leanings, and even vacation or family photos may influence researcher-participant interactions in unanticipated, and potentially adverse, ways. For example, increased access to research staff may be inappropriately used as a means for help-seeking, presenting additional challenges and liability considerations for study staff.

Several limitations and biases are important to note to the current review. First, the characteristics of subjects recruited through social media compared to those recruited from traditional sources was not addressed. Second, as there is relatively little literature from non-English-speaking Western countries, particularly in Europe, it is unclear whether the findings could be generalized to this population. Third, publication bias — specifically researchers not publishing studies which had poor social media-based recruitment — may inflate the estimates of cost efficiency. Fourth, cost estimates may not be accurate given both currency exchange rates fluctuate over time and the potentially significant differences in research infrastructure between the countries studied. Finally, there are limitations of the search strategy, including: a) Although we specified seven of the most popular (past and current) platforms and used “social media” MeSH/Emtree and explicit search for “social media” and “social networking” — which would aggregate lesser-known platforms as well

— popular discussion forums, such as Reddit, were excluded. These popular discussion forums are often labeled as “social media.” However, the mechanisms of how users interact and share information on discussion forums is quite different from networking-based platforms; b) Other forms of internet and digital advertising (e.g., Google AdWords and YouTube videos) were excluded from the search. The decision to limit the review to social media was made due its unique characteristics in comparison with other forms of digital/internet advertising, as social media affords to the opportunity for direct engagement with potential participants, free options for advertising/contacting potential participants, as well as passive paid advertising. Additionally, social media involves the aspect of “sharing”/snowball recruitment that other forms of digital advertising do not. Furthermore, Google AdWords, YouTube, and other internet/digital advertising do not have some of the unique privacy/HIPAA considerations as social media platforms. A systematic review of all forms of digital advertising and the underlying mechanics, reach, efficacy, and privacy considerations would be interesting, but beyond the scope of this review.

5. CONCLUSION

Social media presents a tremendous opportunity to address some urgent challenges in mental health research. In some instances, social media cohorts may allow for a higher degree of generalizability without compromise of internal validity. Other benefits reported by investigators using these methods include: 1) low cost, 2) increased access, especially for harder-to-reach populations or rare disorders, 3) less staff hours, and 4) reduced time to meeting recruitment targets. However, as social media platforms are commercially owned, there exist unique privacy and ethics considerations that are not addressed by current federal guidelines on human subjects research. Given the trend of increasing reliance on this method, there is an urgent need for further investigation and regulation in this area.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

ACKNOWLEDGEMENTS

Preparation of this work was supported in part by grants from the Harold Amos Medical Faculty Development Program (Robert Wood Johnson) and NIMH (R01MH105461) to Dr. Rodriguez, NIMH (R01MH112420) to Dr. Mangurian, and NIH (DP2CA225433) to Dr. Linos. The authors further thank Farifteh F. Duffy, Ph.D., and Diana Clarke, Ph.D., of the American Psychiatric Association, for critical administrative and technical assistance throughout preparation.

This article is derived from work done on behalf of the American Psychiatric Association (APA) and remains the property of the APA.

Dr. Grzenda is funded, in part, by a research fellowship grant from the APA/Foundation. Dr. Fillippou-Frye has served as consultant for nOCD LLC.

Drs. Widge has pending patent applications related to electrographic markers and brain stimulation methods to ameliorate mental illness. Dr. Widge has received device donations and consulting income from Medtronic and consulting income from Livanova and Circuit Therapeutics.

Dr. Carpenter has served as a consultant for Magstim, Feelmore Labs, and Neuronix, and has received research clinical trial support from Cerevel, Janssen, NeoSync, and Neuronetics.

Dr. McDonald has research contracts from Stanley Foundation, Soterix, Neuronetics, NeoSync and Cervel Neurotherapeutics. He is an ad hoc member of several NIMH and NINDS study sections. He is a member of the American Psychiatric Association (APA) Council on Research and Quality representing ECT and Neuromodulation Therapies. Dr. McDonald is compensated as the chair of the DSMB for the NIA multicenter study. He receives royalties from Oxford University Press to co-edit a book on the Clinical Guide to Transcranial Magnetic Stimulation in the Treatment of Depression. He is a paid consultant for Signant Health. He has endowed chair funded by the JB Fuqua Foundation. He is an employee of Emory University School of Medicine.

Dr. Tohen was an employee of Lilly (1997 to 2008) and has received honoraria from or consulted for Abbott, AstraZeneca, Alkermes, Allergan, Bristol Myers Squibb, GlaxoSmithKline, Lilly, Johnson & Johnson, Otsuka, Merck, Gedeon Richter Plc, Sunovion, Forest, Roche, Elan, Lundbeck, Teva, Pamlab, Minerva, Neurocrine, Pfizer, Wyeth and Wiley Publishing; his spouse was a full time employee at Lilly (1998–2013).

Dr. Kalin has received research support from NIMH; he has served as a consultant for CME Outfitters, the Pritzker Neuropsychiatric Disorders Research Consortium, the Skyland Trail Advisory Board, the Early Adversity Research External Scientific Advisory Board at the University of Texas-Austin and for Corcept Therapeutics Incorporated; and he receives remuneration from APA Publishing as Editor in Chief of the journal *The American Journal of Psychiatry*.

Dr. Nemeroff has received grants or research support from NIH and the Stanley Medical Research Institute; he has served as a consultant for Bracket (Clintara), Dainippon Pharma, Fortress Biotech, Intra-Cellular Therapies, Janssen Research and Development, Magstim, Prismic Pharmaceuticals, Sumitomo Navitor Pharmaceuticals, Sunovion, Taisho Pharmaceutical, Takeda, TC MSO, and Xhale; he has served on scientific advisory boards for the American Foundation for Suicide Prevention (AFSP), the Anxiety Disorders Association of America (ADAA), Bracket (Clintara), the Brain and Behavior Research Foundation, the Laureate Institute for Brain Research, Skyland Trail, and Xhale and on directorial boards for ADAA, AFSP, and Gratitude America; he is a stockholder in AbbVie, Antares, BI Gen Holdings, Celgene, Corcept Therapeutics, OPKO Health, Seattle Genetics, and Xhale; he receives income or has equity of \$10,000 or more from American Psychiatric Publishing, Bracket (Clintara), CME Outfitters, Intra-Cellular Therapies, Magstim, Takeda, and Xhale; and he holds patents on a method and devices for transdermal delivery of lithium (patent 6,375,990B1) and a method of assessing antidepressant drug therapy via transport inhibition of monoamine neurotransmitters by ex vivo assay (patent 7,148,027B2).

Dr. Mangurian receives support from NIH, Doris Duke Charitable Foundation, the California Health Care Foundation, and Genentech. She is a founding member of TIME'S UP Healthcare, but receives no financial compensation from that organization. In 2019, she has received one-time speaking fees from Uncommon Bold.

In the last 3 years, Dr. Rodriguez has served as a consultant for Epiodyne, receives research grant support from Biohaven Pharmaceuticals and a stipend from APA Publishing for her role as Deputy Editor at *The American Journal of Psychiatry*.

REFERENCES

- [1]. Caplan A, Friesen P. Health disparities and clinical trial recruitment: Is there a duty to tweet? *PLoS Biol.* 2017;15:e2002040. [PubMed: 28249024]
- [2]. Share of U.S. adults using social media, including Facebook, is mostly unchanged since 2018. Washington, D.C.: Pew Research Center; 2019.
- [3]. Social media outpaces print newspapers in the U.S. as a news source. Washington, D.C. : Pew Research Center; 2018.
- [4]. Harpin S, Davis J, Low H, Gilroy C. Mobile Phone and Social Media Use of Homeless Youth in Denver, Colorado. *J Community Health Nurs.* 2016;33:90–7. [PubMed: 27074405]
- [5]. Chou WY, Hunt YM, Beckjord EB, Moser RP, Hesse BW. Social media use in the United States: implications for health communication. *J Med Internet Res.* 2009;11:e48. [PubMed: 19945947]
- [6]. Topolovec-Vranic J, Natarajan K. The Use of Social Media in Recruitment for Medical Research Studies: A Scoping Review. *J Med Internet Res.* 2016;18:e286. [PubMed: 27821383]
- [7]. Amon KL, Campbell AJ, Hawke C, Steinbeck K. Facebook as a recruitment tool for adolescent health research: a systematic review. *Academic pediatrics.* 2014;14:439–47.e4. [PubMed: 25169155]
- [8]. Thornton L, Batterham PJ, Fassnacht DB, Kay-Lambkin F, Calear AL, Hunt S. Recruiting for health, medical or psychosocial research using Facebook: Systematic review. *Internet interventions.* 2016;4:72–81. [PubMed: 30135792]

- [9]. Whitaker C, Stevelink S, Fear N. The Use of Facebook in Recruiting Participants for Health Research Purposes: A Systematic Review. *J Med Internet Res*. 2017;19:e290. [PubMed: 28851679]
- [10]. Khatri C, Chapman SJ, Glasbey J, Kelly M, Nepogodiev D, Bhangu A, et al. Social media and internet driven study recruitment: evaluating a new model for promoting collaborator engagement and participation. *PLoS One*. 2015;10:e0118899. [PubMed: 25775005]
- [11]. Kayrouz R, Dear BF, Karin E, Titov N. Facebook as an effective recruitment strategy for mental health research of hard to reach populations. *Internet interventions*. 2016;4:1–10. [PubMed: 30135786]
- [12]. Guillery J, Wiant KF, Farrelly M, Fiacco L, Alam I, Hoffman L, et al. Recruiting Hard-to-Reach Populations for Survey Research: Using Facebook and Instagram Advertisements and In-Person Intercept in LGBT Bars and Nightclubs to Recruit LGBT Young Adults. *Journal of medical Internet research*. 2018;20:e197. [PubMed: 29914861]
- [13]. Gelinas L, Pierce R, Winkler S, Cohen IG, Lynch HF, Bierer BE. Using Social Media as a Research Recruitment Tool: Ethical Issues and Recommendations. *Am J Bioeth*. 2017;17:3–14.
- [14]. Berg CJ, Buller DB, Schauer GL, Windle M, Stratton E, Kegler MC. Rules regarding marijuana and its use in personal residences: findings from marijuana users and nonusers recruited through social media. *Journal of environmental and public health*. 2015;2015:476017. [PubMed: 26576162]
- [15]. Bold KW, Hanrahan TH, O'Malley SS, Fucito LM. Exploring the Utility of Web-Based Social Media Advertising to Recruit Adult Heavy-Drinking Smokers for Treatment. *J Med Internet Res*. 2016;18:e107. [PubMed: 27194456]
- [16]. Borodovsky JT, Marsch LA, Budney AJ. Studying Cannabis Use Behaviors With Facebook and Web Surveys: Methods and Insights. *JMIR public health and surveillance*. 2018;4:e48. [PubMed: 29720366]
- [17]. Boyle SC, LaBrie JW, Witkovic YD. Do lesbians overestimate alcohol use norms? Exploring the potential utility of personalized normative feedback interventions to reduce high-risk drinking in Southern California lesbian communities. *Journal of gay & lesbian social services*. 2016;28:179–94. [PubMed: 28579731]
- [18]. Brief DJ, Rubin A, Keane TM, Enggasser JL, Roy M, Helmuth E, et al. Web intervention for OEF/OIF veterans with problem drinking and PTSD symptoms: a randomized clinical trial. *Journal of consulting and clinical psychology*. 2013;81:890–900. [PubMed: 23875821]
- [19]. Brodar KE, Hall MG, Butler EN, Parada H, Stein-Seroussi A, Hanley S, et al. Recruiting Diverse Smokers: Enrollment Yields and Cost. *International journal of environmental research and public health*. 2016;13.
- [20]. Bunge EL, Taylor LA, Bond M, Stephens TN, Nishimuta K, Barrera AZ, et al. Facebook for recruiting Spanish- and English-speaking smokers. *Internet interventions*. 2019;17:100238. [PubMed: 30886827]
- [21]. Carlini BH, Safiotti L, Rue TC, Miles L. Using Internet to recruit immigrants with language and culture barriers for tobacco and alcohol use screening: a study among Brazilians. *Journal of immigrant and minority health*. 2015;17:553–60. [PubMed: 24563138]
- [22]. Carter-Harris L, Bartlett Ellis R, Warrick A, Rawl S. Beyond Traditional Newspaper Advertisement: Leveraging Facebook-Targeted Advertisement to Recruit Long-Term Smokers for Research. *J Med Internet Res*. 2016;18:e117. [PubMed: 27306780]
- [23]. Coathup V, Smith L, Boulton M. Exploration of dietary patterns and alcohol consumption in pregnant women in the UK: A mixed methods study. *Midwifery*. 2017;51:24–32. [PubMed: 28527301]
- [24]. Corroon J, Phillips JA. A Cross-Sectional Study of Cannabidiol Users. *Cannabis and cannabinoid research*. 2018;3:152–61. [PubMed: 30014038]
- [25]. Currin JM, Croff JM, Hubach RD. Baked sex: The exploration of sex-related drug expectancies of marijuana users. *Sexuality Research & Social Policy: A Journal of the NSRC*. 2017.
- [26]. Daniulaityte R, Zatreh MY, Lamy FR, Nahhas RW, Martins SS, Sheth A, et al. A Twitter-based survey on marijuana concentrate use. *Drug and alcohol dependence*. 2018;187:155–9. [PubMed: 29669296]

- [27]. Davis AK, Arterberry BJ, Schneeberger D, Bonar EE, Bauermeister JA, Young SD, et al. Evaluation of the dualistic model of passion for alcohol consumption among emerging adults engaged in risky drinking. *Addiction Research & Theory*. 2019.
- [28]. Davis AK, Rosenberg H. Using the Theory of Planned Behavior to predict implementation of harm reduction strategies among MDMA/ecstasy users. *Psychology of addictive behaviors : journal of the Society of Psychologists in Addictive Behaviors*. 2016;30:500–8. [PubMed: 27322805]
- [29]. Deady M, Mills KL, Teesson M, Kay-Lambkin F. An Online Intervention for Co-Occurring Depression and Problematic Alcohol Use in Young People: Primary Outcomes From a Randomized Controlled Trial. *J Med Internet Res*. 2016;18:e71. [PubMed: 27009465]
- [30]. Emery JL, Coleman T, Sutton S, Cooper S, Leonardi-Bee J, Jones M, et al. Uptake of Tailored Text Message Smoking Cessation Support in Pregnancy When Advertised on the Internet (MiQuit): Observational Study. *J Med Internet Res*. 2018;20:e146. [PubMed: 29674308]
- [31]. Fazzino TL, Rose GL, Pollack SM, Helzer JE. Recruiting U.S. and Canadian college students via social media for participation in a web-based brief intervention study. *Journal of studies on alcohol and drugs*. 2015;76:127–32. [PubMed: 25486401]
- [32]. Frandsen M, Thow M, Ferguson SG. The Effectiveness Of Social Media (Facebook) Compared With More Traditional Advertising Methods for Recruiting Eligible Participants To Health Research Studies: A Randomized, Controlled Clinical Trial. *JMIR research protocols*. 2016;5:e161. [PubMed: 27511829]
- [33]. Frandsen M, Walters J, Ferguson SG. Exploring the viability of using online social media advertising as a recruitment method for smoking cessation clinical trials. *Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco*. 2014;16:247–51. [PubMed: 24127266]
- [34]. Graham AL, Fang Y, Moreno JL, Streiff SL, Villegas J, Munoz RF, et al. Online advertising to reach and recruit Latino smokers to an internet cessation program: impact and costs. *J Med Internet Res*. 2012;14:e116. [PubMed: 22954502]
- [35]. Guillory J, Kim A, Murphy J, Bradfield B, Nonnemaker J, Hsieh Y. Comparing Twitter and Online Panels for Survey Recruitment of E-Cigarette Users and Smokers. *J Med Internet Res*. 2016;18:e288. [PubMed: 27847353]
- [36]. Hajek P, Peerbux S, Phillips-Waller A, Smith C, Pittaccio K, Przulj D. Are ‘dual users’ who smoke and use e-cigarettes interested in using varenicline to stop smoking altogether, and can they benefit from it? A cohort study of UK vapers. *BMJ open*. 2019;9:e026642.
- [37]. Knapp AA, Lee DC, Borodovsky JT, Auty SG, Gabrielli J, Budney AJ. Emerging Trends in Cannabis Administration Among Adolescent Cannabis Users. *The Journal of adolescent health : official publication of the Society for Adolescent Medicine*. 2019;64:487–93. [PubMed: 30205931]
- [38]. Lee CM, Blayney J, Rhew IC, Lewis MA, Kaysen D. College Status, Perceived Drinking Norms, and Alcohol Use among Sexual Minority Women. *Psychology of sexual orientation and gender diversity*. 2016;3:104–12. [PubMed: 27774492]
- [39]. Lennox J, Emslie C, Sweeting H, Lyons A. The role of alcohol in constructing gender & class identities among young women in the age of social media. *The International journal on drug policy*. 2018;58:13–21. [PubMed: 29734048]
- [40]. Lewek P, Wo niak B, Maludzi ska P, migielski J, Kardas P. Polish e-cigarettes: Users reasons to start vaping – A survey of 1142 Polish vapers. *Family Medicine and Primary Care Review*. 2018;20:232–5.
- [41]. Lord S, Brevard J, Budman S. Connecting to young adults: an online social network survey of beliefs and attitudes associated with prescription opioid misuse among college students. *Substance use & misuse*. 2011;46:66–76. [PubMed: 21190407]
- [42]. MacDonnell K, Cowen E, Cunningham DJ, Ritterband L, Ingersoll K. Online recruitment of a non-help-seeking sample for an internet intervention: Lessons learned in an alcohol-exposed pregnancy risk reduction study. *Internet interventions*. 2019;17.
- [43]. Mak WW, Chio FH, Chan AT, Lui WW, Wu EK. The Efficacy of Internet-Based Mindfulness Training and Cognitive-Behavioral Training With Telephone Support in the Enhancement of

Mental Health Among College Students and Young Working Adults: Randomized Controlled Trial. *J Med Internet Res*. 2017;19:e84. [PubMed: 28330831]

- [44]. Molina Y, Marquez JH, Logan DE, Leeson CJ, Balsam KF, Kaysen DL. Current intimate relationship status, depression, and alcohol use among bisexual women: The mediating roles of bisexual-specific minority stressors. *Sex roles*. 2015;73:43–57. [PubMed: 26456995]
- [45]. Montgomery L, Heidelberg K, Robinson C. Characterizing Blunt Use Among Twitter Users: Racial/Ethnic Differences in Use Patterns and Characteristics. *Substance use & misuse*. 2018;53:501–7. [PubMed: 28910232]
- [46]. Moreno MA, Christakis DA, Egan KG, Brockman LN, Becker T. Associations between displayed alcohol references on Facebook and problem drinking among college students. *Arch Pediatr Adolesc Med*. 2012;166:157–63. [PubMed: 21969360]
- [47]. Nyi PP, Lai EP, Lee DY, Biglete SA, Torrecer GI, Anderson IB. Influence of age on Salvia divinorum use: results of an Internet survey. *Journal of psychoactive drugs*. 2010;42:385–92. [PubMed: 21053761]
- [48]. Oesterle S, Epstein M, Haggerty KP, Moreno MA. Using Facebook to Recruit Parents to Participate in a Family Program to Prevent Teen Drug Use. *Prevention science : the official journal of the Society for Prevention Research*. 2018;19:559–69. [PubMed: 29116552]
- [49]. Osilla KC, Pedersen ER, Tolpadi A, Howard SS, Phillips JL, Gore KL. The Feasibility of a Web Intervention for Military and Veteran Spouses Concerned About Their Partner's Alcohol Misuse. *The journal of behavioral health services & research*. 2018;45:57–73. [PubMed: 28039559]
- [50]. Pedersen ER, Helmuth ED, Marshall GN, Schell TL, PunKay M, Kurz J. Using facebook to recruit young adult veterans: online mental health research. *JMIR research protocols*. 2015;4:e63. [PubMed: 26033209]
- [51]. Pedersen ER, Naranjo D, Marshall GN. Recruitment and retention of young adult veteran drinkers using Facebook. *PLoS One*. 2017;12:e0172972. [PubMed: 28249027]
- [52]. Pedersen ER, Osilla KC, Helmuth ED, Tolpadi A, Gore K. Reaching Concerned Partners of Heavy Drinking Service Members and Veterans through Facebook. *Military Behavioral Health*. 2017;5:265–73.
- [53]. Pepper JK, MacMonegle AJ, Nonnemaker JM. Adolescents' Use of Basic, Intermediate, and Advanced Device Types for Vaping. *Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco*. 2019;21:55–62. [PubMed: 29294122]
- [54]. Rait MA, Prochaska JJ, Rubinstein ML. Recruitment of adolescents for a smoking study: use of traditional strategies and social media. *Translational behavioral medicine*. 2015;5:254–9. [PubMed: 26327930]
- [55]. Ramirez AG, Chalela P, Akopian D, Munoz E, Gallion KJ, Despres C, et al. Text and Mobile Media Smoking Cessation Service for Young Adults in South Texas: Operation and Cost-Effectiveness Estimation. *Health promotion practice*. 2017;18:581–5. [PubMed: 28438055]
- [56]. Ramo DE, Prochaska JJ. Broad reach and targeted recruitment using Facebook for an online survey of young adult substance use. *J Med Internet Res*. 2012;14:e28. [PubMed: 22360969]
- [57]. Ramo DE, Rodriguez TM, Chavez K, Sommer MJ, Prochaska JJ. Facebook Recruitment of Young Adult Smokers for a Cessation Trial: Methods, Metrics, and Lessons Learned. *Internet interventions*. 2014;1:58–64. [PubMed: 25045624]
- [58]. Ramo DE, Thurl J, Delucchi KL, Hall S, Ling PM, Belohlavek A, et al. A randomized controlled evaluation of the tobacco status project, a Facebook intervention for young adults. *Addiction*. 2018.
- [59]. Sadasivam RS, Cutrona SL, Luger TM, Volz E, Kinney R, Rao SR, et al. Share2Quit: Online Social Network Peer Marketing of Tobacco Cessation Systems. *Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco*. 2017;19:314–23. [PubMed: 27613918]
- [60]. Schinke S, Schwinn T, Hopkins J, Gorroochurn P, Wahlstrom L. Is the Legalization of Marijuana Associated With Its Use by Adolescents? *Substance use & misuse*. 2017;52:256–8. [PubMed: 27754733]

- [61]. Schwinn T, Hopkins J, Schinke SP, Liu X. Using Facebook ads with traditional paper mailings to recruit adolescent girls for a clinical trial. *Addictive behaviors*. 2017;65:207–13. [PubMed: 27835860]
- [62]. Schwinn TM, Thom B, Schinke SP, Hopkins J. Preventing drug use among sexual -minority youths: findings from a tailored, web-based intervention. *The Journal of adolescent health : official publication of the Society for Adolescent Medicine*. 2015;56:571–3. [PubMed: 25744209]
- [63]. Sexton M, Cuttler C, Finnell JS, Mischley LK. A Cross-Sectional Survey of Medical Cannabis Users: Patterns of Use and Perceived Efficacy. *Cannabis and cannabinoid research*. 2016;1:131–8. [PubMed: 28861489]
- [64]. Thrul J, Belohlavek A, Hambrick D, Kaur M, Ramo DE. Conducting online focus groups on Facebook to inform health behavior change interventions: Two case studies and lessons learned. *Internet interventions*. 2017;9:106–11. [PubMed: 29276693]
- [65]. Vederhus JK, Kristensen O, Timko C. How do psychological characteristics of family members affected by substance use influence quality of life? *Quality of life research : an international journal of quality of life aspects of treatment, care and rehabilitation*. 2019.
- [66]. Villanti AC, Jacobs MA, Zawistowski G, Brookover J, Stanton CA, Graham AL. Impact of Baseline Assessment Modality on Enrollment and Retention in a Facebook Smoking Cessation Study. *J Med Internet Res*. 2015;17:e179. [PubMed: 26183789]
- [67]. Wagner DE, Fernandez P, Jordan JW, Saggese DJ. Freedom From Chew: Using Social Branding to Reduce Chewing Tobacco Use Among Country Peer Crowd Teens. *Health education & behavior : the official publication of the Society for Public Health Education*. 2019;46:286–94. [PubMed: 30353748]
- [68]. Walker MW, Navarro MA, Hoffman L, Wagner DE, Stalgaitis CA, Jordan JW. The Hip Hop peer crowd: An opportunity for intervention to reduce tobacco use among at-risk youth. *Addictive behaviors*. 2018;82:28–34. [PubMed: 29477904]
- [69]. Washington TA, Patel SN, Meyer-Adams N. Drinking Patterns and HIV Risk Behaviors Among Black and Latino Men Who Have Sex Within Los Angeles County. *American journal of men's health*. 2017;11:834–44.
- [70]. Watson NL, Mull KE, Heffner JL, McClure JB, Bricker JB. Participant Recruitment and Retention in Remote eHealth Intervention Trials: Methods and Lessons Learned From a Large Randomized Controlled Trial of Two Web-Based Smoking Interventions. *J Med Internet Res*. 2018;20:e10351. [PubMed: 30143479]
- [71]. Weaver ER, Wright CJ, Dietze PM, Lim MS. 'A Drink That Makes You Feel Happier, Relaxed and Loving': Young People's Perceptions of Alcohol Advertising on Facebook. *Alcohol and alcoholism (Oxford, Oxfordshire)*. 2016;51:481–6.
- [72]. Wilkerson JM, Shenk JE, Grey JA, Simon Rosser BR, Noor SW. Recruitment Strategies of Methamphetamine-Using Men Who Have Sex with Men into an Online Survey. *Journal of substance use*. 2015;20:33–7. [PubMed: 25642143]
- [73]. Young SD, Nianogo RA, Chiu CJ, Menacho L, Galea J. Substance use and sexual risk behaviors among Peruvian MSM social media users. *AIDS care*. 2016;28:112–8. [PubMed: 26324405]
- [74]. Young SD, Shoptaw S. Stimulant use among African American and Latino MSM social networking users. *Journal of addictive diseases*. 2013;32:39–45. [PubMed: 23480246]
- [75]. Norman J, Grace S, Lloyd C. Legal high groups on the Internet—The creation of new organized deviant groups? *Drugs: Education, Prevention & Policy*. 2014;21:14–23.
- [76]. Deligianni E, Corkery JM, Schifano F, Lione LA. An international survey on the awareness, use, preference, and health perception of novel psychoactive substances (NPS). *Human psychopharmacology*. 2017;32.
- [77]. Akers L, Gordon JS. Using Facebook for Large-Scale Online Randomized Clinical Trial Recruitment: Effective Advertising Strategies. *J Med Internet Res*. 2018;20:e290. [PubMed: 30409765]
- [78]. Birrell L, Deen H, Champion KE, Newton NC, Stapinski LA, Kay-Lambkin F, et al. A Mobile App to Provide Evidence-Based Information About Crystal Methamphetamine (Ice) to the

- Community (Cracks in the Ice): Co-Design and Beta Testing. *JMIR mHealth and uHealth*. 2018;6:e11107. [PubMed: 30573443]
- [79]. Blitchein-Winicki D, Zevallos K, Samolski MR, Requena D, Velarde C, Briceno P, et al. Feasibility and Acceptability of a Text Message-Based Smoking Cessation Program for Young Adults in Lima, Peru: Pilot Study. *JMIR mHealth and uHealth*. 2017;5:e116. [PubMed: 28778850]
- [80]. Coday M, Richey P, Thomas F, Tran QT, Terrell SB, Tylavsky F, et al. The recruitment experience of a randomized clinical trial to aid young adult smokers to stop smoking without weight gain with interactive technology. *Contemporary Clinical Trials Communications*. 2016;2:61–8. [PubMed: 26949747]
- [81]. Derrick JL, Eliseo-Arras RK, Hanny C, Britton M, Haddad S. Comparison of internet and mailing methods to recruit couples into research on unaided smoking cessation. *Addictive behaviors*. 2017;75:12–6. [PubMed: 28662435]
- [82]. Gilligan C, Kypri K, Bourke J. Social networking versus facebook advertising to recruit survey respondents: a quasi-experimental study. *JMIR research protocols*. 2014;3:e48. [PubMed: 25230740]
- [83]. Haines-Saah RJ, Kelly MT, Oliffe JL, Bottorff JL. Picture Me Smokefree: a qualitative study using social media and digital photography to engage young adults in tobacco reduction and cessation. *J Med Internet Res*. 2015;17:e27. [PubMed: 25624064]
- [84]. Hammoud MA, Jin F, Degenhardt L, Lea T, Maher L, Grierson J, et al. Following Lives Undergoing Change (Flux) study: Implementation and baseline prevalence of drug use in an online cohort study of gay and bisexual men in Australia. *The International journal on drug policy*. 2017;41:41–50. [PubMed: 28081482]
- [85]. Heffner JL, Wyszynski CM, Comstock B, Mercer LD, Bricker J. Overcoming recruitment challenges of web-based interventions for tobacco use: the case of web-based acceptance and commitment therapy for smoking cessation. *Addictive behaviors*. 2013;38:2473–6. [PubMed: 23770645]
- [86]. Bauermeister JA, Zimmerman MA, Johns MM, Glowacki P, Stoddard S, Volz E. Innovative recruitment using online networks: lessons learned from an online study of alcohol and other drug use utilizing a web-based, respondent-driven sampling (webRDS) strategy. *Journal of studies on alcohol and drugs*. 2012;73:834–8. [PubMed: 22846248]
- [87]. Cobb NK, Jacobs MA, Wileyto P, Valente T, Graham AL. Diffusion of an Evidence-Based Smoking Cessation Intervention Through Facebook: A Randomized Controlled Trial. *American journal of public health*. 2016;106:1130–5. [PubMed: 27077358]
- [88]. Hildebrand J, Burns S, Zhao Y, Lobo R, Howat P, Allsop S, et al. Potential and Challenges in Collecting Social and Behavioral Data on Adolescent Alcohol Norms: Comparing Respondent-Driven Sampling and Web-Based Respondent-Driven Sampling. *J Med Internet Res*. 2015;17:e285. [PubMed: 26704736]
- [89]. Anguera JA, Jordan JT, Castaneda D, Gazzaley A, Arean PA. Conducting a fully mobile and randomised clinical trial for depression: access, engagement and expense. *BMJ Innov*. 2016;2:14–21.
- [90]. Callegari ET, Reavley N, Gorelik A, Garland SM, Wark JD, Safe Dst. Serum 25-hydroxyvitamin D and mental health in young Australian women: Results from the Safe-D study. *J Affect Disord*. 2017;224:48–55. [PubMed: 27810275]
- [91]. Christensen H, Batterham PJ, Gosling JA, Ritterband LM, Griffiths KM, Thorndike FP, et al. Effectiveness of an online insomnia program (SHUTi) for prevention of depressive episodes (the GoodNight Study): a randomised controlled trial. *Lancet Psychiatry*. 2016;3:333–41. [PubMed: 26827250]
- [92]. Dunne L, Perich T, Meade T. The relationship between social support and personal recovery in bipolar disorder. *Psychiatric rehabilitation journal*. 2019;42:100–3. [PubMed: 30221967]
- [93]. Eisma MC, Boelen PA, van den Bout J, Stroebe W, Schut HA, Lancee J, et al. Internet-Based Exposure and Behavioral Activation for Complicated Grief and Rumination: A Randomized Controlled Trial. *Behav Ther*. 2015;46:729–48. [PubMed: 26520217]

- [94]. Gibbs JJ, Rice E. The social context of depression symptomology in sexual minority male youth: Determinants of depression in a sample of Grindr users. *Journal of Homosexuality*. 2016;63:278–99. [PubMed: 26295497]
- [95]. Huesch MD, Mukherjee D, Saunders EF. E-recruitment into a bipolar disorder trial using Facebook tailored advertising. *Clin Trials*. 2018;15:522–3. [PubMed: 29952243]
- [96]. Hui A, Wong PW, Fu KW. Evaluation of an Online Campaign for Promoting Help-Seeking Attitudes for Depression Using a Facebook Advertisement: An Online Randomized Controlled Experiment. *JMIR mental health*. 2015;2:e5. [PubMed: 26543911]
- [97]. Kerns JL, Mengesha B, McNamara BC, Cassidy A, Pearlson G, Kuppermann M. Effect of counseling quality on anxiety, grief, and coping after second-trimester abortion for pregnancy complications. *Contraception*. 2018;97:520–3. [PubMed: 29477632]
- [98]. Krusche A, Rudolf von Rohr I, Muse K, Duggan D, Crane C, Williams JM. An evaluation of the effectiveness of recruitment methods: the staying well after depression randomized controlled trial. *Clin Trials*. 2014;11:141–9. [PubMed: 24686105]
- [99]. Lambert JD, Greaves CJ, Farrand P, Price L, Haase AM, Taylor AH. Web-Based Intervention Using Behavioral Activation and Physical Activity for Adults With Depression (The eMotion Study): Pilot Randomized Controlled Trial. *J Med Internet Res*. 2018;20:e10112. [PubMed: 30012547]
- [100]. Lattie EG, Ho J, Sargent E, Tomasino KN, Smith JD, Brown CH, et al. Teens Engaged in Collaborative Health: The Feasibility and Acceptability of an Online Skill-Building Intervention for Adolescents at Risk for Depression. *Internet interventions*. 2017;8:15–26. [PubMed: 28584734]
- [101]. Maloni JA, Przeworski A, Damato EG. Web recruitment and internet use and preferences reported by women with postpartum depression after pregnancy complications. *Archives of psychiatric nursing*. 2013;27:90–5. [PubMed: 23540519]
- [102]. Masand PS, Tracy N. Results from an online survey of patient and caregiver perspectives on unmet needs in the treatment of bipolar disorder. *The primary care companion for CNS disorders*. 2014;16.
- [103]. Morgan AJ, Jorm AF, Mackinnon AJ. Internet-based recruitment to a depression prevention intervention: lessons from the Mood Memos study. *J Med Internet Res*. 2013;15:e31. [PubMed: 23403043]
- [104]. Pratap A, Renn BN, Volponi J, Mooney SD, Gazzaley A, Arian PA, et al. Using Mobile Apps to Assess and Treat Depression in Hispanic and Latino Populations: Fully Remote Randomized Clinical Trial. *J Med Internet Res*. 2018;20:e10130. [PubMed: 30093372]
- [105]. Silva Almodovar A, Surve S, Axon DR, Cooper D, Nahata MC. Self-Directed Engagement with a Mobile App (Sinaspri) and Its Effects on Confidence in Coping Skills, Depression, and Anxiety: Retrospective Longitudinal Study. *JMIR mHealth and uHealth*. 2018;6:e64. [PubMed: 29549066]
- [106]. Unlu Ince B, Cuijpers P, van 't Hof E, van Ballegooijen W, Christensen H, Riper H. Internet-based, culturally sensitive, problem-solving therapy for Turkish migrants with depression: randomized controlled trial. *J Med Internet Res*. 2013;15:e227. [PubMed: 24121307]
- [107]. Wise T, Arnone D, Marwood L, Zahn R, Lythe KE, Young AH. Recruiting for research studies using online public advertisements: Examples from research in affective disorders. *Neuropsychiatric Disease and Treatment*. 2016;12:279–85. [PubMed: 26917961]
- [108]. Youn SJ, Trinh N-H, Shyu I, Chang T, Fava M, Kvedar J, et al. Using online social media, Facebook, in screening for major depressive disorder among college students. *International Journal of Clinical and Health Psychology*. 2013;13:74–80.
- [109]. Dodd AL, Mezes B, Lobban F, Jones SH. Psychological mechanisms and the ups and downs of personal recovery in bipolar disorder. *The British journal of clinical psychology*. 2017;56:310–28. [PubMed: 28543095]
- [110]. Kelleher E, Moreno M, Wilt MP. Recruitment of Participants and Delivery of Online Mental Health Resources for Depressed Individuals Using Tumblr: Pilot Randomized Control Trial. *JMIR research protocols*. 2018;7:e95. [PubMed: 29650507]

- [111]. Ashford MT, Ayers S, Olander EK. Interest in web-based treatments for postpartum anxiety: an exploratory survey. *Journal of reproductive and infant psychology*. 2017;35:394–409. [PubMed: 29517373]
- [112]. Fogarty AS, Proudfoot J, Whittle EL, Clarke J, Player MJ, Christensen H, et al. Preliminary Evaluation of a Brief Web and Mobile Phone Intervention for Men With Depression: Men's Positive Coping Strategies and Associated Depression, Resilience, and Work and Social Functioning. *JMIR mental health*. 2017;4:e33. [PubMed: 28798009]
- [113]. Kayrouz R, Dear BF, Karin E, Fogliati VJ, Gandy M, Keyrouz L, et al. Acceptability of Mental Health Services for Anxiety and Depression in an Arab Sample. *Community mental health journal*. 2018;54:875–83. [PubMed: 29368132]
- [114]. King DB, O'Rourke N, DeLongis A. Social media recruitment and online data collection: A beginner's guide and best practices for accessing low-prevalence and hard-to-reach populations. *Canadian Psychology/Psychologie canadienne*. 2014;55:240–9.
- [115]. Batterham PJ, Calear AL, Farrer L, McCallum SM, Cheng VWS. FitMindKit: Randomised controlled trial of an automatically tailored online program for mood, anxiety, substance use and suicidality. *Internet interventions*. 2018;12:91–9. [PubMed: 30135773]
- [116]. Carrotte ER, Dietze PM, Wright CJ, Lim MS. Who 'likes' alcohol? Young Australians' engagement with alcohol marketing via social media and related alcohol consumption patterns. *Aust N Z J Public Health*. 2016;40:474–9. [PubMed: 27624756]
- [117]. Fonseca A, Canavarro MC. Women's intentions of informal and formal help-seeking for mental health problems during the perinatal period: The role of perceived encouragement from the partner. *Midwifery*. 2017;50:78–85. [PubMed: 28395200]
- [118]. Han X, Han W, Qu J, Li B, Zhu Q. What happens online stays online? —Social media dependency, online support behavior and offline effects for LGBT. *Computers in Human Behavior*. 2019;93:91–8.
- [119]. Leach LS, Butterworth P, Poyser C, Batterham PJ, Farrer LM. Online Recruitment: Feasibility, Cost, and Representativeness in a Study of Postpartum Women. *Journal of Medical Internet Research*. 2017;19.
- [120]. Balsam KF, Molina Y, Blayney JA, Dillworth T, Zimmerman L, Kaysen D. Racial/ethnic differences in identity and mental health outcomes among young sexual minority women. *Cultural diversity & ethnic minority psychology*. 2015;21:380–90. [PubMed: 25642782]
- [121]. Choi I, Milne DN, Deady M, Calvo RA, Harvey SB, Glozier N. Impact of Mental Health Screening on Promoting Immediate Online Help-Seeking: Randomized Trial Comparing Normative Versus Humor-Driven Feedback. *JMIR mental health*. 2018;5:e26. [PubMed: 29622528]
- [122]. Choi I, Milne DN, Glozier N, Peters D, Harvey SB, Calvo RA. Using different Facebook advertisements to recruit men for an online mental health study: Engagement and selection bias. *Internet interventions*. 2017;8:27–34. [PubMed: 30135825]
- [123]. Ellis LA, Collin P, Davenport TA, Hurley PJ, Burns JM, Hickie IB. Young men, mental health, and technology: implications for service design and delivery in the digital age. *J Med Internet Res*. 2012;14:e160. [PubMed: 23171827]
- [124]. Fenner Y, Garland SM, Moore EE, Jayasinghe Y, Fletcher A, Tabrizi SN, et al. Web-based recruiting for health research using a social networking site: an exploratory study. *J Med Internet Res*. 2012;14:e20. [PubMed: 22297093]
- [125]. Kauer SD, Buhagiar K, Blake V, Cotton S, Sancil L. Facilitating mental health help-seeking by young adults with a dedicated online program: a feasibility study of Link. *BMJ open*. 2017;7:e015303.
- [126]. Laemmle-Ruff IL, Raggatt M, Wright CJC, Carrotte ER, Davis A, Jenkinson R, et al. Personal and reported partner pornography viewing by Australian women, and association with mental health and body image. *Sexual health*. 2019.
- [127]. Lores TJ, Henke M, Chur-Hansen A. Attitudes Toward Combining Psychological, Mind-Body Therapies and Nutritional Approaches for the Enhancement of Mood. *Advances in mind-body medicine*. 2016;30:19–25.

- [128]. Loxton D, Powers J, Anderson AE, Townsend N, Harris ML, Tuckerman R, et al. Online and Offline Recruitment of Young Women for a Longitudinal Health Survey: Findings From the Australian Longitudinal Study on Women's Health 1989–95 Cohort. *J Med Internet Res*. 2015;17:e109. [PubMed: 25940876]
- [129]. McCallum SM, Batterham PJ, Calear AL, Sunderland M, Carragher N. Reductions in quality of life and increased economic burden associated with mental disorders in an Australian adult sample. *Australian health review : a publication of the Australian Hospital Association*. 2018.
- [130]. Moore D, Drey N, Ayers S. Use of Online Forums for Perinatal Mental Illness, Stigma, and Disclosure: An Exploratory Model. *JMIR mental health*. 2017;4:e6. [PubMed: 28219879]
- [131]. Musiat P, Winsall M, Orlowski S, Antezana G, Schrader G, Battersby M, et al. Paid and Unpaid Online Recruitment for Health Interventions in Young Adults. *The Journal of adolescent health : official publication of the Society for Adolescent Medicine*. 2016;59:662–7. [PubMed: 27663927]
- [132]. Russomanno J, Patterson JG, Jabson JM. Food Insecurity Among Transgender and Gender Nonconforming Individuals in the Southeast United States: A Qualitative Study. *Transgender Health*. 2019;4:89–99. [PubMed: 31032424]
- [133]. Sterzing PR, Ratliff GA, Gartner RE, McGeough BL, Johnson KC. Social Ecological Correlates of Polyvictimization among a National Sample of Transgender, Genderqueer, and Cisgender Sexual Minority Adolescents. *Child abuse & neglect*. 2017;67:1–12. [PubMed: 28226283]
- [134]. Tebbe EA, Allan BA, Bell HL. Work and well-being in TGNC adults: The moderating effect of workplace protections. *Journal of counseling psychology*. 2019;66:1–13. [PubMed: 30211566]
- [135]. Wilson RL, Usher K. Social media as a recruitment strategy: using Twitter to explore young people's mental health. *Nurse researcher*. 2017;25:36–41. [PubMed: 29251447]
- [136]. Arayasirikul S, Chen YH, Jin H, Wilson E. A Web 2.0 and Epidemiology Mash-Up: Using Respondent-Driven Sampling in Combination with Social Network Site Recruitment to Reach Young Transwomen. *AIDS and behavior*. 2016;20:1265–74. [PubMed: 26499337]
- [137]. Baier N, Roth K, Felgner S, Henschke C. Burnout and safety outcomes - a cross-sectional nationwide survey of EMS-workers in Germany. *BMC Emergency Medicine*. 2018;18. [PubMed: 29945558]
- [138]. Chu JL, Snider CE. Use of a social networking web site for recruiting Canadian youth for medical research. *The Journal of adolescent health : official publication of the Society for Adolescent Medicine*. 2013;52:792–4. [PubMed: 23352727]
- [139]. Hugelius K, Adolfsson A, Gifford M, Ortenwall P. Facebook Enables Disaster Research Studies: The Use of Social Media to Recruit Participants in a Post-Disaster Setting. *PLoS Curr*. 2017;9.
- [140]. Espinoza-Castro B, Vasquez Rueda LE, Mendoza Lopez RV, Radon K. Working Below Skill Level as Risk Factor for Distress Among Latin American Migrants Living in Germany: A Cross-Sectional Study. *Journal of immigrant and minority health*. 2018.
- [141]. Hill EM, Watkins K. Women with Ovarian Cancer: Examining the Role of Social Support and Rumination in Posttraumatic Growth, Psychological Distress, and Psychological Well-being. *Journal of Clinical Psychology in Medical Settings*. 2017;24:47–58. [PubMed: 28124180]
- [142]. Klik KA, Williams SL, Reynolds KJ. Toward understanding mental illness stigma and help-seeking: A social identity perspective. *Social science & medicine (1982)*. 2019;222:35–43. [PubMed: 30599434]
- [143]. Bitton S, Tuval-Mashiach R, Freedman S. Distress Levels among Parents of Active Duty Soldiers during Wartime. *Frontiers in psychology*. 2017;8:1679. [PubMed: 29018394]
- [144]. Drozd F, Raeder S, Kraft P, Bjorkli CA. Multilevel growth curve analyses of treatment effects of a Web-based intervention for stress reduction: randomized controlled trial. *J Med Internet Res*. 2013;15:e84. [PubMed: 23607962]
- [145]. Ecker S, Riggle EDB, Rostosky SS, Byrnes JM. Impact of the Australian marriage equality postal survey and debate on psychological distress among lesbian, gay, bisexual, transgender, intersex and queer/questioning people and allies. *Australian Journal of Psychology*. 2019.
- [146]. Chard AN, Finneran C, Sullivan PS, Stephenson R. Experiences of homophobia among gay and bisexual men: results from a cross-sectional study in seven countries. *Culture, health & sexuality*. 2015;17:1174–89.

- [147]. McMeekin DE, Hickman RL Jr., Douglas SL, Kelley CG. Stress and Coping of Critical Care Nurses After Unsuccessful Cardiopulmonary Resuscitation. *American journal of critical care : an official publication, American Association of Critical-Care Nurses*. 2017;26:128–35.
- [148]. Parkinson S, Bromfield L. Recruiting young adults to child maltreatment research through Facebook: a feasibility study. *Child abuse & neglect*. 2013;37:716–20. [PubMed: 23768931]
- [149]. Quinn M, Gillooly D, Kelly S, Kolassa J, Davis E, Jankowski S. Evaluation of Identified Stressors in Children and Adolescents After Super Storm Sandy. *Pediatric nursing*. 2016;42:235–41. [PubMed: 29406642]
- [150]. Subasinghe AK, Jayasinghe YL, Wark JD, Gorelik A, Garland SM, Young Female Health Initiative Safe DSG. Factors associated with unwanted sexual experiences of young Australian females: an observational study. *Sexual health*. 2017;14:383–91. [PubMed: 28606288]
- [151]. Batterham PJ. Recruitment of mental health survey participants using Internet advertising: content, characteristics and cost effectiveness. *International journal of methods in psychiatric research*. 2014;23:184–91. [PubMed: 24615785]
- [152]. Calear AL, Batterham PJ, Christensen H. Predictors of help-seeking for suicidal ideation in the community: risks and opportunities for public suicide prevention campaigns. *Psychiatry research*. 2014;219:525–30. [PubMed: 25048756]
- [153]. Ma JS, Batterham PJ, Calear AL, Han J. Suicide Risk across Latent Class Subgroups: A Test of the Generalizability of the Interpersonal Psychological Theory of Suicide. *Suicide & life-threatening behavior*. 2019;49:137–54. [PubMed: 29315743]
- [154]. Tan Z, Liu X, Liu X, Cheng Q, Zhu T. Designing Microblog Direct Messages to Engage Social Media Users With Suicide Ideation: Interview and Survey Study on Weibo. *J Med Internet Res*. 2017;19:e381. [PubMed: 29233805]
- [155]. Teo AR, Liebow SB, Chan B, Dobscha SK, Graham AL. Reaching Those At Risk for Psychiatric Disorders and Suicidal Ideation: Facebook Advertisements to Recruit Military Veterans. *JMIR mental health*. 2018;5:e10078. [PubMed: 29980498]
- [156]. Zimerman A, Caye A, Zimerman A, Salum GA, Passos IC, Kieling C. Revisiting the Werther Effect in the 21st Century: Bullying and Suicidality Among Adolescents Who Watched 13 Reasons Why. *J Am Acad Child Adolesc Psychiatry*. 2018;57:610–3 e2. [PubMed: 30071982]
- [157]. Cheng Q, Kwok CL, Zhu T, Guan L, Yip PS. Suicide Communication on Social Media and Its Psychological Mechanisms: An Examination of Chinese Microblog Users. *International journal of environmental research and public health*. 2015;12:11506–27. [PubMed: 26378566]
- [158]. Bachner-Melman R, Zontag-Oren E, Zohar AH, Sher H. Lives on the Line: The Online Lives of Girls and Women With and Without a Lifetime Eating Disorder Diagnosis. *Frontiers in psychology*. 2018;9:2128. [PubMed: 30443238]
- [159]. Gagnon C, Aime A, Belanger C. Predictors of Comorbid Eating Disorders and Diabetes in People with Type 1 and Type 2 Diabetes. *Canadian journal of diabetes*. 2017;41:52–7. [PubMed: 27614805]
- [160]. Gatt L, Jan S, Mondraty N, Horsfield S, Hart S, Russell J, et al. The household economic burden of eating disorders and adherence to treatment in Australia. *BMC psychiatry*. 2014;14:338. [PubMed: 25432265]
- [161]. Kirk KM, Martin FC, Mao A, Parker R, Maguire S, Thornton LM, et al. The Anorexia Nervosa Genetics Initiative: Study description and sample characteristics of the Australian and New Zealand arm. *The Australian and New Zealand journal of psychiatry*. 2017;51:583–94. [PubMed: 28378620]
- [162]. Mason TB, Lewis RJ, Heron KE. Daily discrimination and binge eating among lesbians: A pilot study. *Psychology & Sexuality*. 2017;8:96–103.
- [163]. Raggatt M, Wright CJC, Carrotte E, Jenkinson R, Mulgrew K, Prichard I, et al. “I aspire to look and feel healthy like the posts convey”: engagement with fitness inspiration on social media and perceptions of its influence on health and wellbeing. *BMC public health*. 2018;18:1002. [PubMed: 30097034]
- [164]. Saffran K, Fitzsimmons-Craft EE, Kass AE, Wilfley DE, Taylor CB, Trockel M. Facebook usage among those who have received treatment for an eating disorder in a group setting. *The International journal of eating disorders*. 2016;49:764–77. [PubMed: 27302908]

- [165]. Moser JC, Turk CL, Glover JG. The relationship between participation in Alcoholics Anonymous and social anxiety. *Psi Chi Journal of Psychological Research*. 2015;20:97–101.
- [166]. Sunderland M, Batterham PJ, Calear AL, Carragher N. The development and validation of static and adaptive screeners to measure the severity of panic disorder, social anxiety disorder, and obsessive compulsive disorder. *International journal of methods in psychiatric research*. 2017;26.
- [167]. van Ballegooijen W, Riper H, Klein B, Ebert DD, Kramer J, Meulenbeek P, et al. An Internet-based guided self-help intervention for panic symptoms: randomized controlled trial. *J Med Internet Res*. 2013;15:e154. [PubMed: 23896222]
- [168]. Hing N, Russell AM, Gainsbury SM, Blaszczynski A. Characteristics and help-seeking behaviors of Internet gamblers based on most problematic mode of gambling. *J Med Internet Res*. 2015;17:e13. [PubMed: 25567672]
- [169]. Schivinski B, Brzozowska-Wo M, Buchanan EM, Griffiths MD, Pontes HM. Psychometric assessment of the Internet Gaming Disorder diagnostic criteria: An Item Response Theory study. *Addictive Behaviors Reports*. 2018;8:176–84. [PubMed: 30505924]
- [170]. Slecza P, Braun B, Grune B, Buhringer G, Kraus L. Proactive coping and gambling disorder among young men. *Journal of behavioral addictions*. 2016;5:639–48. [PubMed: 27838919]
- [171]. Muench F, Hayes M, Kuerbis A, Shao S. The independent relationship between trouble controlling Facebook use, time spent on the site and distress. *Journal of behavioral addictions*. 2015;4:163–9. [PubMed: 26551906]
- [172]. Stead H, Bibby PA. Personality, fear of missing out and problematic internet use and their relationship to subjective well-being. *Computers in Human Behavior*. 2017;76:534–40.
- [173]. Batterham PJ, Calear AL, Sunderland M, Carragher N, Brewer JL. Online screening and feedback to increase help-seeking for mental health problems: population-based randomised controlled trial. *BJPsych Open*. 2016;2:67–73. [PubMed: 27703756]
- [174]. Rogers VL, Griffin MQ, Wykle ML, Fitzpatrick JJ. Internet versus face-to-face therapy: emotional self-disclosure issues for young adults. *Issues in mental health nursing*. 2009;30:596–602. [PubMed: 19742368]
- [175]. Drabble J, Bowles DP, Barker LA. Investigating the role of executive attentional control to self-harm in a non-clinical cohort with borderline personality features. *Frontiers in behavioral neuroscience*. 2014;8:274. [PubMed: 25191235]
- [176]. Erchull MJ, Liss M, Lichiello S. Extending the negative consequences of media internalization and self-objectification to dissociation and self-harm. *Sex Roles: A Journal of Research*. 2013;69:583–93.
- [177]. Lehmilller JJ, Ioerger M. Social networking smartphone applications and sexual health outcomes among men who have sex with men. *PLoS One*. 2014;9:e86603. [PubMed: 24466166]
- [178]. Ryan T, Xenos S. Who uses Facebook? An investigation into the relationship between the Big Five, shyness, narcissism, loneliness, and Facebook usage. *Computers in human behavior*. 2011;27:1658–64.
- [179]. Khokhar B, Park JY, Kiptanui Z, Palumbo F, Dutcher S, Jiang WL, et al. Assessing Physician and Patient Perceptions of Generic Drugs via Facebook: A Feasibility Study. *J Pharm Technol*. 2018;34:43–7.
- [180]. Woodward SC, Bereznicki BJ, Westbury JL, Bereznicki LR. The effect of knowledge and expectations on adherence to and persistence with antidepressants. *Patient preference and adherence*. 2016;10:761–8. [PubMed: 27226710]
- [181]. Bittker SS, Bell KR. Acetaminophen, antibiotics, ear infection, breastfeeding, vitamin D drops, and autism: an epidemiological study. *Neuropsychiatr Dis Treat*. 2018;14:1399–414. [PubMed: 29910617]
- [182]. Crosier BS, Brian RM, Ben-Zeev D. Using Facebook to Reach People Who Experience Auditory Hallucinations. *J Med Internet Res*. 2016;18:e160. [PubMed: 27302017]
- [183]. Richards HS, Jenkinson E, Rumsey N, Harrad RA. The psychosocial impact of ptosis as a symptom of myasthenia gravis: A qualitative study. *Orbit*. 2014;33:263–9. [PubMed: 24832459]
- [184]. Williams MT, Proetto D, Casiano D, Franklin ME. Recruitment of a hidden population: African Americans with obsessive-compulsive disorder. *Contemp Clin Trials*. 2012;33:67–75. [PubMed: 21983626]

- [185]. Batterham PJ, Calear AL. Preferences for Internet-Based Mental Health Interventions in an Adult Online Sample: Findings From an Online Community Survey. *JMIR mental health*. 2017;4:e26. [PubMed: 28666976]
- [186]. Stoddard SA, Bauermeister JA, Gordon-Messer D, Johns M, Zimmerman MA. Permissive norms and young adults' alcohol and marijuana use: the role of online communities. *Journal of studies on alcohol and drugs*. 2012;73:968–75. [PubMed: 23036215]
- [187]. Berg CJ, Daniel CN, Vu M, Li J, Martin K, Le L. Marijuana Use and Driving Under the Influence among Young Adults: A Socioecological Perspective on Risk Factors. *Substance use & misuse*. 2018;53:370–80. [PubMed: 28777692]
- [188]. Thornton LK, Harris K, Baker AL, Johnson M, Kay-Lambkin FJ. Recruiting for addiction research via Facebook. *Drug and alcohol review*. 2016;35:494–502. [PubMed: 26179224]
- [189]. Obar JA, Oeldorf-Hirsch A. *The Biggest Lie on the Internet: Ignoring the Privacy Policies and Terms of Service Policies of Social Networking Services*. Rochester, NY: Social Science Research Network; 2018.
- [190]. Office of the Chief Information Officer ASfA. *Cybersecurity*. HHSgov 2016.

HIGHLIGHTS

- Social media is increasingly employed in mental health research recruitment.
- Compared to traditional methods, social media recruitment offers advantages in cost, speed, and efficiency.
- Minimal federal guidance exists in using social media for recruitment to avoid privacy violations.

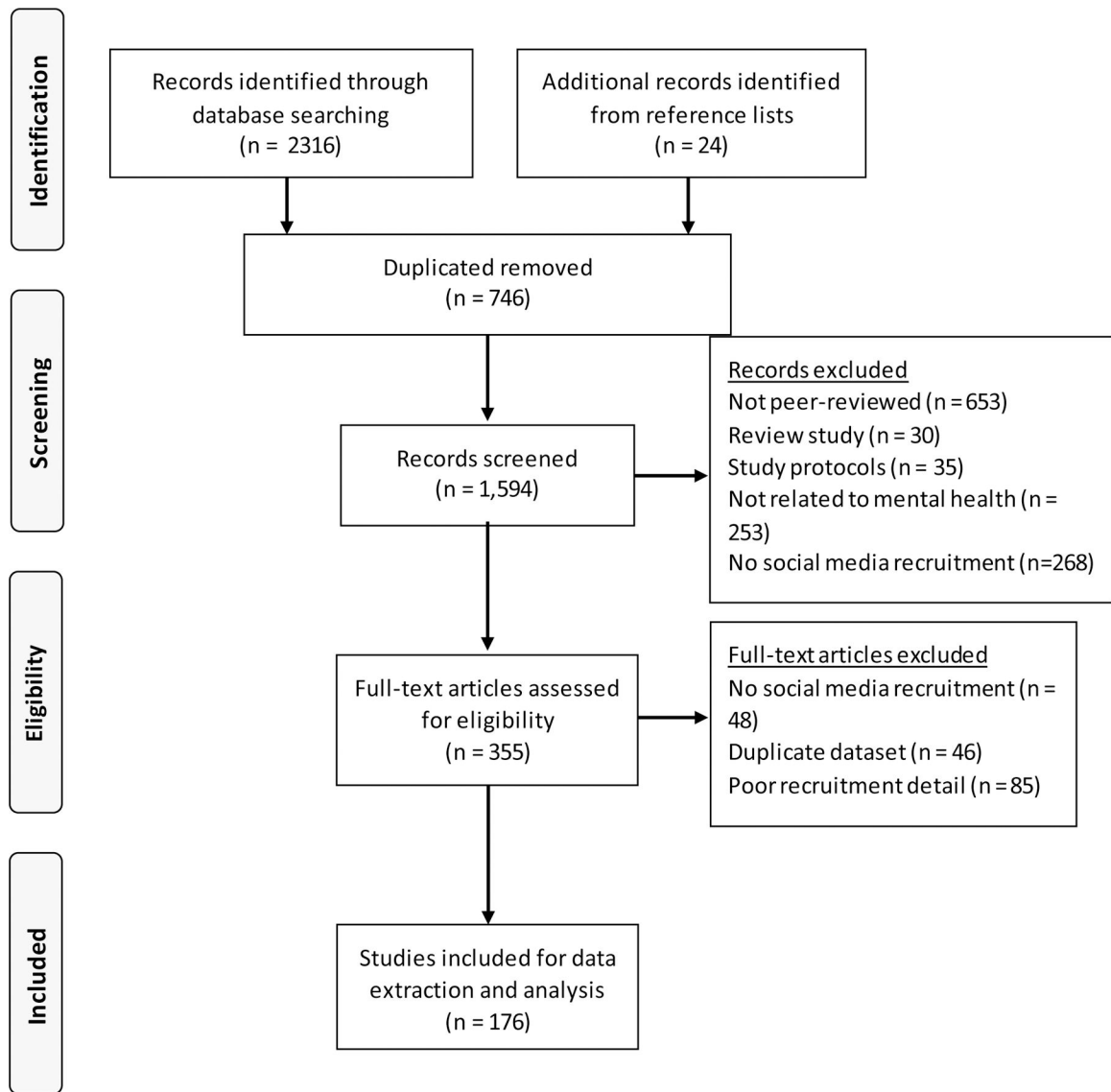


FIGURE 1:
LITERATURE SEARCH WORKFLOW

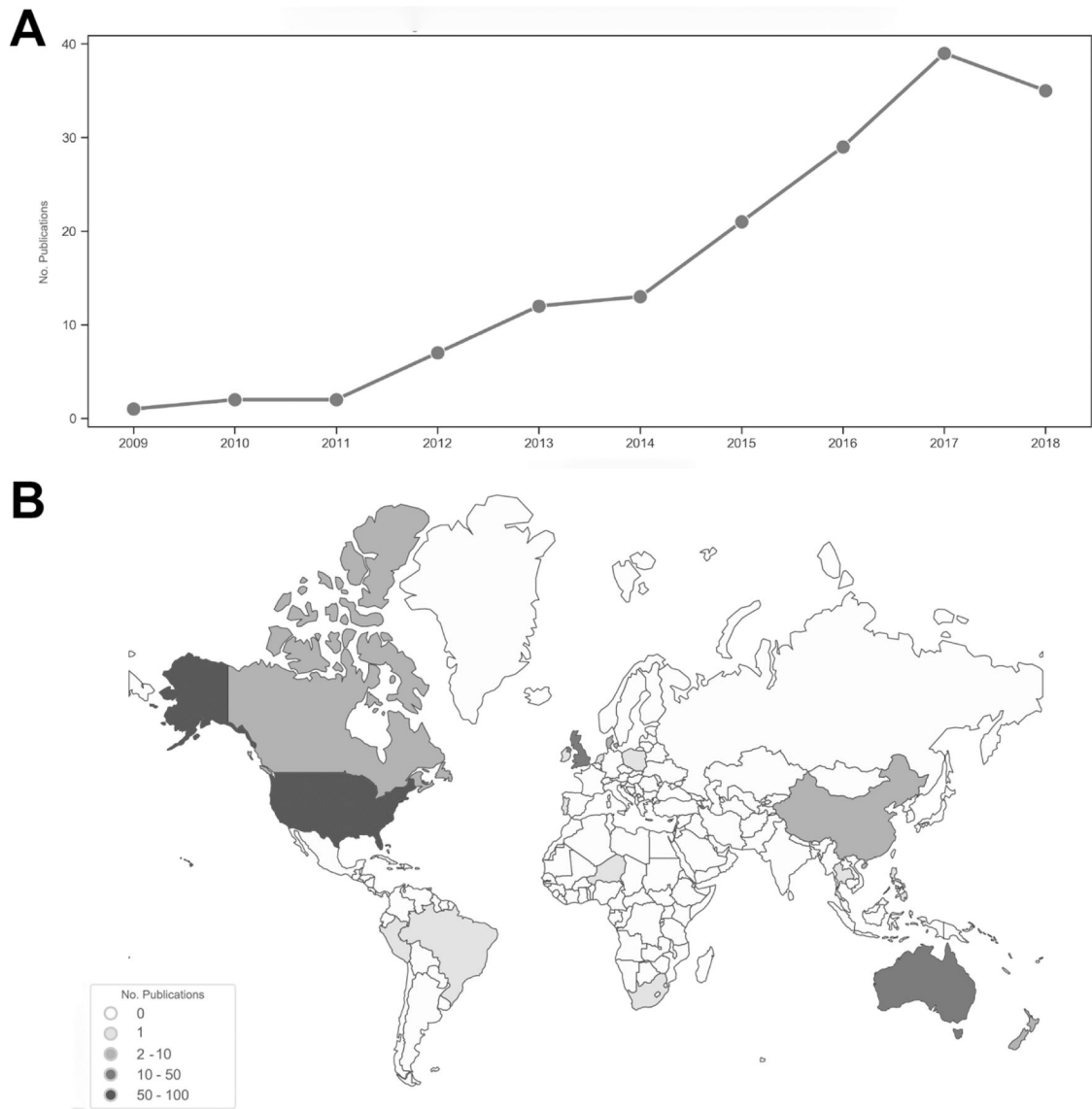


FIGURE 2.
YEAR AND COUNTRY DISTRIBUTION OF STUDIES USING SOCIAL MEDIA
RECRUITMENT FOR MENTAL HEALTH RESEARCH, 2009–2018.

TABLE 1:
SUMMARY OF SOCIAL MEDIA MENTAL HEALTH RECRUITMENT STUDIES

Age of recruited participants	N	Total	%
Adult only	125	176	71.0%
Both adults and children/adolescents	33	176	18.8%
Children/adolescents only	10	176	5.7%
Not reported	8	176	4.6%
Gender of recruited participants	N	Total	%
Any gender	140	176	79.6%
Female only	23	176	13.1%
Male only	10	176	5.7%
Transgender only	3	176	1.7%
Study design	N	Total	%
Cross-sectional	110	176	62.5%
Randomized controlled trial	36	176	20.5%
Non-controlled trial	20	176	11.4%
Prospective	9	176	5.1%
Retrospective	1	176	0.6%
Incentives (e.g., cash, gift card drawings)	73	176	41.5%
Psychiatric diagnostic research areas	N	Total	%
Substance use disorders	77	176	43.8%
Mood disorders	27	176	15.3%
General mental health	21	176	11.9%
Trauma & stress-related disorders	15	176	8.5%
Suicidal ideation & self-injurious behaviors	8	176	4.5%
Eating disorders	7	176	4.0%
Anxiety disorders	5	176	2.8%
Impulse control disorders	5	176	2.8%
Mental healthcare delivery	4	176	2.3%
Personality disorders	3	176	1.7%
Pharmacology	2	176	1.1%
Developmental disorders	1	176	0.57%
Psychotic disorders	1	176	0.57%
Social media platform(s) used	N	Total	%
Facebook only	121	176	68.8%
Facebook & Twitter	24	176	13.6%
Facebook & Instagram	9	176	5.1%
Facebook & multiple other	9	176	5.1%
Twitter only	6	176	3.4%

Age of recruited participants	N	Total	%
Weibo only	3	176	1.7%
Instagram only	1	176	0.6%
Myspace only	1	176	0.6%
Myspace & Mi Gente	1	176	0.6%
Tumblr only	1	176	0.6%
Advertising strategies	N	Total	%
Paid ads	107	176	60.8%
Free posts to relevant groups/pages	44	176	25.0%
Study page or profile	40	176	22.7%
Posts to personal profiles	11	176	6.3%
WebRDS	7	176	4.0%
Direct contact with users based on content	7	176	4.0%
Comparative metrics	N	Total	%
Social media only recruitment used	76	176	43.2%
Equivalent/high final participant rate	28	41	68.3%
More cost effective than some/all other methods	10	18	55.6%

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

TABLE 2:
COSTS PER STUDY TYPE USING FACEBOOK RECRUITMENT

Study type	N	Median cost/participant	Range
All	49	\$19.47	\$0.13—339.50
Cross-sectional	27	\$6.25	\$0.13—267.67
Non-controlled trial	10	\$35.68	\$8.80—339.50
Prospective	1	\$149.64	NA
Randomized controlled trial	7	\$42.82	\$4.53—112.48

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript