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Research Strategy for Health Sciences: Facebook Friend Request is Non-Differentially Accepted in a Diverse, Young Adult Population

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Abstract

Social media is being used for recruitment and study of healthcare choices and behavior, and may be particularly helpful to reach young adult populations outside of a four-year college setting. Our aim was to report on overall success of recruiting young adults in diverse settings with respect to education and employment into a study using Facebook. Young adults (N=380; 50% male; 44% White) who had been involved in a longitudinal research project received a friend request from the research study group's profile. Acceptance rates of friend requests and socio-demographic and mental health factors associated with acceptance were evaluated. Approximately 67% of 318 participants who received a friend request accepted the request. Socio-demographic and mental health characteristics were similar between those who did and did not accept friend requests suggesting non-differential recruitment through Facebook. Friending through Facebook is a feasible way to reach young adults involved in health and behavioral research, and may be a way to expand the populations that are studied in health science research to maximize generalizability of the conclusions drawn.

Keywords

social media; recruitment; Facebook

1 | Introduction

Social media (SM) is a set of computer mediated tools that allow for the creation of virtual communities and exchange of user-generated content (Lenhart et al., 2010). SM has transformed communications by providing interactive and moment-to-moment disclosures of personal information to large loosely associated networks of people. SM is a core communication strategy for young adults, with over 97% of teens and young adults reporting being online, and 81% utilizing some kind of SM (Greenwood, Perrin, & Duggan, 2016; Lenhart et al., 2010; Madden et al., 2013). Young adults devote significant amounts of time

to digital communications, and SM has become a fundamental channel for adolescents to obtain and share information (Greenwood et al., 2016; Lenhart et al., 2010; Madden et al., 2012; 2013).

SM is penetrating the US population independent of education, race/ethnicity, or health care access (Chou et al., 2009). The use of SM does not appear to be dwindling, as Pew data suggests that use of most of the “big 3” major SM sites: Facebook (FB), Twitter, Instagram, is stable or increasing in popularity over the last 3–5 years in the adolescent and young adult age groups (Madden et al., 2012). In 2015 FB had 1.49 billion active monthly users, with 968 million people logging in each day. Because of the broad access and scalable quality of strategies which capitalize on SM data, researchers have suggested that SM be utilized to engage, recruit, and retain research participants (e.g., Loxton et al., 2015).

2 | Literature Review

Health science researchers have recognized the utility of Facebook as a novel tool to recruit participants, as well as to observe behavior in a naturalistic setting and test hypotheses (Wilson et al., 2012). Facebook data are particularly relevant for study of social processes and hold potential for health surveillance and intervention. This has been particularly true for mental health research, where naturalistic studies to date indicate that behavior disclosed on SM appears to be a valid reflection of actual behavior (Kosinski et al., 2013; Moreno et al., 2012), and that people most vulnerable to mental health difficulties spend more time on SM, compared to others without these challenges (Ybarra et al., 2005). In addition, Facebook and other social media platforms have groups that have been used to find participants with particular backgrounds, interests, or other similarities (e.g., Ravindran et al., 2014). Given the potential for reaching hard to recruit and retain populations, public health programs have demonstrated success in adapting social media as a communication platform for health promotion efforts such as smoking cessation and dietary interventions, increasing their reach through cyberspace (Block et al., 2008; Jaganath et al., 2012; Khan et al., 2007; Korda & Itani, 2013).

As SM users trend towards increased online privacy on the Facebook platform, friending research participants may provide health science researchers with novel and useful methods for recruitment, retention and data collection from private and public accounts. Friending involves sending friend requests (FRs) from one SM profile to another. Upon receiving a FR, a SM user has one of three options: they can accept, ignore or deny the FR. Accepting a FR is completely voluntary, and can be reversed (i.e., unfriended). If a FR is accepted, the two profiles become linked in the social network and both users have access to each other's personal wall and posted profile contents. The friending function is the basis of the social network as it functions to links profiles of people together.

Participant recruitment and retention are major challenges for longitudinal health sciences research. Health science research has long been criticized for reliance on White, Educated, Industrialized, Rich, Democratic (WEIRD) populations, and when evaluated, differences are found between WEIRD and non-WEIRD samples for processes thought to be culturally invariant (Henrich et al., 2010). Recruitment strategies dictate who is contacted, informed,

and consented into research. Consequently, recruitment strategies determine how likely a sample is to be representative of the population from which it is drawn. Access to a worldwide social media network like Facebook with over a billion users may provide an opportunity to recruit samples that have historically been under represented. However, the promise of use of the social media platforms access to diverse populations has not been evaluated, and may lead to differential recruitment. Young adults with depression may be particularly challenging to recruit given the vegetative symptoms of depression including fatigue, low energy, and fatigue leading to core motivation and engagement deficits. (Hinshaw et al., 2004) Use of SM may be a valuable tool for recruiting, locating, and communicating efficiently with study participants, and it has potential to expand recruitment beyond a sample of convenience. There have been a few reports of recruitment utilizing SM with new populations. The Australian Longitudinal Study on Women's Health (ALSWH) utilized several open recruiting strategies to recruit their cohort of 17,069 adult women. SM was the most successful strategy, with almost 70% of their sample recruited through that method (Loxton et al., 2015). The authors indicate that FB recruitment yielded the most representative sample with regards to age, area of residence, and education. With regards to recruitment via FB FR, Brockman and colleagues (Brockman et al., 2014) reported that in their study of 127 18 year-olds in the U.S., 49% accepted a friend request, and 76% maintained that friendship with an unknown health professional for 9 months.

2.1 | Purpose

Social network environments offer opportunity to reach traditionally under-represented groups of people for health research. Although prior work has established the feasibility of using Facebook for research recruitment, prior literature has not adequately addressed if recruitment through social media platform results in differential patterns of research participation based on social, demographic, and psychological features. The aim of the present study is to evaluate the characteristics of young adults who allow access to their Facebook social media data, who were well characterized due to their participation in longitudinal study procedures. We sought to expand existing literature by describing SM recruitment procedures, reporting SM recruitment rates and determining the representativeness of study participants recruited via the SM approach. Because prior literature is limited in size and scope, our goal was to examine recruitment success through FR on Facebook with a sample of young adults that was diverse with respect to sex, race, ethnicity, education, income, immigration, and mental health status. The overarching goal was to inform decisions when considering using SM as a platform for study recruitment by determining if inclusion of SM recruitment strategies would systematically exclude certain types of participants.

3 | Methods

3.1 | Design

The present study was a non-experimental descriptive study that examined the factors associated with acceptance of study procedures via Facebook friend request.

3.2 | Participants

Background of the DPP Social Media Project (DPPSMP)—The DPPSMP was conducted within the context of the Developmental Pathways Project (DPP), a community-based cohort study designed to examine the causes and consequences of adolescent mental health problems. All study procedures were reviewed and approved by the institutional IRB (IRB #37775 C). DPP participants (N=521) were recruited from public middle schools in the fall of their sixth grade year and were interviewed in-person eight times with the final interview conducted in early adulthood (age 21–23 years). Recruitment of sixth graders was carried out in four successive annual waves. Over the course of their longitudinal study tenure, each DPP participant had undergone recruitment into four phases of the study (at 6th, 9th, 12th grades, and young adulthood). Based on these prior assessments, participants' mental health status was well characterized prior to invitation to the Facebook study. Participants had received money for each research activity in which they participated and were offered a \$10 gift card in appreciation for accepting the DPPSMP friend request that gave researchers access to their Facebook profiles.

The Developmental Pathways longitudinal study sample comprised 249 (47.8%) females and 272 (52.2%) males, including 148 (28.4%) black, 97 (18.6%) Asian Americans and Pacific Islanders, 21 (4.0%) Native Americans, and 255 (48.9%) white. Across racial groups, 10.2% were Hispanic. The mean age at the baseline interview was 12.02 years (SD = .43). Families spanned a range of annual household income levels, with ~1/3 of participants living in households with annual incomes less than \$25,000, and ~1/3 over \$75,000. Participants spanned the full range of risk for mental health problems (Vander Stoep et al., 2012).

Eligibility for DDPSMP—All study procedures were approved by the UW Human Subjects Review Committee. DPP participants were eligible for recruitment if they had completed a longitudinal study interview at age 17–18 years (12th grade) AND had either completed a young adult interview at age 21–23 years OR were *not* slated to be approached to participate in the young adult study for at least four months (to minimize research burden and reduce non-participation in either study). During the time frame in which DPP participants were recruited into DPPSMP, a total of 380 young adults met these criteria.

3.3 | Instruments

Socio-demographic status—In prior DPP interviews, participants' caregivers reported demographic information, including date of birth, sex, race, ethnicity, household income, caregiver educational status, and country of birth of participant and parents. In the DPP young adult interview that preceded DPPSMP recruitment, participants reported whether they were enrolled in school or employed.

Depression status—In the seventh DPP interview at age 17–18 years, participants completed the Mood and Feelings Questionnaire (MFQ; Angold & Costello, 1987) to yield a depression score. The MFQ is a 33-item self-report scale designed for youth aged 8 to 18. Items are derived from Diagnostic and Statistical Manual of Mental Disorders criteria for major depressive disorder and dysthymia and assess affective, melancholic, vegetative, cognitive, and suicidal symptoms. High test-retest reliability and good criterion and

construct validity with regard to a depression diagnosis have been demonstrated, as well as measurement equivalence across racial/ethnic groups (Banh et al., 2011; Sund et al., 2001).

3.4 | Ethical Considerations

Utilizing SM as a way to recruit and obtain data raises questions about ethical procedures and considerations for maintaining principles related to consent, privacy, and equitable opportunities to participate in (or decline/withdrawn from) research. In this protocol, all participants previously consented for the use of the mental health data for the larger longitudinal trial. Participants were then contacted to obtain specific consent to use their social media data to further understand the adolescent and young adult development. Participants had all given the research team permission to contact them regarding the study, but had not given explicit approval to use Facebook as the method of contact. Our study procedures involve friending participants on Facebook, we took several precautionary measures to continue to protect the privacy and confidentiality of the participants with these new procedures. These precautionary measures were grounded in procedures documented in previous studies including: 1) honoring that we will not post any content on the participants' walls, 2) will only communicate through private message if and when we do communicate with participants via Facebook, 3) request that participants use private messaging to contact us to preserve their own privacy, 4) we also concealed our 'friend list' on our profile so that none of our participants are able to see who the other participants are that we have friended (Moreno et al 2012). Finally, our profile name was ambiguous to any identifying information regarding the purpose and characteristics of the study as to not provide information about the relationship between the study and its participants. Despite the protections that were undertaken in the study, researchers are still beholden to Facebook's privacy practices. Though it was not relevant for this study, if data is collected via Facebook-hosted applications past interactions with Facebook and application developers highlight that Facebook may have limited control regarding who can access and how one can use users' data. Readers are referred to Moreno and colleagues (2013) if they are interested in additional ethical considerations for social media research ethics.

4 | Procedures

Search for Facebook profiles—A systematic search for Facebook profile names of the 380 eligible young adults was conducted. We created a SPSSMP Facebook profile with a distinctive name that was not identifiable to the public as associated with a research project. We conducted a systematic search for Facebook profiles of DPP participants using, in sequence, first and last name, common nicknames of the first name with last name, email address(es), and cell phone number(s). Verification of a Facebook profile required matching information in the profile to one or more of the following matching criteria that were part of the longitudinal study tracking information: email address, birthdate, city and high school, city and high school graduation year, or high school and high school graduation year.

Recruitment of DPP participants into the SPSSMP—Research staff made a series of contacts with young adults to recruit them into the SPSSMP including an introduction letter to the participants last known address, followed by an email, and a Facebook message with

an alert to accept our friend request if they were interested in the DPPSMP. Participants were told that accepting the Friend request served as their voluntary, informed consent to participate in the DPPSMP. If the participant still had not friended the DPPSMP Facebook account after three months, the friend request was rescinded.

5 | Statistical analyses

All analyses were conducted in SPSS, version 19. (IBM Corp., 2010) Descriptive statistics were used to depict demographic characteristics and depression status of young adults who did and did not accept the Friend request. We used logistic regression to determine if there were statistically significant differences in characteristics of Friend request acceptors and non-acceptors. First crude associations were evaluated, and then all demographic and depression variables were entered simultaneously to account for overlapping ways they might be associated with willingness to participate.

6 | Results

6.1 | Description of Study Sample

The 380 DPP participants who were eligible for the study had a mean age of 21.97. The sample of eligible participants resembled the full DPP sample in sex, race, and ethnic composition and nativity. 50% were female. By race, participants were white (44.21%), black (26.84%) or Asian American (17.37%). 10% were Hispanic, and 30% had one or more parent who was born outside of the USA. In the sample, 40.9% were students, and 65.7% were employed.

6.2 | Facebook Profile Identification and Acceptance Rates

Of 380 eligible participants, we found 318 (83.7%) Facebook profiles by using the search algorithm. Of the 318 for whom we found Facebook profiles, 212 (66.7%) accepted the friend invitation; for 105 a friend invitation was sent to their Facebook account, but they did not respond to the invitation within a three month window; 10 actively declined to participate (five did not have a FB account, and five were not interested); one had a privacy setting that rejected our friend invitation.

6.3 | Comparison of Friend Acceptors and Non-Acceptors

Table 1 shows the demographic and depression status of 212 Facebook Friend acceptors and 168 who did not get or did not accept the invitation. The distribution of young adults across categories of sex, race, ethnicity, nativity, and depression are not markedly different between the two groups. Statistical testing bears out the descriptive information from Table 1, showing the FB Friend acceptors to be representative of the young adults who were recruited both in terms of their demographic characteristics and their depression status. With regard to depression status, 62% of young adults with low depression scores and 72% of young adults with intermediate to high depression scores accepted our friend request.

A test of a full model with seven variables against the constant only model was not statistically significant $\chi^2 (7, N=346) = 9.20, p = 0.24$, indicating that these characteristics, as a set, did not distinguish between acceptance and non-acceptance of the FR.

7 | Discussion

The theoretical foundation of this research is based in the promise of social network platforms ability to augment the populations that are recruited into health research. Given that prior work has been over-reliant on WEIRD populations, and representativeness of populations recruited via social networks has not been evaluated, this study sought to examine the social, demographic, and psychological characteristics of participants invited into a Facebook research study. The results of this study suggest that social media recruitment within the context of a longitudinal study of a diverse sample of young adults is an acceptable and feasible way to reach a diverse set of participants. Eighty-four percent of the eligible sample had an identifiable Facebook account and two thirds of those with Facebook accounts accepted a friend request that would allow research investigators access to their social media information as a source of data. This rate of acceptance is slightly higher than previous studies with unknown populations on a different platform (49.6% accepted request on MySpace), and lower than rates in a study where known participants were first contacted by phone to discuss a friend request (99.7% on Facebook) (Brockman et al., 2014).

Results highlight that recruitment via FB resulted in a sample that was representative of young adults who were eligible to participate. Prior social media-based studies have recruited young adults from college campuses, but the DPPSMP sought to evaluate if recruitment results varied with young adults in settings other than 4-year college campuses. In this sample, approximately 2/3 of young adults were in employment settings, and a minority completed or were attending a 4-year university. Differences in rates of acceptance were minimal with respect to depression status, sex, race, immigration status, employment or school enrollment status and other important socio-demographic factors. Our finding of non-differential recruitment of study participants via social media is consistent with prior research for young adult women in Australia (Loxton et al., 2015). Given that approximately 64.6% of 18 to 24 year old emerging adults choose to pursue a path outside of traditional four-year college settings (US Census Bureau, 2016) and the majority of conclusions drawn on from social and behavioral research has been based on college-attendees, it is important to have pathways for the opportunity to contribute to the knowledge base.

Thus, this study adds to a growing body of literature showing that using Facebook to recruit young adults into a study that requests that investigators gain access to social media content will yield a substantial percentage who agrees to participate. Importantly, these findings indicate those who are successfully recruited will constitute an unbiased representation of the young adults who are eligible. It is encouraging that recruitment via social media was non-differential with respect to depression status, as persons who are depressed are often difficult to recruit via other means (Hinshaw et al., 2004). Depending upon the research question to be addressed, this may suggest social media as a promising avenue for study recruitment. In addition, once participants are recruited via social media platforms, they may

passively contribute data and reduce the limitations of other methods of data collection such as self-report or laboratory based tasks and ultimately advance science while reducing participant burden.

The study has three major limitations with respect to external validity. Results may not generalize beyond situations where researchers have already built trust with study participants or where researchers are requesting access to the content of the person's social media. Studies that recruit via social media as an initial research contact might be expected to have lower participation rates. Studies that address other questions than those requiring scrutiny of social media postings might be expected to have higher participation rates. Second, the participants were all from a western and industrialized nation, therefore there may be limits to the generalizability to other populations. Finally, individual's perception of sharing their social media data for research may be influenced by the practices and policies for handling Facebook's user information in the past (e.g., Cambridge Analytica) and future. This study contributes to the growing pool of information currently being disseminated about the utility and feasibility of using social media to conduct research with young people.

In conclusion, this study evaluated the characteristics of participants who agreed to a friend request for purposes of psychological research. Because, participants were enrolled in a longitudinal study, their mental health and demographic characteristics were well-characterized allowing for the unique opportunity to evaluate if social media recruitment via Facebook resulted in differential recruitment and therefore may contribute to bias. Recruitment strategies determine how likely a sample is to be representative of the population from which it is drawn, and is a key consideration in generalizability of health sciences research. Given that the limitations of studying only WEIRD populations for health sciences, it is essential that new recruitment strategies that are developed are evaluated to the extent to which they result in biased populations.

Contributions

This study illustrated that in this context, two-thirds of participants who received a friend request accepted the request. Importantly, social, demographic, and mental health characteristics were similar between those who did and did not accept friend requests suggesting non-differential recruitment through Facebook. Therefore, this research supports the conclusion that friending through Facebook is a feasible way to reach young adults involved in health sciences research, and may be a way to expand to underrepresented populations that are studied in health sciences research to maximize ecological validity.

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Table 1

Descriptive characteristics of the study sample

Demographic characteristics	Non Acceptors (N=168)	Accepters (N=212)	Total (N=380)
Gender			
Male	93	98	191
		46.23%	50.26%
Female	75	114	189
		53.77%	49.74%
Ethnicity			
White	73	95	168
		44.81%	44.21%
Hispanic	14	27	41
		12.74%	10.79%
Black	49	53	102
		25.00%	26.84%
Asian	32	34	66
		16.04%	17.37%
Native American	0	3	3
		1.42%	0.79%
Depression			
low	125	163	288
		79.51%	81.36%
int	8	21	29
		10.24%	8.19%
high	16	21	37
		10.24%	10.45%
Education			
below hs	15	13	28
		6.13%	7.37%
hs	30	32	62
		15.09%	16.32%
some college	44	53	97
		25.00%	25.53%
4 year degree	42	54	96
		25.47%	25.26%
advanced degree	37	60	97
		28.30%	25.53%
Income			
below 25K	49	52	101
		29.17%	26.58%
25–50K	36	56	92
		21.43%	24.21%
50–75K	30	36	66
		17.86%	17.37%
75–100K	24	25	49
		14.29%	12.89%
100+K	29	43	72
		17.26%	18.95%
Child Immigration Status[†]			
Born in USA	144	193	337
		88.34%	90.59%
Born outside of USA	19	16	35
		11.66%	9.41%

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Demographic characteristics	Non Acceptors (N=168)	Accepters (N=212)	Total (N=380)
Parent Immigration Status²			
Born in USA	110	148	258
Born outside of USA	53	62	115
Young Adults Employed³	89	131	220
Young Adults in School³	55	82	137

¹Data only available on 372 participants.

²Data available on 373 participants.

³Data available on 335 participants.

Table 2

Odds ratios (unadjusted and adjusted) for socio-demographic characteristics associated with friendship request acceptance

Predictor Variables	Unadjusted values		Adjusted values	
	OR	95%	OR	95%
Race/Ethnicity	1.06	0.70 – 1.59	0.99	0.60 – 1.64
Sex	1.44	0.96 – 2.17	1.55	0.99 – 2.42
Prior Depression (at visit 7)	1.02	0.99 – 1.04	1.02	0.99 – 1.04
Caregiver Education	1.23	1.01 – 1.51	1.00	0.99 – 1.00
Household Income	1.04	0.90 – 1.19	1.05	0.88 – 1.24
Parent Immigration Status	1.15	0.80 – 1.66	0.97	0.63 – 1.48
Child Immigration Status	1.59	0.79 – 3.20	1.50	0.67 – 3.36
Young Adult Employed *	1.09	0.69 – 1.73	N/A	N/A
Young Adult in School *	1.08	0.69 – 1.68		

* 45 participants had not yet completed their young adult interview and had missing values for employment and education information. Thus these variables were not included in the model.

Note. For the analyses race/ethnicity was coded as a binary variable, 0=white, 1=black, Asian American, Latino, Native American; sex was coded as a binary variable, where male=0, female=1; for prior depression continuous MFQ scores were used; caregiver education was coded as an ordinal variable with categories ranging from 1 (less than high school education) to 5 (advanced degree); caregiver immigrant status is coded 1=born outside of US, and child immigration status are binary variables coded 0=no, 1=yes; household income was coded as an ordinal variable with categories ranging from 1=<\$25,000/year to 5 = \$100,000/year