Published in final edited form as:

Contemp Clin Trials. 2012 March ; 33(2): 268–272. doi:10.1016/j.cct.2011.10.011.

Recruiting Adolescent Girls into a Follow-up Study: Benefits of Using a Social Networking Website

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Abstract

Background—Recruitment and retention of adolescent research participants presents unique challenges and considerations when conducting epidemiological studies.

Purpose—To describe the use of the social networking website in the re-recruitment and tracking of adolescent girls into a follow-up study of the Trial of Activity for Adolescent Girls (TAAG) at the University of Maryland field site.

Methods—730 girls were recruited as 8th graders into TAAG. Re-recruitment efforts were conducted when they were 11th graders (TAAG 2). Traditional methods, including mailings and school visits, were conducted. A TAAG 2 Facebook site was created to search for girls not found through traditional recruitment methods. Chi-square and t-tests were conducted to identify differences in characteristics between those found and “friended” through Facebook and through traditional recruitment methods.

Results—There were 175 girls we were unable to locate using traditional recruitment methods. Of these, 78 were found on Facebook, 68 responded to our friend request, and 43 girls (6% of the girls previously recruited) participated in the study. Demographic data were similar for those who friended us on Facebook and traditional methods. 8th grade body mass index and percent body fat were lower for those recruited from Facebook ($p = 0.03$ and 0.04 , respectively). Number of daily minutes of moderate-to-vigorous physical activity tended to be lower among the TAAG 2 Facebook friends (19 ± 11 vs 21 ± 11 , $p = 0.06$).

Conclusions—Loss to follow-up was minimized by contacting potential participants through Facebook. Social networking websites are a promising method to recruit adolescents.

Keywords

Recruitment; retention; adolescents; longitudinal studies; technology

1. Introduction

A concern in epidemiological follow-up studies is the retention of research participants. Typically, strategies are employed to avoid loss of contact throughout the study. Signed consent forms present an opportunity to collect contact information including home address, telephone numbers, e-mail address, and alternate contact details to facilitate tracking. Newsletters and media coverage are also techniques used to maintain contact [1]. Other strategies to minimize loss to follow-up include database resources such as the US Postal Service's national change of address system, state vital statistics records, death and disease registries, departments of motor vehicles, social security offices, and records of voter registration, public utilities, health insurance, marriage, and taxation [2]. Public web-search directories are a moderately successful method of tracking participants [3].

Recruitment and retention of adolescent research participants present unique challenges. Difficulties in retaining adolescents arise because minors are not listed in many public use databases. Instead, schools are often used for initial recruitment and follow-up. Using schools can be problematic because they often have complex levels of administration in which researchers must work to gain entry to the school and its students [4]. Once entry is obtained, researchers must overcome barriers such as bell schedules, absenteeism, and multiple class disruptions associated with recruitment and measurement activities [4]. Contact with adolescent research participants requires multiple visits to distribute and collect parent consent forms. Overall, recruitment and retention strategies for adolescents must carefully be developed to maximize participation in public health research.

Social networking sites, such as Facebook or Myspace, are potential avenues to reach adolescents. The Kaiser Family Foundation Report on Media Use [5] reports that 53% of 15-18 year olds use a social networking website daily. Adolescent female social network users spend an average of 61 minutes per day on sites [5]. Facebook is a website where users can create a personal profile and virtually connect with "friends" by sending messages, updating one's profile status, and posting on virtual page walls. Created in 2004 for the exclusive use in college communities, a high school version was launched in 2005. By 2006 Facebook was the seventh most popular website on the World Wide Web [6] and in 2011 is first [7]. Facebook search results are visible to the public and typically provide the user's high school, graduation year, and geographic location. From here, users can be messaged or "friended." Once friended, there is typically complete access to the user's profile, which contains information such as birthday, e-mail, or phone number.

While traditional recruitment and retention methods can be challenging for researchers working with adolescents, social network sites may be an avenue to overcome some of them. Therefore, the purpose of this paper is to describe our experience using the social networking website Facebook in the re-recruitment of adolescent girls into a follow-up study of the Trial of Activity for Adolescent Girls (TAAG) at the University of Maryland field site. We provide this information to aid other researchers seeking to maintain high follow-up rates of cohorts of adolescents or young adults.

2. Methods

The Trial for Activity in Adolescent Girls (TAAG) was a multi-center group-randomized trial designed to test an intervention to reduce the usual decline in moderate to vigorous physical activity (MVPA) in middle-school girls [8]. TAAG had six field centers (the Universities of Arizona, Maryland, Minnesota, and South Carolina; San Diego State University; and Tulane University), a Coordinating Center (University of North Carolina, Chapel Hill) and a Project Office at the National Heart Lung and Blood Institute. The trial

was approved by each site's Institutional Review Board (IRB) and parental permission and minor assent were obtained for all participants. Each field site recruited six middle schools, which were randomized in equal numbers to either control or intervention conditions. Data were collected in three stages throughout the trial. First, baseline data were collected in a randomly selected number of 6th grade girls in spring 2003. Two independently random samples of 8th grade girls were then selected in spring 2005 and spring 2006 after year two and year three of the intervention, respectively. Measures included self-report demographic information, physical activity measured objectively by the use of Actigraph accelerometers (MTI model 7164), questionnaires related to opinions on physical activity and body composition measurements. Body composition measurements included height, weight and tricep skinfold thickness. All measurements were collected by trained data collectors. Height and weight were used to calculate body mass index (BMI kg/m²) and tricep skinfold thickness was used to calculate percent body fat. Girls received \$50 for participation. Results from TAAG found a moderately higher level of MVPA in participants from intervention schools compared to the control schools at the conclusion of the three year intervention [8]. The participants discussed in this study are the Maryland field center participants from spring 2006 (n=730).

2.1. Description of the participants

In the fall of 2008, three years after the TAAG intervention, the 730 participants from the Maryland field center were invited into a follow-up study, titled "TAAG 2." A sentence stating that they might be re-contacted in the future was included in the 2006 parent permission and student assent forms. Thus, by consenting to participate in 2006 they implicitly gave permission for us to re-contact them. Potential participants in TAAG 2 include the participants who were recruited in Maryland. Participants were expected to be primarily clustered in Baltimore (n=469) and Montgomery (n=261) counties in Maryland and be enrolled in public high schools near the middle schools from which the participants were originally recruited. Measures collected for TAAG 2 were the same as those of TAAG 1 with several additions including survey questions about nutrition, sleep, and other physical activity-related questions. Girls who completed measurements received \$75.

The 730 girls who had complete accelerometry data and participated in TAAG during 2006 were eligible to participate in TAAG 2. TAAG 2 recruitment goals were to re-recruit as many of the original Maryland field site participants as possible, regardless of geographic locations within the United States. Data available to conduct re-recruitment of participants were self-reported information on home address, phone number, alternate contact phone number and probable high school, all of which were collected during spring 2006. There had been no contact with participants after the 2006 measurement was completed.

2.2. TAAG 2 General Recruitment Strategy

Recruitment efforts in the fall of 2008 first consisted of a mass mailing of postcards to the home address provided in 2006. The mailing was used to gauge the number of participants that had relocated based on the number of postcards that would be undeliverable and returned. The postcard asked girls to call or e-mail a designated recruitment staff member if they were interested in participating in TAAG 2. Next, roster lists were generated from the participants' self-report of the high school they had expected to attend. These lists were used to schedule recruitment visits at the high schools. Recruitment presentations and consent form distribution took place at the nine main high schools in which most girls attended. Girls who were not enrolled in a main school and who did not reply to the mass mailing were followed up with a phone call using the consent form contact information. Alternate contacts listed on the consent form were contacted in the event that the girl's home phone number was either incorrect or out of service. Furthermore, in the event that the individual

and alternate contacts were unsuccessful in locating a girl, lists of participants were brought to recruitment sessions at the high schools to ask peers for any contact information.

2.3. Use of social networking sites in TAAG 2 recruitment

To add to the above recruitment efforts, the social networking websites Facebook and Myspace were utilized. TAAG 2 Facebook and Myspace accounts were created, but for the purposes of this paper, only the Facebook account process will be described. The majority of participants used this particular social network site.

The TAAG 2 Facebook account was created using the recruitment coordinator's contact information and TAAG logo as the profile picture. The profile was set up to be consistent with the information provided at the high school recruitment presentations and described the TAAG 2 objectives and expectations. The account was managed by a single graduate assistant (LIJ) to maintain consistency. The search feature on the Facebook website was used to find girls from TAAG who were no longer enrolled in one of the main public schools or who were unable to be reached via our previously described traditional recruitment methods. Name, high school graduation year, and geographic location were primarily used to identify TAAG 2 potential participants on Facebook profiles. When a girl's profile was located, she was friended and sent a message inviting her to participate in TAAG 2. We asked her to provide her current mailing address through a Facebook message, which was visible only through the TAAG 2 Facebook page.

An internal electronic database was kept to track recruitment methods and note relevant communication with research participants, such as the accumulation of friends on Facebook, distribution and collection of consent forms, and successful methods of contacting individuals. TAAG participants located on Facebook were categorized by the following recruitment outcomes:

1. "Consent yes:" Girls who responded to a friend request from TAAG, provided a current mailing address, and returned the consent form via mail with parental consent to participate.
2. "Consent no:" Girls who responded to a friend request from TAAG, provided their mailing address and returned consent form via mail opting not to participate.
3. "Consent no response:" Girls who responded to a friend request from TAAG, provided a mailing address, but did not return the consent form to the TAAG recruitment staff.
4. "Did not accept Facebook friend request:" Girls that we were able to find on Facebook but did not accept our friendship and therefore further contact could not be established.

For the purposes of this study we collapsed "Consent yes", "Consent no" and "Consent no response" into one category called "Facebook friends" because they had "friended" us, provided updated contact information and received a study consent form.

2.4. Social networking sites for future recruitment

After recruitment and during the TAAG 2 measurement activities, questionnaires were created that included the questions "Do you have a Myspace account?" and "Do you have a Facebook account?", which allowed us to calculate the percentage of our TAAG Maryland field site cohort that may be able to be tracked using social networking websites and recruited into future follow-up studies.

2.5. Analysis

Descriptive statistics were used to summarize the characteristics of the TAAG 2 participants recruited using Facebook. This information was obtained from self-reported demographic questionnaires completed in 2006. Chi-square and t-tests tests were calculated to identify differences in characteristics between the Facebook friends and the original TAAG sample. The percentage of TAAG 2 participants that had Facebook and Myspace accounts in the winter/spring of 2009 (when measurement took place) was also calculated to assess the popularity of social networking accounts in the TAAG 2 Maryland field site participants. All analysis was conducted using SAS version 9.1 (SAS Institute, Cary, NC) with significance level set at $p=0.05$.

3. Results

All 730 TAAG participants in Maryland were initially contacted for recruitment into TAAG 2 through an informal postcard mailing to the last listed home address with instructions to contact the recruitment coordinator with interest in participating. From this initial mailing, 72 (9.8%) postcards were returned due to incorrect or insufficient address, 85 (11.6%) individuals responded to the postcard by contacting the recruitment coordinator via phone or e-mail, and 573 (78.4%) postcards had no response. It was estimated that 398 of the 573 non-responders were enrolled in the nine main high schools and could be recruited through in-person recruitment presentations, leaving approximately 175 girls with unverified contact information. Seventy eight (45%) of these 175 girls were found using Facebook. Of these girls, 11 did not respond to the friend request.

Of the 68 (9% of the entire sample) girls categorized as “Facebook friends,” 43 (63%) provided “assent” consents and 25 did not. Of these, 7 declined participation and 18 did not return the consent form. In contrast, of the 662 we attempted to re-recruit using traditional methods, 552 (84%) provided assent, 29 declined participation and 79 either did not return the consent form or were not located. Overall, 6% of the 2006 sample provided assent through Facebook recruitment.

The demographic, body composition, and physical activity data in 2006 for participants found and friended through Facebook compared with those from the TAAG 2006 sample we attempted to locate through traditional methods are displayed in Table 1. The groups were similar on most characteristics, however, mean BMI and mean percent body fat were higher for the TAAG sample searched using traditional recruitment methods as compared to those friended on Facebook ($p=0.03$ and $p=0.04$, respectively). There was a trend for daily minutes of MVPA to be lower for those friended on Facebook ($p=0.06$).

Throughout the measurement period of TAAG 2, Facebook was used for consent and measurement reminders. Facebook was used with 24 participants recruited through traditional methods to provide reminders for consent form returns or about upcoming TAAG 2 measurement.

Of the sample recruited through traditional methods and Facebook and measured in TAAG 2 ($n=589$), a majority of participants reported having either Facebook and/or Myspace accounts. As of spring 2009, approximately 67% of participants had a Facebook account, while a little less than 50% have a Myspace account.

4. Discussion

This study is the first to present detailed information on how a social networking website was used to support traditional recruitment methods to re-recruit a diverse sample of

adolescent girls into a follow-up study. Retaining members of a study cohort for follow-up is important for maintaining internal and external study validity. Through Facebook we were able to locate 68 (9%) and ultimately re-recruited 43 (6%) of the participants who we would otherwise not have been able to reach using the traditional recruitment methods. We recruited 81% of the 2006 TAAG sample into continued participation; without our Facebook methods recruitment would have been only 75%.

In previous research related to recruitment methods of follow-up studies, Canadian researchers attempted to locate and update contact information on a group of participants that had not been contacted for over 20 years by using publicly available web-search engines [3]. Overall, about 30% of the original sample was located; however, these participants were more likely to have a higher income and report living with their father during childhood than those not able to be located [3]. The present study suggests that the use of Internet based social networking websites for recruitment into a short-term follow-up study does not result in a bias of participants, as demographic characteristics for Facebook friends were not different. The results from this study also demonstrate that Facebook can be used to recruit a racially diverse sample, as our Facebook friends had a similar race/ethnicity composition as that of the original sample. The addition of Facebook as a recruitment strategy to our traditional recruitment methods helped us to minimize loss to follow-up and, ultimately, positively influence the validity of the study.

We cannot speculate why the girls recruited from Facebook had lower BMI levels, lower percent body fat, and lower daily minutes of MVPA than the larger TAAG sample. While statistically significant, the differences are small and may not be meaningful.

Results from this study also demonstrate that using Facebook is a low cost method to locate research participants. In fact, outside of staff time, Facebook is free. Direct mail can cost \$14-\$27 per participant, while site visits to facilitate face-to-face contact can be expensive as well [9]. Future studies that aim to re-recruit research participants may be interested in utilizing Facebook due to its cost-saving features, as long as staff are available to manage Facebook.

Facebook is a cost effective technique that may be used in future TAAG follow-up studies, since two-thirds of the participants reported having a Facebook account. Because so many adolescents use Facebook on a daily basis, recruitment techniques that do not employ the use of social network technology may be missing out on a large segment of the adolescent population. Rideout and colleagues reported that 82% of 7th-12th graders visit a social network site and 72% have created a social networking profile [5]. These trends are increasing over time and are expected to grow in the future. Interestingly, in 2009 the fastest growing demographic in Facebook membership was women over the age of 55, suggesting the potential use of Facebook for research recruitment in other segments of the US population [10]. Despite this, future studies should test the use of Facebook in different populations before relying heavily on Facebook to re-locate research participants.

Contacting participants on Facebook is a new concept, so communication to the audience must be carefully constructed and adjusted accordingly. In this study individuals responded more favorably to brief Facebook messages inquiring about updated contact information rather than lengthy recruitment explanations of TAAG 2. For example, we initially constructed a formal recruitment script in a detailed Facebook message about TAAG 2. After non-response to this inquiry, we used a simple message related to obtaining updated contact information. This brief message resulted in more responses; thus, this technique was used for additional contact throughout the study.

It is important to be clear about the research objectives and intent when using social network profiles to disseminate information to potential participants. This includes posting recruitment staff contact information and providing IRB approval status to further prove the legitimacy of the contact. With the ambiguity associated with Facebook and other online social networking websites, potential research participants need to be assured that they are being contacted for a legitimate request. For this study it was also helpful that initial recruitment in 2006 was conducted face-to-face and a social networking website was used to re-recruit participants who were familiar with our staff and logos.

When designing studies, researchers are required by their institution's IRB to maintain confidentiality. In studies like TAAG and TAAG 2, confidentiality refers to data specific to a given participant rather than confidentiality regarding study participation. We did not collect study-relevant participant data from the website and believe that it is a breach of confidentiality to do so. However, in many behavioral interventions located in community settings, participants know who is involved in the study and who is not. Not only is it virtually impossible, the nature of study does not warrant maintenance of study participation confidentiality. When we attempted to contact a girl through Facebook we used the "message" function so that only she, rather than all her Facebook friends, received our request. Using Facebook as a recruitment or intervention strategy for studies that require participant confidentiality may be more problematic. With the new features Facebook is adding to its website, a person may be able to organize Facebook friends in a way to protect participant confidentiality.

There are limitations to this study. After obtaining current addresses from our Facebook friends, the consent forms were sent through the regular mail without receipt acknowledgement request; thus, we cannot verify that they received the forms. Some of the 175 girls who were not in the main high schools were subsequently found and recruited through methods other than Facebook. Detailed notes were not taken on how each girl was found, so we cannot report the exact percentage recruited through the different methods. To be consistent with seasonality of data collection with TAAG and to coincide with school schedules, we had limited time to recruit girls into TAAG 2.

Conclusions

To increase participation in public health research, diverse methods for recruitment and retention must be employed. When adolescents are involved in research, creative recruitment techniques should be used to maximize sample retention and preserve diversity. Overall, the use of Facebook to recruit adolescent research participants was able add to traditional recruitment techniques by further minimizing losses to follow-up and has potential for use in future follow-up studies.

Acknowledgments

This work was supported by the National Institutes of Health, R01 HL094572. We thank Ms. Kathleen Zook and Kristen Kamas for their help with participant recruitment and leadership of TAAG 2 measurement. We especially thank all our "TAAG girls" who generously gave their time to be participants in our studies.

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Table 1

Demographic, body composition, and physical activity information from adolescent girls'/11th grade girls who friended us on Facebook compared with those who did not.

	Facebookrecruited(n=67) [*]	Not Facebook recruited (n=663)	p-value
	% (n)	% (n)	
Race			0.84
White	39% (26)	44% (292)	
Black	24% (16)	23% (153)	
Hispanic	15% (10)	14% (93)	
Other	22% (15)	19% (125)	
Free and reduced lunch recipient	67% (20)	65% (188)	0.57
Household type			0.53
One parent	36% (24)	32% (213)	
Two parents	64% (43)	68% (450)	
Mother's education			0.21
High school or less	19% (13)	26% (173)	
College/some college	37% (25)	34% (228)	
Professional training/beyond college	28% (19)	19% (128)	
Missing	19% (10)	20% (134)	
Overweight or obese ^{**}	28% (19)	35% (230)	0.30
Mean (SD) Body mass index (kg/m²)	21.5 (4.1)	22.7 (5.3)	0.03
Mean (SD) percent body fat	29.0 (8.6)	31.3 (8.8)	0.04
Mean (SD) daily MVPA minutes [†]	19.0 (10.8)	21.5 (10.6)	0.06

^{*} Facebook recruited includes all who friended TAAG 2.

^{**} Body mass index $\geq$ 85th percentile

[†] MVPA = Moderate-to-vigorous physical activity