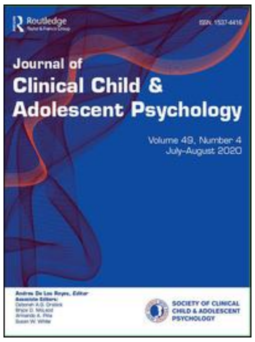

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Online Methods in Adolescent Self-Injury Research: Challenges and Recommendations

Diana M. Y. Smith[a], Sarah M. Lipson[b], Shirley B. Wang[b], and Kathryn R. Fox[c]

[a]Department of Psychology, University of California San Diego Medical School; [b]Department of Psychology, Harvard University; [c]Department of Psychology, University of Denver

ABSTRACT

Online methods hold promise as effective research tools for adolescent psychopathology research. Such methods may be the most effective way to reach large, representative samples of adolescents and harder-to-reach populations. They also may increase adolescent disclosure of risky behaviors, reduce recruitment costs, and increase the cost and time efficiency of recruitment. Despite these advantages, researchers may be concerned about including measures assessing risky behaviors, like suicidal thoughts and behaviors and nonsuicidal self-injury, in online studies of youth. In addition, parental consent in online studies is impractical and difficult to obtain. Concerns also include potential iatrogenic effects, sample bias, and data quality issues. This review discusses the benefits and challenges for online adolescent self-injury research, proposes strategies to overcome barriers, and provides examples and recommendations for future research.

The Internet provides a platform that offers many benefits for research recruitment and sampling for psychological scientists (Miller et al., 2017). Online psychological research first appeared in the late 1990s (Gosling & Bonnenburg, 1998; Kraut et al., 1998; Young, 1998). As the benefits of online research became apparent, the use of these methods proliferated rapidly (Gosling & Mason, 2015). More recently, clinical scientists have embraced online research as a convenient method to recruit high-quality samples (Chandler & Shapiro, 2016). For example, online research has examined public attitudes toward clinical issues (Arch et al., 2015; Burke et al., 2014; Corrigan et al., 2015; Jahnke et al., 2015; Lebowitz et al., 2015; Mitchell & Locke, 2015). Moreover, clinical scientists have used online methods to study psychopathological symptoms, such as generalized anxiety disorder (Lebowitz et al., 2014), depression (Winer et al., 2014; Yang et al., 2014), eating disorders (Fox et al., 2019), borderline personality disorder (Standish et al., 2014), obsessive-compulsive disorder (Fergus & Bardeen, 2014), and even self-injurious thoughts and behaviors (SITBs, including suicidal thoughts and behaviors as well as self-harming behaviors enacted without suicidal intent; e.g., Ribeiro et al., 2019) among adults.

Online methods also hold significant promise for mental health research in adolescents, with recent studies employing these methods (e.g., Smith, Wang et al., 2020). However, this type of research poses substantial challenges, most notably risk assessment for harmful behaviors and ethical concerns regarding parental consent (Michaels et al., 2015). Indeed, many psychologists interested in studying mental health among adolescents use measures that assess health risk behaviors, like drug/alcohol use, risky sexual behaviors, and SITBs. For example, one of the most commonly used measures of childhood depressive symptoms, the Child Depression Inventory-II (Kovacs, 2010) assesses suicide ideation over the past two weeks. The prospect of assessing risky behaviors including SITBs online in adolescents can lead to practical and ethical concerns among researchers (Lakeman & Fitzgerald, 2009) which likely prevent researchers from pursuing online methods.

Despite these challenges, online research presents a promising avenue to reach adolescent populations experiencing mental illness and traditionally hard-to-reach adolescents, like those who identify as lesbian, gay, bisexual, transgender, queer, or another sexual or gender identity (LGBTQ+). This review discusses benefits and challenges for conducting mental health research online with adolescents. Given that SITBs arguably represent some of the highest risk behaviors among youth, this review describes the benefits and challenges for online SITB research in adolescents, considers strategies to overcome barriers, and provides examples and recommendations for future research. We also provide

CONTACT Kathryn R. Fox ✉ Kathryn.Fox@du.edu Department of Psychology, Denver University, Frontier Hall, 2155 Race St, Denver, CO 80210.

supplemental materials, such as advertisement examples, mental health resource examples, and a Facebook advertising how-to guide, on Open Science Framework (https://osf.io/g6cha/). We believe that the issues and strategies discussed and the materials presented also apply to online studies assessing mental health and risky behaviors among adolescents.

Benefits of Online Methods in Adolescent SITBs Research

Although researchers interested in child and adolescent SITBs have typically focused on school- or laboratory-based studies, using the Internet to study SITBs in adolescents poses many benefits above and beyond these traditional methods. Social media may be the most effective method of reaching a large, representative sample of adolescents. In addition, online SITB research studies may encourage increased disclosure and honesty. Finally, the low cost of online recruitment and data collection provide a cost-efficient manner of large dataset collection. This section will review these benefits, as well as examples of recent studies that have benefited from online recruitment.

Reaching a Representative Sample of Adolescents

The Internet provides access to a large population of potential research participants, including many who would not otherwise participate in research (Miller et al., 2017). Traditional in-person laboratory studies require significant planning and effort on the part of participants (e.g., finding overlapping availability with experimenter, transportation), and there are additional barriers to studying psychopathology and sensitive topics (e.g., stigma). Such barriers are even greater when considering laboratory-based studies involving adolescents, which require that both adolescents *and* their parent/guardian have availability (at the same time), interest, and transportation for both parties. Taken together, these barriers can lead to a small subset of adolescents having the means to participate in lab-based studies, limiting the extent to which such studies can be generalized to the population of interest. School-based recruitment methods help to overcome some of these barriers; although parental consent is still required, this method removes the need for transportation and time-limited barriers. Unfortunately, these school-based methods then tend to limit participant diversity on a number of domains (e.g., geography).

Online studies remove many of these barriers and limitations, leading to improved study generalizability compared to in-person studies (Michaels et al., 2015). Critically, there has been an exponential increase in the use of social media in the last decade, particularly among young people (Memon et al., 2018). In fact, 95% of adolescents report owning a smartphone, and 45% report being online "almost constantly" (Pew Research Center, 2018). As such, using online methods for recruitment allows researchers to reach most adolescents in the U.S. while simultaneously removing resource-intensive constraints that may deter adolescents from lower socioeconomic status from participating. Likely related to the near ubiquity of Internet use and lowered barriers for online participation, a recent review found that Facebook recruitment led to better representation and participant selection compared to traditional recruitment methods, such as print and e-mail advertisement (Whitaker et al., 2017).

Reaching Populations of Interest

Online recruitment techniques also provide an avenue to recruit traditionally difficult-to-reach groups (e.g., Fenner et al., 2012; Stanton, 1998). Although SITBs are relatively common among adolescents, SITBs appear in the general population at a low base-rate (Cho et al., 2020; Glenn & Nock, 2014). It is thus often difficult to recruit a large-scale study of adolescents engaging in these behaviors. School-based studies are one way to circumvent this difficulty; however, school samples can vary widely in rates of reported SITB engagement (e.g., between 4% and 64% of students reporting suicidal ideation in the past year; Benbenishty et al., 2018), often resulting in relatively modest samples of adolescents who engage in SITBs. In contrast, online recruitment methods are ideal for reaching large numbers of adolescents engaging in SITBs. Screening surveys can reach a very large number of adolescents across the U.S. (or beyond) cheaply within days, helping to identify adolescents engaging in these behaviors for study recruitment. These methods can help to overcome limitaitons in the study of SITBs, which tend to include small samples due to recruitment difficulties that increase the likelihood of spurious findings and datasets that are not robust to demographic and contextual factors (Bagley et al., 2001; Cho et al., 2020; Glenn & Nock, 2014).

Additionally, online methods are particularly well-suited for recruiting large numbers of adolescents belonging to specific populations. For example, SITB researchers may be interested in recruiting LGBTQ+ adolescents, as they are at increased risk of SITB engagement compared to their heterosexual peers, and they may engage in more severe forms of self-injury (Batejan et al., 2015; Di Giacomo et al., 2018; Fox et al., 2018; Haas et al., 2010; King et al., 2008; Marshal et al., 2011). Yet LGBTQ+ youth are often difficult to recruit via traditional methods, as they are less likely to respond to typical recruitment advertisements requiring parent/guardian involvement, particularly if they are not “out” to their relatives and/or do not receive support from their parents/guardians (e.g., Griffith et al., 2017). Previous studies have found that LGBTQ+ populations have a strong online presence and online recruitment and data collection can feasibly and efficiently reach this high-risk minority group (Gay, Lesbian and Straight Education Network, 2013; Lytle et al., 2018), particularly when parental consent is waived (more on this below). This approach helps to ensure participants’ identity can remain confidential and private, without risking parental/familial discovery, thus increasing willingness to participate in research. Social media and online recruitment are instrumental in ongoing efforts to investigate specific groups reporting elevated rates of SITB engagement.

Increased Disclosure of SITB Engagement

The near-anonymity afforded by online survey methods encourages increased disclosure of sensitive and often stigmatized topics including SITB engagement. The benefits of anonymous data collection in psychological research have been discussed for decades (Joinson, 1999, 2001). In SITB research, online anonymous self-report methods yield higher rates of SITB disclosure than online identifiable self-report methods and in-person interviews. For example, a meta-analysis found a decrease in nonsuicidal self-injury (NSSI) prevalence across studies as participant anonymity decreased. In this analysis, pooled prevalence calculations estimated that “anonymous” participants reported a 21.4% NSSI prevalence, “potentially identifiable” participants reported a 14.7% NSSI prevalence, and “identifiable” participants reported a 14.7% NSSI prevalence (Swannell et al., 2014). Furthermore, self-administered questionnaires resulted in higher pooled prevalence than interviews, at 19.7% and 6.8%, respectively (Swannell et al., 2014). Increased disclosure may be related to the increased confidentiality inherent in these methods. In addition, anonymous participation may reduce the stigma associated with mental illness, such that participants may be more likely to report other emotional symptoms (Gibson et al., 2014). Using anonymous and near anonymous approaches may help participants to feel more comfortable, which may lead to more valid responses.

Efficiency and Cost-effectiveness

Perhaps the most obvious benefit of online recruitment is its capacity to obtain a large sample in a short amount of time and at a low cost. Several studies have successfully recruited large online samples of adolescents who engage in SITBs, which can be substantially more time consuming and costly in more traditional research settings. Salk et al. (2020), for example, spent only 1,536 USD on Facebook and Instagram advertisements and 500 USD on participant payment over a short four months to recruit 5,642 participants for a study on the mental health of transgender adolescents. Of these 5,642 participants, 2,948 comprised the sample for a study that examined rates of SITBs across transgender and cisgender identities (Thoma et al., 2019). Similarly, in 2012, Loxton et al. (2015) recruited 11,799 women over Facebook into a longitudinal study on Australian women’s health. In contrast, referral and traditional media only recruited 1,184 and 910 women into the study, respectively (Loxton et al., 2015). Online studies also can be rapidly completed, with many studies completing data collection in a manner of hours (Guillory et al., 2018; Lytle et al., 2018; Whitaker et al., 2017). These improvements often come with little to no extra cost, with some studies spending as little as 0.50 USD per participant (Amon et al., 2014; Thomas et al., 2015). These benefits may be useful especially when conducting longitudinal research studies; for example, in a study of over 1,000 people with a history of SITBs, Ribeiro et al. (2019) were able to use short time intervals to predict risk of self-injury in young adults. The efficiency of data collection makes online methods particularly appealing for survey research and studies involving multiple timepoints where attrition is a concern.

Challenges and Recommendations for Online Methods in Adolescent SITB Research

Although there are numerous benefits to online adolescent SITB research, there are also specific challenges that relate to the nature of this sample and medium. As Internet use for behavioral research has increased, a body of literature has emerged concerning the specific challenges that arise in online studies. In this section, we review ethical considerations for SITB research in adolescents, as well as issues of sample bias and data quality. We then provide steps to overcome such barriers, including recommendations and sample materials to address these challenges.

Risk Assessment

Challenge

Research investigating SITBs typically includes a protocol for risk assessment and safety planning in the event that a participant reports recent (e.g., past year) SITB history. Risk assessment concerns can make SITB research difficult; indeed, a survey of SITB researchers found that their topreported challenge was risk assessment and safety (Lakeman & Fitzgerald, 2009). Risk assessment via online studies of SITB is particularly challenging. The near-anonymous nature of most online data collection, for example, potentially precludes researchers' ability to ensure participant safety.

Recommendation

Before offering recommendations, we want to point out two critical issues. First, it is not the researcher's role to act as a clinical provider for study participants, especially in observational studies (Hom et al., 2017). As researchers, we cannot (and arguably should not) provide clinical and mental health treatment to our participants for myriad reasons, including that participants are *not* consenting to clinical care and that these relationships are time-limited. Nevertheless, as researchers, and particularly those who study SITBs, we are ethically obligated to ensure participant safety for the duration of study experiences, and to intervene if they are at "imminent" risk of hurting themselves or someone else. Moreover, we strive for participants in our research studies to leave feeling the same or better than when they entered, and with more resources for mental health care and support than they had prior to participation. We argue that as clinical researchers it is our main role to ensure that our study protocol does not harm participants, and to guide participants to safety planning and mental health resources where they can receive sufficient mental health care.

Second, it is not currently possible to accurately determine short-term risk for suicide attempts or death in real-world applications, as there are no specific risk factors that serve as reliable and strong predictors for these outcomes in the short term (see Franklin et al., 2017). Machine learning techniques show promise in recent research for predicting short-term nonfatal SITBs, but much more replication and research is needed before these algorithms are ready for real-world deployment (Ribeiro et al., 2019). Instead, proxies of suicide risk are currently used alongside risk assessments to make decisions regarding necessary interventions (e.g., requiring emergency room evaluation and subsequent hospitalization, safety planning, providing mental health resources; Chu et al., 2015).

In light of these issues, we have several recommendations for researchers studying SITBs in adolescents using online methods, and seeking to maintain participant anonymity (or near anonymity when e-mail addresses must be collected). It remains essential that researchers establish criteria to demarcate participants who may be at risk for future suicidal or self-harming behaviors (e.g., past month history of SITB), and that they to do their best to help those individuals. Once determined, these participants should then receive an automatic (i.e., trigger) e-mail or survey block expressing that it seems like the participant is going through a hard time, and providing crisis and electronic resources that are easily accessible (e.g., see https://osf.io/mpx95/ for an example). Such resources can include recommendation to visit a local (psychiatric, if available) emergency room if currently suicidal or unable to keep themselves safe, and information on how to access other mental health resources, including suicide hotlines, text lines, and other electronic crisis services (Blasco et al., 2016, 2019; Glenn et al., 2017). We also recommend that, when appropriate, participants are given the option to complete a self-guided electronic safety plan (e.g., https://osf.io/rwktm/). This automated alert format ensures that high-risk participants receive real-time responses (Michaels et al., 2015). Alternatively, if resources allow and/or depending on the protocol being enacted, researchers may have a study clinician reach out directly to participants who classify as at potential risk for future SITBs. IRB protocols should describe, in detail, how researchers will determine and then help participants who have a history of SITBs.

Some may argue that this approach is less thorough than traditional risk assessment and safety protocols provided during an in-person study visit. Indeed, using this format, it is not possible to collect information typically deemed to indicate imminent risk (e.g., current suicide intent, access to suicide method). This format also precludes steps such as escorting a participant to a psychiatric emergency room. However, it is worth noting that very little empirical research has examined the impact of SITB risk mitigation strategies traditionally employed in research. Indeed, randomized control trials examining the impact of both lower (e.g., safety planning, means restriction) and higher (e.g., hospitalization) intensity interventions on reducing SITBs show at best weak effects, with no significant advantages for any given approach (Fox, Huang et al., 2020). Although hospitalization is often deemed necessary, both to protect a given person and to avoid legal ramifications, hospitalization and related restrictive interventions can be traumatizing and potentially even iatrogenic (Chung et al., 2017; Olfson et al., 2016; Ward-Ciesielski & Rizvi, 2020). Thus, we argue that in light of a lack of evidence for superiority of any SITB risk reduction method at present, these steps are not necessary in online research where information about current imminent risk is not collected. However, should new robust evidence emerge of effective and scalable interventions for SITBs, we would strongly encourage their adoption in online research studies.

Possible Iatrogenic Effects of Participating in SITB Research

Challenge

As with other demographic groups, adolescents who participate in SITB research may risk emotional distress. Some researchers may be concerned that answering questions and describing history of SITB engagement may lead to negative emotional outcomes. Many IRBs, for example, hesitate to approve extensive checklists in order to protect participants from engagement in harmful behaviors. Indeed, this is a commonly held, but misguided belief that often leads researchers to avoid detailed questions about suicide and self-harm altogether (Bajaj et al., 2008; Betz et al., 2016; Bocquier et al., 2013).

Recommendation

Most research to date contradicts this long-held belief. There is no evidence that assessment of suicidal thoughts and behaviors primes vulnerable populations to think about suicide (see Dazzi et al., 2014 for a review; see DeCou & Schumann, 2018 for a meta-analysis). In addition, previous research has found no iatrogenic effects resulting from detailed, online studies asking questions about nonsuicidal self-injury or from viewing online stimuli (e.g., images) related to self-injury (Cha et al., 2016; Muehlenkamp et al., 2015). On the contrary, some studies indicate an overall positive effect on mood after participation in research related to SITBs (Biddle et al., 2013; Gibson et al., 2014). Research suggests that detailed questions about self-harm behaviors, such as those in checklists, do not heighten distress nor intensify behavioral urges; on the contrary, these questions potentially decrease risk in high risk participants (Crawford et al., 2011; Deeley & Love, 2010; Gould et al., 2005; Smith et al., 2010). These findings, in tandem with the high presence of easily accessible stimuli related to SITBs on social media, suggest that participating in online research studies likely *does not* have iatrogenic effects (Brown et al., 2018). Nonetheless, the possibility remains that a subgroup of participants may experience emotional distress and researchers should prepare for this possibility (Michaels et al., 2015).

Given the potential for increased negative mood and/or distress after participating in studies assessing SITBs, these studies should discuss and offer broadly applicable mental health resources after completion of each part of the study (including the study screener) and in the study's debriefing materials (Michaels et al., 2015). These resources should include a comprehensive summary of easily accessible mental health resources to both reduce distress and to offer additional support for participants. In studies with online samples, the resources provided should vary to address a variety of situations and locations, and these should include crisis resources (hotlines, text lines) as well as other online mental health resources. When resources allow, researchers should also consider whether to include contact details for a named researcher or to provide a tick box for participants to receive a personalized note or follow-up for lingering questions, concerns, or help accessing mental health resources. This procedure somewhat replicates the more personal connection that a face-to-face check-in offers (Gibson et al., 2014).

Parental Consent

Challenge

Traditionally, research studies involving participants under the age of 18 require parental consent. However, in conducting studies online among adolescents, parental consent is impractical and logistically difficult to obtain. It is nearly impossible to determine the identity of a given online user, which challenges the authenticity of parental consent in this setting. As such, if someone wants to participate, they could take steps to provide fraudulent parental permission. Therefore, even if a study requires parental contact information or parental consent, it is logistically very difficult and impractical to verify the identity of the parent or guardian. Nevertheless, there continues to be an ongoing discussion of the ethics surrounding parental consent, in SITB research and beyond (Coyne, 2010). This discussion centers on tensions between the need to protect adolescents and the recognition of adolescent's autonomy as persons in their own right.

Recommendation

Investigators can create online research studies for adolescents where parental consent is waived, based on federal research regulations when: (1) research involves minimal risk; (2) the waiver does not impact the rights or welfare of participants; (3) research cannot be carried out without such a waiver; and (4) participants are provided with additional information after study completion (General Requirements for Informed Consent, 2007). We argue that each of the above requirements is met for *many* online studies of SITBs among adolescents. Indeed, paralleling each of the above requirements: (1) most studies examining SITBs in adolescents qualify for the "minimal risk" designation[1]; (2)

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[1] Importantly, as mentioned in the previous section, research suggests that questions that assess mental illness and SITBs do not increase distress in the long-term, in both adolescents and adults. No evidence shows that such assessments prime vulnerable populations to consider suicide (see Dazzi et al., 2014 for a review; see DeCou & Schumann, 2018 for a meta-analysis). Questions about suicide and self-harm do not increase these thoughts or behaviors in randomized control trials (Gould et al., 2005; Harris & Goh, 2017). Rather, evidence suggests that such questions may reduce distress and suicidal thoughts among at-risk individuals (Dazzi et al., 2014; Gould et al., 2005; Linehan et al., 2006).

participant rights and safety are maintained with careful consideration of study design, steps to ensure participant confidentiality, thorough and clear assenting procedures, and safety protocols; (3) it is logistically very difficult, if not impossible, to ensure *true* parental/guardian consent in studies conducted online; and (4) participants are provided with thorough debriefing post study completion. Indeed, although such decisions can vary widely across institutional review boards (IRBs; e.g., Mammel & Kaplan, 1995), many IRB institutions allow researchers to waive parental consent for studies on SITBs in adolescents in appropriate circumstances (e.g., see Salk et al., 2020; Smith, Wang et al., 2020; Wang et al., Under Review for descriptions of three such IRB-approved studies across two institutions). When writing an IRB application involving a request to waive parental consent, it is important to consider level of risk to participant, level of anonymity, the use of identifiers, and whether there is reason to avoid parental involvement. As previously discussed, online SITB research does not increase a participants' risk for self-harm behaviors nor for greater emotional distress than other mental health research (Cha et al., 2016; Muehlenkamp et al., 2015). Further, it is feasible to conduct online research that collects either near-anonymous or de-identified responses to protect participants' confidentiality. Researchers seeking to waive parental consent should collect only the participant information necessary for their study, thereby further minimizing any risk to participants' privacy.

In addition to meeting federal regulation requirements for a waiver of parental consent, such a waiver likely also improves the quality and generalizability of data collected from such studies. Investigators should emphasize the methodological benefits that such a waiver for parental consent affords. Regarding data quality, waiving parental consent likely *decreases* sampling biases and dishonest reporting by participants, given that SITBs are considered risky behaviors and that adolescents often do not disclose SITBs to their parents (Herrera et al., 2017; Jones et al., 2019; Klaus et al., 2009; Fox et al., Under Review). Adolescent participants may worry about parents discovering their engagement in these behaviors through participating in a given study or through fears that study personnel will disclose these behaviors to their parents. Indeed, research indicates that adolescents are less likely to disclose SITBs when statements about limited confidentiality (indicating a potential need to involve parent/guardians) are provided (Lothen-Kline et al., 2003). Requiring parental consent, therefore, potentially limits participant honesty and results may not accurately reflect participant SITB engagement. Regarding improved generalizability, waiving parental consent may help researchers to recruit more representative samples of adolescents who would otherwise not participate in such research (Tigges, 2003). Indeed, in one online study, only 35% of 15–17-year-old participants indicated willingness to participate in research requiring parental involvement (Cavazos-Rehg et al., 2020).

Finally, relying on adolescent self-assent may protect adolescents from potential negative outcomes. For example, although many parents can be supportive and helpful when learning about SITB engagement, parents often report feeling guilt, fear, frustration, and uncertainty when learning about SITBs in their children (e.g., Byrne et al., 2008). Although researchers can provide psychoeducation and resources to parents when sharing their adolescents' SITBs, such provisions are offered only *once*, and may leave parents unsure of how to best provide support. Moreover, when considering the study of LGBTQ+ adolescents who tend to show high risk for SITBs, requiring parental consent could be problematic, as parents may discover that LGBTQ+ adolescents were recruited for the study, accidentally "outing" participants who were not ready or may not have wanted this identity disclosed. Finally, recent research shows that adolescents' negative experiences with parental discovery of SITBs can lead them not to disclose SITBs in the future (Fox et al., Under Review). Given that SITB disclosure is a critical component of its treatment and prevention, this outcome is less than ideal.

Sample Bias

Challenge

Nearly any method of study recruitment comes with a potential for sample bias. For example, online studies suffer from potential for self-selection bias, and targeting certain websites (e.g., Reddit) for recruitment has led to disproportionately White samples (e.g., Fox et al., 2016).

Recommendation

The use of targeted advertisements across social media outlets (e.g., Facebook, Instagram) can help to increase the representativeness of samples recruited. Indeed, online platforms offer the potential to intentionally recruit groups who have been historically underrepresented in research. Previous research has successfully used social media to recruit paramedics, cancer survivors, and gay Latino men (King et al., 2014; Gorman et al., 2014; Martinez et al., 2014). Online methods also show promise for the recruitment of people with mental illness (Kayrouz et al., 2016). Social media methods, for instance, successfully recruited people with depression and people with bipolar disorder (King et al., 2014; Morgan et al., 2013). Furthermore, and to reiterate, online studies facilitate participation from individuals who would not otherwise engage in in-person study methods. For example, in a recent study assessing SITBs in both an online and in-person sample, the majority of online participants reported a preference for online research (Fox, Harris et al., 2020). For those who are interested, see our how-to guide (https://osf.io/da6qb/) to running a successful advertising campaign on Facebook and/or Instagram.

Data Quality

Challenge

Online surveys may lead to increased fraudulent or erroneous responses compared to in-person interviews, due to inattention or motivation to finish quickly. For example, in a study of LGBT individuals, social media recruitment was associated with more data quality issues compared to in-person recruitment, and researchers dropped a significantly larger portion of data from social media respondents (Guillory et al., 2018). In addition, although financial incentives may increase participation rates, it is possible that these incentives may lead to duplicate responses, especially in adolescent populations where financial incentives are particularly enticing (DeCamp & Manierre, 2016). Therefore, online studies in adolescents may require additional attention to data quality through deliberate study design (Michaels et al., 2015).

Recommendation

The addition of items to assess validity within online surveys may help researchers distinguish fraudulent responses. A page timer, for example, enables researchers to see whether participants spend an appropriate amount of time on a response. Open-ended responses that require English fluency and coherence to answer a question can help assess attention and valid responding, if included at the end of a survey. Researchers should also implement a method to track or prevent duplicate responses. If studies ask participants for e-mail addresses, for instance, researchers can compare participants' e-mails to identify duplicate responses. IP address comparison also offers an alternative method to identify duplicate responses; however, in studies where researchers seek to promote near-anonymity, this is not an option. Instead, settings in Qualtrics ("prevent ballot box stuffing") can be used to prevent duplicate responses from the same IP address. Trap/captcha questions – such as, "Please select "Sometimes" as your answer choice" – can also be included to test whether a participant did not read the survey carefully (Mellis & Bickel, 2020; Oppenheimer et al., 2009). Once data are collected, several additional methods have been proposed to check data quality and responses (e.g., Mellis & Bickel, 2020). In addition to assessing validity, including screening surveys and offering appropriate but not excessive compensation can each be used to limit the ease and incentive for fraudulent responses.

Assessment of SITBs online poses additional challenges, given that many assessments are interview-based (e.g., Nock et al., 2007), and provide participants with opportunities to ask questions as they arise. SITB studies should offer participants an explicit definition of the suicidal behavior of interest (e.g., suicidal ideation, suicide attempt, non-suicidal self-injury; Swannell et al., 2014), and should consider using measures that have been shown to be reliably used online (e.g., SITBI-R; Fox, Harris et al., 2020). Furthermore, studies should assess presence of SITB with checklists rather than a yes/no question, as lists of methods and/or types of SITBs may encourage memory recall of relevant experiences compared to yes/no items (Swannell et al., 2014). Importantly, checklists potentially increase memory recall without increasing distress or behavioral urges in high risk participants (Crawford et al., 2011; Deeley & Love, 2010; Gould et al., 2005; Smith et al., 2010). Researchers can remind participants to e-mail the study's contacts if questions come up during participation.

Conclusion

The recommendations and opensource materials (all located here: https://osf.io/g6cha/) in this paper serve as a guide for researchers who aim to use online methods to examine SITBs in adolescents. A move to online methods does not require a return to survey research. Rather, online methods offer an opportunity to leverage technology and creativity to create and design online experimental studies. The internet offers benefits for adolescent SITB research over traditional, in-person recruitment strategies for all types of data collection, including those studies that include experimental manipulation, performance-based data, and real-time monitoring (e.g., Dreier et al., Under Review; Lloyd et al., 2020; Smith, Fox et al., 2020). These methods can even be used for randomized control trials of potential SITB treatments (e.g., Franklin et al., 2016; Hooley et al., 2018). Critically, online methods require less time and monetary investment at the researcher's expense. More importantly, the anonymity in online research encourages more participation and honest disclosure in adolescent SITB research. This honesty is crucial to effective research in the understanding and treatment of SITBs in adolescents. We argue that online methods will help researchers in this domain reach a broader, more generalizable sample of youth. In addition, due to the high rates of SITB engagement among adolescents and high levels of comorbidity with other dimensions of psychopathology, the online assessment of SITBs is an important skill for a adolescent mental health researchers. The field must continue to develop and advance research methods in order to better reach the populations of interest.

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Additional Materials

The project titled "Online Methods in Adolescent Self-Injury Research: Challenges and Recommendations" on the Open Science Framework platform houses the supplemental materials for this paper. These materials include advertisement examples, mental health resource examples, and a how-to guide for Facebook advertising. Access the project at this link: https://osf.io/g6cha/

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ORCID

Shirley B. Wang http://orcid.org/0000-0002-8583-3014
Kathryn R. Fox http://orcid.org/0000-0002-2697-7771

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