Ethical considerations for the use of ecological momentary assessment in non-suicidal self-injury research

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Abstract

Research examining non-suicidal self-injury (NSSI) in daily life has grown substantially; thus, it is essential in conducting ecological momentary assessment (EMA) research with individuals who self-injure to follow important ethical guidelines. Given the challenges faced by researchers in monitoring, assessing, and responding to risk among those who self-injure, further guidance and research is warranted in informing best-practices for conducting EMA research examining NSSI. We suggest ethics-based approaches to professional competence, responding to and monitoring risk, and ensuring inclusive and representative approaches to NSSI research in daily life. Related empirical and practical issues in need of further investigation are discussed.

Keywords: research ethics, non-suicidal self-injury, ecological momentary assessment

Introduction

Non-suicidal self-injury (NSSI) is conceptualized as the deliberate destruction of one's body tissue in the absence of suicidal intent, which is not socially sanctioned (International Society for the Study of Self-injury, 2024). NSSI is a transdiagnostic behavior that can occur across a range of mental disorders, as well as among individuals who do not meet the criteria for any psychiatric disorder (Bentley et al., 2015; Wang & Eaton, 2023). The presence of NSSI is uniquely associated with an increased risk for the development of other mental health problems (Daukantaite et al., 2021; Kiekens et al., 2023; Turner et al., 2022), suicidal thoughts and attempts (Franklin et al., 2017; Kiekens et al., 2018; Victor & Klonsky, 2014), scarring and stigmatization (Burke et al., 2019; Staniland et al., 2020), and a range of other adverse psychosocial outcomes (Baer et al., 2020; Burke et al., 2015; Gandhi et al., 2017; Robinson et al., 2019; Turner et al., 2017). In clinical contexts, NSSI should be monitored and may require treatment even outside of co-occurring mental health problems on the basis of the implicit distress and physical harm individuals who self-harm experience alongside both urges to self-harm and when engaging in NSSI behaviors, respectively.

While rates of NSSI peak in adolescence and emerging adulthood (Gandhi et al., 2018; Gillies et al., 2018; Muehlenkamp et al., 2012), self-injury behaviors often persist across the lifespan, with some individuals reporting onset of NSSI in adulthood (Klonsky, 2011). Swannell and colleagues (2014) reported the lifetime prevalence of NSSI in community samples as around 23% in adolescents, 13.4% in emerging adults, and 5.5% among adults. Much higher rates are found in clinical samples (Christensen et al., 2021; Millon et al., 2024; Ose et al., 2021). Therefore, clarification regarding the course and context (e.g., physical, emotional, etc.) of NSSI in and of itself, across populations and diagnostic categories (Haliczer & Dixon-Gordon, 2023; Hepp et al 2021; Kiekens et al., 2021) is critical to preventing and intervening on NSSI.

Traditional research methods in psychology, which have relied heavily on cross-sectional self-reports, have helped to provide foundational knowledge of the prevalence, frequency, and correlates of NSSI. In addition, longitudinal studies have helped clarify the developmental course of NSSI throughout adolescence and emerging adulthood (Kiekens, Claes, Hasking, 2024). However, these methods may not be sufficient for capturing the complex nature of NSSI as it occurs in daily life, requiring the use of more ecologically valid methods (e.g., Burke et al., 2021; Turner et al., 2019). Indeed, most social science research methods rely on asking participants to report on experiences of NSSI *retrospectively* due to the ethical inability of researchers to observe NSSI behavior naturalistically in the lab. Such retrospective reports may be highly vulnerable to recall bias (Glenn et al., 2017; Kendall et al., 1999), whereas ecological momentary assessment (EMA) has shown promise in this area, for instance, in detecting thoughts of suicide not captured by retrospective reports (Gratch et al., 2021). Furthermore, traditional, retrospective approaches fail to model the dynamic nature of NSSI over short periods of time (e.g., by asking, "*have you self-injured since last year?*"). Traditional research methods used to study NSSI are also limited due to their typical nomothetic approach in which respondents report on their history (e.g., responding "yes" or "no" to having engaged in NSSI in the past year), dividing them into groups and comparing these groups (i.e., lifetime or 12-month NSSI history versus no NSSI history). Such between-group knowledge does not translate to an understanding of risk and protective factors at the within-individual level, which requires an idiographic approach (Fisher et al., 2018). EMA approaches can improve on less nuanced, retrospective nomothetic approaches (e.g., lifetime NSSI frequencies, retrospective reports assessing past month or week NSSI) by measuring NSSI as it occurs over minutes or hours, which has provided unique insights regarding the short-term course of NSSI (e.g., Kiekens et al.,

2024) and accompanying intrapersonal (e.g., affect; Hepp et al., 2020) and interpersonal (e.g., Janssens et al., 2024) phenomena.

New methodological advances, such as EMA, have moved towards data collection techniques that facilitate modeling NSSI dynamically across minutes, hours, days, and weeks, improving our ability to understand how risk for NSSI changes in the short-term relative to one's own baseline in order to better inform treatment and prevention. However, with these novel approaches to measurement come ethical challenges. Previous discussions tackling the ethics of EMA, both broadly and among specific populations, have included issues of participant burden, geolocation tracking, data privacy, and confidentiality (Roth et al., 2017; Rudolph et al., 2020; Wenze & Miller, 2010). More recently, ethical practices in the use of EMA have been evaluated in the context of suicidality, an area of research that shares many ethical implications with the study of NSSI. Experiences of NSSI may include NSSI urges or behaviors, which are themselves distinct from each other (Burke et al., 2019) and from suicidal thoughts and behaviors (Nock & Favazza, 2009). Work in the area of intervening on suicide risk has focused on navigating confidentiality, responding to risk, training, and competency in cross-sectional and longitudinal research (Lee et al., 2016; Schatten et al., 2020).

With respect to NSSI, prior literature examining the ethical challenges in research has focused on its application to high-risk adolescents. Lloyd-Richardson and colleagues (2015) focused on youth-specific practices around consent/assent in addition to outlining facets of self-injury that confer risk for suicide (i.e., medical severity, frequency, form, and recency), the role of research staff versus clinical teams, and differentiating suicidal behavior and NSSI. While previous literature has laid the groundwork for ethical considerations for NSSI research across the lifespan, there exist unique ethical and legal implications for research using EMA methods to

study NSSI which have yet to be addressed. Some of these considerations have been discussed broadly in relation to ethical and practical guidelines for using EMA to study NSSI throughout the research process (i.e., recruitment, safety monitoring, accuracy and feasibility, compensation, and researcher well-being; Kiekens et al., 2021), but prior work has not couched these topics within broader ethical frameworks and principles.

Given the relative lack of research and consensus on ethical best practices in the field, researchers may be forced to rely on "word of mouth" for strategies from other research teams who have developed successful protocols for EMA NSSI studies, which may propagate methodological decisions without appropriate consideration of ethical implications. The present article outlines extant work on this topic in addition to providing recommendations and best practices for scholars considering assessment of NSSI and associated constructs using EMA. Although myriad ethical issues are relevant to the use of EMA broadly (e.g., participant reactivity, Hufford et al., 2002; equity in EMA research, Roelfs & Shor, 2023) and in NSSI research broadly (e.g., differentiation from suicidality, Klonsky & Muehlenkamp, 2007; avoiding iatrogenic harm, Fulginiti & Frey, 2019), this manuscript focuses on unique issues relevant to the intersection of studying NSSI using EMA. First, we will briefly summarize the value of using EMA to study NSSI. Second, we will highlight the ethical issues involved in designing NSSI-focused EMA studies as they relate to professional competence, consultation, and reducing risk of harm. Within this domain, we will further consider ethical factors in relation to design of EMA assessments, such as language and terminology used as well as displays of NSSI-related imagery, as they may be used in EMA. Third, we will consider the balance of participant autonomy, beneficence, and nonmaleficence in identifying risk to participant well-being and establishing valid and ethically appropriate procedures to respond to risk of harm in NSSI EMA research.

NSSI and EMA

There has been an explosion of research investigating NSSI over the past 20 years, with recent innovative research efforts aimed at studying NSSI in real-time through intensive longitudinal designs (Rodriguez-Blanco et al., 2018). One such method of choice in the field is EMA (also termed experience sampling or real-time monitoring; Myin-Germeys et al., 2018), which includes data collection methods that employ an intensive longitudinal design with participants in their daily lives (Shiffman et al., 2008). Smartphone-based EMA procedures allow researchers to prompt participants to complete short surveys, usually on their phone, multiple times a day and capture how thoughts, feelings, behaviors, and emotions unfold *in situ,* therefore increasing data precision (Stone et al., 1999). EMA is often viewed favorably in studying NSSI given its improved ecological validity (Hufford et al., 2002). Emerging research indicates that EMA is more reliable in assessing the presence of NSSI behavior than other retrospective methods (Esposito et al., 2022). Furthermore, EMA allows for real-time data collection, which enhances the ability to establish temporal precedence. This method also enables measurement of potential psychosocial factors underlying NSSI behavior in real-time, offering improvements over traditional cross-sectional approaches. Additionally, EMA facilitates the exploration of short-term within-person associations, contrasting with the developmental between-person associations typically investigated in traditional longitudinal designs.

While EMA methods have been in practice for decades, including using paper diaries and early personal computing devices, modern advancements in smartphone technology have allowed for unprecedented access to participants in their daily lives (Intille et al., 2007). Following suit, NSSI researchers have joined other fields in the use of EMA methods to measure complex real-time experiences that have been otherwise inaccessible in traditional laboratory

settings (for a review see Gee et al., 2020; Hepp et al., 2020; Kuehn et al., 2022; Rodriguez-Blanco et al., 2018). However, with the advancement of technology also comes novel and unique ethical challenges. While ethical guidelines have been outlined to advise researchers in the study of NSSI broadly (e.g., Hasking et al., 2019b; Lloyd-Richardson et al., 2015; Singhal & Bhola, 2017), the present paper aims to outline the important ethical concerns that researchers should consider when conducting EMA-based research with individuals who engage in NSSI by building upon earlier recommendations (Kiekens et al., 2021) within the context of broad ethical principles and frameworks. Given the large body of EMA NSSI research emanating from the United States, specific references will be given to the American Psychological Association (APA) ethics code (APA, 2017) with further reference to internationally recognized ethical principles, which overlap in many substantive ways. Additionally, we will outline significant future research avenues to ensure that the practices and ethical recommendations regarding NSSI risk monitoring and responding are grounded in empirical evidence as the field progresses.

Design of EMA Studies, Professional Competence, and Reducing Risk of Harm

Current ethical guidelines should be at the core of establishing practices for assessing and monitoring the risk of harm in the use of emerging EMA measurement methods. APA ethics code guidelines require that psychologists "conduct research with populations and in areas only within their boundaries of competence" (p. 5). Competence is paramount to conducting ethical research using EMA among those that self-injure; however, there are undoubtably researchers interested in this topic without explicit training in NSSI scholarship. Given the transdiagnostic nature of NSSI, researchers from interdisciplinary backgrounds should *not* refrain from asking questions about NSSI when relevant to their field of study solely because this may be a new area of interest. Retaining a clinical psychologist on the research team with expertise in managing NSSI risk, as well as suicide risk (given high rates of co-occurrence with NSSI; Guertin et al., 2001;

Hamza et al., 2012; Nock et al., 2006), can be an effective way to ensure the team has clear, appropriate protocols for crisis intervention and risk assessment in these situations (Brown et al., 2001). However, obtaining an expert in the study of NSSI as a research team member or consultant may not always be feasible. In such cases, researchers can also develop their own competency in risk assessment and management (Fox et al., 2015; Heath & Nixon, 2008; Lengel & Styer, 2019).

Adapting Traditional NSSI Measures for EMA

Issues of measurement strategy, wording, and approach, particularly in relation to avoiding participant harm, are critical to all NSSI-focused research. These topics are especially relevant to EMA research, relative to other methods, as many EMA assessments are developed on an ad hoc basis without significant psychometric or usability testing (e.g., Janssens et al., 2024); therefore, stigmatizing or otherwise harmful content may be more likely to slip through the cracks without appropriate checks or consultation to existing best practices in the field. Further, when only one or two items are presented to capture a construct (which is typical in EMA research), harm from pejorative language may be greater, both to the participant and to scientific rigor. In some cases, inappropriate language choice or other assessment content can also have a deleterious impact on data usability. For example, high attrition may occur in EMA protocols as participants grow frustrated with stigmatizing or inaccurate language through repeated presentations of those same questions multiple times a day. Further, the fact that these measures are completed in daily life without a researcher present makes opportunities for participant feedback about problematic language more limited. Accordingly, researchers should consider piloting their EMA protocols before data collection, incorporating any feedback into the study prior to enrolling participants. Even among experienced NSSI researchers, piloting is

valuable when working with a new population of interest, for example, when conducting an EMA study with adults versus adolescents who would likely have different preferences regarding language used in surveys.

Wording and Language Choice

In directly addressing these potential pitfalls, researchers may first focus on ensuring that language does not perpetuate stigma, which is in line with prior literature highlighting the importance of avoiding stigmatizing language in describing behavior and individuals who self-injure. Researchers should refer to extant work outlining language that does not perpetuate stigma or erroneously suggests uniformity across all people who self-injure (i.e., recommendations against referring to NSSI as "bad" or "maladaptive"; Hasking et al., 2019a; Hasking et al., 2017; Lewis, 2017). Given that the study of NSSI using EMA is a relatively new field, researchers wanting to conduct research in this area would benefit from making decisions regarding language, and the translation of EMA items to other languages, by considering the preferences of individuals with lived experiences and experts in the field; for example, by consulting with existing literature in this area, through pilot testing, or consulting individuals with lived experiences and/or research expertise directly.

One way to reduce the risk of harm via pejorative wording in EMA items is by using language from existing measures that have been evaluated for stigmatizing language (although the authors are not presently aware of measures validated in this specific way). Given that there are currently no validated measures of NSSI developed for EMA protocols, we recommend that researchers make their items publicly available in item repositories (e.g., Kirtley et al., 2019; https://osf.io/kg376/), publish study and risk management protocols, and register the objectives and analysis plan of the study to enhance reproducibility (Kirtley et al., 2021) to foster

methodological rigor and transparency. In addition, researchers should, when possible, include people with lived experience with NSSI in the design of the EMA in addition to piloting their research protocols to ensure that the protocol is feasible, works as intended, and is well understood (i.e., briefing, check-ins, technical aspects, risk monitoring, interventions, debriefing; for relevant guidance on these approaches to community-engaged research, see Boness et al., in press; Singhal & Bhola, 2017).

In a maximally person-centered approach, when appropriate and feasible, researchers and clinicians may even use language describing NSSI in the EMA protocol as defined by each person in their own words. For example, they may ask individuals to describe the functions of NSSI for themselves at the outset of the study and use this language during follow-up EMA surveys, in addition to standard language in order to balance participant acceptability and replicability. In order to balance using existing measures and avoiding non-stigmatizing language, researchers may also make changes to existing measures by using newer EMA technologies that allow the research team to "pipe in" more preferred language based on participant feedback, for example, during the piloting stage, or on a person-specific basis. These methods have the added benefit of promoting trust and further increasing the validity of participant reports, but would require appropriate data analytic approaches (i.e., qualitative analysis) and may limit researchers' ability to consolidate responses in a quantifiable manner across participants.

Imagery and NSSI-Relevant Stimuli

The decision to use NSSI-related imagery (e.g., razors, wounds caused by cutting, blood, scars) in EMA research should be balanced carefully with the potential harm to the participant. One recent systematic review of 19 studies revealed that while the presentation of NSSI-related

imagery may promote positive impacts for some (i.e., empathy, solidarity), there may be troubling negative effects observed among those with a history of NSSI (i.e., suggesting new methods, normalization, and exacerbation of self-harm; Marchant et al., 2021). One factor limiting the risk of harm in prior research utilizing imagery is that much of this work has been conducted in laboratory settings via behavioral tasks (e.g., Self-Injury Implicit Association Test, presentation of imagery in neuroimaging and psychophysiology research; Cha et al., 2016; Hooley et al., 2020), during which researchers can intervene if NSSI-related imagery results in distress. Similar to use of inaccurate or stigmatizing language, repeated presentations of NSSI-relevant stimuli may cause distress in an EMA context, and researchers are limited in their ability to intervene outside of the lab. Although mobile behavioral tasks using NSSI-relevant stimuli are presently rarely used in EMA research, there is an increase in collection of these data (e.g., Ji et al., 2024) and given technological advances, we anticipate that such practices may represent a growing trend, thus warranting further consideration of ethical principles in this domain. For example, while findings discussed above indicate potential for positive impacts of self-harm visual content (Marchant et al., 2021), further research in this area is warranted in order to clarify whether these impacts are also observed with repeated administration in varied contexts in daily life. Participants may also benefit from recognition that some emotional discomfort, should it occur, may be transient and/or ameliorated by coping strategies available through the research protocol. While EMA methodology may allow researchers to examine participant responses to NSSI imagery in their daily lives (e.g., mobile behavioral tasks), several considerations should be made when implementing these practices. Researchers should be aware of the potential adverse effects of NSSI imagery on both the participant and others around them, since EMA surveys or mobile tasks may be completed in a variety of social contexts. For example,

participants' comfort in completing these types of assessments may vary by their physical location (e.g., in public, at work) or emotional state (e.g., already experiencing distress). Further, when participants are viewing NSSI imagery on their phones, other people nearby may be unintentionally exposed to potentially distressing content. Discussion of exposure to these images should be set out in the consent process and participants should be appropriately informed of the nature of the content prior to their participation (i.e., practicing the EMA surveys with the participant, answering participant questions, and explaining what is expected on the surveys) and given the opportunity to decline consent for relevant study procedures. Further, researchers may also present the participant with the option to opt -in or opt-out of each EMA survey containing NSSI imagery, even when consent is obtained beforehand. This would be consistent with the broader concept of reconsent over the course of longitudinal research, such as EMA, when research or participant circumstances change during the course of the study (Wallace et al., 2016).

Risk Management and Crisis Response Planning: Beneficence and Nonmaleficence

In line with the ethical principles of beneficence and nonmaleficence, research procedures for responding to indicators of high risk for NSSI in EMA should both do no harm and safeguard the welfare of the participants (APA, 2017; Council for International Organizations of Medical Sciences [CIOMS], 2017). Psychologists conducting EMA research with individuals experiencing ongoing or recent engagement in NSSI should put in place thoughtful and ethically informed protocols and procedures for responding to risk during the EMA period given the lack of empirically backed research on risk management interventions in these contexts.

Some promising efforts have been made to develop consensus-based recommendations, informed by experts from various backgrounds and individuals with lived experience, to provide concrete best practices for when and how to respond to risk of suicide (Nock et al., 2021); however, this work has not been explicitly expanded to NSSI risk. Such recommendations specific to suicide risk advise researchers to review incoming data regarding suicide risk at least once a day every weekday, respond to high-risk responses with real-time suicide risk assessment, and provide pop-ups presenting participants with resources or safety planning following higher risk responses (Nock et al., 2021). Yet, one recent systematic review of studies measuring NSSI and/or suicidal thoughts highlighted a mismatch between risk assessment recommended practices and those that are favored by stakeholders; only 65% of EMA studies in the past four years reported protocols where incoming data on NSSI or suicidal thoughts was monitored or responded to (Bentley et al., 2021). Results from this review also underscore dissimilarities between research teams in current safety practices related to monitoring and responding to EMA data. For instance, some teams reported no real-time safety monitoring in response to reports of NSSI urges and/or engagement (e.g., Palmier-Claus et al., 2013, Vansteelandt et al., 2017), while others used automated prompts following reported NSSI urges or behaviors, or other types of active monitoring of incoming responses (e.g., Andrewes et al., 2017; Scott et al., 2017). However, a majority of studies included in this review aimed pop-up and real-time monitoring towards responses indicative of suicide risk, rather than responses reporting NSSI or its risk factors. This reflects a relatively conservative approach in recent research to responding to NSSI-relevant risk; however, given significant variability in current practices and the lack of existing research and guidelines specific to NSSI risk categorization and response, further investigation of relevant ethical principles is warranted.

Misconceptions about NSSI, particularly its relation to suicidal thoughts and behaviors, likely impact researchers' willingness to assess NSSI urges and behaviors in an EMA context, given the lack of clarity about the level of risk and the necessity of real-time responses to risk indicators. It is critical to note that, in discussing responding to NSSI risk in the present work, the authors are not advocating that NSSI necessarily requires the same level of intervention as suicidal thoughts or behaviors, nor do we suggest that NSSI-focused EMA research must always include active monitoring and risk management to be consistent with ethical principles. Even NSSI co-occurring with suicidal ideation may not be, in and of itself, suggestive of imminent suicide risk, as NSSI can occur as a method to *avoid* suicidal behavior or cope with suicide urges (Czyz et al., 2021; Herzog et al., 2022). Over-responding to such behaviors that do not indicate imminent risk would act in opposition to respect for participant autonomy. Levels of intervention, however, exist on a continuum, which may include providing participants with in-app resource reminders (low intervention) or ongoing data monitoring and contact from the research team (high intervention), with the level of intervention chosen by the research team in consideration of participant level of risk, study aims and resources, and the costs and benefits of varied intensities of intervention. These decision-making processes must also consider what constitutes "high acuity" or "imminent risk" in the context of the specific study and population; factors may include medically severe NSSI, co-occurrence of imminent plans and intentions for suicide, and/or marked clinical worsening from baseline. To ensure the competency of research staff in working with individuals who self-injure and are at elevated risk for suicide, all research team members conducting risk assessments should be trained in the assessment method used and supervised by a licensed clinician. Further, researchers should advise participants against contacting the research team in case of emergency unless the research team is adequately staffed

and resourced to offer 24/7 crisis supports. Given the relative lack of empirically based guidance for responding to NSSI risk, we have outlined domains of decisional balance with examples that prioritize different ethical principles along a continuum of risk (Table 2), which may aid researchers in considering appropriate levels of intervention while prioritizing beneficence, nonmaleficence, and respect for autonomy.

Data Collection Design, Sampling, and Monitoring Considerations

While EMA monitoring practices should be implemented based on individual participant and study characteristics (e.g., expected participant risk), different EMA survey schedules may require more or less intensive monitoring. EMA surveys may use several types of repeated sampling methods: signal contingent, event contingent, and burst designs (see Reis & Gable, 2000 for review of these methods). For example, signal contingent designs are administered on a set schedule (e.g., 4 survey prompts a day), typically including the same questions at each presentation. In this case, some, but not all, survey administrations may include indicators of NSSI risk. Other survey schedules, such as event-contingent protocols, involve providing participants with instructions to self-initiate surveys when they are experiencing a phenomenon of interest, such as NSSI urges or behaviors. If researchers opt to administer event-contingent or burst surveys, which are completed when people experience higher levels of distress or other phenomena of interest, follow-up protocols may be warranted for assessing and managing risk. Therefore, it is unsurprising that EMA studies tread a fine line between research and intervention for which there must be a "goodness of fit" between the study's objectives and the design of safety procedures (Bai et al., 2020). Researchers should be aware that in a study of NSSI behavior, especially among clinical samples, contacting participants every time they report engaging in NSSI would alter the study's purpose (from observation to intervention), reduce the

autonomy of the individual, and may discourage participants from honest reporting about NSSI behavior during the study period.

EMA protocols may further vary in the timeframe being assessed with each survey; some may have participants indicate what they are thinking or feeling "right now," while others may ask participants to report whether something happened "since the last survey". The time frame of these questions also has important ethical implications in determining when to intervene or follow up on responses. For instance, when responses are reported to risk-consistent questions referring to the current moment (e.g., current, serious thoughts of suicide or self-harm), the research team may choose to elevate their response to include reaching out to the participant directly over text or phone call. This may differ from the appropriate ethical balance when responding to something that has happened since the last survey but which may not be currently occurring (i.e., 3-4 hours prior).

Further, international guidelines detail the importance of informing participants of the risks associated with participating in a research study as a part of the informed consent process, including limits of confidentiality (APA, 2017; COIMS, 2017). In line with previously mentioned ethics-based recommendations, researchers should decide in advance if they will monitor incoming EMA responses in real time or at other intervals (e.g., daily, weekly). This may include being "alerted" when participants indicate a predetermined set of risk factors for NSSI or engagement in NSSI itself. In circumstances where researchers have identified a threshold upon which follow-up is needed, it is further necessary to determine the timeframe for follow-up and what those procedures include. Providing explanations to participants of what data monitoring practices will occur, and when intervention will (or will not) be provided, is paramount to informed consent. Such information allows participants to best understand what

support may be available to them from the research team or other sources. For example, some studies may designate a research team member who can provide immediate support, whether via phone, text, or an in-app contact option. On the other hand, active monitoring and quick response times may not always be feasible; in these cases, researchers should instead provide 24/7 crisis resources to participants (e.g., 988, crisis text line), whether at each survey or when triggered by a high-risk response. Regardless of approach, participants should be informed as to whether their responses will be monitored, in what way, and what resources are available to them, within and outside of the research team, when at high risk for self-harm. In recruiting, consenting, and responding to risk for NSSI among youth, there are additional provisions that the researcher must discuss with the participant and caregivers at the outset of the study, for example, to ensure adequate understanding of when caregivers or other emergency services may be contacted regarding risk.

Further, more advanced EMA technology may also allow researchers to embed personalized files or links within their surveys, which may offer an additional opportunity for researchers to include participant's unique safety plans (i.e., NSSI safety plans completed with research staff prior to beginning EMA) within the surveys, and prompt participants to use these resources in response to predetermined high-risk survey responses.

While these recommendations offer several opportunities to provide support, resources, and researcher follow-up during an EMA protocol, there are limitations implicit in intervening during a window of naturalistic observation. Providing participants with support resources and making these more salient and readily available than they may otherwise be to participants may, itself, be a form of intervention that changes the phenomenon being studied. These potential intervention effects may become more influential (i.e., reducing NSSI behavior or urges during

the EMA period) as researchers provide greater support to participants (i.e., a pop up with crisis numbers versus a research staff member calling to follow up and safety plan). Thus, the potential benefits to participants via more intensive follow-up should be balanced with risk of harm associated with intervention (e.g., frustration, hindrance of honest responding) and reduced validity and relevance of research study findings due to unanticipated or variable intervention effects. Additional impacts of intervention on participant wellbeing (i.e., iatrogenic effects of interventions) will be discussed further in the following section.

Further, although participant risk follow-up is often described as a universally positive approach, responding to incoming data can result in both positive and negative reactions among participants. The goal of such follow-ups or interventions is, of course, to protect participants from harm; however; in some cases, researchers' follow-up procedures may lead to breaches of confidentiality or other iatrogenic outcomes (e.g., calling local authorities for wellness checks, leading to police involvement), which is oftentimes an extremely negative experience for participants. Such breaches in confidentiality not only violate the rights and autonomy of participants but also undermine community trust in researchers and psychologists, further hampering our ability to conduct research aimed at improving the quality of life of those who self-injure. Researchers should also consider the negative impact and anxiety-provoking nature of research-initiated follow ups on participants on their own, even in the absence of law enforcement or emergency services involvement.

Additionally, interventions initiated by researchers have the potential to greatly influence participants' likelihood of responding honestly on future surveys (i.e., fearing involuntary hospitalization resulting from disclosure of self-injurious thoughts and behaviors; Blanchard & Farber, 2020; Love & Morgan, 2021). Intervention from the research team, especially with

frequent engagement from the participant, can also inadvertently lead to participant reliance on the research team for therapeutic purposes, and in certain situations may reinforce that engaging in self-harm may result in social support from the research team, which is contraindicated with established and supported treatments targeting NSSI (Linehan, 2014). This should be given special consideration in working with individuals with few psychological and financial resources for whom the research team serves as a primary contact with mental health professionals. In deciding when and how to engage with participants in response to survey responses indicating risk, protocols should align with the APA Ethics Code (2017) regarding competence, which can include consultations with psychologists with appropriate expertise and offering participants appropriate resources frequently. Finally, decisions based upon the perception that participation in an EMA protocol may be contributing to individual harm should be made on a case-by-case basis, given the paucity of research determining when NSSI-focused EMA research is harmful to certain individuals (e.g., participants that report adverse reactions to being frequently surveyed about depressed mood or NSSI urges). Research teams could also check in with all participants regularly throughout the EMA period, regardless of risk indicators, to ensure the protocol is not distressing to participants, in addition to reminding participants that they can withdraw from the EMA surveys at any time. Ultimately, researchers should always and continuously balance the costs and benefits – to both research validity and participant safety – in planning how to respond to incoming data to balance these ethical priorities, especially in the absence of empirically evaluated guidelines.

Building Inclusive and Representative Research: Justice, Equity, and Scientific Rigor

The APA ethics code (2007; Principle D), requires that "Psychologists recognize that fairness and justice entitle all persons to access to and benefit from the contributions of

psychology and to equal quality in the processes, procedures, and services being conducted by psychologists" (p. 4). The field has made important advances in this period, with promising new directions on the horizon following the advent of novel methodological tools, such as EMA (Rodriguez-Blanco et al., 2018). However, much of this work has occurred without explicit consultation with individuals who themselves have engaged in NSSI in roles beyond that of research participants. Involving individuals with NSSI lived experience in our research process and idea development would improve our empirical understanding of NSSI and buffer against historical pitfalls and misunderstandings in the field, particularly in relation to daily life experiences of NSSI, which are woefully understudied. Throughout the research process, the field should leverage both the voices of experts in the field in addition to actively engaging — and compensating — community stakeholders (e.g., using advisory groups, participatory research).

Scientists should also proactively consider and address barriers to full participation in EMA research, particularly when these barriers may be inequitably experienced and more deleterious to members of marginalized communities. For example, participants commonly cite fears of psychiatric hospitalization — especially on an involuntary basis — as a barrier to honest disclosure regarding their experiences with self-injurious thoughts and behaviors in research settings (Fulginiti & Frey, 2019). Although involuntary hospitalization on the basis of NSSI alone is likely rare, fears of hospitalization and involuntary disclosures to law enforcement (e.g., for the purposes of a "wellness check") may still impact reporting of NSSI risk in EMA studies in a way that impacts participant well-being, evaluation of risk, and data quality and usability. Importantly, researchers must consider how these negative experiences with inpatient treatment, as well as with police interactions during mental health crises, disproportionately impact

marginalized individuals and individuals living at the intersection of multiple marginalized identities (e.g., People of Color, transgender and non-binary individuals; Acosta et al., 2019; Delphin-Rittmon et al., 2015). These factors should be considered in making decisions about the best practices for participants in crisis and how we deliver resources when conducting EMA NSSI research (e.g., establishing alternative crisis intervention resources in the participant's area that operate separately or adjunctively to police) especially given the unique obligations of EMA-focused research teams that monitor incoming data in real time.

Further, although ensuring socioeconomic diversity in psychological research is challenging across methodologies (Gurven, 2018), this may be especially difficult with EMA research, which regularly excludes individuals who do not own their own smartphones or do not have access to cellular or internet service for the duration of the study. This practice systematically excludes a subset of the population from EMA research that may have unique experiences with NSSI (e.g., financial stressors, housing instability; Roelfs & Shor, 2023). To engage in more inclusive research practices, psychologists should actively work towards including participants from a range of socioeconomic statuses, for example, by including funding for "loaner" phones or providing a stipend for phone payment plans for the duration of the study for individuals who do not already have regular access to a phone plan that facilitates participation. This requires psychologists to take on the onus of inclusion and advocacy efforts moving forward, while acknowledging the impact of unjust research practices within the field of psychology that may contribute to justified hesitancy towards participation from members of marginalized groups. Some solutions may involve including marginalized individuals in all steps of the research process (e.g., participatory research) and making appropriate statistical considerations in data analyses (e.g., QuantCrit; Garcia et al., 2018).

Recommendations and Open Questions for Future Work

While previous scholarship has provided critical guidance on acceptable and feasible integration of EMA in the study of NSSI, there remain areas in need of further research to ensure that scientists have empirically based best practices grounded in ethical guidelines to inform research efforts. First, we must determine if and when intervening during EMA is appropriate, how intervening may be the most effective, and for whom. Similarly,, further research is needed to examine if different approaches to managing NSSI risk are more likely to cause harm than others. Such approaches may include evaluation and documentation of whether the protocol itself may be causing harm to participants, such as by tracking adverse events and eliciting explicit feedback from participants (i.e., asking participants what they liked/disliked about their participation in an EMA protocol). Second, greater research is warranted to determine meaningful risk thresholds, as well as the timeline in which researchers should respond to indicators of risk (e.g., medical severity/needing medical attention, high indications of imminent suicide risk, or clinical worsening from baseline), and whether these vary among individuals over time and samples. However, our understanding of this interindividual heterogeneity is currently limited. Consequently, we lack empirically derived information on when or how to best intervene, whether through human-led or automated approaches. This is an area where Just-in-Time Adaptive Interventions (JITAIs) and Micro-Randomized Trials (MRTs) could potentially offer valuable insights and solutions (Coppersmith et al., 2022; Qian et al., 2022). Third, the field should determine whether specific qualifications should be required to oversee risk assessments (i.e., licensed versus non-licensed, years of expertise, type of credential). Fourth, there are currently no validated EMA measures of NSSI available to researchers, which impedes our ability to infer reliable conclusions from existing research or combine EMA data across studies.

Future efforts to validate existing NSSI EMA measures would greatly add to the reliability and reproducibility of research in this field. Efforts to evaluate EMA measures of NSSI would also benefit from review of measures by people with lived experience who can indicate preferred language. Fifth, by determining whether there is any added utility to using NSSI imagery during EMA (e.g., see Ji et al., 2024), and empirically evaluating the costs and benefits of NSSI-relevant stimuli during EMA research, researchers would be better equipped to make ethics-based decisions regarding the inclusion of these measures in the protocols and how best to adapt them for use within EMA research. Sixth, there is little evidence to support any one method for presenting crisis or mental health resources to participants throughout the EMA protocol. Future efforts evaluating the effect of repeated presentations for resources are warranted, including when or if participants use resources, how often, or if repeated presentation of resources following specific responses (i.e., after indicating having engaged in NSSI) might discourage participants from honest reporting (Bentley et al., 2024). Seventh, similarly, little is known about how informing participants about real time monitoring of EMA data might affect their responses. Lastly, further research is warranted regarding participant preferences for risk responding procedures and how collaborative development with participants and stakeholders regarding these procedures (i.e., mobile crisis unit vs. police officer; arranging for a meeting with crisis response teams at a local public location, rather than a participants' home) might ameliorate participant concerns in responding honestly about risk-consistent behaviors.

Summary and Conclusions

The present discussion of ethical considerations in EMA research with individuals with recent or current NSSI highlights the challenging nature of studying complex, high-risk phenomena in daily life. In addition to the recommendations provided in this manuscript (see

Table 1 for summary), which are in line with extant ethical guidelines and currently identified best practices in other areas of study (Roth et al., 2017; Rudolph et al., 2020; Wenze & Miller, 2010), we hope this work highlights the need for and facilitates the development of formal guidance and best practice guidelines within the field of NSSI research for this emerging area of scholarship. Future research to clarify the potential risks and benefits of different methodological choices in NSSI EMA research should focus on a number of key areas. First, empirical research is needed to understand the effect of different ethics-driven EMA protocol decisions on observed data patterns (e.g., the influence of frequency of data monitoring and responding on subsequent NSSI disclosure on following surveys). Second, additional research is needed to determine the efficacy of alternatives to traditional involuntary hospitalization procedures, such as dispatching mental health professionals in place of police for mental health crises, particularly in the context of relatively low medical severity of most NSSI behaviors, which impact the relative balance of risks and benefits associated with over-responding to risk. Third, research will be improved through inclusion of individuals with lived experiences of NSSI and related challenges in considering EMA methodology best practices to understand these behaviors (for recommended reading see Lewis et al., 2017; Lewis et al., 2019; Victor et al., 2022). While further intervention research is necessary to address these ethical questions, the present paper provides guidelines grounded in current research as well as the clinical and research expertise of the authors to support further work in these domains which reflects the varied needs and resources across study teams, projects, and scientific aims.

Table 1. Ethics-Informed Recommendations for EMA Research in NSSI

Domain	Recommendations
Language	• Avoid language that perpetuates stigma towards those that self-injure, including value-laden terminology (i.e., "maladaptive"). • Consider the context and purpose of NSSI (e.g., coping, self-regulation) in language used within the study. • Conduct survey piloting to ensure language is appropriate for the desired sample prior to the distribution of surveys to study participants.
Imagery	• Include NSSI-related imagery only when necessary for study aims. • Discuss inclusion and nature of imagery used in the study during the consent process. • Allow participants to opt in or opt out of study components with NSSI imagery at each EMA survey notification.
Risk Assessment and Management	• Match crisis response procedures to the population recruited (community versus clinical populations). • Communicate data handling procedures and monitoring of responses by the research team to participants. • Prioritize participant safety in risk-related interventions, including safety in relation to over-responding to risk. • Make information on relevant and high-quality crisis and mental health resources readily and frequently available. • Ensure the appropriate training of research staff conducting risk assessments.
Data Monitoring	• Monitor responses for suicide and self-harm risk. • Inform participants explicitly regarding protocols the research team will follow when reviewing incoming responses.
Data Responding and Resources	• Provide a comprehensive list of resources to all participants at study outset, including using in-app features to embed resources within EMA software when relevant. • Consider including resources at the start of each EMA survey regardless of responses. • Consider the costs and benefits of additional follow-up after specific EMA responses (i.e., resources, staff follow up, safety planning, crisis response).
Risk Assessment and Response	• Engage in clear and explicit discussions with participants about limits of confidentiality at the outset of research. • Clarify the difference between NSSI and suicidal behavior with their research team (in responding to risk) and participants (in responding to EMA items). • Risk responding should be appropriate to survey type (i.e., event- or signal-contingent) and recency of risk indicator (i.e., at this moment, since last survey).
Justice, Equity, Scientific Rigor	• Engage with, and compensate, stakeholders prior to data collection for consultation in the development and execution of NSSI research.
Addressing Barriers	• Remain informed about the quality of local inpatient care and alternatives to police involvement in mental health crisis management. • Actively engage a diverse range of participants to better understand individual and group differences with NSSI across sociocultural contexts. • Bridge the resource gap that can occur in EMA research by providing loaner phones to participants when needed.

Table 2. Exemplar Risk Monitoring and Intervention Considerations Across the Continuum of Respect for Autonomy

Domain	Low Autonomy	Moderate Autonomy	High Autonomy
Participant Identification	Require participants to provide identifying information, physical location, and consent to contact key support persons in case of crisis. *This option maximizes the ability of the research team to direct others (emergency medical providers, police, support persons) to the participant in case of crisis.*	Require participants to provide identifying information and physical location. *This option allows for emergency responding in case of life-threatening harm, but without risk to participants' social relationships tied to contacting support persons.*	Fully anonymous participation. *This option maximizes participant autonomy and potential willingness to share stigmatized or high-risk information, but reduces researchers' ability to intervene in case of emergency, and may be impractical if participants receive renumeration for participation.*
Informed Consent	Provide no information during the consent process on interventions based on EMA responses. *This interferes with participants' ability to make informed choices about participation, and may be considered deception. Some researchers view this as a way to obtain "accurate" data on risk states using EMA; however, lack of clarity in the consent process may lead participants to under-report risk indicators due to uncertainty about how the research team will respond.*	Provide information about when and how the research team will review and respond to EMA data during the initial consent process, and whether this is actively or through automated interventions. *This is consistent with ethical principles of informed consent, and allows participants to decline enrollment or to change their responses to EMA surveys based on knowledge of how the team will respond. This may, for some participants, lead to decreased "true" reporting of high-risk states to avoid intervention, reducing the research team's ability to intervene in these cases.*	Provide information about when and how the research team may actively or through automated interventions respond to EMA data during initial consent process and in response to high-risk EMA response combinations. *This option may include pop-up notifications when a high-risk item is endorsed that remind the participant that, should they submit these data, the research team will respond; this ensures transparency for participants but is most likely to lead participants to change their responses based on potential intervention.*

Crisis Resources	Participants are actively reminded to seek support and implement adaptive skill strategies skills in crisis, or otherwise incentivized or required to take specific actions in high-risk contexts. *This is most likely to occur in clinical intervention studies, such as Dialectical Behavior Therapy trials, involving phone coaching or similar. This approach maximizes participants' access to care, while also changing the data from "pure" observation to intervention science. This approach only emphasizes beneficence if the participants have the ability and access to the skills and supports provided.*	Participants given crisis resources during enrollment and / or throughout EMA, regardless of high-risk responding. *This approach ensures participants are aware of extant resources without specifically encouraging their use; this may still impact participants' data as "observational" but to a lesser extent than in an intervention trial, particularly if crisis resources are already known to the participant (e.g., 911, 988).*	Participants given well-known crisis resources upon enrollment only or not at all. *This approach minimizes the chance that study enrollment changes the participants' behavior in high-risk contexts from pre-study baseline, but may exacerbate risk of harm if participants expect that enrollment in the study will be beneficial to their well-being.*
Research Team Contact	Participants are told to expect ongoing data monitoring, regular contact with the research team, and immediate response in case of crisis. *This option maximizes the clinical utility of the research team, if the team is available for crisis supports 24/7; however, this approach decreases data fidelity to "typical" daily life and may cause harm if the research team is not able to provide immediate crisis care as expected. In this case, this would be exemplary of low beneficence.*	Regular contact throughout EMA protocol, unconnected to survey responses; participants told research team contact will not be immediate or available for crisis support. *This approach minimizes risk of participant reactivity to perceived monitoring and/or reliance on the research team for clinical care, but facilitates reminders of existing resources or clinical skills during routine check-ins.*	No contact with research team throughout EMA protocol. *This approach prohibits clinical benefit from research team contact, but also reduces unnecessary follow up which may also cause participant distress, especially if the participant is already receiving clinical care. This approach may also exacerbate risk of harm if participants expect follow up from the research team or believe their responses are being monitored as they are completed.*

Intervention Prompt	Research team intervention upon any indicator of risk (e.g., negative affect, desire for NSSI). *This approach maximizes participant access to crisis supports, but is most likely to change the nature of observed data, and may become onerous for both the participant and the research team.*	Research team intervention only with highest indicators of risk (e.g., medically severe NSSI has already occurred or is imminent). *This approach may be appropriate for those with medically severe NSSI in need of timely care, or those at highest risk of other negative outcomes (e.g., suicidal behavior), but is also likely to influence data quality, and may impact participant satisfaction with study participation, depending on whether intervention was perceived as helpful.*	No intervention regardless of acuity of response. *This approach yields the most "true" representation of participants' daily lives, but may not be justifiable to research ethics boards or other stakeholders, particularly if the resources for more timely intervention exist, and if risk of serious harm without intervention is especially high.*
Intervention Intensity	Research team dispatches emergency medical providers or first responders (e.g., police) following high-risk responses. *This minimizes risk of medically severe harm going unnoticed or unaddressed, but is likely to cause significant distress, and possible emotional or physical harm, to participants due to these encounters. This approach may also increase distrust of research broadly and, if disclosed during consent, to change participants' willingness to respond accurately.*	Research team contacts the participant directly for follow-up, only contacting external supports (first responders, known personal supports) if unable to reach the participant directly. *This approach shows more consideration of participant autonomy, but may be perceived as onerous or lead to distrust between the participant and the research team. However, this may also motivate participants to check-in with research staff to ensure their safety in a timely manner.*	Research team contacts participant directly for follow-up, but does not further intervene if participants decline to respond or provide information on safety. *This approach prioritizes participant autonomy but may not adequately allow research staff to intervene in high-risk periods during which medically severe harm may otherwise occur or have occurred.*

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