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Social Contagion of Nonsuicidal Self-Injury

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(In Progress)

Elizabeth E. Lloyd-Richardson (ed.) et al.

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CHAPTER

Social Contagion of Nonsuicidal Self-Injury

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Abstract

This chapter explores the social contagion of nonsuicidal self-injury (NSSI) via interpersonal, media and online exposure among both youths and adults by referencing social learning theory and the Social Exposure to Non-Suicidal Self-Injury Scale. According to social learning theory, people imitate and learn certain behaviors by identifying with people who act as models. The chapter elaborates on the concepts of social learning, modeling, and imitation, and general recommendations for the assessment and treatment of clinical practice addressing social contagion factors. It then suggests utilizing ecological momentary assessment (EMA) and single-case experimental design (SCED) for future studies on social contagion of NSSI.

Keywords: NSSI, social contagion, interpersonal, media, social learning theory, behaviors, social learning, modeling, ecological momentary assessment, single-case experimental design

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Research in recent years has made significant advances toward a more thorough understanding of major risk factors and predictors of nonsuicidal self-injury (NSSI). Most studies have focused on correlates of NSSI at the level of the individual (e.g., related psychopathology), but promising results have also been achieved in the study of interpersonal processes (e.g., peer and family support) that impact the risk of NSSI. The social contagion of NSSI, or the process by which one person's self-injurious behaviors can promote the same behaviors in others, is an underexplored topic in the study of NSSI and adds an important dimension when it comes to both onset and maintenance of NSSI.

One of the primary aims of this chapter is to review empirical studies that focus on social contagion via interpersonal, media, and online exposure to NSSI among both youths and adults. Research suggests that people are exposed to NSSI through a diverse range of sources, including peers, social media, and the

internet, and that being exposed to NSSI through these avenues may then predispose individuals to engage in NSSI themselves. One way of understanding this relationship, drawing on social learning theory (Bandura, 1977), is to view exposure as a means through which individuals learn to model their own behavior on what they observe in others. This theoretical viewpoint complicates the role of social factors in NSSI, as social learning may promote NSSI (Jarvi et al., 2013) at the same time as peer support acts to protect against it (Heath et al., 2009).

Defining Key Terms

In line with the nomenclature used by Jarvi et al. (2013), we define *social contagion* primarily as the occurrence of NSSI in two or more people from the same group within a short time period. Further, social contagion also refers specifically to the process by which one individual's behavior can increase the occurrence of the same behavior in other people, distinguishing social contagion from the related notion of *clusters*, which is commonly used to describe a significantly high frequency of suicidal or self-injurious behavior among members of a group (Heilbron et al., 2014). The process of social contagion necessarily involves one person being exposed to someone else's NSSI in some way, so it is worth clarifying what is meant by *exposure* to NSSI; this definition has been operationalized in the literature in various ways. The term accommodates many different pathways by which someone can encounter NSSI; indeed, the Social Exposure to Non-Suicidal Self-Injury Scale (Zelkowitz et al., 2017), which aims to capture key constructs in the literature, includes items ranging from indirect sources, such as music lyrics, to highly direct sources, like witnessing someone engage in NSSI. Finally, phrases such as *social learning*, *modeling*, and *imitation* draw on Bandura's (1977) social learning theory, which suggests that people imitate—and thereby learn—certain behaviors by identifying with people who, by displaying those behaviors, act as models.

What follows is our review of the existing literature that has explored some form of exposure and related social contagion of NSSI across various demographic groups and platforms (e.g., in person vs. online). In addition to reviewing the empirical literature, we attempt to bridge the gap between research and clinical practice in this area. We introduce a case study that involved treatment of a patient impacted by social contagion in her initial onset of NSSI as a young adult, and review some clinical implications to consider when it comes to identifying, assessing, and addressing possible social contagion factors in treatment and intervention. Finally, we conclude with a discussion of limitations to the current empirical base and recommendations for future work in this important area of study.

Brief Description of the Issue

Social contagion processes have been associated with the onset and maintenance of NSSI well before the more recent uptick in both research and clinical interest in NSSI; the first documented acknowledgment of this relationship in the literature appears to date back to the 1960s (Matthews, 1968). Although further research is needed to determine and elucidate this relationship, it is likely that social contagion factors serve as both distal and proximal risk factors for NSSI. The identification of distal and proximal risk factors has been at the center of NSSI research in recent years, as researchers have posed questions and designed studies to better understand who self-injures, why, and what puts one individual at risk of engaging in NSSI compared to any other. Like the suicide literature, the NSSI literature has identified more distal risk factors for NSSI than proximal indicators that *immediately* precede episodes of NSSI. Yet these proximal factors are of course of primary concern to both researchers and clinicians alike, as identification of these risk factors would allow for the possibility of the prevention of NSSI among individuals most at risk for future occurrences of these behaviors (see Kiekens et al., 2020).

In sum, studies to date suggest that many individuals who have or who are currently engaging in NSSI endorse exposure to NSSI through various sources. Evidence suggests that interpersonal (which we define as direct, explicit, in person exposure) and media exposure to NSSI is associated with the occurrence of NSSI. Data suggest that exposure to NSSI can serve as a social learning process, and that NSSI is a learned behavior in some instances, for certain individuals (Jarvi et al., 2013). A number of associated risk factors and characteristics have been identified in the literature elucidating who is most likely to be impacted by social contagion of NSSI (e.g., adolescents, individuals with more adverse life events; Hasking et al., 2013). Social transmission of NSSI has been documented most frequently among adolescent participants, supporting the significant influence that interpersonal relationships have on adolescents during this developmental stage. Of course, social contagion is not a necessary factor or the only predisposing risk factor for NSSI, and onset and maintenance of NSSI are certainly influenced by a variety of both proximal and distal indicators.

Social Contagion in Adolescent Samples

Research regarding NSSI in adolescents supports the frequent co-occurrence of individuals and their friends engaging in self-injury (Hasking et al., 2013; Victor & Klonsky, 2018). Furthermore, data have shown social contagion of NSSI between two best friends, but not among groups of friends (You et al., 2013). Further research is needed to clarify the moderators of this effect, and especially among adolescents in inpatient and residential treatment settings, an understudied population in social contagion research.

Data suggest that peers are a common source of initial exposure to NSSI, and that adolescents who self-injure often have peers or family members who do as well. In a study of 94 adolescents, investigators assessed a wide range of factors potentially associated with NSSI, including a family history of psychopathology, sexual orientation, comorbid psychopathology, and noninjurious repetitive behaviors, as well as qualitative information regarding the source of the adolescent's idea to begin engaging in NSSI, and their reason for stopping, if applicable (Deliberto & Nock, 2008). The most frequently endorsed source that led to the idea of engaging in NSSI was from peers (38.3%), followed by coming up with the idea independently (20.0%), and from the media (13.3%). The desire to stop engaging in NSSI due to a social reason (e.g., unwanted attention or because it upsets family and friends) was more common among individuals who learned about NSSI from a peer. In another study, 3,757 students in 10th and 11th grade in Queensland, Australia responded to a battery of self-report measures assessing "deliberate self-harm behavior" and psychopathological symptoms (De Leo & Heller, 2004). The strongest associations with self-harm were exposure to self-harm in friends and exposure to self-harm in family members. Additionally, in a study that included 89 adolescents, Victor and Klonsky (2018) investigated several social aspects of NSSI. They found that 71.6% of participants had friends who also self-injured, and half of the participants reported discussing NSSI with their friends. On the other hand, very few participants reported either assisting their friends in engaging in NSSI, suggesting NSSI to someone, feeling that their friends play a role in their NSSI, or engaging in NSSI with friends. Those adolescents who reported knowing that a friend engaged in NSSI tended to also report engaging in more NSSI methods, an accepted proxy for severity, than other adolescents (Victor & Klonsky, 2018). Together, these studies suggest the importance of social relationships and social learning for adolescent NSSI, which may be particularly relevant factors to consider and assess in relation to initial NSSI onset.

Research has consistently established exposure to NSSI in a friend as a predictive factor for later engagement in NSSI. You et al. (2013) conducted a longitudinal study of high school students involving two assessments, six months apart. Specifically, they investigated the effects of a best friend's behavior and a friend group's behavior on an individual's engagement in NSSI. To match participants' data to their friends' data, the authors instructed participants to identify their five best friends. They found negligible, but statistically significant, associations between the participant's NSSI status and their best friend's NSSI

status at both Time 1 ($r = 0.12$) and Time 2 ($r = 0.15$). Within the same time frame, there was a slight tendency for best friends to have the same NSSI status. A stronger correlation existed between the best friend's NSSI status at Time 1 and the participant's status at Time 2 ($r = 0.44$). A logistic regression indicated a predictive relationship, suggesting that an individual is more likely to begin engaging in NSSI if their best friend already does (i.e., increased risk due to socialization). Conversely, the participant's Time 1 status did not predict their best friend's Time 2 status, which may indicate the lack of a selection effect (i.e., adolescents who already self-injure are not more likely to select a best friend who self-injures as well). In another set of analyses examining frequency, the results indicated that the participant's NSSI frequency at Time 1 did not predict their best friend's frequency; nor did the best friend's frequency predict the participant's. Thus, additional questions remain about the role of social contagion of NSSI in NSSI onset, as well as whether and how social contagion may impact maintenance of NSSI and related factors, such as frequency and methods used.

In another longitudinal study of 186 adolescents (93 nested friendship dyads; Schwartz-Mette & Lawrence, 2019), results provided further evidence for the socialization effect between friends. Participants' Time 2 and Time 3 NSSI frequency scores were predicted by both their own and their friend's Time 1 and Time 2 scores, respectively. In a novel exploration of emotion regulation ability and friendship quality as moderators, the authors also found that high levels of emotion regulation difficulty were associated with greater socialization effects between friends, but that friendship quality was not a significant moderator. It is important to note that an additional study conducted by Hasking et al. (2013) yielded a discrepant finding. In the year-long study, knowing a friend who self-injured at baseline predicted NSSI at follow-up only for those adolescents who also reported more adverse life events. However, this study relied on participants' knowledge and accurate reporting of their friends' behavior because it did not match participants' data to their friends' data, as other studies did. This study also reported the novel finding that the primary methods for self-injury tended to be consistent across friendship, while motives did not. Taken together, these longitudinal studies support the idea that adolescents are more at risk for NSSI onset if they have a close friend who engages in NSSI, with the caveat that certain additional factors, such as emotion regulation difficulty or adverse life events, may impact the risk level.

Of note are You et al.'s (2013) additional analyses regarding characteristics and patterns of NSSI behavior within friend groups of three to five adolescents. They found that independent of depressive or impulsive characteristics, there was less within-group variance regarding NSSI status than a between-group variance. In other words, adolescents were more likely to share NSSI status with members of their friend group than with other adolescents generally. Furthermore, multiple regression analyses indicated that a participant's NSSI status at Time 1 predicted their friend group's NSSI status at Time 2, but a friend group's status at Time 1 did not predict the participant's status at Time 2. The authors interpreted this finding to indicate a selection process whereby adolescents who had a history of NSSI behavior chose to join friend groups of peers who also engaged in NSSI (You et al., 2013). This process is notably distinct from that which has been observed to occur between two best friends, highlighting the complexity of the social processes at play (Schwartz-Mette & Lawrence, 2019; You et al., 2013).

Although most studies on social contagion of NSSI among adolescents were conducted in the general community, two studies investigated inpatients. Consistent with findings in the community, in one study, a large majority of the patients (87%) reported exposure to NSSI before they began engaging in NSSI (Zhu et al., 2016). The researchers found mixed results regarding the association between exposure to a specific method of NSSI and engagement in that method. Some methods, such as scratching, hitting, and pinching, were associated with frequency of use, while others were not. Although exposure to cutting was not related to engagement in cutting, individuals who used this method of NSSI tended to do so more frequently if they had more frequent exposure to it. There was also a significant correlation between exposure to NSSI in the media (overall, traditional, or social media) and engagement in NSSI (see Westers, this volume).

Furthermore, participants who intentionally sought NSSI content in the media tended to report engaging in NSSI more frequently than others (Zhu et al., 2016). In a qualitative study, researchers interviewed eight residents from two adolescent inpatient units (Smith-Gowling et al., 2018). Two key themes across the interviews were “pre-admission exposure to self-harm” and “exposure on the inside.” Participants described pre-admission exposure to NSSI from family members, friends/peers, and on social media. They also discussed the difficulty of being “surrounded” by others in distress and the difficulties that arose when a patient self-injured on the unit, which included both physical consequences (e.g., room searches) and emotional consequences (e.g., being reminded of their own history of NSSI). Further research is needed among adolescents in inpatient or residential settings, as these individuals may experience distinct or more intense socialization processes regarding social contagion of NSSI.

One might expect that, due to the relationship between NSSI and suicidal behavior, the socialization of NSSI may translate into suicidal behavior. However, there is no evidence to support this notion, and there is in fact some evidence against it. In a population-based birth cohort study, Mars et al. (2019) investigated predictors of suicide attempts by age 21 among participants who endorsed suicidal thoughts ($n = 456$) and “nonsuicidal self-harm” ($n = 569$) at age 16. The researchers found that among adolescents who experienced suicidal thoughts and engaged in NSSI, exposure to NSSI in a friend or family member did not predict future suicide attempts. This finding underscores the distinct processes underlying NSSI and suicidality.

In sum, the literature to date supports the social contagion of NSSI among adolescents. Data suggest that adolescents learn about NSSI from external sources, such as the media or a friend, before the initial onset of the behavior. Longitudinal studies have captured the increased risk of NSSI for adolescents who have a close friend who already engages in NSSI, and the socialization process of choosing to surround oneself with a group of friends with a shared NSSI status. Additional factors such as difficulty with emotion regulation and adverse life events may increase risk level, but further research is needed to replicate and clarify these effects and their impact on the uptake of NSSI behavior. The body of literature regarding social contagion of NSSI among adolescents is relatively small, and further research in a wider variety of settings (e.g., residential or inpatient treatment) and closely examining mediating and moderating factors is warranted.

Social Contagion of NSSI in College Samples

Many college students are socially well connected with other people their age, and some are living independently and/or away from home for the first time in their lives. Although these factors make college students less representative of the broader population, they also make college samples important and convenient participants for the study of social influences and NSSI. To date, studies have shown that social and media exposure are highly prevalent among college students, particularly through friends, movies, and television (Heath et al., 2009). Moreover, findings suggest social exposure to NSSI is a better predictor of NSSI risk than both media exposure to NSSI and social exposure to suicide (Muehlenkamp et al., 2008). Some research in this area has focused on potential moderators (e.g., NSSI outcome expectancies; Hasking & Rose, 2016) of the relationship between social exposure and NSSI risk, but further work, particularly longitudinal research, is needed.

To date, research in college samples suggests the importance of social motivations in NSSI. For example, Heath et al. (2009) examined social influences on initiation, disclosure, methods, and motivations for NSSI in a small ($n = 23$) sample of college students with a lifetime history of NSSI. A total of 22% of participants reported that they first thought about engaging in NSSI because they knew someone else who had engaged in it, while another 22% learned to engage in self-injury through the media or the internet. The importance of direct interpersonal influence was clear, as 65% of participants reported talking to their friends about

NSSI and 74% reported knowing at least one friend who had self-injured. More than half of participants (59%) within the latter group reported that their friend had engaged in NSSI before they did, while 65% used some or all of the same methods as their peers who had self-injured. Finally, participants from a matched comparison group of 23 students who did not self-injure reported significantly higher levels of peer support than participants who did self-injure. Although this study was primarily descriptive with a small sample size and only two male participants, Heath et al. (2009) illustrated the influence of social connections on NSSI in college students.

Muehlenkamp et al. (2008) investigated whether exposure to NSSI or suicidal behavior in acquaintances was associated with an increased risk of NSSI. Participants ($N = 1,965$), of whom 21.2% ($n = 417$) endorsed lifetime NSSI, were asked whether they knew someone who had engaged in NSSI or suicidal behavior and were divided into four groups accordingly: suicide-only exposure ($n = 380$), NSSI-only exposure ($n = 229$), suicide and NSSI exposure ($n = 1028$), and no exposure ($n = 328$). Participants in the NSSI-only exposure group were significantly more likely than controls to engage in NSSI themselves, while participants in the suicide-only exposure group were *not* more likely than controls to engage in NSSI. Further, the rate of NSSI in the group who had exposure to both NSSI and suicide was not significantly different from the NSSI-only exposure group, suggesting that exposure to NSSI specifically—and not suicide—may be a factor heightening risk for NSSI. This cross-sectional study does not allow for an analysis of the temporal influence of exposure on NSSI risk, and the method of assessing exposure leaves little room for nuance in the types of exposure accounted for. However, these findings from Muehlenkamp et al. (2008) fall in line with a social learning theory of NSSI (Bandura, 1977), showing that exposure to NSSI *specifically* is associated with the risk of engaging in NSSI.

In a sample of 340 U.S. college students, Zerkowitz et al. (2017) more thoroughly examined the social learning theory of NSSI, clarifying the relationship between NSSI history and social exposure to NSSI while testing the interaction between social exposure and emotion dysregulation in relation to NSSI. The authors assessed the prevalence of exposure via personal relationships with people engaging in NSSI (38%), the internet (24%), and movies and TV (71% and 64%), finding that both social and media exposure were common. Participants with a history of NSSI reported significantly higher levels of both social and media exposure to NSSI compared to those with no NSSI history. Social exposure and emotion dysregulation were each significantly associated with NSSI history and frequency when controlling for the other, but media exposure was not significant. Although social exposure did not moderate the impact of emotion dysregulation, greater social exposure to NSSI was associated with increased NSSI frequency—as well as the likelihood of reporting lifetime NSSI history—at both low and high levels of emotion dysregulation. These findings align with the idea that, as expressed in the social learning hypothesis of NSSI, risk factors like emotion dysregulation might exacerbate risk in the context of social exposure to NSSI. Zerkowitz et al. (2017) offered a thorough account of the prevalence of different types of exposure in this college sample, and provided support for a social learning and interpersonal influence-based model of NSSI.

In a study aimed to further explore the mechanisms through which social exposure leads to increased NSSI risk, Hasking and Rose (2016) tested whether core cognitions (e.g., self-efficacy expectancies), as well as knowledge about and attitudes toward NSSI, work as moderators or otherwise influence this relationship. They drew on social cognitive theory, which states that the relationship between external influences and behavior can be explained partly in terms of individual cognitions—or expectancies—about the outcomes of a behavior and one's perceived ability to perform the behavior (Bandura, 1986). In line with findings from Zerkowitz et al. (2017), social and media exposure were common in the sample, which included 389 undergraduate students at an Australian university. Although knowing at least one friend who self-injured was not directly related to the frequency of NSSI, participants' self-efficacy to resist NSSI was inversely related to frequency. Hasking and Rose's (2016) findings support social cognitive theory as a framework for

understanding NSSI, and they add further nuance to the question of how exactly social exposure to NSSI increases the probability of engaging in future NSSI.

The studies reviewed here present several key insights into the social contagion of NSSI among college students, but a few broader methodological shortcomings also stand out. Interpersonal influence is clearly highly common among college students (Heath et al., 2009; Zerkowitz et al., 2017), but studies that aim to assess the prevalence of NSSI and different vectors of exposure to it must prioritize recruiting larger samples with greater racial and gender diversity. Research suggests that social exposure to NSSI is strongly associated with NSSI risk (Zerkowitz et al., 2017), and studies suggest that it performs better as a predictor of NSSI than either media exposure to NSSI or social exposure to suicide specifically (Muehlenkamp et al., 2008). While Bandura's (1977) social learning theory and social cognitive theory (Bandura, 1986) apply usefully to the study of moderators of the relationship between exposure to NSSI and risk of NSSI (Hasking & Rose, 2016; Muehlenkamp et al., 2008), researchers may also consider examining potential mediators in this relationship.

Social Contagion of NSSI in Online Samples

Despite widespread usage of smartphones and social media among young people, and the common appearance of NSSI-related content online, few studies have rigorously examined online exposure to NSSI as a vector for social contagion above and beyond interpersonal exposure (Jarvi et al., 2017; Lewis et al., 2012). The precise influence social media has on children and adolescents is difficult to predict, as the posts users encounter on these platforms may be created and shared by peers, high-profile celebrities, or various other sources, exposing users to a wide range of content with little official oversight or censoring. As such, some forms of online exposure to NSSI may at times operate in a similar way to interpersonal exposure, but digitally mediated, while other forms of online exposure are less directly targeted and meant for a broad audience. Further, there is little consensus among researchers as to what counts as social exposure via the internet (see Pritchard & Lewis, this volume). Some studies (e.g., Heath et al., 2009) consider it social exposure when people learn about NSSI in the media or online, but these forms of exposure do not necessarily involve communicating with another person, casting doubt on whether they should be thought of as "social." Research on social contagion in online samples has found that exposure to NSSI over social media is tied to negative outcomes whether or not users intend to view NSSI content (Arendt et al., 2019), but further research is needed to elucidate the broader ways that NSSI impacts people online, and how (e.g., communicating/posting about NSSI vs. scrolling through others' content/pictures/stories).

In a recent study, Arendt et al. (2019) focused on online exposure to NSSI over Instagram, one of the most popular social media platforms among youth today, aiming to assess the relationship between exposure to NSSI or suicidality-related outcomes. Young adults were recruited from internet gaming websites to complete surveys at two time points (one month apart) assessing exposure to NSSI on Instagram, suicidal thoughts and behaviors, and emotional well-being. The authors measured exposure to NSSI by asking participants if they had seen posts showing someone who intentionally self-injures, for example, by cutting. They found that exposure to NSSI on Instagram was significantly associated with suicidal ideation, NSSI, and emotional disturbance. Further, exposure to NSSI at the first time point predicted NSSI and suicidality-related outcomes at the second time point, and exposure to NSSI was related to negative outcomes even for participants who accidentally (rather than intentionally) encountered NSSI content (Arendt et al., 2019). These findings point to the potentially contagious nature of online exposure to NSSI as distinct from but similar to in person social exposure.

According to a study by Whitlock et al. (2006), hundreds of forums exist on the internet for the purpose of anonymously discussing NSSI, hosting communities populated primarily by users who are female and

between 14 and 20 years old. The authors located more than 400 such forums (in the early 2000s) and selected 10 of the most popular for a more in-depth content analysis, which involved coding almost 3,000 posts. The most common themes in the message board posts were support for others, motivation and triggers for NSSI, concealing NSSI, and addiction-like elements, where users discussed NSSI as if it were a drug they were trying to quit using. Most communication on the forums was supportive and involved sharing personal experiences, suggesting a high level of trust despite the anonymity. The researchers found that some of the conversations on the message boards normalized or encouraged NSSI, and sometimes involved sharing new methods for self-injuring (Whitlock et al., 2006). It is clear that online forums are not necessarily a positive environment for adolescents, and even when content is supportive, users may still be exposed to accounts of NSSI in stark detail. More research is needed on different kinds of online exposure (e.g., visual vs. textual references to NSSI, social media vs. other media) in order to capture the nuanced ways in which individuals can encounter NSSI online. This is a challenging area of research to keep updated due to the fast pace and always evolving nature of social media.

It is worth noting that different online forums and social networking sites vary widely in their approaches to monitoring and censoring NSSI-related content (Lewis & Baker, 2011). Whitlock et al. (2006) divided the message boards they analyzed into three levels according to the extent to which each forum's moderators blocked or labeled potentially triggering posts. High-moderation boards completely prohibited potentially triggering or "disruptive" posts, whereas medium-moderation boards allowed such posts but clearly labeled them, and low-moderation message boards did not attempt to block or label any posts. Among the 10 message boards the researchers examined, four were low-moderation, another four were medium-moderation, and one was high-moderation. In general, forums that choose to moderate their content often employ volunteers to do so, who may be unreliable or inconsistent. Moreover, users may find ways around censorship in more strictly monitored online settings, such as by using euphemisms or other coded languages to refer to NSSI.

Challenges, Recommendations, and Future Directions in Research

The body of literature presented in this chapter has several limitations that represent directions for future work. At the most basic level, standard and consistent definitions of the different types of NSSI exposure are needed to enhance the study of these complex social processes. Studies have investigated exposure in a variety of forms: knowing that an acquaintance/friend/family member self-injures, talking about NSSI with another person, seeing images of NSSI in movies or on TV, being in the company of another person engaging in NSSI, and reading about or seeing images of NSSI on social media. Each type of exposure may contribute differently to the social contagion of NSSI, and the broad term "exposure" cannot necessarily be compared across studies. We also face the challenge of prior use of different terms and definitions of NSSI. For example, researchers who use the term "NSSI" typically refer very specifically to the definition presented at the beginning of this chapter, while researchers who use the broader term "self-harm" often include participants in their studies who endorse both nonsuicidal and suicidal self-injurious behaviors, potentially further complicating the overall picture. While NSSI and suicidality often co-occur and share conceptual overlaps, these behaviors are indeed distinct with unique risk factors (Andover et al., 2012; Ferrera et al., 2012) and are thus best studied and defined separately. NSSI researchers have made concerted efforts to clarify precise terminology regarding self-injury (e.g., Nock & Favazza, 2009), and the distinction between self-harm and NSSI has become more mainstream. However, researchers today are still left to contend with imprecise terminology in past publications, which muddle findings related to NSSI and complicate the process of building on or replicating prior research.

A further complication worth noting is the variety of measures that have been employed in research to date. Even studies that investigate the same type of exposure frequently use different modes of measurement

(e.g., semistructured interviews, self-report surveys, items from larger validated surveys on general psychiatric symptoms, and stand-alone nonvalidated questions). Increasing the use of standardized measures will benefit the field of NSSI research in general, but work remains to be done with regard to social contagion research. Although there are a number of widely used and well-validated measures to assess NSSI history and severity (e.g., the Self-Injurious Thoughts and Behaviors Interview; Nock et al., 2007), there are no existing measures that capture social contagion that we are aware of. The development and validation of such a measure is another important area of future work in this area of NSSI research. Furthermore, the generalizability of results is limited by narrow study populations. Individuals who engage in NSSI may be in inpatient or residential psychiatric treatment, outpatient psychotherapy, or receiving no treatment at all. Social contagion processes may operate differently in treatment versus nontreatment settings. Similarly, differences in age, gender and sex, socioeconomic status, and adverse life events may impact social contagion. Standard operational definitions of exposure and NSSI, consistent measurement strategies, and diverse samples and settings will increase the reliability of results and allow cross-study comparisons.

Social contagion is necessarily a longitudinal process by which an individual becomes more susceptible to NSSI after exposure. Still, a large portion of the literature reports cross-sectional or retrospective research. Retrospective reports can be useful, but they are limited by human error and participant bias. Existing longitudinal research is largely limited to two or three time points, with lapses of several months to a year between data collection. These initial longitudinal investigations are valuable, but they lack the density and duration needed to understand how exposure influences NSSI trajectory across an individual's development. Without longitudinal data that captures real-time exposure to NSSI and its impact on future NSSI thoughts and behaviors, we remain unable to determine whether exposure to NSSI (and in what form) leads to higher risk for future NSSI. Related to this point, inclusion of younger participants, such as children and preteens, in longitudinal designs may increase the chance that we are able to capture first exposure to NSSI in real time, allowing us to understand and draw some preliminary conclusions about initial exposure and NSSI onset.

Finally, we suggest consideration of two critical methodologies in future studies on social contagion of NSSI: ecological momentary assessment (EMA) and single-case experimental design (SCED). EMA captures temporally dense, naturalistic data in real time that is impossible to replicate in retrospective or even traditional longitudinal studies. More recent advances in EMA technology and the use of smartphones, apps, and/or other wearable devices like smartwatches may allow researchers to capture incidences of exposure that immediately precede episodes of NSSI. This information would contribute significantly to our understanding of NSSI exposure and social contagion as a proximal risk factor for NSSI. Second, SCEDs (see Barlow et al., 2009) are powerful and cost-efficient tools to explore mechanisms, and have been generally underutilized in NSSI research to date. SCEDs involve quantitative examination of changes in behavior among a small group of participants; although these designs are typically used to explore the impact of an intervention on behavior, they offer a unique opportunity in the case of social contagion to explore the occurrence of NSSI over time in the context of a dose-response relationship (e.g., Does frequency or duration of exposure lead to severity or frequency of NSSI behavior? When direct exposure to NSSI is removed from the environment, does NSSI behavior decrease or remit?). Additional advantages of SCEDs include high internal validity and the opportunity to explore reasons for intersubject variability using flexible and responsive experimental strategies (Barlow et al., 2009).

Case Example

Greta is a 26-year-old female who identifies as biracial and heterosexual. She is currently single and lives with roommates in a major East Coast city where she is working on a graduate degree in social work, and works currently with child and family services doing in-home visits with children between the ages of 12 and 17. Greta is presenting for treatment to address her depression, recent diagnosis of borderline personality disorder (BPD), and NSSI in the context of a partial hospital program.

Yesterday, Greta was taken to the emergency room by a colleague for evaluation after making several concerning statements about hurting herself during the workday; the emergency room staff determined that Greta was not at acute risk of harming herself, did not have a suicide plan or intent in mind, had no history of suicidality, and was willing to work on a safety plan during the evaluation. Staff recommended that Greta seek further treatment in the local partial hospital program, and she was willing and able to start the program the next day.

In the six months leading up to Greta's partial hospitalization admission, she had been struggling with long-standing depression and seeing an outpatient therapist each week. The therapist had recently talked to Greta about BPD and presented it to her as an explanation to understand many of her persistent and long-standing issues in relationships, difficulty in regulating emotions, impulsivity, lack of a sense of self, and NSSI. Greta thought this was a fitting and validating diagnosis and has been attempting to learn more about her symptoms and coping skills to manage them. She has not received any evidence-based treatments for BPD.

Greta had first been directly exposed to NSSI in her role as a mental health care worker for child and family services about three months ago. She reported first engaging in NSSI herself after what she described as a very stressful day at work; she completed a home visit with a 13-year-old child whose family had been on her caseload for about eight months. The child, a female with a significant trauma history and long-standing NSSI with intermittent suicidal ideation, had shown Greta several recent cuts on her forearms and thighs. Greta, aware that this child had a history of NSSI, had never seen the cuts in person and was struck by the number and depth of the cuts. She reported leaving the home visit, getting in her car, feeling "out of control," and punching her dashboard and windows. She reported back to work and met with her supervisor (a licensed clinician) to discuss the case and how best to address the child's safety moving forward. That night after work, Greta cut herself repeatedly on the inside of her upper arms. She stated, "It [NSSI] wasn't a part of me at all, and then suddenly, it was. I always knew that some people hurt themselves in this way, but never understood it until I did it myself." Since this episode, Greta has been engaging in NSSI to manage emotional reactions primarily in the context of her role at work. She continues to cut her arms, where she can hide the wounds with clothing, and has not disclosed her NSSI to anyone but her therapist.

Clinical Considerations

A number of important factors likely contributed to the onset of Greta's NSSI in addition to the social learning that appears to have occurred in her response to her work with child and family services. These include, but are not limited to, a recent diagnosis of BPD (65%–80% of individuals diagnosed with BPD are estimated to have engaged in NSSI; see Brickman et al., 2014), comorbid depression, and general deficits in adaptive skills in emotion regulation. However, Greta seemed to be particularly influenced by exposure to her 13-year-old client's NSSI, indicated by her almost immediate response of engaging in NSSI herself following witnessing the client's cuts during the home visit.

This experience with the client, therefore, became a central component of Greta's early treatment, which included admission to a partial hospital program after she expressed suicidal ideation and intent to harm herself more seriously. During her seven-day treatment in the program, Greta's treatment team completed a structured diagnostic interview and confirmed diagnoses of BPD and major depressive disorder (moderate, recurrent). Greta started attending daily group therapy in the program, which involved skills training consistent with cognitive behavioral (e.g., cognitive restructuring) and dialectical behavioral practices (e.g., distress tolerance). Greta also saw an individual therapist for three, 50-minute sessions to expand the skill sets from group therapy and personalize her coping and safety plan in preparation for discharge. One meaningful aspect of individual therapy included discussion of Greta's lack of a stable sense of self (consistent with her BPD diagnosis), which may have been a contributing factor to her vulnerability to the impact of social contagion in NSSI onset.

A notable difficulty in this case for Greta's treatment team at the partial hospital program and her outpatient therapist was whether—and if so, when—Greta could and should return to work with child and family services in the context of her own mental health challenges, recent hospitalization, and recent increased safety risk. At the time of Greta's discharge from the program, she decided to take a leave of absence from work for a period of time to focus on her treatment and to reassess her capacity to continue to work with high-risk clients in this context. Although she had not decided whether she would disclose any of the details of her hospitalization with her supervisor at work, Greta and the treatment team discussed ways in which Greta might work with her outpatient therapist in the future to have these conversations to manage her own safety and the safety of her clients (e.g., request that she see clients with an experienced therapist for home visits; request not to see clients with known, current NSSI or suicidality). Greta also continued her graduate studies in the social work program, and was hopeful that further education and clinical training would help her garner the necessary skills to work with patients presenting with high-risk behaviors.

General Recommendations for Clinical Practice

Perhaps the most important note to make regarding the assessment of possible social contagion factors in a patient presenting with NSSI is simply to ask about exposure to NSSI related to both onset and continuation of the behavior (e.g., knowledge of/exposure to friends, family, or peers and use of social media sites related to NSSI). Further assessment questions might include attempts to learn more about current exposure, and how the patient views its impact on NSSI thoughts, urges, and actions. Finally, explicit assessment of online behavior may be particularly useful in understanding social contagion factors, such as asking patients about usage, posting, frequency of engagement with others online who engage in discussion of NSSI, and how the individual sees online behavior impacting incidences of NSSI (e.g., does engagement with social media groups about NSSI increase or decrease NSSI behavior?).

After learning more about social contagion factors during the assessment phase, clinicians may then use this information to tailor interventions specific to the patient's presenting treatment targets related to NSSI (e.g., consider ways to reduce or eliminate exposure, and/or ways to cope when faced with NSSI exposure when/if it is unavoidable). Simple and straightforward psychoeducation about the impact of social learning and contagion on NSSI behavior may also be of use in treatment and allow for a collaborative approach to better understanding antecedents of NSSI in therapy. More targeted research is certainly needed to test existing science-based approaches for NSSI in the context of specifically addressing issues related to social contagion. However, established science-based approaches (cognitive-behavioral and/or dialectical behavior therapy) are well suited to include social contagion considerations as part of a treatment plan, for example, using cognitive-behavioral strategies to track and monitor the role that exposure to NSSI has on NSSI behavior (e.g., through exercises identifying antecedents, behaviors, and consequences of NSSI and/or

using chain analysis exercises in the context of DBT; see Linehan, 2015). Finally, standard approaches to regulating risk behaviors should be utilized in group settings, such as discouraging discussion in the group about specific incidences of NSSI (e.g., the method used) and asking participants with recent lacerations/burns/etc. and/or scars to keep them covered while attending treatment in the group setting.

Conclusion

The study of social contagion factors in the development and maintenance of NSSI is a fascinating area of research, and one that certainly will benefit from continued examination. Research in this area can be advanced through more expansive views/definitions of social contagion and should include interdisciplinary collaborations between clinical researchers and, for example, researchers in the fields of public health, social psychology, and school psychology, among others. Additionally, the ever-expanding reach and impact of social media on our daily lives and behaviors, particularly among children and adolescents, cannot be underestimated in this particular case, while online exposure to NSSI remains a particular area of concern for those who may seek information and support in these somewhat less stigmatized and more anonymous forums, which to date remain largely unexplored and unregulated.

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