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The Influence of Social Contagion and Technology on
Epidemic Non-Suicidal Self-Injury

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Abstract

Non-suicidal self-injury (NSSI) is the deliberate damaging of one's body without the intention of suicide (Nock & Favazza, 2009). NSSI can cause serious medical consequences and is associated with psychological impairment or distress in day-to-day functioning. When this type of pathological behavior occurs in inpatient settings, the behavior has been known to spread from patient to patient (Taiminen, Kallio-Soukainen, Nokso-Koivisto, Kaljonen, & Helenius, 1998). Recent internet-based research has shown that online forums have become a place for people to find social connections based on pathology (Whitlock, Powers, & Eckenrode, 2006). Christakis and Fowler (2009) showed that thoughts, actions, and feelings spread in epidemic-like-patterns through social networks and have determined the patterns and properties of this type of social influence. Because of the nature of the NSSI pathology, it seems to be the case that these rules will also govern the spread of NSSI contagion and therefore, these findings can be used to intervene by predicting who is most at risk and providing them with "inoculating" resources.

Keywords: non-suicidal self-injury, epidemic, social contagion, Internet

Introduction

Non-suicidal self-injury (NSSI) is the intentional damaging of one's body without the intention of suicide (Nock & Favazza, 2009). NSSI is not currently recognized as a distinct disorder in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR; 4th ed. revised; American Psychiatric Association, 2000), rather it is considered a symptom of other disorders. At the time of this writing, NSSI has been proposed as a distinct disorder for the forthcoming edition of the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM-V*). Researchers thus far have shown favor towards the proposed addition, and thereby recognition, of this form of self-injurious behavior as a disorder (Selby, Bender, Gordon, Nock,

& Joiner, 2011; Wilkinson, & Goodyer, 2011). Non-suicidal self-injury primarily includes cutting, as well as self-burning, scratching, harsh rubbing of the skin to name a few.

One factor in the prevalence of NSSI is social contagion, which is the spread of thoughts, emotions, and behaviors from person to person and among larger groups (Christakis & Fowler, 2009). Furthermore, new developments in technology increase the forums through which people come together to share information. These changes in technology increase the platforms by which thoughts, emotion, and behaviors spread within social networks, thereby initiating contagion in new places. For instance, researchers found cases in which NSSI was encouraged between users in hundreds of Internet forums (Whitlock, Powers, & Eckenrode, 2006). As society develops in this way, it is the responsibility of researchers and clinicians in the areas of psychology and medicine to study new ways by which psychopathology develops. This knowledge can then be used in assessment of risk factors, preventative measures, and improved treatment. The purpose of this paper is to synthesize extant research on NSSI so as to elucidate the association between social contagion and non-suicidal self-injury, as well as the media influence on NSSI.

Etiology of NSSI

Perhaps the most paradoxical aspect of non-suicidal self-injury, and any type of deliberate self-injury, is that evolutionary theory seems to suggest that it should not happen, considering the principle of survival through adaptation. Because this is a self-harming act with the potential to lead to severe or fatal injury, it seems only natural to conceive of this behavior as maladaptive. Contrary to instinctive interpretation, an act of deliberate self-harm or NSSI is not necessarily an attempted suicide but rather an attempt at adaptation (Yates, 2004).

Clinical researchers seek to understand the functions of a behavior so as to be able to find suitable alternative behaviors, which provide the same positive psychological effects of the behavior, but without the maladaptive effects. NSSI is a behavior that may serve multiple functions, which might include: expressing, externalizing, or communicating emotions, dissociation to escape emotions, and stabilizing a sense of identity (Suyemoto, 1998). Repetitive cases of NSSI are known to develop akin to an addiction and tend to present clinically in conjunction with eating disorders, substance abuse, and kleptomania (Favazza, 1996). Clinicians and researchers use psychological models to try to understand these functions to determine what function(s) the behavior may serve for an individual.

Self-injury appears to be a highly emotional pathology. It has been revealed to serve the function of emotion regulation and dysphoria (Nixon, Cloutier, & Aggarwal, 2002). A possible contributing factor to NSSI is alexithymia (the difficulty or inability to identify and describe emotions using words). These people turn to NSSI to express their emotions. Unpleasant emotions seem to produce the NSSI in alexithymia. Researchers (Nock, Prinstein, & Sterba, 2009) have reported occurrences of negative emotion prior to and during incidences of self-injurious thoughts and behaviors. The recorded emotions included: anger, fear, sadness, a sense of worthlessness, numbness, rejection, and being overwhelmed. When an individual with alexithymic traits experiences these negative and painful emotions, it is easy to understand why they would have difficulty managing and expressing emotions in a positive manner and proceed to use temporary means, such as cutting, to meet their needs.

Though the NSSI proposal for the DSM-V includes association with negative thoughts and feelings, the proposal leaves undecided whether or not NSSI should be included as a mood disorder or a behavioral disorder (Shaffer & Jacobson, 2009). Functions of NSSI that cannot be

accounted for by the classification as a mood disorder include: communicating distressing emotions, the phenomena of dissociation, and positive reinforcement factors such as attention and social inclusion. Also, NSSI has been reported to occur during a state of dissociation (Levenkron, 1998; Suyemoto, 1998). This brings into question whether NSSI should be classified as a dissociative disorder, though this was not included in the proposal to the DSM-V workgroup. It is important to recognize that NSSI has also been theorized as a multifunctional behavior (Suyemoto, 1998). This author suggests that, if recognized as a distinct disorder, NSSI should be classified as a behavioral disorder for two reasons. Firstly, the primary feature of non-suicidal self-injury is a particular act of abnormal behavior and classification as a behavioral disorder can embrace the current functional models of this behavior. And secondly, the interpretation of other functional factors, such as need for attention, self-identification, and group cohesion (Taiminen, Kallio-Soukainen, Nokso-Koivisto, Kaljonen, & Helenius, 1998), would not be accounted for by classification as a mood disorder.

Social Contagion

Social contagion is the spread of thoughts, emotions, and behaviors from person to person and among larger groups as affected by shared information and mimicry (Christakis & Fowler, 2009). These same researchers have also shown the potential likelihood of social contagion as the cause of epidemic psychopathology. Relevant biological findings and phenomenological principles ruling the effects of social contagion are discussed in this section.

Behavioral researchers investigate potential biological causes for pathology and, in this case, biological causes of psychopathological contagion. This includes the conscious or involuntary spreading of thoughts, emotions, and observable behaviors. Mirror neurons are a class of neuron present in the premotor cortex, which activate when one person observes another

perform a behavior (Cattaneo & Rizzolatti, 2009). A biological apparatus that allows humans to learn from each other would likely have numerous evolutionary benefits, allowing for rapid learning and adaptation (Iacoboni, 2009). Christakis and Fowler (2009) consider the mirror neuron system as the biological mechanism responsible for social contagion.

Christakis and Fowler (2009) identified six principles of influence in social networks. These six principles are: (1) Humans shape their social networks because of the tendency to associate with those who are perceived as similar to themselves; (2) Information that is passed through the network is a factor shaping human behavior, including social contagion; (3) Friends influence us; (4) Information and imitation can spread beyond direct relationships; (5) Social networks have emergent properties, which change with the fluctuation of relationships. (6) One individual carries three degrees of social influence and this effect significantly decreases at the fourth degree relation. An exhaustive explanation and confirmation of these principles is beyond the scope of this paper, but can be found in Christakis and Fowler (2009). As it relates to the contagion on non-suicidal self-injury, these principles are suggested for use in the treatment of epidemic NSSI, which can be found in the section below entitled: “*Media, Social Contagion, and the treatment of Epidemic NSSI.*”

Epidemic Non-Suicidal Self-Injury

Epidemics of non-suicidal self-injury have indeed been reported and have a reputation for uncontrollability (Fennig, Carlson, & Fennig, 1995; Matthews, 1968; Rosen, & Walsh, 1989; Taiminen, et al., 1998). Social contagion has been identified as a likely cause of NSSI contagion (Christakis & Fowler, 2009; Whitlock, et al., 2006).

This social contagion hypothesis is supported by one of the earliest recorded instances of self-injury contagion in an inpatient unit for emotionally disturbed adolescents. Matthews

(1968) traces an instance of contagion, which lasted for seven months and started with *Patient 1* (male, behavior disorder-depressive) who cut frequently and with any sharp object at hand. Within the same month, the behavior spread to Patient 1's closest friend, *Patient 2* (male, behavior disorder-aggressive). Six months later, both were transported to a psychiatric hospital for the severity of their symptoms. Within ten days, they were discharged and both were reportedly doing well on their own. The later instances of self-injury occurred between patients 7, 8, 9, and 10 whose cuts were superficial, in which cases 8 and 9 has a close relationship and Patient 8 explicitly admitted to cutting because Patient 7 had done it and reported being afraid of hurting himself and over-bandaged his wound as if it were a status display. In Patients 5 and 6, the cuts were both located on the upper extremities and manifested in distinct patterns. All patients, whose self-injury occurred after Patient 3, reported a subsiding of the need to self-injure after Patient 3 was discharged about 6 months later. The last episode of self-injury occurred in patient 11 who was shunned for unstated reasons.

Taiminen, et al. (1998) reported similarities such as a small cluster of initial instances of contagion and a larger cluster of incidences, which appear less connected to the initial group. Two patients in this study stated that cutting did not relieve any anxiety or anger, but rather were influenced by the self-injury of others because they themselves did not want to feel like outsiders. There was also an instance wherein a patient was treated by others with contempt and accused of being a fake. Two of the four patients who acted accusatory toward the "faking" patient had co-occurrences with this patient's one instance of self-harm. This may indicate that there are social rules that must be abided by during instances of contagion, which may bring meaning or value to these events.

Additionally, researchers have found instances of *blade sharing* on an inpatient psychiatric unit. Of the 76 inpatients, 61.2% reported NSSI in the form of cutting and about 26.7% of those who cut also reported sharing cutting implements with others (DiClemente, Ponton, & Hartley, 1991). Not only does this indicate that (at least the sharing group) the inpatients were aware of each other's NSSI behaviors, but it potentially puts others at risk for HIV transmission (DiClemente, et al., 1991). These reports do not mean that emotions are at the heart of the matter, but at the same time it might indicate relationships or status, inasmuch that a patient would not share a blade with someone they did not well regard. An implication of this finding is that inpatient caregivers should know who carries HIV in their units and put appropriate measures in place to insure that blade sharing does not occur at all, but especially with this person (DiClemente, et al., 1991). Those same researchers indicated that the increased of NSSI, but not blade sharing, in their sample was not associated with gender, age, ethnicity, or primary psychiatric diagnoses – all things which, on an inpatient psychiatric unit, make individuals with those things in common more likely to be friends.

Media, Social Contagion, and the Treatment of Epidemic NSSI

Though a relatively new treatment called Dialectical Behavior Therapy (Linehan, 1993) is used to treat suicidality and borderline personality disorder, for which NSSI is a symptom, no therapy has been proven effective for the direct treatment of NSSI due to lack of research and so future attention to this area is critical to the accord of clinical effectiveness (Nock, 2010). Given the lack of research supporting treatment of individual instances of NSSI and since the probability of a large epidemic of NSSI is low, it is likely that attention towards research on the treatment of epidemic self-injury will not happen until a distant future. One intention in the writing of this paper is to direct attention towards the treatment of epidemic non-suicidal self-

injury. In so doing, suggestion for future research on the treatment of epidemic NSSI can be found below.

Behavioral models are believed to best explain contagion of non-suicidal self-injury as the behavior can be conceptualized through social modeling (mimicry) reinforced by a sense of self or group identity, attention, or concern. Such is believed to be the case in instances of contagion wherein the prevalent symptoms are more minor and less connected to internal dynamics (Suyemoto, 1998). Therefore, in the development of treatment for epidemic NSSI should give consideration to behavioral contingencies as well as functions.

Taiminen, et al. (1998) have proposed the substitution of constructive and meaningful ritualistic behavior as an alternative behavior, serving the function of group cohesion. The alternative behaviors that were proposed, including mountaineering and bungee jumping, do involve noticeable risk-taking, which seems to be a common trait among those who self-injure (DiClemente et al.,1991). Currently there is no empirical evidence supporting the theoretical proposal of perceived-risk alternative behaviors as an effective and safe method for treating institutional instances of epidemic self-injury, as this may be an area for future research.

Taiminen, et al., (1998) state that adolescents avoid behavior they perceive as imitative. This could potentially be used as a treatment option for an epidemic of NSSI contagion in adolescent environments such as inpatient and online media (Twitter, YouTube, blogs, etc.) wherein the function of the maladaptive behavior is related to self or group identity. The goal and method of this treatment would be to stop the spread of behavior by creating the perception that the behavior is imitative so as to elicit an adverse reaction from those socially connected but not yet engaging in the behavior. Investigation would be necessary as to the efficacy of this type of treatment and the age demographics for which it may prove effective.

Social network theory also suggests that an increase in positive affect in one person will also spread to other people within their social network (Christakis & Fowler, 2009). This is an implication for an indirect method of treatment, suggesting that if those who are socially connected to individuals with instances of NSSI increase positive emotions in their lives, similar contagion will likely spread positive emotion to those afflicted by NSSI. Assessment of risk factors for social contagion, NSSI, and NSSI contagion are essential to treatment using this model since some may already be psychologically immune to contagion of this pathology and social contagion itself. An influential (risk) factor for social contagion is likely to be empathic connection, though this proposition is has not been researched empirically.

Although rates of prevalence are high, there are no systematic investigations relating factors for risk, demographic factors, associated symptoms, and epidemiological treatment, which may be more so influenced by observer's disinterest, in the contagion of self-injury (Fennig, Carlson, & Fennig, 1995).

Conclusions

A common theme in non-suicidal self-injury literature is a need for research. New technological developments may be part of the cause of contagion, but show potential as a tool for research and treatment (Nock, Prinstein, & Sterba, 2009). It will extremely useful for the investigation of contagion of self-injury that researchers attempt to document social networks within and surrounding the epidemic radius. Most of the current research on NSSI contagion has failed to do this, with few exceptions (Matthews, 1968). This researcher strongly encourages documentation of social connections along with demographics in research reports of epidemic NSSI, so that these relationships may be assessed.

Researchers identify correlations of abnormal behaviors because this information can then be used to identify those who are most at risk. Nock (2010) acknowledged the identification of risk factors for NSSI as one of the most deficient areas of research in the study of NSSI, as current understanding self-injury correlates are shared between NSSI and other forms of maladaptive behavior. Theory strongly suggests that factors influencing susceptibility to critical, emotional, and behavioral contagion include strong empathic connections though current support for this has only been looked at indirectly. Future research should strive to develop methods for efficiently assessing risk factors for social contagion, which would be particularly useful for understanding the contagion of epidemic NSSI. Such developments could lead to measures which predict who is in need of prophylactic treatment, for example, in an epidemic of NSSI on an inpatient unit. Furthermore, because of the nature of psychopathology and individual (developmental) differences in psychological functioning, it is likely that only some portion of the population would be susceptible to instances of self-injury contagion under normal circumstances. Although, the principles of social influence hold for social networks, future investigations should systematically differentiate the factors that affect contagion in clinical, non-clinical, and virtual settings.

The indirect treatment methods for epidemic NSSI suggesting in this paper are intended to help researchers see potential in this area of clinical and social research and to act as a starting point in an area which has received little to none in terms of academic attention. Assessing immunity and treating those around the instance of self-injury, in addition to the self-injurer, is the psychological equivalent of vaccination.

Non-suicidal self-injury is a dangerous pathology, showing potential for addiction, contagion, and unexpected medical complications. The findings synthesized above demonstrate

social contagion as a functional influence on the occurrence of non-suicidal self-injury in clinical, educational, and virtual environments. Hopefully, identification of this function will lead to greater awareness of this phenomena and epidemic treatment options in the future.

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