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Maya Wilde
mw24601@byu.edu

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Understanding and Working Through Self-Harm

Maya Wilde

Department of Psychology, Brigham Young University

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Professor Dawn-Marie Wood

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Abstract
Self-harm is a coping strategy used by many adolescents dealing with mental disorders. Fifteen articles from academic journals published between 2012 and 2022 were examined. Those who struggle with non-suicidal self-injury (NSSI) experience overactivation in the fronto-limbic system of the brain, which includes the amygdala (Kaess et al., 2021). Self-harm decreases activity and stress in the amygdala and increases the amount of dopamine in the brain (Kaess et al., 2021; Reitz et al., 2015). Self-harm may be used as a way to regulate negative affect. Seeing blood might be a significant part of an episode of NSSI, but it is unsure. Seeing blood seemed to be calming in some ways for participants with NSSI (Naoum et al., 2016). Many people describe NSSI as addicting and hard to stop (Pritchard et al., 2021). Aspects of self-harm may be addictive to the self-injurer. Self-harm is understood to be a process of negative reinforcement but may involve positive reinforcement, as well (Worley, 2020). Compared to cravings for substances in those with substance abuse disorder, cravings for NSSI were not as strong (Victor et al., 2012). Implementing strategies used in addiction treatment might be beneficial. Treatment for NSSI might look different for each person, but trust and understanding seem to be important in any form of treatment. Fostering a trusting and understanding environment avoids leaving those who struggle in isolation.
Understanding and Working Through Self-Harm

Self-harm is an increasingly common phenomenon that is important to better understand. An estimated 17% of adolescents have engaged in some form of self-harm (Lewis & Hasking, 2021). Additionally, those who engage in self-harm are at increased risk for suicidal ideation and behaviors (Cummings et al., 2021). Self-harm may feel helpful to the perpetrator as a coping mechanism for working through intense episodes of emotion, but it does not help a person learn how to improve their mental health. When it comes to supporting a person who harms themselves, it can often be stressful and confusing, but learning about self-harm can decrease stress related to confronting it and can facilitate both seeking and providing help.

Self-harm is also known as non-suicidal self-injury, or NSSI. It is a way of hurting oneself without the intent of suicide. Self-harm can include burning, banging, scratching, and cutting. Cutting involves making an incision in the skin, often drawing blood. NSSI is primarily thought to be a way to regulate intense emotions; in other words, it is considered a coping strategy (Lewis & Hasking, 2021). Because of this, NSSI is not considered a disorder in itself, rather it is typically a symptom of other mental disorders. Emotional regulation refers to how one manages and disposes of negative emotions (Cummings et al., 2021). There are many healthy ways to regulate emotions, but unfortunately, cutting is used as a more destructive attempt to eliminate negative affect.

Genetic predispositions to self-harm may help explain the practice, and certain thought processes and behavioral patterns may also put a person at greater risk for self-harming. A genetic predisposition may make one prone to certain behaviors; however, being genetically predisposed to self-harm does not mean that individuals will engage in NSSI. Environmental
factors can have an influence. In other words, an individual still has the ability to make their own choices; genetic predisposition simply makes certain choices more tempting.

Similarly, while cutting has been described as addictive (Pritchard et al., 2021), addictive tendencies can be gradually overcome. Addiction is a complex idea that involves intertwining factors such as brain chemistry, behavior, and psychology (Satel et al., 2017). Although neurochemical processes are involved in addiction, addiction is not necessarily a permanent diagnosis. Those struggling with an addiction can choose to make an effort to work through it and change. Self-harm is not usually thought of as an addiction, but it does show some similarities. Chemical reward processes in the brain make self-harm difficult to “quit” (Cummings et al., 2021). Urges to cut can feel strong and may be hard to resist, and completely stopping the act may be an unreasonable thing to ask of self-injurers. Replacing cutting with alternative methods could help ease people out of the habit. Replicating the reward of cutting without damage may be helpful in transitioning to a healthier mindset and healthier coping strategies.

Caring for those who self-harm does not need to be complicated. Often, simply being present and understanding can make a big difference to someone who is working through intense emotions. Psychiatric patients have described how doctors and nurses use coercive measures, such as physically restricting their bodies, rather than providing any emotional support; further, they have shared that simple understanding would have been much more helpful (Looi et al., 2015). Physical restraint may add to pre-existing distress, which can make the urge to cut even stronger. A gentle presence and some empathy might create a more calming atmosphere that could lessen a desire to cut. Although cutting does appear to provide short-term relief to those who repeatedly employ the practice, empathetic and skillful acknowledgement of the potentially
addictive aspects of this immediately gratifying coping strategy should be clinically prioritized, because, given the nature of cutting and what happens in the brain, an understanding, competent clinician can be particularly helpful to those who participate in self-harm, treatment plans similar to those prescribed for addiction can be effective, and the recovery process can be aided by methods that suggest alternative activities and behaviors to distract from the urge to (or mimic the effects of) self-harm.

The Nature of Cutting: What Happens in the Brain

There are neurobiological reasons why cutting helps a person feel better and why a person may be more prone to cutting in the first place. Kaess and colleagues (2021) found that those with both depression and a habit of NSSI experienced overactivation in the fronto-limbic areas of the brain when feeling rejected by peers. This area of the brain includes the amygdala, which regulates negative emotions such as fear and possibly interprets social behaviors (Putnam & Chang, 2021). Perhaps those who harm themselves may do so because their fear is not processed efficiently and may be more intense than what is normal. This intensity might drive someone to regulate those emotions in a way that their brain cannot (i.e., by cutting). There also seems to be a difference in white matter organization in the brain between those who self-harm and those who do not. More organized white matter correlates to more efficient neural transmission and functioning (Schreiner et al., 2020). Brain imaging was measured by metrics of fractional anisotropy (FA) and generalized fractional anisotropy (GFA); higher scores of both metrics reflect better organization and integrity of white matter (Schreiner et al., 2020). Schreiner and colleagues (2020) found lower GFA and FA scores in those with NSSI, and lower scores for longer episodes of NSSI. This may suggest that the brains of those who self-harm could have
more difficulty processing thoughts and feelings. Both studies indicate that cutting may be a behavioral way of managing intense emotions, if the brain is not doing so efficiently.

Despite the negative effects on people with NSSI, the process of cutting may decrease overactivation of areas in the brain that process negative emotions. Reitz et al. (2015) examined MRI scans of participants with borderline personality disorder (BPD) over the course of an artificial episode of NSSI. Participants were introduced to a stressor and might have had a small incision made in their skin with a scalpel or might have had the scalpel touch their skin without cutting. Stress levels and activation of the amygdala decreased significantly for those who were cut (Reitz et al., 2015). This suggests that cutting the skin calms the brain and aids the self-injurer in returning to a more comfortable state. Kaess and colleagues (2021) also found that arousal of the fronto-limbic system may be decreased over an episode of NSSI. Those with BPD tend to have higher levels of activation of the amygdala, which may be similar to others who struggle with self-harm, especially cutting (Reitz et al., 2015). The chronic presence of this stress may be overwhelming, and cutting could be an effective way to relieve the burden. Intense emotional stress or pain tends to be reduced when one cuts, which might make a person desire that relief again when emotional stress increases (Cummings et al., 2021). These findings indicate that effectively removing the emotional pain encourages the behavior the next time overwhelming negative emotions come.

Seeing blood during an episode of NSSI may be an important step in feeling relief from emotional distress. Pritchard and colleagues (2021) found that many people reported that the sight of blood was helpful during NSSI. The sight of blood and the relief it brought was described as addictive and made the habit of NSSI hard to stop (Pritchard et al., 2021). Similarly, Stacy and colleagues (2021) observed that those who were allowed to look at their blood after a
prick reported increased relief afterwards, which may indicate a positive effect of seeing physical consequences. Naoum and colleagues (2016) also conducted a study examining the role of blood in an episode of NSSI, and they found that arousal decreased more for a group that saw fake blood after experiencing a sensation similar to an incision of the skin. The group that saw fake blood also experienced a decrease in the urge to self-harm again (Naoum et al., 2016). Given that NSSI is thought to improve emotional regulation, blood could be a tangible manifestation of the effectiveness of NSSI (Kaess et al., 2021). Blood may be a marker of having hurt oneself enough; without the blood, an individual may feel an increased need for relief to better regulate emotions. However, further research is needed to determine the importance of seeing blood. In Naoum et al.’s (2016) study, heart rate decreased the same amount in both blood and non-blood groups. Therefore, blood may only be a small factor during NSSI.

Effective Treatment Plans: Similar to Those Prescribed for Addiction

Self-injury is not a disorder in of itself; however, aspects of cutting may be addicting to the injurer. Pritchard and colleagues (2021) found many anonymous posters on a website who described their cutting habit as an addiction. They found a few reasons that this could be: to validate their experience, to show the complexity of NSSI, to warn others, and to express how hard it can be to stop (Pritchard et al., 2021). Addiction is a widely understood phenomenon. Relating NSSI to addiction might help others apply what they already know about addiction to self-injury, which is something they may not fully understand. Worley (2020) described addiction as a “treatable, chronic medical disease involving complex interactions among brain circuits, genetics, the environment, and life experiences in which people engage in behaviors that become compulsive and often continue despite harmful consequences” (p. 14). Cutting brings harmful consequences and is often described as compulsive. Pritchard and colleagues (2021)
found that nearly 17% of posts about NSSI on the website they examined described it as addicting, which implies that many feel compulsive urges to hurt themselves. Worley (2020) also agreed that many people report having obsessive urges to cut or not feeling able to stop. This research indicates that the relief brought from cutting is most likely what is addicting.

Addiction is a widely understood phenomenon that may aid in understanding NSSI. The neurobiology behind self-injury may be similar to addiction and substance abuse disorder (Worley, 2020). When a person cuts, there is an increase in a feel-good neurotransmitter called dopamine; however, this can ultimately lead to lower than usual levels of dopamine, which in turn increases the urge to cut again (Worley, 2020). Seeking out a behavior that brings good emotions is the result of positive reinforcement. Cutting is largely understood to involve negative reinforcement, but the seeking out of dopamine by cutting could be a result of positive reinforcement. Addiction in terms of substance abuse is understood to involve positive reward systems; the substances produce a “high” in the brain that users seek to feel again (Victor et al., 2012). Cutting may simultaneously bring the self-injurer a high (positively reinforcing cutting) and take away intense negative emotions (negatively reinforcing cutting). While positive reinforcement is one similarity between substance addiction and cutting, there are still some differences to note. Victor and colleagues (2012) changed a questionnaire used for substance abuse by trading words like “drugs” for “self-injury.” Cravings for substances seemed to be much stronger than those for NSSI (Victor et al., 2012). Additionally, NSSI was almost always reported to be craved when emotions were negative, while cravings for substances happened even when emotions were positive (Victor et al., 2012). This suggests that NSSI cravings do seem to occur but not at the intensity that they do for addictive substances.
While cutting might not be a full-blown addiction, it is still important to consider addictive features of cutting. Guérin-Marion and colleagues (2018) found strong correlations between NSSI and addictive features. Understanding how hard cutting can be to stop can invite deeper understanding of those who struggle and provide more insightful treatment. There are similarities between treatments for substance abuse addiction and NSSI (see Figure 1). For example, rehabilitation centers are options for those who struggle with substance abuse, and there are psychiatric hospitals for those who struggle with NSSI. Relapse is a term used to describe repeating the unwanted behavior for both substance abuse and NSSI. Lewis and Hasking (2021) asserted that relapse was a normal process of NSSI recovery and was not a failure to recover nor a complete halt in progress. When it comes to addiction to substances, recovery looks a bit different for each person who struggles to stop (Stanojlović et al., 2022). Similarly, each person who struggles with NSSI will typically find a way to recover that works for them (Stänicke et al., 2020). Perhaps applying methods used for addiction recovery to NSSI recovery could be beneficial.

Recovery: Alternative Activities and Behaviors

Cutting may be uncomfortable to talk about or hard to understand for friends and family of those who struggle with it. However, friends and family can have a major impact on the habit. It is important that they do not show judgment, anger, nor frustration with the person who is struggling (Kelada et al., 2018). These things can worsen the urge to cut and discourage those in need of help from seeking it (Kelada et al., 2018). Feelings of isolation or of being misunderstood might create an environment where cutting can be hidden and become worse. Instead, family and friends should focus on calm, supportive, and loving reactions (Kelada et al., 2018). The type of atmosphere created is then a place where those struggling might feel less of a
compulsion to hurt themselves. Family and friends should also encourage professional help. Stänicke and colleagues (2020) observed that many participants did not go to treatment for themselves at first but later appreciated treatment. This suggests that external motivation may eventually turn into internal motivation; the initial, gentle push can be made by friends and family.

It is important to recognize that recovery will look different for each person; certain types of treatments will work better for different people (Lewis & Hasking, 2021). What is important for therapists, clinicians, and other professionals to keep in mind, though, is to establish a relationship of trust (Kelada et al., 2018; Looi et al., 2015). Kelada and colleagues (2018) found that patients who did not feel comfortable with their therapist felt that they could not talk about their struggle. Similarly, Looi and colleagues (2015) noted that when patients trusted their therapists, they were more likely to seek help and resist hurting themselves. If therapists do not establish a supportive and caring environment, patients are more likely to sit alone in frustration and hide their self-harm. Consequently, psychiatric institutions should reconsider using coercive tactics with their patients. Looi et al. (2015) observed that patients reported being pinned down or watching roommates be violently handled when caught trying to self-harm; these restraints often left patients and witnesses traumatized. Thus, it appears that intense coercion may increase stress and the desire to cut, which is opposite of what professional help should do. Psychiatric institutions should aim for their patients to feel cared for; they should worry less about behavioral control and more about support. Looi et al. (2015) confirmed this, as patients reported that they wished for more understanding; instead, these patients felt neglected because staff would only interact with them to physically restrain them from hurting themselves. Only interacting with patients this way may foster feelings of loneliness, which might increase the
desire to self-harm. Stanojlović and colleagues (2022) observed that, for addiction recovery, someone was typically on call in the emergency department who would go in and talk with the patient and work with them to figure out a pathway to recovery. Applying this sort of communication and support to NSSI recovery could be beneficial. If professionals work with patients, rather than against them, it can decrease patient stress and help foster a desire to recover.

Rather than focusing on halting the behavior of self-harm, it could also be effective to treat underlying mental illnesses (Lewis & Hasking, 2021). Given that self-harm is considered a symptom, not a disorder, treating the underlying mental illness might decrease the frequency of self-harm. It is unrealistic, though, to expect cessation to happen easily or immediately. Patients and professionals should recognize and accept that thoughts or urges of NSSI could occur for a long time, and this is normal (Lewis & Hasking, 2021). Professionals should emphasize that patients are strong enough to not act on urges (Lewis & Hasking, 2021; Looi et al., 2015). Realizing this ability might bring those with NSSI hope and increase the likelihood that they resist urges. Patients suggest that clinicians give specific examples of activities to do instead of self-harm (Stänicke et al., 2020). In the moment of wanting to self-harm, it might be difficult to think of alternative activities alone. Already having ideas in mind may increase the likelihood that other coping strategies are used first before deciding on self-harm.

NSSI can be a difficult habit to stop. Although research is new, many strategies can be employed to help. Some clinicians suggest behaviors that mimic self-harm, such as holding ice cubes or drawing on the skin with red marker (Lewis & Hasking, 2021). More evidence is necessary to determine whether this strategy is effective or helpful (Lewis & Hasking, 2021). Perhaps this strategy can be a last resort for those who feel that nothing else is working in the
moment. Stänicke and colleagues (2020) indicated that delaying self-harm was a strategy some used; finding something else to do first can distract the person and hopefully allow the urge to pass. Additionally, it can be helpful to find activities or exercises that take up energy and time (Stänicke et al., 2020). Keeping track of triggers for self-harm could also be effective; recognizing and removing triggers might decrease frequency of urges to self-harm (Lewis & Hasking, 2021). Lastly, those who wish to self-harm should find other people to turn to when the urge to self-harm arises. Being with another human in those moments is thought to be one of the most powerful strategies to use (B. Lindal, personal communication, March 2, 2022). The presence and support of other people might decrease feelings of isolation, increase support and love, and encourage those struggling to seek help.

**Conclusion**

Self-harm is an increasingly common occurrence among adolescents and young adults. A better understanding of how it works and how to help is important in stopping this phenomenon from further increasing. Self-harm can take different forms such as scratching, banging, burning, or cutting. It is understood to be a way of regulating negative emotions (Lewis & Hasking, 2021). The relief brought from participating in self-harm might potentially be addicting, and the act itself is often described that way (Pritchard et al., 2021). The addictive features of self-harm might be important to consider to maximize recovery rates. Treatment can look different for each person, but it is important for friends, families, and professionals to be supportive, caring, and to establish a relationship of trust.

Neurobiologically, there are multiple reasons for cutting. Those with NSSI seem to experience overactivation of the fronto-limbic system, and their brains cannot efficiently process negative emotions such as fear (Kaess et al., 2021). Schreiner and colleagues (2020) found that
those with NSSI seem to have lower organization and integrity of white matter in the brain, further implicating the inability to efficiently process and cope with negative emotions. During an episode of NSSI, arousal of the amygdala is decreased, as are stress levels (Reitz et al., 2015). Self-harm may be a way to process negative emotions, such as stress, when patients' brains cannot. The sight of blood is often reported as an important factor while cutting (Pritchard et al., 2021). Amygdala activity was decreased more in those who saw fake blood in a study done by Naoum and colleagues (2016). Perhaps the sight of blood is a tangible way of knowing that enough harm has been done and that the episode can be complete. However, evidence is still mixed, and further research should be done to examine the role of blood in self-harm.

NSSI is often described as being addicting (Pritchard et al., 2021). There may be multiple reasons for this, including to validate the experience, to show its complexity, to warn others, and to explain how hard it can be to stop (Pritchard et al., 2021). Many people are familiar with addiction, so the comparison could be an easy way to portray the experiences of those with NSSI. The neurobiology of NSSI might be similar to addiction to substances (Worley, 2020). However, researchers are still unsure if NSSI is a completely negative reward system, or if positive reinforcement is involved, as well. Cravings for substances have been found to be significantly stronger than cravings for NSSI (Victor et al., 2012). It is hard to say whether NSSI is an addiction, but it may be beneficial to take into account its addictive features when considering treatment, as similarities exist between treatments for addiction and for NSSI.

Treatment for NSSI will not look the same for everyone, but it is important to create an environment of trust, care, and support. Family and friends should be calm and nonjudgmental when discussing NSSI (Kelada et al., 2018). They should also encourage professional help. Professionals should ensure that patients have a trusting and understanding relationship with
their patients so that those who struggle are more likely to seek help and less likely to hide in frustration (Kelada et al., 2018; Looi et al., 2015). Coercive measures should not be a frequent tactic used in psychiatric institutions, as is the wish of many patients (Looi et al., 2015). This might increase stress and the urge to self-harm. Those who struggle with self-harm should find activities that work for them in distracting from and resisting the desire to hurt themselves (Stänicke et al., 2020). Finding other activities to do before self-harm may allow time for the urge to pass.

Awareness and understanding of cutting can help immensely in getting those who struggle the help that they need. There should be more discussions within families, friend groups, and perhaps even schools and workplaces. Understanding NSSI may make it less uncomfortable to talk about, which would likely lead to help-seeking. Additionally, psychiatric institutions need to focus more on providing gentle and loving care rather than stressful and coercive strategies. If psychiatric hospitals become a safer place, those who need help may be more willing to be admitted. Simple understanding and support can help those with NSSI and should therefore be part of self-harm treatment plans.
References


Appendix

Figure 1

Similarities Between NSSI and Substance Addiction

Note. This infographic gathers similarities found in terms, descriptions, and recovery between non-suicidal self-injury and addiction to substances. Adapted from “Self-injury Recovery: A Person-Centered Framework,” and “Recovery Coaching in and out of Emergency Departments: An Overview of the Connecticut Community for Addiction Recovery’s (CCAR) Emergency Department Recovery Coaching Program” (Lewis & Hasking, 2021; Stanojlović et al., 2022).