

Non-suicidal self-injury (NSSI) across the lifespan

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Abstract

Although increasingly well documented and understood in adolescence, the study of NSSI in children, adults, and the elderly is thin and gives rise to far more questions than answers. This chapter is intended to summarize what is known about NSSI etiology, risk and protective factors, consequences, trajectory, and treatment in three distinct developmental stages: childhood, adolescence, and adulthood. Because of the general paucity of research about NSSI in childhood and adulthood, there exists noticeable unevenness across sections that also serve to highlight need for knowledge. It concludes that better understanding of the ways in which elemental NSSI characteristics change over time is essential. Some of the core areas for study are: variation in NSSI experience, consequences, treatment strategies, and recovery processes with regard to age of onset and duration.

Key words:

Childhood

Adolescence

Adults

Elderly

Lifespan

Development

Background

Understanding non-suicidal self-injury (NSSI) across the lifespan requires comprehension of the interaction between developmental periods and self-injury behaviors. Such interactions are, however, woefully understudied to date. Although increasingly well documented and understood in adolescence, the study of NSSI in children, adults, and the elderly is thin and gives rise to far more questions than answers. This chapter is intended to summarize what is known about NSSI etiology, risk and protective factors, consequences, trajectory, and treatment in three distinct developmental stages: childhood, adolescence, and adulthood. Because the extant NSSI-related research seldom accounts for developmental variation within studies and because of the general paucity of research about NSSI in childhood and adulthood, dividing the chapter into these developmental areas will result in noticeable unevenness across sections that also serve to highlight need for knowledge. The chapter is generally organized by developmental period and includes a brief description of all developmental-period specific information available to date. Where there is no developmentally-specific information available, as is true for treatment approaches and NSSI consequences, a general review is provided at the end of the chapter.

Were developmental period the only factor in understanding NSSI trajectories, the research roadmap might be quite straight forward. However, as Nock and Favazza (2009) have so aptly pointed out, understanding of NSSI is complicated by the fact that what exactly constitutes NSSI a) is sometimes murky, b) is often but not always associated with a variety of other psychiatric issues, some of which may be quite pronounced, and c) appears in a variety of forms that vary by severity and periodicity. Because of this, identifying the contribution of developmental stage to NSSI trajectories is anything but clear. For the purpose of this review, we adopt the taxonomy

first articulated by Favazza and Simeon (1995) and more recently updated by Nock and Favazza (2009). In this taxonomy, the vast majority of those who engage in NSSI practice what is termed *common* NSSI. This form of self-injury includes individuals for whom NSSI is a) compulsive (i.e., ritualistic and rarely premeditated such as hair pulling or trichotillomania), b) episodic (i.e., every so often and with no identification as someone who self-injures), and c) repetitive (i.e., performed on a regular basis and with identification as someone who self-injures). They further specify that self-injury among those who perform it repetitively can be mild, moderate, or severe depending on the lethality of the injuries. Although common NSSI can and does co-occur with other DSM classifiable mental illnesses, such as depression or anxiety, it is also increasingly evident in individuals with no other mental illness. Indeed, in a recent study of NSSI in college populations, 44% of those reporting NSSI did not show symptoms of DSM IV classifiable disorders (Gollust, Eisenberg, & Golberstein, 2008).

In addition to common NSSI, Favazza and Nock (2009) identify two other categories: *stereotypic* and *major* NSSI. *Stereotypic* NSSI refers to high frequency repetitive self-injury often without implements and most frequently among individuals with developmental disabilities or neuropsychiatric disorders. It typically results in only minor physical injury (e.g., head banging or self-biting). *Major* NSSI refers to self-injury performed very infrequently (perhaps even once) but with very serious physical consequences (e.g., eye enucleating or castration). Major NSSI occurs most often among individuals with psychotic disorders, or as a result of serious drug or alcohol induced psychological impairment. This chapter is focused primarily on common NSSI. Where the literature is focused on stereotypic or major NSSI, this will be indicated.

NSSI in Children

Prevalence and etiology

NSSI in children is most often identified in those with existing psychiatric disorders such as schizophrenia (Green, 1967, 1968), Tourette's syndrome (Mathews, Waller, Glidden, Lowe, Herrera, Budman et al., 2004; Robertson, 1992) and Lesch-Nyhan syndrome (Anderson & Ernst, 1994; Hall, Oliver, & Murphy 2001; Putnam & Stein, 1985; Simpson & Porter, 1981).

Prevalence rates of NSSI within each of these specific populations are unknown. Though rare in infancy, self-injury does sometimes occur in infants and toddlers with severe mental retardation and/or autism. The most severe forms occur in children who cannot speak and has been theorized to be attributable to "self-offensive" acts that result from tension related to a child's experiences of their internal and external worlds (Shentoub & Soulairac, 1961).

Estimates for prevalence rates of NSSI among community populations of children below the age of 12 are virtually non-existent. When prevalence rates of NSSI for children are provided, they are most often reported within the broader context of "self-harm" which includes suicide-related thoughts or behaviors as well. Only two studies identified for this review included prevalence data for children below the ages of 11 years and both of these use the broader self-harm definition or are limited by a methodology likely to distort the actual prevalence rate. One of these studies is based on results of a survey of over 10,000 children, parents, and teachers and is documented in a report on the prevalence and characteristics of self-harm in the United Kingdom (UK) published by the Social Care Institute of Excellence (Meltzer, Gatward, Goodman, & Ford, 2001). This study found a self-harm prevalence rate among children ages five to ten to be 1.3%. More specifically, it was 0.8% among children with no known mental health difficulties, 6.2% among children with a diagnosed anxiety disorder, and 7.5% in cases where children had been diagnosed with chronic mental distress (e.g., conduct or hyperkinetic

disorders). The lowest rate (0.4%) was among five to seven-year-old girls and the highest (2.1%) was among eight to ten-year-old boys. In a report issued by ChildLine (Dow, 2004) based on demographic analyses of calls coming into a helpline about self-harm (suicidal intent is not differentiated), only 2% of the calls were from children between the ages of five and eleven. Unfortunately, while informative, this study is limited by the bias built into the sample and thus, unlikely to provide any meaningful estimate of prevalence (Dow, 2004).

Although estimates of NSSI prevalence in child populations are unavailable, studies among older populations which document age of onset find that 5.1% - 24% of self-injurious respondents report initiating NSSI under the age of eleven (Heath, Toste, & Beetam, 2006; Ross & Heath, 2002; Whitlock, Eckenrode, & Silverman, 2006). Studies of school faculty and staff also suggest that a significant number of children engage in NSSI – some starting as early as kindergarten (Heath et al., 2006; Purington, Whitlock, & Pochtar, 2009).

Developmental considerations

Unfortunately, other than age of onset, very little data exist to inform the understanding of how NSSI characteristics in otherwise normally developing children might differ from those of adolescents or adults. The study of self-harm (inclusive of suicidality) in the UK cited above (Meltzer, Gatward, Goodman, & Ford, 2001) did explore risk factors for child self-harm and found that risk was heightened by a) increases in the number of stressful life events experienced, b) presence of poor parental mental health, c) presence of family discord and dysfunction, and d) presence of frequent punishment. Although this list bears strong similarity to the list of risk factors for adolescents and adults, the short- and long-term emotional, mental, behavioral, and social impact of accumulating risk and later NSSI may be different from one age group to

another because of differences in developmental capacity, tasks, and processes. For example, because children generally are not capable of sophisticated abstract thinking, planning, and long-term perspective (Piaget, 1964) and because they tend to over attribute external events to themselves (Shaw, 2000), they are typically more emotionally reactive to early childhood trauma and adversity than they would be to similar events had they occurred later in life. Children also tend to overestimate the role they play in causing external events to happen (Shaw, 2000). Negative events, particularly as they accumulate, are processed by an amygdala (responsible for emotion identification and response) not yet in full dialogue with the cerebral cortex (responsible for higher order cognitive processing). As a result, children are likely to look for a concrete cause for negative events and to identify themselves as key causal agents. In addition, they often lack the experience needed to appreciate that the pain, which they and those they love may be experiencing as a result of difficult or traumatic life events or transitions, will pass with time. These developmental differences may lead to a behavioral response, such as NSSI, disproportionate to that evidenced by adolescents or adults faced with similar contextual stimuli.

Although existing evidence suggests that, as in adolescence and adulthood, self-injury in children is likely used as a means of expressing and mitigating emotional distress, there are no studies of NSSI function in normally developing children. Since NSSI is relatively uncommon in childhood, even among children experiencing severe or multiple risk factors, early adoption and utilization of NSSI as a coping mechanism suggests that physiological vulnerabilities and/or early exposure to NSSI may also play a role in age of onset. It is not yet known whether early onset NSSI has characteristics and trajectories that differ from NSSI that has its onset during adolescence or adulthood. It seems reasonable to hypothesize, for example, that early NSSI

onset may lead to more severe and intransigent forms of NSSI over time and might be comorbid with more severe or numerous mental health issues than in adolescent or adult NSSI trajectories.

NSSI in Adolescents and Young Adults

Prevalence and etiology

Because NSSI is believed to be most common among adolescents and young adults, most NSSI research is conducted among these groups – primarily with youth in secondary schools and college settings. For example, the small but steadily growing body of NSSI scholarship consistently shows an average age of onset between 11-15 years, depending on the sample parameters such as current age of sample population (Muehlenkamp & Gutierrez, 2004; Kumar, Pepe, & Steer, 2004; Jacobson & Gould, 2007; Nixon, Cloutier, & Aggarwal, 2002; Nock & Prinstein, 2004; Klonsky & Muehlenkamp, 2007). Variation in age of onset tends to be normally distributed with about 25% indicating starting between the ages of 10 – 14, 27% between 15 – 16, and 38.6% between 17 – 24 (Whitlock, Eckenrode, et al., 2006). Duration of NSSI is understudied, but where it has been studied tends to vary by population and age of onset (Heath, Toste, Nedecheva, & Charlebois, 2008). For example, in their study of college students, Whitlock and colleagues (2006) found that among individuals with repeat NSSI who reported no NSSI in the past year and no intention of practicing NSSI again, the majority (79.8%) reported stopping NSSI within five years of starting and 40% reporting stopping within one year of starting.

Lifetime prevalence of NSSI ranges from 12% to 37.2% in secondary school populations (see Jacobson & Gould, 2007 and Rodham & Hawton, 2008 for reviews) and 12% to 38% in young adult populations (Gratz, Conrad, & Roemer, 2002; Heath et al., 2008; Polk & Liss, 2007; Whitlock, Eckenrode, et al., 2006). Studies typically find that about 6%-7% of

adolescents and young adults who report current NSSI (NSSI in the past year /6 mos) (Gollust et al., 2008; Jacobson & Gould, 2007; Whitlock, Eckenrode, et al., 2006) and that of all youth reporting any NSSI, over three quarters report repeat NSSI (>1 episode), about half report between two and ten lifetime incidents, and 20% -25% report more than ten lifetime incidents. Overall, about a quarter of all adolescents and young adults with NSSI history report practicing NSSI only once in their lives (Heath et al., 2008; Whitlock, Eckenrode, et al., 2006). However, at least one study has shown even a single NSSI episode to be significantly correlated with a history of abuse and with comorbid conditions such as suicidality and psychiatric distress (Whitlock, Eckenrode, et al., 2006), suggesting that there may be a group of adolescents in which a single incident of NSSI serves as a risk indicator for other risk behaviors or pathology.

The most common NSSI forms reported by adolescents and young adults include scratching, cutting, punching or banging objects with the conscious intention of self-injury, punching or banging oneself, biting, ripping or tearing the skin, carving on the self, and burning oneself (Briere & Gil, 1998; Heath et al., 2008; Klonsky, 2007a, 2007b; Laye-Gindu & Schonert-Reichl, 2005; Whitlock, Eckenrode, et al., 2006). While these forms are those most commonly reported, they are not the only forms of NSSI practiced among adolescents and young adults. Studies of NSSI forms used in adolescent and young adult populations indicate that a wide range of forms are used including trichotillomania, wound interference, embedding, bone breaking (or attempted bone breaking), and ingesting caustic substances (Klonsky, 2007a, 2007b; Laye-Gindu & Schonert-Reichl, 2005; Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007; Nock & Prinstein, 2004; Walsh, 2006; Whitlock, Eckenrode, et al., 2006). The majority of young people reporting repeat self-injury also report using multiple methods to injure. In one study of those who reported repeat NSSI, 70% reported using multiple methods with about half

reporting using two to four methods. Further, those reporting repeat NSSI also were more likely to report injuring multiple body locations (Whitlock, Eckenrode, et al., 2006).

NSSI practices can be highly variable depending on the nature and degree of engagement in NSSI (i.e., compulsive, episodic, or repetitive) and on the context within which it is performed. For example, in a recent study of college students, most of those who practice NSSI (63.7%) report injuring in private, 10.2% indicated preferring a particular room or place, and 8.8% report injuring in the presence of others and another 18% report ever having self-injured while under the influence of drugs or alcohol (Whitlock, Muehlenkamp, et al., 2010). Notably, in one study of 30 adolescents and young adults asked to provide real time data on NSSI and suicide thoughts and actions over a 2 week period reported thinking about NSSI in conjunction with drugs or alcohol 15% - 20% of the time but actually engaging in NSSI in conjunction with drugs and/or alcohol only 3% of the time (Nock, Prinstein, & Sterba, 2009). The Whitlock, Muehlenkamp, et.al (2010) study also found significant gender variation in NSSI patterns with males being significantly more likely than females to report injuring in the presence of others, letting others cause injuries, injuring another person as part of an NSSI routine, and injuring while intoxicated. Males also were more likely than females to report intoxication during an instance when they injured themselves more severely than intended (Whitlock, Muehlenkamp, et al., 2010). In a similar vein, a survey of NSSI trends in secondary schools with school counselors, social workers, and nurses as respondents suggested that there may be various contexts in which NSSI is initiated and maintained. For example, while most of the respondents (81.5%) indicated being aware of students conforming to the individuals who fit the profile of the private individual injurer who tells few people if anyone at all, 69.4% of the respondents indicated awareness of individuals who injured and openly shared this fact with others. Another

25.9 % indicated having observed youth who injure alone but who show or tell others about their injuries share their injuries as a means of being part of a group and another 17.2% reported that their school contained groups of youth who injure together as a part of group membership (Purington et al., 2009).

Similarly, the extent of body damage incurred as a result of NSSI practices varies considerably. In one study, 21% of all young people with NSSI experience reported injuring themselves more severely than intended and 47% of these reported multiple episodes of injuring themselves more severely than intended. Over a third (35.3%) of those with NSSI experience in this study indicated that they should have been seen by a medical professional for their injury but only 6.5% reported actually seeking medical attention (Whitlock, Eckenrode, et al., 2006). Similar findings have been reported in a large study of secondary school student self-harm in the UK where 12.6% of adolescents reporting any self-harming behavior reported seeking medical attention (Hawton, Rodham, Evans, & Weatherall, 2002). A better understanding of the severity and associated lethality of NSSI based on clinical assessment of presenting NSSI characteristics would be immensely helpful in medical, psychiatric, and community settings where quick assessment of safety and treatment needs is warranted.

Empirical study of primary NSSI characteristics suggests that NSSI can be grouped or classified by clinical features in ways that may predict risk for other psychiatric disorders, risk behaviors, and suicidality. For example, using latent class analysis techniques, Klonsky and Olinio (2008) identified four classes differentiated by NSSI form, function, and descriptive feature (e.g., time elapsed from consideration to execution of NSSI, pain, and whether one injures alone or with a group). They found that when compared to other classes, the class with the greatest comorbidity with suicidality was characterized by forms capable of causing more

serious physical damage (e.g., cutting), a later age of onset, and primarily composed of females who injure with some degree of premeditation, in private and who do so primarily to regulate negative affect. The other most severe class was characterized by forms capable of causing serious physical damage, though through a greater variety of forms than the former class, and for social reasons as much as with the intention of regulating negative affect. Also using a latent class analysis approach to classification of NSSI characteristics in relation to psychological distress, suicidality and disordered eating, Whitlock, Muehlenkamp, and Eckenrode (2008) identified three classes differentiated by four basic NSSI characteristics: lifetime NSSI frequency, the type of form used, the number of forms employed, and gender. Like Klonsky and Olini (2008), they found that the highest severity class (i.e., that most likely to report suicidality, disordered eating, and psychological distress) were composed primarily of females using multiple NSSI forms capable of causing a high degree of tissue damage, and who reported over 11 lifetime NSSI incidents. They also found that, compared to the other two groups, this group was more likely to report having inflicted more damage than intended, having friends who self-injured, perceiving that NSSI interferes with their life, and possessing a history of sexual, emotional, or physical abuse. Although more study of how presenting NSSI characteristics can be employed to quickly assess risk for physical damage as a result of NSSI and of risk for suicidality and other psychiatric disorders is warranted, these two studies do support clinical contention that there are important clinical differences in NSSI meaning, lethality, and effective treatment approaches (Conterio & Lader, 1998; Muehlenkamp, 2005; Walsh, 2006).

The study of initial motivation for NSSI adoption is important in light of the widespread belief that NSSI has increased in prevalence and has spread into populations within which it was previously undocumented or in which it was believed to occur at very low frequency. Perhaps

reflective of the shifting set of dominant contributors to NSSI, studies of initial motivation are not consistent in their findings about why people initiate NSSI. For example, in a study of Canadian college students, Heath and colleagues (2009) find that social motivations were common in NSSI initiation and maintenance. Similarly, a UK-based study of adolescent self-harm in school-based populations found that being associated with the “Goth” subgroup (youth identifying with “gothic” style dress and comportment) was significantly associated with adoption of self-injurious behavior in the study population (Rutledge, Rimer, & Scott, 2008; Young, Sweeting, & West, 2006). Even when social influences are present, however, studies also find a majority of respondents (adolescent, secondary school, and college) identify “accidental discovery” or an impulsive response to overwhelming negative affect as the primary reason for initiating NSSI (Heath, Ross, Toste, Charlebois, & Nedecheva, 2009; Whitlock, Eckenrode, et al., 2006).

Although an important means of testing the practice-based observation that NSSI may be spreading into community populations through exposure to media and friendship groups, asking respondents to consciously identify causes for NSSI adoption is limited by a variety of methodological issues and biases. In other words, it often is difficult for individuals to consciously link possible external exposure (e.g., through media or general knowledge that NSSI is practiced by peer groups) to the personal motivation for adopting the practice. Studies of contagion among adolescents in clinical settings, however, demonstrate the tendency for NSSI to spread. For example, in an empirical study of social contagion in clinical settings, Walsh and Deorfler (2009) found that NSSI occurs in statistically significant clusters, can be triggered by staff departures in residential settings, and can be mapped using a sociogram across adolescents in a special education school. They also identified promising approaches for preventing social

contagion in group settings including encouraging youth to discuss NSSI with adults but not with peers and requiring the covering of wounds to prevent triggering the behavior in others (Walsh & Doerfler, 2009).

Variation in reported sources of inspiration for initiating NSSI also may be linked to the possibility that important, and dynamic, variations in the social meaning and practice of NSSI exist – particularly among middle and high school populations (Prinstein, Guerry, Browne, & Rancourt, 2009). Although a lifecourse approach to the study of NSSI acknowledges potentially important variation in individual NSSI trajectories, similar study of variation in social forms of NSSI is warranted. For example, while studies of NSSI on college campuses often identify individuals who practice NSSI in private and primarily as a means of regulating negative affect or dissociation, some studies are surfacing different NSSI forms. For example, Young and colleagues' (2006) study of self-harm in Goth populations suggests that, for youth who identify with Goth (or “emo”) subgroups, self-injury may be practiced as a form of social bonding or membership. This self-injury may or may not conform to the epidemiological characteristics in NSSI form, frequency, and function associated with the profile of someone engaging in NSSI alone. Similarly, in a study of NSSI in secondary school settings as observed by New York State secondary school nurses, social workers, and counselors, respondents identify Goth subgroups as a common group to evidence NSSI (Purington et al., 2009). Because of the difference in primary NSSI function and rituals among these groups, it is quite likely that variation in detection, prevention, and treatment approaches will also be warranted. Indeed, in his description of protocols likely to be effective in secondary school settings, Walsh (2006) indicates that assessing for group involvement is an important step of intervention protocols. Such a focus is needed as NSSI may carry fundamentally different risks for individuals participating in NSSI for

social versus individual emotion regulation purposes, and effective intervention is likely to vary based on level of group involvement.

In contrast to research on NSSI initiation, research on NSSI function is far more consistent. In general, function models of NSSI break down into three basic categories: psychological, social, and biological. Psychological models are typically described using the four function model first identified by Nock and Prinstein (2004) as: *automatic positive reinforcement* (i.e., NSSI is motivated by the desire to feel something in the wake of dissociation or to generate a rush of energy), *automatic negative reinforcement* (i.e., NSSI is motivated by the desire to escape negative affect reinforced by negative internal states such as anger or grief), *social positive reinforcement* (i.e., NSSI is motivated by the desire to gain attention or access to resources), and *social negative reinforcement* (i.e., NSSI is motivated by the desire to avoid punishment from others). While not all researchers conceptualize or describe psychological function using these four categories (see Klonsky for a review, 2007a), a broad base of empirical evidence suggests that one of the primary functions of NSSI is to avoid psychological pain, to express psychological distress, and to refocus one's attention away from negative stimulus (Hawton & Rodham, 2006; Klonsky, 2007a; Nock & Prinstein, 2004, 2005; Rodham, Hawton, & Evans, 2004; Selekman, 2009; 2006a, 2006b; Selekman & Shulem, 2007; Walsh, 2007). In keeping with this, Andover, Pepper and Gibb (2007) found that individuals with a NSSI history tend to utilize avoidant coping strategies significantly more often than their non self-injurious peers and that female, but not male, self-mutilators endorsed using problem-solving and social support seeking strategies less often than those without a NSSI history. This is particularly resonant with adolescents' responses to function questions who tend to cite reasons directly linked to emotion regulation, an area of concentrated development during adolescence. Such

responses include: “to cope with negative feelings,” “to relieve stress,” “to deal with frustration,” “to relieve pain,” “to feel something,” “to change emotional pain into physical pain,” and “to get a rush or surge of energy” (Chapman, Gratz, & Brown, 2006; Jacobson & Gould, 2007; Klonsky, 2007a; Laye-Gindhu & Schonert-Reichl, 2005; Nixon et al., 2002; Nock & Prinstein, 2004; Whitlock, Muehlenkamp, et al., 2010).

The fact that adolescents, with whom most NSSI function studies have been conducted, also tend to indicate reasons for NSSI such as, “so someone would pay attention,” and “to get a rush or surge of energy” underscore the role of both social and biological roles in maintaining NSSI. Social function models point to the importance of viewing NSSI as a behavior undertaken to fulfill multiple functions simultaneously, many of which are fundamentally interpersonal in nature. In addition to being identified as factors that predispose or place at risk adolescents who ultimately adopt NSSI as an outlet for negative emotion (Prinstein et al., 2009; Yates, 2004), research finds interpersonal factors also make significant contributions to NSSI maintenance (Favazza, 1998; Nock & Prinstein, 2004; Prinstein et al., 2009; Yates, 2004).

Lastly, biological models of function tend to focus primarily on the role of NSSI in the regulation of endogenous opioids. The homeostasis model of NSSI, for example, suggests that people who self-injure may have chronically low levels of endogenous opioids. In this model, NSSI is fundamentally remedial – it represents an attempt to restore opioids to normal levels. Low levels of opioids may result from a history of abuse, trauma or neglect or may be biologically endowed through other processes (Sher & Stanley, 2008). These models are helpful in deepening understanding about how and why NSSI becomes addictive (Nixon et al., 2002; Winchel & Stanley, 1991).

Although current function models are silent on the alchemic particularities of psychological, social, and biological models in promoting and maintaining NSSI, there does exist broad agreement that NSSI likely fulfills multiple functions simultaneously and serves as an outlet behavior for a variety of psychiatric conditions such as depression and post-traumatic stress disorder (Briere & Gil, 1998; Brown, Comtois, & Linehan, 2002; Chapman et al., 2006; Claes, Vandereycken, & Vertommen, 2006; Figueroa, 1988; Himber, 1994; Klonsky, 2007a; Laye-Gindhu & Schonert-Reichl, 2005; Nixon et al., 2002; Nock & Prinstein, 2004, 2005; Osuch, Noll, & Putnam, 1999).

Demographic predictors of NSSI in adolescents and young adults

Perhaps the most salient theme to emerge from existing literature is that there is no one “self-injurer” profile. Difficulty identifying a profile may be due partly to the widely varied motivations reported for initiating and engaging in NSSI. Within clinical populations, those who self-injure tend to possess high levels of depression and anxiety and comparatively few coping mechanisms (Haines & Williams, 2003). However, as Strong (1998) notes, those who self-injure are also found in “the best neighborhoods and private schools, in colleges and in the workplace” and are “often bright, talented and creative achievers – perfectionists who push themselves beyond all human bounds, people-pleasers who cover their pain with a happy face” (p.18). She suggests it is more common than assumed for someone engaging in NSSI to be high functioning and they are likely to go undetected by the service system.

Although most research finds adolescent and young adult females to be 1.5-3 times more likely to self-injure than their male peers (Conterio & Lader, 1998; Favazza, 1999; Purington et al., 2009; Whitlock, Eckenrode, et al., 2006), other empirical research suggests that the gender

gap may be narrower than assumed (Briere & Gil, 1998; Deiter, Nicholls, & Pearlman, 2000; Dulit, Fyer, Leon, Brodsky, & Frances, 1994; Galley, 2003; Heath et al., 2008; Martin, Rozanes, Pearce, & Allison, 1995). The difficulty in accurately assessing the sex distribution of NSSI may arise from the variation in which males and females engaging in NSSI are found, how they self-injure, and how likely they are to seek treatment (Alderman, 1997; Connors, 2000). The fact that no gender differences were found in individuals reporting a single NSSI incident (Whitlock, Eckenrode, et al., 2006) and that gender differences emerge in class analyses of NSSI (Klonsky & Olino, 2008; Whitlock et al., 2008) and in rituals and practices (Whitlock, Muehlenkamp, et al., et al., 2010), suggests that while a gender gap may exist in NSSI prevalence, there may also exist important differences in the forms and contexts within which NSSI is practiced (Purinton et al., 2009). In light of the gendered patterns evident in disorders similar to NSSI, such as suicidal behavior and disordered eating (Lewinsohn, Rohde, Seeley, & Baldwin, 2001; Lewinsohn, Seeley, Moerk, & Striegel-Moore, 2002), it is likely that analysis of gender differences in NSSI will surface gender-related distinctions with implications for clinical detection and treatment and prevention approaches.

Finds on the association between NSSI and ethnicity in adolescents and young adults are inconclusive. Although a small number of studies comparing Caucasian to non-Caucasian youth show significantly higher rates among the former (Muehlenkamp & Gutierrez, 2004, 2007; Whitlock, Eckenrode, et al., 2006; Whitlock, Purinton, et al., 2009), other studies show similarly high rates in minority samples (Favazza, 1999; Laye-Gindhu & Schonert-Reichl, 2005; Whitlock & Knox, 2007) or only modest differences between Caucasians and Asian students (Whitlock, Eckenrode, et al., 2006). Although parallels between NSSI and eating disorders have led some to speculate that NSSI is likely to be most prevalent among middle and upper income

individuals, no existing research supports this contention. Indeed, other researchers have reported NSSI to exist in low income populations (Nixon, Cloutier, & Jansson, 2008; Whitlock, Eckenrode, et al., 2006). Further, studies of NSSI in college students have revealed no socioeconomic (SES) differences (Whitlock, Eckenrode, et al., 2006; Whitlock, Muehlenkamp, et al., 2010). There is some evidence linking NSSI to sexual orientation such that incidence of NSSI is elevated among those who report exclusive homosexual attraction and some same-sex attraction (Whitlock, Eckenrode, et al., 2006) and particularly prevalent among those with bisexual or questioning sexual orientation statuses (Whitlock, Eckenrode, et al., 2006; Whitlock, Muehlenkamp, et al., 2010).

Risk and protective factors

Risk factors are conditions that increase the likelihood of a negative outcome. In this case, these are conditions that precede and directly or indirectly contribute to the onset and maintenance of NSSI. Protective factors are conditions that effectively buffer people from a negative outcome. Like risk factors, protective factors may precede or co-occur with NSSI and may directly or indirectly influence development or continuation of NSSI. Although relatively easy to identify general contributors to NSSI, discerning the nature of the particular relationship between risk and protective factors and NSSI is more art than science; it is far easier to identify salient contributors to any given outcome in retrospect than it is to predict an outcome given a potential set of contributors. This is largely due to the complex interaction between environment, personality, and developmental processes (typically broken into discrete though related domains: physiological, social, emotional, moral, cognitive, and spiritual).

Understanding of the origins and evolution of common forms of NSSI in adolescence is also complicated by the fact that NSSI is increasingly regarded as both a potential indicator of mental illness, when present at clinical levels (which have yet to be agreed-upon), as well as one of several possible expressions of what could be regarded as normative adolescent risk taking and culture (Clarke & Whittaker, 1998; Favazza, 1996; Young et al., 2006). Indeed, the complexity, multitude, and rapidity of developmental changes during adolescence provide a uniquely fertile environment for the dynamic interplay between risk and protection – with behavior results not always predictable at the outset. In a thorough and recent review of the literature, Klonsky and Glenn (2009) synthesized and shared what is known about NSSI psychosocial risk and protective factors. As they note, extant literature generally centers around four broad categories of risk to date: emotion dysregulation (e.g., negative emotionality, dissociative experiences, and alexithymia), self-derogation, childhood adversity (e.g., familial neglect, child abuse, attachment difficulties), and comorbid or antecedent psychiatric disorders (e.g., borderline personality disorder, anxiety, depression, eating disorder, and substance abuse) (see Klonsky & Glenn, 2009, for a review).

Within these categories, individual level risk factors (temperament, comorbid mental illness, and physiological vulnerability) have commanded the greatest empirical attention. Exploration of environmental contributors to NSSI tend to focus on the role of family dynamics and functioning and of childhood experiences of abuse (particularly sexual abuse), neglect, and trauma and there exists little controversy about the contributions of these to later development of NSSI (typically in adolescence though sometimes earlier or later) (see Yates, 2004 and Jacobson & Gould, 2007 for a thorough review of this literature). Exploration of the role that emotion reactivity and management play in NSSI has also proven fruitful. Though nascent, extant studies

confirm theoretical suppositions that poor emotion regulation skills in conjunction with higher levels of emotional reactivity may be a risk factor for engagement in NSSI (Linehan, 1993; Najmi, Wegner, & Nock, 2007; Nock, Wedig, Holmberg, & Hooley 2008).

Outside of these broad areas, there exists a smattering of research on the contributions of various external settings and processes to the onset and continuation of adolescent NSSI. Though limited, studies of peer groups (Heath et al., 2009; Prinstein et al., 2009; Yip, Ngan, & Lam, 2002; Young et al., 2006), media and Internet influence (Murray & Fox, 2005; Murray, Warm, & Fox, 2005; Whitlock, Powers, & Eckenrode, 2006; Whitlock, Purington, & Gershkovich, 2009), and social and cultural trends and pressures related to body modification and objectification (Favazza, 1996; Stirn & Hinz, 2008; Young et al., 2006) all find positive and significant associations with NSSI.

Studies of the link between NSSI and other mental health related disorders suggest that the presence of an existing mental illness or risk condition (e.g. excessive alcohol use or disordered eating) may heighten the risk of NSSI onset among adolescents. Studies of NSSI comorbidity show strong positive correlations to major depressive disorder, borderline personality disorder, alexithymia, anxiety disorder, substance use disorders, post traumatic stress disorder, smoking, antisocial behavior, and disordered eating (Alderman, 1997; Connors, 2000; Conterio & Lader, 1998; Claes, Vandereycken, & Vertommen, 2001; Favazza, DeRosear, & Conterio, 1989; Holmes & Nadelson, 2000; Jacobs & Isaacs, 1986; Jacobson, Muehlenkamp, & Miller, 2009; Kumar et al., 2004; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006; Sansone & Levitt, 2002; Ross, Heath, & Toste, 2009; Tantam & Whittaker, 1993). Although much of this research reflects comorbidity in clinical populations, more recent studies of these relationships in community populations of youth document similar patterns, though at lower

levels of association (Gollust et al., 2008; Ogle & Clements, 2008; Whitlock, Eckenrode, et al., 2006).

In many ways, the stage of life we identify as adolescence is, in and of itself, a risk factor for NSSI. Indeed, the study of NSSI risk and protective factors in adolescence is incomplete without adequate reckoning of the role development plays in making NSSI an attractive option for adolescents. This also is important since adolescence is the most common period of onset for most major mental disorders (Kessler, Berglund, Demler, Jin, Merikanagas, & Walters, 2005). Adolescence, regardless of its exact boundaries, is a distinct stage of life from both childhood and adulthood. It is the life period in which childhood gives way to focus on development of the capacities required for adulthood (Erickson, 1968; Havighurst, 1972), and is the only period to rival early childhood in the complexity and rapidity of change. Unlike early childhood, in which the extent of growth is obvious, much of the development occurring in the adolescent years occurs within the seemingly invisible domains associated with psychological, social, moral, cognitive, sexual, and spiritual maturity. Not only does full maturity mandate robust development in each of these areas, it requires integration between them. Maladaptive behaviors, such as NSSI, may arise during this time as individuals use a variety of strategies for reaching and maintaining emotional equilibrium. This may help to explain the relatively short duration of NSSI activity among otherwise well functioning individuals (Whitlock, Eckenrode, etc., 2006).

Moreover, since development is neither linear nor simply concurrent, asynchronistic development during the adolescent years, when brains, bodies, and sense of self are undergoing profound change, is more the norm than not. For example, lab studies of decision making consistently show few age differences in cognitive processes relevant to risk taking and decision making between adolescents and adults in laboratory settings (Steinberg & Cauffman, 1996).

These similarities, however, dissipate in neurological studies which do show significant variation in underlying biological substrates associated with neurological processing of risk by age (Casey, Getz, Galvin, 2008; Tottenham, Galvin, Voss, Glover & Casey, 2008) and in real life settings when intense contextual stimuli influence self-regulation processes – all of which are still undergoing development in the adolescent period. When novelty and sensation-seeking impulses, both of which increase dramatically at puberty, are coupled with low self-regulatory competence, which does not fully mature until early adulthood, there exists psychologically fertile ground for seemingly aberrant behavior (Steinberg, 2004). When these conditions are accompanied by psychosocial factors which frustrate or delay healthy developmental processes, such as early childhood trauma, biological imbalances or difficult temperamental dispositions, overly demanding or challenging environments, and/or persistent inconsistency in the nature of the demands of various social environments (e.g., family, peers, school, community), there are likely to be detrimental consequences (Lerner & Steinberg, 2004). Thus, the brain-behavior-social context interactions that occur during this period have profound implications for emotion and motivation (Dahl, Spear, Kelley, Shaikh, & Clayton, 2004) and often give rise to behaviors that appear highly clinically significant but which may be time limited and/or part of a normal developmental trajectory.

It is during this period that less than healthy methods of coping, such as self-injury, emerge. As Conterio and Lader (1998) so aptly point out, self-injury may serve as an outlet for the “growing pains” of adolescence through its capacity to give form and expression to discomfort with physical changes and sexual impulses, confusion about the twin need for autonomy and connection, the need to perform perfectly in all social situations, and the need for psychological validation. NSSI may also be, as Favazza (1996, 2009) has so beautifully

articulated, a physical and metaphorical attempt to integrate spirit, body, and psyche. An NSSI episode may be thus experienced by some as a transcendental act, one capable of conferring authenticity and - even if fleetingly - physical, mental, emotional, and spiritual equilibrium. Its particular attractiveness to adolescents, then, may lie in its capacity to serve as a vehicle for simultaneous expression of pain and a striving toward wholeness – both of which are abundant during the adolescent period.

NSSI in Adults

Although popularly branded as the “newest teen epidemic” (Welsh, 2004) NSSI is neither new nor unique to the adolescent years. Some of the earliest NSSI cases appeared in the 18th century (Brumberg, 2006; Favazza, 1996) and often involved adults (largely women in their 20’s or 30’s) or male war veterans (New York Times, 1880, p. 2). Cases of “delicate self-cutting” were documented in the 1960’s and were most commonly identified among young women, primarily in their 20’s (Pao, 1969). Although seemingly rare, NSSI also has been documented in elderly populations (Parks & Feldman, 2006).

Despite its longstanding origins, empirical understanding of NSSI in adults is sorely lacking. What literature does exist on adult NSSI often is conducted on small or specialized populations, limiting generalizability. As a result, estimates of primary NSSI characteristics, such as prevalence, frequency, and form, are unavailable. Since so much of the adolescent NSSI literature includes young adults, it is not clear precisely what age group constitutes “adult” onset NSSI. However, since the literature in general is so thin, this section will include studies in which the sample is 18+ years and is not drawn from a community sample of college students.

Although reasonable to assume that NSSI in adulthood would share important features with NSSI in adolescence, such as function, comorbidity with other disorders, contextual risk factors, consequences, and treatment approaches, there may be important distinctions. For example, in light of the developmental integration and stability afforded adults in comparison to children and adolescents, where NSSI may serve as a coping mechanism in normally developing young people with transient deficits in emotion regulation, it seems likely that adults who employ NSSI may suffer from emotional and mental imbalances not linked to natural developmental processes. If so, NSSI in adults may signal comorbid mental illness and may be more difficult to effectively treat.

Very few studies report prevalence rates of NSSI in adults. One of the earliest studies, conducted by Briere and Gil (1998), reports on the results of two studies: one undertaken as part of a nationally representative study of trauma and its effects and the other as part of study of victimization history and trauma symptoms in multiple clinical samples. Using an NSSI item intended to assess a six month prevalence, they found that 4% of the general population sample reported ever engaging in NSSI and 0.3% reported often engaging in NSSI. Although they found no gender differences in the NSSI sample, they did find a link between any NSSI in the previous six months and childhood abuse. Among the clinical adult sample, 21% indicated at least occasional self-injury in the past six months while the corresponding figure for frequent NSSI was eight percent. Similar to the community sample finding, a history of sexual abuse predicted NSSI, though not other trauma history. There were no significant gender differences in NSSI history, though younger age predicted NSSI in both samples. Similar to adolescent studies, individuals in clinical samples reporting any NSSI were also more likely to report concomitant diagnoses of posttraumatic stress disorder, dissociative disorder, or borderline personality

disorder. In line with this, a study of NSSI prevalence rates among a sample of military recruits by Klonsky and colleagues (2003), found a 4% prevalence rate. The same study found that anxiety played a major role in adult NSSI.

In contrast to these US-based studies, a recent community sample study of Australian adults aged 18-30 documented a prevalence rate of 40.8% (Hasking et al., 2008). They found that over one-third of those who engaged in NSSI used one (37.5%) or two methods of NSSI (29.2%). The majority reported engaging in NSSI within the last year (36.0%), with a significant number reporting NSSI within the last month (15.2%).

Information on other NSSI characteristics in adult samples also is scarce. In the Briere and Gil (1998) study above, they found cutting, biting scratching, and punching to be the most commonly employed NSSI forms (endorsed by over 40% of the self-injurious sample). Hasking et al. (2008) found scratching and cutting to be the most common forms. Briere and Gil (1998) also found that rather than merely representing a psychological symptom, NSSI was most commonly undertaken as a means of regulating negative affect and dissociation. Similar to the function literature identified for adolescents, they conclude that NSSI may be best understood as a coping mechanism and best treated through use of strategies aimed at increasing and enhancing adaptive coping skills. Similarly, in a study of NSSI motivation in a clinical sample of adult inpatients at a freestanding tertiary care psychiatric hospital, Osuch, Noll, & Putnam (1999) found cutting, scratching, hitting, and burning to be the most common NSSI forms reported. Like studies conducted with adolescents, they found the primary motivation for NSSI to be related to affect regulation.

In another study based on a survey of individuals watching a daytime television program on NSSI and who responded to an invitation to complete a survey about their NSSI experience,

Favazza and Conterio (1989) found NSSI to be common among women in their mid to late 20's who first deliberately harmed themselves in early adolescence. Consistent with the severe class NSSI category identified by Whitlock and colleagues (2008), they found that the majority of the respondents who exhibited high lifetime NSSI frequency (>50 occasions) used cutting as the dominant NSSI form. These respondents also reported using multiple, potentially damaging forms such as burning and self-hitting. Also consistent was their finding that many of these women reported comorbid disorders, such as disordered eating, alcohol abuse, and suicidal behavior.

Studies of NSSI in elderly populations are virtually non-existent. Although there are studies of "self-harm" in the elderly, these are almost always focused primarily on suicide (Dennis, Wakefield, Molloy, Andrews, & Friedman, 2007; Hawton & Harriss, 2006; Pierce, 1987). In the one review article of NSSI in the elderly, Parks and Feldman (2006) identify the great need for research in this area. Once done, Parks and Feldman (2006) predict that studies are likely to find that although NSSI is uncommon in the elderly, risk factors such as dementia, depressive disorders, physical illness, and loss of a spouse all may contribute to NSSI onset. They further hypothesize that in contrast to adolescents and adults, NSSI function in elderly populations may stem from frustration and from deficits in the ability to communicate effectively with others – similar to the role NSSI is hypothesized to play in children with developmental difficulties that affect communication skills.

Consequences of NSSI: A lifecourse perspective

Studies of the consequences of NSSI are rare, largely because it is fundamentally longitudinal and, as of the time of this writing, there exists no published study designed to test

the longitudinal trajectories of NSSI. One exception is a six year longitudinal study of individuals diagnosed with Borderline Personality Disorder in which NSSI was measured at each time point. The McLean Study of Adult Development followed 299 participants, aged 18 to 35 with a BPD diagnosis, and found a 65% decrease in NSSI behaviors from baseline. At baseline, 81% of the participants reported engaging in NSSI within the previous two years, while only 26% of the participants reported engaging in NSSI at a six-year follow-up (Zanarini, Frankenburg, Hennen, et al., 2005). Whether this decrease in NSSI is unique to the population studied, regression to the mean following study entry, or represents a natural developmental decline in NSSI tendency is unknown but suggests that future inquiry along these lines may be fruitful.

Despite the limited evidence available to illuminate NSSI consequences, we do know that NSSI is correlated with a variety of adverse mental health conditions (see the “Risk and protective factors” section earlier in this chapter) and that the magnitude and duration of these associations vary by population studied (e.g., they tend to be stronger in clinical populations than in community population studies). Of these, the relationship between NSSI and suicide-related behavior is, perhaps, the most speculated about consequence to consider. That NSSI and suicidal behaviors are related is well documented and not in question at this point (Gardner & Cowdry, 1985; Muehlenkamp & Guitierrez, 2004; Walsh, 2006; Walsh & Rosen, 1988; Whitlock & Knox, 2007), but the nature of the relationship remains somewhat ambiguous. Most NSSI treatment specialists and scholars agree that in the vast majority of cases NSSI is utilized to temporarily alleviate distress rather than to signal the intention to end one’s life (Favazza, 1996; Tantom & Whitaker, 1992; Walsh & Rosen, 1988). Indeed, some see it as a highly functional alternative to suicide (Alderman, 1997; Strong, 1998). Thus, in its relation to suicide, NSSI

possesses an ambiguous, seemingly paradoxical, status as both a functional, albeit worrisome, means of sustaining life by decreasing strong negative affect while simultaneously serving as a potential harbinger for suicidal intent and attempts. This dual status suggests that efforts to discern variations in motivation and intent may be the most productive means of generating information useful in tailoring treatment guidelines, materials, and services. Although Walsh (2006) has argued that NSSI and suicide are entirely distinct psychological and behavioral phenomena, Joiner (2006) theorizes that some suicidal individuals acquire the capacity to engage in high lethality behavior (i.e., suicide) by engaging in increasingly severe NSSI over time. Assuming that suicidal behavior is a *consequence* of NSSI supposes a temporal relationship that has yet to be documented. If this assumption proves true, then the data would suggest that for some, NSSI serves as a harbinger of distress that, if left unmitigated, may lead people to consider or attempt suicide.

Although it is consistently documented that people with NSSI history are at a heightened risk for suicide related behaviors, it also is true that in at least two studies, the majority of those who engage in NSSI do not exhibit any suicidal behavior at all (Muehlenkamp & Guitierrez, 2004; Whitlock & Knox, 2007). Similarly, although NSSI is comorbid with a variety of other mental health related disorders, it also is true that a significant number of people report NSSI as a standalone behavior (Gollust et al., 2008). This fact suggests that there may be a variety of NSSI trajectories in which long-term consequences range from insignificant to highly lethal, depending on factors that have yet to be identified. Since mental disorders in childhood and adolescence are significant predictors of important social and health outcomes in adulthood, including educational attainment (Breslau, Lane, Sampson, & Kessler, 2008), financial earnings (Kessler, Heeringa, et al., 2008), marital instability (Kessler, Walters, & Forthofer, 1998), and substance

use (Merikangas, et al., 1998), better understanding the particular contributions of NSSI to subsequent mental health status is important.

Treatment of NSSI across the lifespan

Research on NSSI treatment, though an area of considerable importance, is still in its infancy. And, like much of the literature above, what little NSSI treatment study does exist is focused largely in adolescents (primarily clinical populations with higher NSSI severity than might be found in community populations). In a review of NSSI-focused treatment strategies, Muehlenkamp (2006) summarized promising strategies based on the inclusion of NSSI in some suicide-focused treatment models and its dominant function as an emotion regulation mechanism. She concludes that approaches utilizing largely cognitive-behavioral therapy (CBT) based techniques are likely to prove most efficacious in NSSI treatment. Because of the time-limited and structured coping skill building nature of the technique, she specifically identifies problem solving therapy and dialectical behavioral therapy as the most promising CBT-based candidates. Her review of studies utilizing each of these strategies with people with suicide and NSSI related behavior suggests that both may be efficacious under the right treatment conditions, but that neither has yet shown relative efficacy.

Review of the components likely to serve as the primary levers of change suggest that viewing the client as a partner in treatment, providing a structured treatment plan in a well defined time frame, focusing on development and applied practice of coping skills (behavioral interventions), and addressing cognitive distortion and negative core beliefs (cognitive restructuring) may be primary ingredients of change. However, as Muehlenkamp (2006) points out, one of the major shortcomings with the studies on which these conclusions are based, is that

it is hard to determine how effective these treatment approaches are specifically with non-suicidal self-injurious clients. This difficulty arises from the fact that findings are seldom specific to NSSI and are not differentiated by age (most include adolescents and adults or only adults).

Using strategies aimed at integrating CBT-based approaches with ecological and systems approaches Miller, Rathus, and Linehan (2007) and Santisteban, Muir, Mena, and Mitriani (2003) have developed a NSSI and suicidality treatment framework based on integrative family systems-oriented approaches and salient elements of dialectical behavior therapy. Largely based on work with adolescents, these approaches expand beyond the individual level and remedial focus of CBT-based treatments to address systemic and contextual factors that serve as positive and negative reinforcements of the behavior. For example, Miller and his colleagues' (2007) treatment model includes a psycho-educational concurrent group approach for parents and adolescents where coping capacity of both parents and adolescents are regarded as a treatment focus. Although promising, evaluation of this approach has yet to be conducted.

Similarly, Santisteban and his colleagues' (2003) integrative borderline family therapy approach integrates key elements of structural family therapy (Minuchin, 1974; Minuchin & Fishman, 1981), brief strategic family therapy (Szapocznik, Hervis, & Schwartz, 2003), multidimensional family therapy (Liddle, Rowe, Diamond, Sessa, Schmidt, & Ettinger, 2000), motivational-enhancement therapy (Miller & Rollnick, 2002), and the therapeutic ideas developed at the Oregon Social Learning Research Center for antisocial and conduct disorder children and adolescents (Chamberlain & Rosicky, 1995; Patterson, Reid, & Dishion, 1992). The primary aims of the integrative borderline family therapy approach are to stabilize the adolescent's self-harming and suicidal behaviors, strengthen parent-adolescent relationships, and improve family communications and conflict-resolution skills. In a study of the efficacy of this

approach on NSSI and suicidality, researchers found that seven out of the ten families in their project reported high satisfaction with their treatment experiences and having strong alliances with their therapists (Santisteban et al., 2003).

Although NSSI treatment trials are scarce, development and implementation models of NSSI treatment have been in use for many years. Developed and articulated by practitioners with substantial experience in treating NSSI, practitioners and consumers of these approaches often report significant success. For example, Conterio and Lader (1998) use an integrative multi-faceted treatment model which incorporates psychodynamic principles and cognitive-behavioral strategies in individual and group work. In other words, the program has an “insight” component, aimed at helping the client understand him or herself better, as well as a “coping” component, in which healthier modes of relating and problem solving are learned. In this way, the impulses to injure are viewed as “clues” to underlying feelings, motives, and communications which the client cannot organize or cope with effectively. Using strategies such as the impulse log, where the client records a daily account of their struggles with urges to injure, the emphasis immediately is on breaking the direct path from impulse to injury and having the client reflect and manage the underlying dynamics which are driving the behavior. The program seeks to substitute delay, reflection, and healthy coping for the previous destructive cycle of self-injurious behavior. To better accommodate variation in client developmental stage at the time of entry, Lader and Conterio’s (1998) approach develops unique individualized plans based on common presenting factors (e.g., family of origin issues, trauma, and loss) and unique factors related to developmental stage, emotional maturity, psychosocial history and gender. In preliminary three time point evaluation of program effectiveness, Lader, Hertzbach, and Nock (2009) found a significant decrease in medical hospitalization due to self-injury and an increase

in the use of more adaptive coping strategies. Treatment effects were maintained at 12-month follow-up.

Similarly, NSSI treatment veteran, Barent Walsh (2006; Walsh & Rosen, 1988) describes a cognitive-behavioral approach for treating NSSI in both adolescents and adults. He emphasizes a micro-detailed assessment that focuses on environmental, cognitive, affective, and behavioral antecedents and consequences. His treatment approach emphasizes responding to NSSI with “a low-key dispassionate demeanor” and “respectful curiosity.” His interventions are skills focused in a manner derived from DBT and other mindfulness-based therapies. He also discusses the role of body alienation in NSSI for trauma surviving clients. He describes in detail (Walsh, 2006) the evidence-based practice of prolonged exposure (Foa, Chrestman & Gilboa-Schechtman, 2009; Foa, Keane, & Friedman, 2000) for the treatment of trauma-derived NSSI and the mechanisms behind social contagion of self-injury (Walsh, 2006; Walsh & Doerfler, 2009; Walsh & Rosen, 1985). As with other commonly utilized approaches, evaluation of this approach is promising, but lacking in rigor and detail. Walsh and Doerfler (2009) described an application of DBT in a group home setting for adolescents that was successful in reducing psychiatric hospitalizations, suicidal behavior, and NSSI. Their study found that clients who remained in treatment longer (12 months or more) did better than those who left early in treatment (the mean was four months). Their interpretation of these results was that, those who received two or more rounds of DBT skills training and individual therapy had better outcomes because they had ample time to learn, practice, and implement their DBT skills.

Selekman (2005, 2006a, 2006b, 2008, 2009) adds a unique twist to DBT-based ecological approaches to NSSI and other self-harming behaviors by focusing on utilizing strength-based approaches to engaging clients in development of treatment plans and means for utilizing

competencies to overcome barriers to desired change. He underscores the importance of including and collaborating with key referent others in the ecological system including but not limited to parents, peers, key members from the adolescent and family's social networks, as well as with involved helping professionals from larger systems. His framework focuses on the importance of transcending deficit-based theoretical frameworks in which therapists chart treatment plans and approaches and using what he calls a *Collaborative Strengths-Based Brief Therapy* approach (2005, 2006a, 2006b, 2008, 2009). Multiple ecological levels are targeted for intervention and engagement and areas of the clients life so commonly overlooked (e.g., gender power imbalances, cultural issues, social injustice issues, incorporating spiritual dimension of clients' lives, and wider societal factors). As part of this approach, Selekman encourages self-injurious clients to identify and employ characteristics of what he calls the "*spaces in between*"—characteristics of the moments when clients are not self-harming or engaging in equivalent behaviors. In this way, he seeks to capitalize on the steps clients and their support system have already taken toward resolving their difficulties and preventing their situations from getting much worse.

Similar to the above models, no comprehensive evaluation of this model exists. In a small study, Selekman and Shulem (2007) conducted a qualitative and process-focused study with 20 high school aged self-harming adolescents and their families. In this study, "self-harm" was broadly defined and included NSSI, bulimia, substance abuse, and sexually risky behavior. Most had already experienced multiple treatment experiences. All of the participants expressed high satisfaction with the collaborative strengths-based brief therapy approach and appreciate the strength-focused approach. To help assess the staying power of their positive treatment experiences, Shulem met with each family at six months, one year, and two years post treatment.

All 20 families reported doing well and there was no return of self-harming and equivalent behavioral difficulties. The adolescents had also made improvement academically and behaviorally in school.

The paucity of well-controlled empirically-validated treatment models for self-harming difficulties across all age groups has led to innovative development of a variety of promising approaches. Grounded largely in dialectical behavioral therapy (DBT) (Linehan, 2000; Linehan, Heard, & Armstrong, 1993; Shearin & Linehan, 1994) and cognitive-behavioral therapy (Evans, Tyrer, Catalan, Schmidt, Davidson, & Dent, 1999), these approaches have yet to be systematically evaluated with NSSI and across a variety of ages.

Research Implications

Although nascent, the study of NSSI across the lifespan is important because it allows for consideration of developmental and contextual features in the expression and recovery process of NSSI. Such an approach has proven immensely useful in the understanding and treatment of similar conditions such as depression (Hankin, Abramson, Moffitt, Silva, McGee, & Angell, 1998; Rao, Hammen, & Daley, 1999) and disordered eating (Patton, Selzer, Coffey, Carlinm & Wolfe, 1999). Using a lifespan study approach mandates assessment of the extent to which NSSI characteristics vary meaningfully across developmental stages. As such, we might expect variation in a multitude of NSSI characteristics including but not limited to: age of onset and cessation, lifetime prevalence, NSSI forms used, reasons for initiating the behavior, psychological function of the behavior, frequency and duration of the behavior, the particularities of rituals and practices used when injuring, extent and nature of association with other risk

behaviors (e.g., disordered eating, drug/alcohol use, and risky sexual activity), risk and protective factors, subjective meaning, recovery processes, and effective treatment approaches. A lifespan approach to the study of NSSI also assumes that the unfolding and particularities of the behavior might vary meaningfully depending in what developmental states one traverses during the periods in which NSSI is initiated, practiced, and ceased. Such a process assumes that time and developmental stages interact in ways that create particular trajectories with meaningful variation in NSSI characteristics.

As a guide for needed research, these expectations are useful. Particularly in combination with the obvious gaps in knowledge evidenced in the above review, they point to several elemental questions in need of address:

NSSI in children

As evident from the brevity of the section on children earlier in this chapter, there are large gaps in knowledge about how NSSI manifests in children and with what consequences. Research aimed at understanding the epidemiology of NSSI in children, as a general population and among subpopulations, would deepen knowledge considerably. Although the general paucity of information renders germane any contribution in knowledge, we regard the following as central:

- Does “common” NSSI occur in children (i.e., does it occur in children not already exhibiting significant psychiatric conditions)? If so, how are the basic epidemiological characteristics (form, frequency, function, initial motivation, rituals and practices, risk and protective factors, comorbidity) similar to (or different from) adolescent and adult onset NSSI?

- Do the consequences of childhood onset NSSI differ from those of adolescents and adults? Do the subjective meanings of NSSI differ by age group?
- How are the treatment approaches and recovery processes different in childhood onset NSSI compared to adolescent and adult onset NSSI? How do each of these categories vary by subgroups (e.g., demographic characteristics, psychiatric characteristics, familial characteristics, etc.)?

NSSI in adolescence

Although it is clear that understanding of NSSI in adolescence is the most robust of all developmental groups considered, much remains to be learned. Fortunately, future research efforts will benefit from the small, but significant body of work already accumulated and is likely to advance basic understanding of NSSI relevance to all developmental groups. The three general adolescent-specific areas which merit attention include:

- Is there variation in basic NSSI epidemiological characteristics among subgroups of youth (e.g., by demographic profile, family and living status, and geographic region)?
- What is the role of NSSI in normative and non-normative adolescent developmental trajectories? Given that it is well established that the first symptoms of adult psychiatric disorders can appear very early in life and that psychiatric trajectories from childhood to adulthood can show both homotypic and heterotypic continuities, it seems plausible to theorize that even low frequency or short-duration NSSI may serve as an indication of sub-clinical emotional disorders that may or may not originate from and evolve into more serious conditions. While it is quite likely that NSSI will

present in more severe forms and to directly and indirectly contribute to more serious adverse outcomes when preceded and/or accompanied by risk laden events (which may be biological, temperamental, or contextual in nature), extant research prohibits validation of this assumption and warrants additional investigation.

- What is the mechanism through which NSSI spreads in community and clinical populations? More importantly, what are promising means for intervention and prevention of contagion?

NSSI in adults

Knowledge about the presentation of NSSI in adults is similarly lacking. Since adults are assumed to have accomplished many of the core developmental tasks regarded as contributors to development of NSSI in childhood and adolescence, it would be particularly useful to understand the developmental origin of adult onset NSSI. Understanding and addressing areas where adults evidence some degree of development arrest may be useful in formulating treatment approaches. As with children, research aimed at understanding the epidemiology of NSSI in adults, as a general population and among subpopulations, would add much to our knowledge base..

NSSI across the lifecourse

Better understanding of the ways in which elemental NSSI characteristics change over time is essential. Some of the core areas for study are: variation in NSSI experience, consequences, treatment strategies, and recovery processes with regard to age of onset and duration. For example, future studies will ideally elucidate: How does developmental stage affect NSSI initiation and function, form and severity, trajectory and recovery? And, how does NSSI affect the capacity to thrive or the likelihood of developing comorbid conditions? Related

to this, it also is important to understand the role that developmental processes, capacities, tasks and timing play in moderating NSSI epidemiology and trajectories. The tendency for NSSI to peak in adolescence suggests a significant interaction between development and behavior—very little of which has been explored theoretically or empirically (the one exception to this is a brief but helpful consideration of NSSI and adolescent development covered by Conterio and Lader, 1998). In light of the growing body of research that suggests that for some individuals, indicators of mental and emotional imbalance may be both sub-clinical and heterotypic (i.e., one of several possible manifestations of distress or disorder) (Kessler, Costello, Ries Merikangas, & Bedirhan Ustun, 2000; Pine, Cohen, Cohen, & Brook, 1999), understanding the relationship and the evolution of NSSI in relation to other mental disorders, risk behaviors, and in reference to external contexts will help to locate the particular role NSSI plays in normative and non-normative development.

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