

DELIBERATE SELF-HARM IN YOUNG CHILDREN

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Lisa McConnell Lewis

## DELIBERATE SELF-HARM IN YOUNG CHILDREN

While *deliberate self-harm* (DSH) in adolescents and adults has been established as a reliable predictor of future suicidal behavior and attempts, whether the same is true for younger children has rarely been studied. Two separate articles will address issues regarding intentional self-injury in young children. The first identified describes the demographic profile of young children who engage in NSSI and evaluated whether predictors of adolescent NSSI are also associated with NSSI in children. The second manuscript analyzed NSSI behaviors to see if they can be correctly predicted from knowledge of a child's history of maltreatment to identify which trauma variables are central in prediction of NSSI status. A Chi-square and logistic regression were run on data from 16,271 records of children ages 5-9 years who received services from the IDMHA in 2018. NSSI was significantly ( $p < .000$ ) associated with trauma history ( $\chi^2 = 75.54$ ,  $df = 1$ ), anxiety ( $\chi^2 = 107.59$ ,  $df = 1$ ), depression ( $\chi^2 = 217.011$ ,  $df = 1$ ), suicide risk ( $\chi^2 = 993$ ,  $df = 1$ ), and impulsivity ( $\chi^2 = 122.49$ ,  $df = 1$ ). Presence of a caregiver mental health problem ( $\chi^2 = 38.29$ ,  $df = 1$ ), age ( $\chi^2 = 14.18$ ,  $df = 4$ ), being male ( $\chi^2 = 11.59$ ,  $df = 1$ ), and being Caucasian ( $\chi^2 = 23.29$ ,  $df = 6$ ) at  $p < .05$ . Regression results indicated the overall model of seven predictors (sexual abuse [OR 1.14], physical abuse [OR 1.26], emotional abuse [OR 1.3], neglect [OR .895], medical trauma [OR 1.34], exposure to natural disaster [OR 1.81] and victim of a crime [OR 1.14]) was statistically reliable in distinguishing between children who self-injure and those who do not. [-2 Log Likelihood = 6228.78,  $\chi^2(6) = 105.416$ ,  $p < .000$ ]. NSSI does occur in pre-adolescent children and while there is some indication that the risk factors and co-variables

are like those of adolescents, there are some differences which need further study.

Training clinicians to inquire about self-injury during assessment of younger children is a simple step. The variables of age and sex throughout development as well as identifying protective as well as risk factors with children should be studied.

Margaret E. Adamek, Ph.D., Chair

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## LIST OF ABBREVIATIONS

|           |   |
|-----------|---|
| CDC       | Centers for Disease Control and Prevention                        |
| CBT       | Cognitive Behavioral Therapy                                      |
| DMHA      | Division of Mental Health and Addiction                           |
| DSH       | Deliberate self-harm  |
| DSM       | Diagnostic and Statistical Manual of Mental Disorders             |
| EAM       | Experiential Avoidance Model                                      |
| EBT       | Evidence-based treatment  |
| ICD-10    | International Classification of Diseases, Tenth Revision          |
| LCSW      | Licensed Clinical Social Worker                                   |
| NEISS-AIP | National Electronic Injury Surveillance System-All Injury Program |
| NSSI      | Non-suicidal self-injury  |
| SES       | Socioeconomic status  |
| SB        | Suicidal behavior   |
| SI        | Suicidal ideation   |
| SSI       | Suicidal self-injury  |
| US        | United States   |
| WHO       | World Health Organization   |

## CHAPTER ONE INTRODUCTION

Deliberate self-harm (DSH), often discussed in popular media as cutting or self-injuring (Adler & Adler, 2011), has received significant attention in both popular culture, medical research, and academic papers in the past several decades (Hawton & Harriss, 2007; Peterson, Xu, Leemis, & Stone, 2019; Witt & Robinson, 2019; Zdanow & Wright, 2012). There are songs, movies, television shows (Purington & Whitlock, 2010), public health campaigns (Brophy & Holmstrom, 2006), social media groups (Dyson et al., 2016; Moreno, Ton, Selkie, & Evans), and YouTube channels (Lewis, Heath, St Denis, & Noble, 2011) dedicated to the topic. The Centers for Disease Control and Prevention (CDC) define DSH as: "... confirmed or suspected: Injury or poisoning resulting from a deliberate violent act inflicted on oneself with the intent to take one's own life or with the intent to harm oneself. This category includes suicide, suicide attempt, and other intentional self-harm" (Vyrostek, Annest, & Ryan, 2004, p. 1).

In 2017, there were 489,980 reported incidents of DSH for Americans of all ages; for adolescents ages 10-19 years old it was 132,649 (CDC, 2003). These figures are likely an underestimation of the actual incidence of DSH as it is typically a low lethality, secretive behavior, and the vast majority of episodes go unreported or treated (Barrocas, Hankin, Young, & Abela, 2012; Hankin & Abela, 2011; Hilt, Cha, & Nolen, 2008). As will be discussed, the wide variation in definitions of DSH is one of the barriers to more accurately measuring the incidence and prevalence of DSH. For purposes here, the World Health Organization (WHO) definition of adolescent and a child used. An adolescent is any person between ages 10 and 19 years of age, and a child is one between the ages one and nine years old (Csikszentmihalyi, 2019).

DSH in adolescents has received most of the attention in the literature for close to 50 years, and has historically been viewed as affecting adolescents and adults exclusively (Courtney, Duda, Szatmari, Henderson, & Bennett, 2019; Harris, Beese, & Moore, 2019; Lupariello, Curti, Coppo, Racalbutto, & Di Vella, 2019; Mars et al., 2019; Matthews, 1968; Valencia-Agudo, Burcher, Ezpeleta, & Kramer, 2018). There is, however, some evidence that DSH occurs in younger children; children as young as three years old (Dervic & Oquendo, 2019; Dougherty et al., 2015; Paul & Ortin, 2018; Whalen, Luby, & Barch, 2018). An epidemiological study of suicide and children in the United States (US) reported 33 children between the ages of 5 and 11 took their own lives in 2017. A variety of methods such as poisoning, hanging, strangulation, suffocation, self-inflicted gunshot wounds were used (Xu, Murphy, Kochanek, Bastian, & Arias, 2018). Also, in 2017, the CDC's *National Electronic Injury Surveillance System-All Injury Program* (NEISS-AIP) indicated there were 984 reported incidents of DSH in children younger than age 10 years (See Figure 1; CDC, 2003). These data include only injuries formally treated by a medical practitioner. "Research on suicidal ideation (SI) and suicidal behavior (SB) in very young children is scarce. However, in clinical settings, child psychiatrists encounter these constellations repeatedly" (Dervic, Brent, & Oquendo, 2008, p. 8).

#### Defining Non-suicidal Self-Injury (NSSI) and Suicidal Self-Injury (SSI)

While DSH is a well-established and reliable predictor of a future suicide attempt (Bergen et al., 2012; Boudreaux et al., 2016; Fairbairn, 1995; Mental Health Foundation, 1999; Muehlenkamp & Gutierrez, 2004), it is not the same as a suicide attempt (Greydanus & Omar, 2017; Olfson et al., 2018; Ribeiro et al., 2016; Saunders et al., 2019; Sivertsen et al., 2019; Stevens et al., 2019). Most who engage in DSH will never

go on to attempt suicide (Hawton & Harriss, 2007; Kiekens et al., 2018; Lester & Krysinska, 2008; Muehlenkamp, Claes, Havertape, & Plener, 2012). In the more contemporary literature, DSH behaviors are divided into two categories: non-suicidal self-injury (NSSI), and suicidal self-injury (SSI; Franklin & Nock, 2016; Ribeiro et al., 2016). NSSI is a behavior that one uses as to cope with distress, a way to live as opposed to a way to die (Klonsky, Glenn, Styer, Olino, & Washburn, 2015; Solomon & Farrand, 1996)

“Self-harm occupies the fuzzy border between normal and abnormal behavior, making it particularly difficult to categorize” (Angelotta, 2015, p. 75). One ontological issue with which researchers and clinicians are faced is wide variability in the classification of the construct of DSH (O'Carroll et al., 1996; Plener, Schumacher, Munz, & Groschwitz, 2015). Differentiating between DSH, NSSI, SSI, suicidal behaviors (SB) and suicidal ideation (SI) is essential, as understanding the intent of the behavior is vital for developing treatment interventions. Inconsistencies in both terminology and meaning of DSH is evident as numerous terms are used interchangeably throughout the literature (See Table 1).

Even the *Diagnostic and Statistical Manual of Mental Disorders V* (DSM5) uses six different terms in reference to self-injury (American Psychiatric Association, 2013). Depending on the chapter, and likely the chapter authors, numerous terms such as non-suicidal self-injury (excoriation disorder, pica), self-mutilation (dissociative disorders, personality disorders), self-inflicted abuse behaviors (personality disorders) self-injurious behavior (post-traumatic stress disorder, hoarding) and deliberate physical self-harm (factitious disorder) are used. The V and Z codes use the term self-harm in diagnosis, but

in the proposed section three of DSM5 criteria, the term NSSI is used (American Psychiatric Association, 2013).

Systematic reviews of DSH (Abdelraheem, McAloon, & Shand, 2019; Evans et al., 2017) also use a variety of terms such as, self-harm, self-injury, self-cut, self-destruct, non-suicidal self-injury, deliberate self-harm, self-mutilation, overdose, self-inflicted injury, parasuicide, suicide, suicidal behavior, auto-mutilation, self-cutting, self-defeating behavior, self-destructive behavior, self-inflicted, self-immolation, self-laceration, self-poisoning, suicidal ideation, attempted suicide, and fatal behavior, making generalizability and application difficult.

Franklin and Nock (2016) identified six criteria to define NSSI based on their work. The behavior: (1) has no suicidal intent, (2) is intentional, not accidental, (3) causes direct harm to the body (i.e., this excludes long term damage caused by alcohol or other substances), (4) is not socially sanctioned, (i.e., piercing or tattoos), (5) must lead to a moderate degree of injury, (i.e. does not include skin picking or lip biting), and (6) is distinguished from the repetitive, stereotypic self-injury often associated with some developmental disorders and the major self-injury (i.e., self-amputations) associated with some psychotic disorders.

The *International Classification of Diseases, Tenth Revision* (ICD-10), published by the WHO (2004), provides a format for classifying condition, disease, injury and mortality statistics, which are then translated to medical codes (Simms, 1992). Its purpose is to promote international comparability for communication and research purposes. The ICD-10 has 24 codes for DSH that were used in both DSH research and in the countries with large DSH surveillance systems: Australia, Ireland, and England (Witt & Robinson,

2019). Unfortunately, ICD-10 codes do not differentiate between NSSI and SSI, having collapsed purposely self-inflicted injury, including poisoning, and attempted suicides into a single category (See Table 2; AHRQ, 2019).

To address this issue of accurately coding injuries in health care settings, the AHRQ (2019) provided the following guidance in determining the appropriate codes for a self-harming behavior:

“Self-harm cannot be assumed by the coder and it must be stated by the responsible consultant, in order for a coder to assign a code from categories X60-X84. The external cause code will only be assigned to the first episode of care in which the patient is admitted for treatment of the self-inflicted injury and therefore will not be added to any subsequent episodes with the same hospital spell. The National Institute for Health and Care Excellence (NICE) have a quality standard for self-harm. This quality standard covers the initial management of self-harm and the provision of longer term support for children and young people (aged 8 years and older) and adults (aged 18 years and older) who self-harm. The term self-harm is used in this quality standard to refer to any act of self-poisoning or self-injury carried out by a person, irrespective of his or her motivation. This commonly involves self-poisoning with medication or self-injury by cutting. Self-harm is not used to refer to harm arising from overeating, body piercing, body tattooing, excessive consumption of alcohol or recreational drugs, starvation arising from anorexia nervosa or accidental harm to oneself. It is difficult to determine the intent of self-harm for those under 8 years old therefore data displayed for patients under 8 years old should be treated with caution. In the very young, while some acts (e.g. ingestion of medicines) may appear to be ‘intentional’ they will not usually involve the normal type of intent found in episodes of self-harm by older individuals and thus might better be regarded as ‘accidental’” (p. 402).

The single factor that seems to separate NSSI from SSI or suicide attempt is the intent of the injury. For purposes here, DSH shall refer to any intentional self-injury without regard for intent. NSSI shall refer to any intentional self-harm in which intent is to cope with living, while SSI is self-injury with intent to die (Connolly, 1999).



## Historical Background

In his seminal 1987 text, *Bodies Under Siege*, Favazza (1998) wrote that self-mutilation as a part of religious and popular culture has been around since the beginning of human history; often viewed as a transcendental practice for spiritual or evidence of demonic possession in such extreme examples as self-castration. NSSI specifically, was referenced in the medical records of mid 19<sup>th</sup> century psychiatric patients who engaged in self-harm that lacked suicidal intent (Angelotta, 2015). Chaney (2017) hypothesized that early alienists distinguished between suicidal and non-suicidal self-harm as a way to protect asylums' reputations and to protect families and patients from the criminal justice system, as suicide attempts were criminal offenses in the 1800's. Physicians at that time were trained to distinguish between NSSI and SSI on certificates of insanity and in the late 19<sup>th</sup> century, doctors began noticing some European women had started puncturing their own skin with sewing needs and treated it as hysteria (Herpertz, Sass, & Favazza, 1997).

The first published report of repetitive NSSI was in 1913 (Angelotta, 2015). The case report discussed a woman who found relief from depressive thoughts that she attributed to being sexually assaulted by a family member. "She reported frequently thinking about self-harm and being preoccupied with the act before engaging in it, saying 'I had tried hard to control myself' and 'at last I could not stand it any longer...'" (Angelotta, 2015, p. 15). In 1938, Menninger (1938) wrote *Man Against Himself* and created a new category of psychiatric illness called which he termed purposive accidents. He developed this category following the release of transportation data indicating some drivers were more likely to have accidents than others. Menninger theorized these people

were intentionally crashing their cars to bring harm to themselves (Chaney, 2017). Over time, psychiatrists started to study the epidemiology of DSH without suicidal intent, and an archetype of the typical cutter as female and young began to emerge (Strong, 1998). While the late 20<sup>th</sup> century literature continued to focus on women as cutters, Pattison and Kahan (1983) found that the incidence of DSH was split evenly between the sexes. The *Diagnostic and Statistical Manual of Mental Disorders III* (DSM3) referred to DSH only as a symptom of borderline personality disorder (American Psychiatric Association, 1981), but finally, after significant debate in the clinical literature, NSSI has been proposed as its own diagnostic class for future editions of the DSM5 (DSM-5; (American Psychiatric Association, 2013).

#### Theoretical Underpinnings

While no theory is likely to explain all DSH, there are two that are applicable as well as prevalent in the literature related to DSH in children: developmental theory and emotional dysregulation theory.

##### Developmental theory

Understanding DSH in children is further complicated by the transitory development of a child's verbal and cognitive skills. As Franklin and Nock (2016) identified in their sixth criteria for defining NSSI discussed previously, stereotypic NSSI is generally associated with developmental disabilities such as, autism, Tourette's and mental retardation. This can include head-banging, slapping oneself, biting self, etc. and is not viewed as suicidal or with the same intent as NSSI discussed here. This is considered a separate category of DSH behavior and excluded from studies of DSH. All

the study samples reviewed here, specifically excluded people with known developmental disabilities.

As is true for people with some developmental disabilities, assessing the function and intent of DSH in younger children can be difficult. There is some debate as to the age in which children even understand the concept of death or suicide, specifically (Luby, Whalen, Tillman, & Barch, 2019; Ridge Anderson, Keyes, & Jobes, 2016; Whalen et al., 2018). Several researchers contend that, in most cultures, children as young as four years old can distinguish the differences between death and sleep, understand the finality of death, and can offer legitimate answers as to why someone might want to end their own life (Hennefield, Whalen, Wood, Chavarria, & Luby, 2019; Chavarria, & Luby, 2019; Scheeringa, 2016; Zeanah & Gleason, 2015). Mishra (1999) found that 71% of the children ages 6-12 understood that death is final. Some did not understand the word suicide, but 95% of them understood the concept of killing oneself. A review by Bodzy, Barreto, Swenson, Liguori, and Costea (2016) concluded that children need not understand the finality of death in order to self-injure with the intent to die.

#### *Developmental psychopathology theory*

Building on general developmental theory is the developmental psychopathology theory which focus on constructs of equifinality and multi-finality to explain the, sometimes contradictory, risk factors identified in childhood DSH (Ridge Anderson et al., 2016; Wakschlag et al., 2012). Multi-finality holds there are multiple outcomes for any shared experience and equifinality holds there are multiple paths to any outcome. Pfeffer (1981) and Bodzy et al., (2016) explained childhood DSH in terms of ego regression and

decompensation which results in poor frustration tolerance, inability to delay gratification, mistrust of the world and increased somatic expression of distress.

#### Emotional dysregulation theory

Many of the models discussed throughout the DSH literature focus on self-harming behavior as a strategy for reducing negative emotions or distress (Deutz, Geeraerts, van Baar, Dekovi, & Prinzie, 2016). There are several variations on this model: the tension reduction model (Haines, Williams, Brain, & Wilson, 1995), dissociation theory (Sachsse, von der Heyde, & Huether, 2002; Solomon & Farrand, 1996 as cited in Haines, 1995) and the experiential avoidance model (Chapman, Gratz, & Brown, 2006). These models all hypothesize that low-lethality, NSSI alleviates one's emotional discomfort and reduces escalating negative emotions. The subsequent relief reinforces the NSSI behavior. The opioid hypothesis suggests that low level pain causes release of endogenous opiates, which calm the body. Some are even experimenting with the opiate blocking medication of Naltrexone to treat this behavior (Roth, Ostroff, & Hoffman, 1996). Dissociation theory explains DSH as a trauma reaction to sexual, physical, or emotional abuse in the first six years of life. One uses DSH to dissociate when traumatic memories arise. Haines et al., (1995) provides an excellent overview that includes research from a variety of disciplines describing this same pattern. "... Interpersonal conflict, rejection, separation or abandonment" (p. 472) are common precipitating events to an episode of NSSI. As the behavior-reinforcement patterns repeats themselves, even low-stress situations start to become triggering events. People who self-harm describe the subsequent emotional state with words such as relief, calm, depersonalized, relaxed, etc. In fact, Haines et al., (1995) found that people who regularly

harmed themselves were even able to find some relief from guided imagery exercises in which they visualized the act of harming themselves.

### *The Experiential Avoidance Model*

Chapman et al. (2006) noted that all these theories share common themes. Her team combined all these theories into a single, unifying model for the function of DSH: the experiential avoidance model (EAM; See Figure 2).

The EAM was developed to explain DSH that occurs in non-psychotic, cognitively normal adults and focuses exclusively on DSH without intent to die. Any behavior that functions to reduce the emotional, cognitive, or physical distress one experiences falls under this model. This includes behaviors surrounding substance abuse, binge eating, and thought suppression. The pattern becomes a negative reinforcer that strengthens the effect of the behavior. People who self-harm are likely to have personality profiles that have lower tolerance for discomfort, higher levels of impulsivity or novelty seeking, and heightened levels of physiological arousal when uncomfortable. The model proposes that those who self-harm need not actually have higher psychophysiological reactivity, but their subjective experience of an event is more intense than is typical (Chapman et al., 2006). This model would be particularly applicable to a younger child as, developmentally, they would be more likely to use impulsive, escape behaviors to manage distress. One of the limitations of this model is the lack of a cognitive component preceding the emotional response. As the most empirically supported approach and widely used approach to helping clients manage emotions is Cognitive Behavioral Theory (CBT), by excluding the important cognitive framing and automatic thoughts associated with an experience these authors missed an opportunity to align with CBT.

## Prevalence

As discussed, the measurement of intent of self-injury makes prevalence difficult to determine. All surveillance systems use emergency room data, and most people who self-harm never seek medical attention (Hawton et al., 2012). Favazza (1996) held that many of his patients were so ashamed of their cutting behaviors, that they would falsely claim it was a suicide attempt when presenting for medical treatment. A recent systematic review established prevalence rates for adolescents ranged from 7.5%-46.5%, the college student rate was 38.9%, and adults ranged from 4-23%. In the only two studies reviewed with a sample of children exclusively under the age of 10, prevalence rates were not reported (Luby et al., 2019; Whalen, Dixon-Gordon, Belden, Barch, & Luby, 2015).

## Risk Factors and Covariates in Adolescent NSSI

Data have emerged to support categorical results regarding risk factors and covariates to DSH. Though different terms are used, these categories can generally be summarized as individual and environmental correlates and risk factors (Cipriano, Cella, & Cotrufo, 2017; Fliege, Lee, Grimm, & Klapp, 2009).

### Environmental level

#### *Maternal psychopathology*

Using a variety of labels such as maladaptive parenting (Johnson et al., 2002), parental stress and distress (Gordon & Hinshaw, 2017), and maternal psychopathology (Whalen et al., 2015), the construct of family history of mental illness as a risk factor for childhood self-harm was measured. Some found family history to be correlated (Chitsabesan, Harrington, Harrington, & Tomenson, 2003; Harrington et al., 1998;

Mitchell, Seah, Ting, Curtis, & Foster, 2018; Simioni et al., 2018), while others found no relationship (Luby et al., 2019; Martin et al., 2016). In one of the few studies focusing primarily on young children, Paul and Ortin (2018) found significantly higher rates of maternal depression and family conflict in six-year-old children who talk about self-harm than in the same aged children who do not. Interestingly, both Pfeffer, Plutchik, Mizruchi, and Lipkins (1986) and Whalen et al. (2015) found that while children who self-harm were more likely to have a mother with a diagnosis of depression, they found no relationship between a family history of suicide or suicide attempts and self-harm. The author reasons that these differences were the result of using caregiver interviews versus medical record reviews. Caregivers may be reluctant to label their young child's behavior as suicidal (Dervic & Oquendo, 2019).

#### *Trauma*

Some researchers have established that children with personal histories that included experiences with violence, physical, emotional, and sexual abuse were more likely to engage in DSH (Johnson et al., 2002; Luby et al., 2019; Wanner, Vitaro, Tremblay, & Turecki, 2012). In their meta-analysis, Liu, Scopelliti, Pittman, and Zamora (2018) found childhood sexual abuse, physical abuse and neglect and emotional abuse to be significantly associated with NSSI specifically. Their sample included 71 studies of children and adolescents under the age of 18; emotional development and distress were moderators of NSSI.

#### *Socioeconomic status*

The evidence was mixed regarding the relationship between socioeconomic status (SES), educational status, or vocational status related to DSH. A single study, (Mitchell

et al., 2018) of children ages 6-16 found that those who engaged in DSH were more likely to be of low SES; other studies found no significant differences (Martin et al., 2016; Whalen et al., 2015).

#### Individual level

##### *Diagnosis*

There appeared to be a link between childhood psychopathology and DSH, though there was little consensus about a specific diagnosis' relationship to self-harm. Some findings suggested a correlation between DSH and depressive symptoms (Brent et al., 1986; Luby et al., 2019; Sheftall et al., 2016; Singareddy et al., 2013; Whalen et al., 2015) and others for a diagnosis of attention-deficit disorder (ADHD; Gordon & Hinshaw, 2017; Swanson, Owens, & Hinshaw, 2014). These findings are likely the result of intentional sampling from psychiatric populations. Swanson et al. (2014) specifically sampled from a clinic that specializes in ADHD.

##### *Age*

DSH was estimated to occur in 10-14% of all adolescents but the vast majority are never identified by the medical community (Hawton et al., 2012). DSH was most common among adolescents between 12 and 14 years of age (Cipriano et al., 2017). Though rarely studied, there were documented cases of children under the age of 10 engaging in DSH (Barrocas et al., 2012; Gandhi et al., 2018; Singareddy et al., 2013). Some have found that DSH may occur in children as young as three years of age (Connolly, 1999; Luby et al., 2019; Whalen et al., 2015). According to the CDC, in 2017, there were 984 incidents of DSH in children under the age of ten. This represented .03% of all injuries that that were medically treated; the rate for adolescents was 3.3% (Xu et



al., 2018). In Australia, Brezo et al. (2008) found that self-harming children ages 6-10 were .7% of all the children hospitalized for DSH. Paul and Ortin (2018) indicated that “...obtaining accurate prevalence rates of young children’s self-harm separated from suicidal ideation is difficult because many studies in this age group have collapsed these two phenomena into a single index...’ (p. 2) or have studied young children and adolescents as a single group. The literature was so scant, that in an exhaustive review, only a single study found focused exclusively on children under the age of 10 and DSH that was specifically identified as NSSI in intent (Luby et al., 2019). Two studies found DSH rates for young children in the community which varied from 4 % (Barrocas et al., 2012) to 7.7% (Singareddy et al., 2013), but more data is needed before conclusions about prevalence can be drawn.

#### *History of self-harm behavior*

Retrospective studies that asked older adolescents and adults to identify previous DSH behaviors have been helpful in identifying characteristics of early DSH (Kiekens et al., 2018). For example, the younger a child is who engages in DSH, the more likely they are to be male, to engage in repeat DSH, to have a future suicide attempt, and to use more lethal means to self-harm (Brezo et al., 2008 ; Hyman, Fisher, Mercugliano, & Cataldo, 1990; Mitchell et al., 2018; Rukundo, Kemigisha, Ocan, Adriko, & Akena, 2018; Sheftall et al., 2016). Chronis-Tuscano et al. (2010) found, while controlling for gender, age, income, maternal psychopathology and early childhood DSH, (ages 3-7) that those with early childhood DSH were four times as likely to have school aged DSH. This is consistent with adolescent and adult research; the younger the age of initial engagement

in self-injury, the more likely there was to be repeated DSH (Cloutier et al., 2017; Huband & Tantan, 2004; Wood, Trainor, Rothwell, et al., 2001).

#### *Preoccupation with death*

One factor that seemed exclusively associated with younger children was a preoccupation with death. Luby et al. (2019) found that young children who engaged in DSH, were significantly more likely to be preoccupied with death. One possible limitation here is that preoccupation with death was determined by clinical observation of children playing. According to the authors, clinicians' interpretations of children's play left some room for ambiguity.

#### *Method of self-harm*

The most common method of self-harm in children trended towards cutting or carving the skin, with hitting oneself as a close second (Barrocas et al., 2012). The same was true for adolescents and adults (Fox et al., 2015). Burning or picking the skin and various other methods occurred at much lower levels. My clinical experience is that younger children often burn themselves using friction, but not fire, i.e. eraser burns. Only one study specifically discussed 'skin-rubbing' as a method of DSH (Nock & Prinstein, 2004). Studies focused on method of DSH in young children were not found, though one study of a mixed sample of children and adolescents found one was more likely to engage in repeated self-harm if they were 'cutters', rather than self-poisoners, and that adolescents who attempted suicide were more likely to have a history of cutting, even if they killed themselves by a different method (Hawton et al., 2012).

### *Race and ethnicity*

Adolescents who self-harm are more likely to be Caucasian, female, and affluent. Similarly, while most found no significant differences in race of children who self-harm (Bodzy et al., 2016; Greening et al., 2008; Luby et al., 2019), others had conflicting findings. Results from Paul and Ortin (2018) found six-year-olds who talk about suicide are more likely to be white than African American, and children who were Hispanic were more likely to self-injure than white children. Conversely, both Bridge et al. (2015) and Sheftall et al. (2016) found children who self-harm are more likely to be black; Bridge et al. (2015) found suicide rates among school-aged children were increasing for black males and decreasing for white males. Results remain inclusive.

### *Gender*

Others have found that gender differences of those who self-harm were not evident until early adolescence (Barrocas et al., 2012; Liu et al., 2006; Nock & Kazdin, 2002). DSH consistently occurred more often in younger female adolescents than in male adolescents (ages 13-15 years old; Hawton et al., 2012 ; Wanner, Vitaro, Tremblay, & Turecki, 2012), but this gap closed as the adolescent aged. By the time a youth was transitioning to adulthood, those who self-harmed were more likely to be male. This leads to the question of what variables influence the gender-DSH relationship to shift as a child develop.

## Public Health Policy

### Relationship to suicide

Although rates of suicide following DSH vary widely, the predominance of retrospective, suicide autopsies and studies have found that adolescents who engage in

DSH behaviors were at higher risk. One systematic review found a range of 24-53% of suicide attempters had a history of DSH (Cipriano et al., 2017). Mars et al. (2019) found that 12% of those who attempted suicide prior to age 21 years reported a history of NSSI. Suicide is now the 10th leading cause of death in both the US and in Indiana (See Figure 5; Xu et al., 2018). As numbers continue to rise (Hedegaard, Curtin, & Warner, 2018), DSH has become a public health problem.

#### Treatment and intervention

An analysis done by Ridge Anderson et al. (2016) found only one evidenced-based treatment (EBT) study for children who are suicidal under the age of 12 years (Perepletchikova et al., 2011). Adapted Dialectical Behavior Therapy (DBT; Perepletchikova et al., 2011), a widely used model for treating borderline personality disorder in adults and adolescents, was adapted for use with children. Perepletchikova et al. (2011) had mixed results and advised that the technique needed further adaptation and study. No follow-up studies on this approach were found.

Despite the widespread occurrence of self-harm in children, no evidence of effective interventions at any age were identified (Hawton et al., 2015). With no established, effective interventions for DSH, it is likely that workers who are intervening are making care decisions based on anecdotal or personal experience.

Adults who self-harm typically have multiple social, economic, and psychological difficulties (Haw & Hawton, 2008), and many providers feel unprepared to address these social determinants of health (Sinclair, Gray, Rivero-Arias, Saunders, & Hawton, 2011). A systematic review of studies that focus on DSH knowledge of medical staff, found that most felt inadequately prepared to help those who self-harm. Staff attitudes were mostly

negative, and feelings of irritation and anger dominated most settings; regardless of discipline, staff were significantly more hostile towards those who self-harm than those presenting with physical illnesses (Saunders, Hawton, Fortune, & Farrell, 2012).

#### Healthcare costs

Not only will uninformed policy development likely lead to poorer health outcomes, it may also serve to exacerbate rising health costs. While most injuries treated in US emergency rooms are unintentional injuries, the cost per case, in treating intentional injuries was significantly higher (Cornell Research Program on Self-Injury and Recovery, 2019). The average medical and work-loss cost of unintentional injuries was \$14,685; the average medical and work-loss cost of intentional injuries was almost double at \$25,121 (Florence, Haegerich, Simon, Zhou, & Luo, 2015; Simon & Schoendorf, 2014). Note, these numbers do not reflect follow-up mental health, psychological treatment or emergency response system cost, which likely exacerbated costs even more. Sinclair et al. (2011) and Hawton (2011) found anecdotal evidence that people who had self-harmed previously, but stopped this behavior, presented to emergency rooms more frequently with other somatic complaints.

Again, none of these data were obtained from samples that included children under the age of 10 years old, even though it is known that children under the age of 10 years engage in DSH. Therefore, generalizability to younger children is difficult. Moreover, it seems likely, that the widespread lack of knowledge about the course, intent, and treatment of DSH, would result in several unnecessary inpatient hospitalizations to manage suicidal risk that is not actually present. Data could not be found regarding this specific issue, another gap that deserves attention. “The relatively high rate of injuries

from... self-harm among adolescents and young adults underscores the need for early prevention strategies that take advantage of the best available evidence to enhance youths' skills, family relationships, and social environments to reduce risk for violence-related injuries” (Florence et al., 2015, p. 1081).

#### Future Directions

Melnik and Fineout-Overholt (2005) provided the following levels system for evaluating quality of evidence when reviewing intervention and practice research:

**Level I:** Evidence from a systematic review of all relevant randomized controlled trials (RCT's), or evidence-based clinical practice guidelines based on systematic reviews of RCT's

**Level II:** Evidence obtained from at least one well-designed Randomized Controlled Trial (RCT)

**Level III:** Evidence obtained from well-designed controlled trials without randomization, quasi-experimental

**Level IV:** Evidence from well-designed case-control and cohort studies

**Level V:** Evidence from systematic reviews of descriptive and qualitative studies

**Level VI:** Evidence from a single descriptive or qualitative study

**Level VII:** Evidence from the opinion of authorities and/or reports of expert committees” (p.10).

This model is like others in the healthcare and social work fields (Dodd & Savage, 2019; McNeece & Thyer, 2004). The majority of methods used for research with samples including children under the age of 10 reached level VI and were descriptive (Mitchell et al., 2018; Sheftall et al., 2016; Whalen et al., 2018) or case studies (Connolly, 1999; Hong, Cho, Kim, Hong, & Kweon, 2017). Longitudinal, cross-sectional case study or case control studies were the highest levels of evidence found (Luby et al., 2019; Rosenthal & Rosenthal, 1984).

### Practice interventions

Social work practice, even in behavioral health, focuses on outcomes that other allied health professionals do not, i.e. improved relationships, better social functioning and case management (Proctor & Rosen, 2003). Not only is there little research concerning DSH in young children, but none of the literature reviewed for this manuscript included social work practice specifically, nor were from journals with social work in the title. Future research should consider the potential role that social work can play in addressing DSH by integrating empirical research with sociocultural systems of the child.

### Research method and procedure

Most of the research with children used statistical methods like logistic regression (Bodzy et al., 2016; Luby et al., 2019; Simioni et al., 2018; Whalen et al., 2015) or ANOVA (Singareddy et al., 2013) to look for risk factors and correlates to DSH. The lack of more sophisticated analysis is likely secondary to the infancy of this area of research (Abdelraheem et al., 2019). Reviews of existing data sets, mostly with high-risk, child welfare or foster care populations (Rockett et al., 2018) lead Hawton et al. (2012) to describe the literature related to self-harm in children as lacking in “robust and reliable information” (p. 1).

Additionally, none of the existing assessment tools have been empirically tested with children (Barrio, 2007). One tool, Achenbach’s Child Behavior Checklist (CBCL) has been found to be valid and reliable with children. Unfortunately, the 1991 version contained two questions: ‘child talks about killing self’ and ‘child harms self/attempts suicide’ (Achenbach, 1991), but the 2000 revision removed the “child harms self”

question which makes comparison to studies that use that tool prior to 2000 difficult (Achenbach, 2001).

All the studies reviewed had psychiatric populations from which the derived a sample. As has been demonstrated with adolescents, the majority of DSH occurs in secret and never comes to the attention of a helping professional (Cornell Research Program on Self-Injury and Recovery, 2019). Therefore, the scarcity of existing literature with young children precludes any generalizing to community-based children. Quantifying and measuring intent are complicated; especially in such young children. A young child's language skills may not be sophisticated enough to clearly communicate intent to alleviate emotional discomfort. His or her cognitive skills may lack the introspective insight necessary for understanding intent to cope versus intent to die. As a result, most of the research reviewed was based on parental report (Abdelraheem et al., 2019; Simioni et al., 2018) of child's behavior and intent. There are limitations with this approach. Parents and caregivers tended to under report in area of DSH (Gabrielli et al., 2015).

In the case of very young children, parents may struggle to differentiate between normal preschool behavior and that which is part of pathology, additionally, not allowing the researcher to use their clinical specialty and knowledge to draw conclusions about the child's intent (Bufferd, Dougherty, Carlson, Rose, & Klein, 2012). Caregivers and other adults likely struggle with the idea that their very young child could be suicidal, and, unintentionally, may tend to look for and settle upon other explanations for the behaviors. Pfeffer, Lipkins, Plutchik, and Mizruchi (1988) and Whalen et al. (2018) all suggested that research has been limited by parental and clinician doubts that very young children can be suicidal. Further, Brent et al. (1986) found low agreement between



children and parents in assessment of suicidality, while having high internal consistency in their study with children ages 6-18 years old. Tishler, Reiss, and Rhodes (2007) suggested that parents may often incorrectly label DSH as unintentional or accidents. As the capacity for emotional regulation has not been well studied in pre-adolescent children, studies that focus on the functional models of DSH with young children are limited as well.

#### Uniform taxonomy of deliberate self-harm

As discussed, the wide variability in defining and naming the types of DSH (NSSI and SSI) organized research agenda is unlikely (Fox et al., 2015) make generalizability and comparison very difficult. Epstein et al. (2018) identified 14 separate assessment tools for DSH in their meta-analysis; some including all behaviors regardless of intent, and some excluding intentionally suicidal behaviors and some including *interference with wound healing* as DSH. Again, the wide variability in assessing and measuring DSH, interferes with comparison between studies. To summarize, this area of study is limited by variability in operational definitions and various sample biases.

“Social work is distinguishable from other disciplines by its emphasis on producing change that affects clients and their environment” (El-Bassel, 2013, p. 1). Because of this focus on practice, one may argue that the development of empirically based, practice guidelines in social work must be a research priority. Practice guidelines may be defined as “... systematically compiled and organized statements of empirically tested knowledge and procedures to help practitioners select and implement interventions that are most effective and appropriate for attaining the desired outcomes (Proctor & Rosen, 2003, p. 1).

## Conceptualization of the Problem

While DSH in adolescents and adults has been studied for the past 50 years (Claassen et al., 2006; Crawford, Turnbull, & Wessely, 1998; Hawton, Taylor, Saunders, & Mahadevan, 2011; Sinclair et al., 2011; Wessing et al., 2015), the literature related to younger children is scant and needs more attention (Bem, Connor, Palmer, Channa, & Birchwood, 2017; Bodzy et al., 2016; Gandhi et al., 2018; Luby et al., 2019; Matarazzo, Homaifar, & Wortzel, 2014; Ridge Anderson et al., 2016; Sheftall et al., 2016; Simioni et al., 2018; Whalen et al., 2015; Zeanah & Gleason, 2015). As Whalen et al. (2015) suggested, learning about the epidemiology, etiology, function and course of DSH in children is critical in understanding youth suicide, as the predominance of the literature in suicidology focused on children ages 12 and older (Kurtz et al., 2003; Ridge Anderson et al., 2016). Dervic and Oquendo (2019) argued that (1) because early results indicated preschool self-injury predicted school aged, adolescent self-injury and other suicidal behaviors, and (2) half of all completed suicides in children under the age of 14 have had no mental health intervention, it is crucial to intervene before children reach adolescence. “Reliable and accurate data on self-harm are important for understanding national trends and risk factors for self-harm, planning appropriate health services and informing potentially effective preventive measures” (Geulayov et al., 2016, p. 1).

## Product

Completion of this work will serve in partial fulfillment of the requirements for the degree Doctor of Philosophy in the School of Social Work, at Indiana University. Results will be reported within the framework of the multiple manuscript dissertation option offered by the Indiana University School of Social Work. This policy requires

two to three publishable manuscripts be prepared and submitted for publication and based on the work on the student. At least one must be data-based, and both must maintain a logical connection in the research. Both studies will present findings related to self-harm behavior in young children.

## CHAPTER TWO

### CORRELATES OF NON-SUICIDAL SELF-INJURY IN YOUNG CHILDREN

#### Introduction

Though primarily studied in adolescents and adults (Gillies et al., 2018), deliberate self-harm occurs in all ages (Xu et al., 2018) and “is woefully under investigated” in pre-pubescent children (J. Whitlock, personal communication, July 2, 2019). It has different labels: deliberate self-harm (DSH; McCluskey, Allareddy, Rampa, Allareddy, & Rotta, 2019), intentional self-injury (Turner, Jin, Anestis, Dixon-Gordon, & Gratz, 2018), non-suicidal self-injury (NSSI; Halicka & Kiejna, 2018), self-mutilation (Timofeyev, Sharff, Burns, & Outterson, 2002 & Outterson, 2002), suicide-related behavior (Martinez, 2013) and cutting (Greydanus & Omar, 2017), among others.

DSH occurs across cultures (Plener, Libal, Keller, Fegert, & Muehlenkamp, 2009) and genders (Victor et al., 2018), and is a well-established predictor of suicidal behavior (Liu et al., 2018). As suicide rates continue to climb in the both the US and abroad, understanding the development of suicidal behaviors is essential in bridging gaps in treatment and prevention (Christensen, Reynolds, & Cuijpers, 2017). In order to establish some consistency and generalizability to future and previous research, the World Health Organization’s (WHO) definitions of adolescent (those ages 10-19 years) and child (those ages 9 years and younger) are used here (WHO, 2017).

DSH has two categories: non-suicidal self-injury (NSSI) and suicidal self-injury (SSI). The function of DSH is distinct from stereotypic self-harm that is often part of developmental disability (Franklin & Nock, 2016). Inconsistently defined constructs of self-injury and variability of ages in the existing literature interfere with generalizability

to pre-pubescent children (O'Carroll et al., 1996). The International Society for the Study of Self-Injury (ISSSI) defined NSSI as “the deliberate, self-inflicted damage of body tissue without suicidal intent and for purposes not social or culturally sanctioned” (ISSSI, 2018). For this study, DSH and NSSI are used interchangeably while suicidal self-injury (SSI), suicidal behavior (SB), or suicide attempt (SA) will refer to self-injurious behavior that is specifically intended to end one’s life.

#### Age

In 2017, the CDC’s *National Electronic Injury Surveillance System-All Injury Program* (NEISS-AIP) documented 875 incidents of DSH in children ages 5 to 9 years old who presented to medical providers for treatment (Centers for Disease Control and Prevention, 2003). These figures were likely an underestimation of the actual incidence of DSH, typically a low lethality, secretive behavior (Abela, 2012; Barrocas et al., 2012; Griffin et al., 2018) that often goes untreated. Some estimate a mere 6.5% of self-inflicted injuries receive medical attention (Cornell Research Program on Self-Injury and Recovery, 2019). Although these numbers do not differentiate between suicidal and non-suicidal self-harm, there is evidence that children do commit suicide. According to the CDC, 33 children between the ages of 5 and 11 years old took their own lives in 2016 (Heron, 2018). Various methods were used including poisoning, hanging, strangulation, suffocation, and self-inflicted gunshot wounds (Xu et al., 2018). Studies on adolescent and adult DSH have found that engagement in NSSI may even be a stronger predictor of future suicide attempt than is a history of suicide attempt (Mars et al., 2019; Nock, 2014; Pennequin, Questel, Delaville, Delugre, & Maintenant, 2019; Ribeiro et al., 2016; Sheridan, Sheridan, Johnson, & Marshall, 2017). Even so, a recent meta-analysis of the

NSSI literature did not identify a single study that included children under the age of 10 (Fox et al., 2015).

Retrospective studies asking older adolescents and adults to identify previous self-injury behaviors have been helpful in identifying characteristics of early self-injury (Kiekens et al., 2018). For example, the younger a child is who engages in self-injury, the more likely they are to be male, to engage in repeated self-injury, to go on to have a future suicide attempt, and to use more lethal means to self-injure (Brezo et al., 2008; Hyman et al., 1990; Mitchell et al., 2018; Curtis, & Foster, 2018; Rukundo et al., 2018 Adriko, & Akena, 2018; Sheftall et al., 2016). While controlling for gender, age, income, maternal psychopathology and early childhood (ages 3-7) self-injury, Chronis-Tuscano et al. (2010) found that children with early childhood self-harm behavior were four times as likely to have school-aged self-injury. This is consistent with the adolescent and adult research that the younger one is at the time self-injury began, the more likely they were to engage in longer term, repeated self-injury (Cloutier et al., 2017; Huband & Tantan, 2004; Wood et al., 2001).

#### Risk factors

Previous research has found that adolescents who engage in NSSI were more likely to be female (Barrocas et al., 2012), have a parent with a mental health problem (Gordon & Hinshaw, 2017; Whalen et al., 2015), have a previous history of self-harm behavior (Franklin & Nock, 2016; Liu et al., 2018), a history of trauma (Bodzy et al., 2016; Tanner, Hasking, & Martin, 2015), and difficulties with emotional dysregulation (Gratz, Richmond, Dixon-Gordon, Chapman, & Tull, 2019). Emotional dysregulation may include depression (Siu, 2019; Tuisku et al., 2009), anxiety (Dixon, Cohen, Baer,

Gratz, & Tull, 2019; Luby et al., 2019), and impulsivity/ADHD (Croyle & Waltz, 2007; Evans, Platts, & Liebenau, 1996; Gordon & Hinshaw, 2017). Liu et al. (2018) completed a meta-analysis of 71 studies and found that a personal history of child maltreatment significantly increased the odds of a one engaging in NSSI. Emotional neglect and emotional abuse having the greatest effect size for DSH. Though being white and female was more common in adolescents and adults who self-harm, younger children who self-harm were more likely to be black and male (Bridge et al., 2015).

The predominance of the self-injury literature utilized convenience samples regarding the age of participants. Inconsistent age cohorts and blending of a variety of ages into the adolescent category resulted in few studies of NSSI in young children. Understanding how self-injury trajectory starts is an essential (Csikszentmihalyi, 2019). piece of the suicide prevention puzzle. The aim of the present study was two-fold. First, to identify a demographic profile of children who engage in NSSI and second, to evaluate whether predictors of adolescent NSSI (maternal psychopathology, depression, anxiety, impulsivity, trauma history) are also associated with NSSI in children. Based on a combination of previous findings in preschool and adolescent DSH literature, this writer hypothesized that children who engage in NSSI behaviors are more likely to be non-Caucasian, have a history of trauma, to demonstrate suicidal behaviors, and to experience problems with depression, anxiety, and impulsivity than children who do not engage in NSSI.

## Method

### Participants

In order to facilitate the generalizability and consistency in construct development, the WHO definition of a child as person between the ages one and nine years old was used. The current study was based on 2018 assessment records compiled by and included in the Midwestern state mental health authority database (DHARMA; Indiana Family and Social Services Administration, 2019). Because the policy of this agency is to initiate a full reassessment each calendar year, a single year parameter of 2018 was chosen. This would avoid duplication of cases in the dataset. These data were collected by community-based behavioral care providers that contracted with Indiana Division of Mental Health and Addiction (DMHA). Each was required to complete a formal assessment with their clients and families at their first visit to a mental health provider with updates every six months they remained in treatment. To ensure that NSSI was not a part of stereotypic self-injury, participant records that indicated a presence of a developmental disability were excluded ( $n = 5148$ ; 24%). For children who received more than one assessment in 2018, the most recent assessment responses were included. The final sample was comprised of 16,271 records.

### Procedure

After receiving approval from the Indiana University Institutional Review Board, de-identified data records of a single cohort of children ages 5-9 years of age who received at least one Indiana Child and Adolescent Strengths and Needs Assessment 5-17 (CANS; Lyons, 2009) were analyzed. Children who were five years old but had not entered kindergarten were assessed using the CANS Birth to Five tool (Personal



Communication with Betty Walton, August 1, 2019), and were not included in the study sample.

### Measures

The CANS tool is used to inform treatment planning that incorporates individual needs and strengths, to monitor the outcomes of services, and to improve quality of programming (Lyons, 2019). Scoring is based on a four-item rating scale describing the child's functioning without the support of services (See Table 3). Ascending scores indicate a higher need for action or remediation in its corresponding domain. The CANS assessment has been found to be a reliable and valid tool for measuring both the psychiatric and psychosocial needs and strengths of children (Anderson, Lyons, Giles, Price, & Estle, 2003; Dilley, Weiner, Lyons, & Martinovich, 2003). While not specifically developed as a research tool, it has served such utility since its development in 1999 (Anderson et al., 2003; Rosanbalm et al., 2016) as it has shown to be reliable and valid at an item level. Cordell and Snowden (2015) studied emotional regulation using the following variables from CANS: frustration management, anger control, anxiety/anxiousness, and irritability. The CANS is used in all 50 states, Canada, China, Italy, and Scotland (Lyons & Israel, 2017).

### *Non-suicidal self-injury*

NSSI is defined as intentional self-harm without suicidal intent. While others have typically used the actionable items (ratings of 2 or 3) on the CANS (Cordell, Snowden, & Hosier, 2016; Griffin et al., 2018; Podgurski, Lyons, Kisiel, & Griffin, 2014) in research, for this study children with a history of NSSI (rating = 1 on item 'self-mutilation') were included as well as those with current NSSI (rating = 2 or 3 on item

‘self-mutilation) to inform the knowledge base regarding frequency or incidence within this population (See Table 2).

### Variables

As such, the dependent variable of NSSI was defined as the CANS Child Risk Behavior item ‘self-mutilation’  $\geq 1$  and was collapsed into a binary variable of ‘NSSI not present’ and ‘NSSI present’ as discussed above (See Figure 3). ‘Other self-harm’ was not included as it is defined as reckless behavior and does not fall within the definition of NSSI.

The independent variables were CANS items: suicide risk, caregiver mental health, child impulsivity, child depression, child anxiety, and child history of trauma and were collapsed into binary variables reflecting ‘actionable items.’ CANS item scores of 0-1 indicated the characteristic was “not present” and scores of 2-3 indicated the characteristic was “present.” Sociodemographic variables of age, ethnicity, and race were also included. This agency uses the race and ethnicity categories as defined by the state census bureau (Betty Walton, personal communication, May 6, 2020). The decision was made not to include SES as a variable as the entire sample was at 200% of poverty level. In this state, the CANS tool is only used with families with this level of income.

### Analysis

This descriptive, cohort study was conducted using Chi-square test of independence to compare the frequency of NSSI and all independent variables using SPSS version 26 (IBM Corporation, 2019) based on the procedure for Chi-square analysis from Field (2018). A second Chi-square test of independence was calculated on sub-groups based on age. Not only would this this second analysis reduce the large sample size, but may also

have more practical significance (Vaske, 2002) in relation to the association between age and NSSI as

## Results

Table 4 presents the descriptive statistics for the children in this sample. Of the 16,271 records reviewed, 9% ( $n = 1473$ ) had a history of or current behaviors of NSSI, 13.6% ( $n = 2220$ ) had historical or current suicidal behaviors, and 4% ( $n = 597$ ) had both suicidal and NSSI behaviors. Most of the sample were male (62%), white (70%), non-Hispanic/Latino (91%), and an average age of 7.56 years. The majority had no identified trauma history (67%), anxiety (56%), depression (72%), suicide risk (86.4%), or caregiver mental health problems (71%). Most of the records indicated problems with impulsivity (70%). A significant interaction ( $p < .000$ ) was present for those with a trauma history ( $\chi^2 = 75.54, df = 1$ ), anxiety ( $\chi^2 = 107.59, df = 1$ ), depression ( $\chi^2 = 217.011, df = 1$ ), suicide risk ( $\chi^2 = 993, df = 1$ ), and impulsivity ( $\chi^2 = 122.49, df = 1$ ); at  $p < .05$ , presence of a caregiver mental health problem ( $\chi^2 = 38.29, df = 1$ ), age ( $\chi^2 = 14.18, df = 4$ ), being male ( $\chi^2 = 11.59, df = 1$ ), and being Caucasian ( $\chi^2 = 23.29, df = 6$ ) were associated with NSSI (See Table 6). While these results are in line with prior research with adolescent populations and therefore support the alternative hypothesis, the strength of these associations is very small and may not, in practice, be useful for identifying risk for self-injury specifically.

Without controlling for age, presence of NSSI is significantly associated with increased odds of being older (1.33, 99% CI = 1.15- 1.54) and male (1.2, 99% CI = 1.05 – 1.41). When controlling for age, only children aged six who engaged in NSSI, are more

likely to be female. As well, suicide risk, impulsivity, and anxiety were significantly associated with NSSI regardless of age, though the strength of that association was small.

As recommended by Khalilzadeh and Tasci (2017), it is useful to discuss effect size due to so many significant relationships in a Chi-square analysis. Cramer's  $V/\phi$  is reported in Tables 5 and 6. Only a few variables had even a small effect size on NSSI: age 5\*impulsivity ( $\Phi = .13$ ), age 7\*depression ( $\Phi = .13$ ), age 8\*depression ( $\Phi = .11$ ), age 9\*depression ( $\Phi = .14$ ), age 9\*anxiety ( $\Phi = .10$ ), and age 9\*trauma history ( $\Phi = .1$ ).

Confirming previous findings in this area, the effect sizes between suicide risk and NSSI, increased as the age of the child increased, ranging from  $\Phi = .16$  at age 5 years, to  $\Phi = .3$  at age 9 years old (See Table 5).

## Discussion

While these results are in line with prior research with adolescent populations and therefore support the alternative hypothesis, the strength of these associations is very small. This is one of the first studies confirming that self-injury without suicidal intent does occur in pre-adolescent youth. As some have found NSSI to be a stronger predictor of suicide attempts than even previous suicide attempts (Asarnow et al., 2011; Mars et al., 2019; Ribeiro et al., 2016), these findings provide support for further research with young children. Though not the specific focus here, it is also noteworthy that the frequency of children identified with suicidal risk was higher than that of children with NSSI-- an outcome not predicted in existing literature in children. As there is some controversy over the developmental stage in which children can fully understand the concept of death in general, and suicide specifically (Bufferd et al., 2012; Hong, Tillman, & Luby, 2015; Luby, Belden, Pautsch, Si, & Spitznagel, 2009; Whalen, Sylvester, &

Luby, 2017), this finding warrants further investigation. Additionally, as these findings that show associated risk factors for self-harm in children mimic those of adolescents, perhaps the development of effective interventions in older youth can be more readily available, modified, and utilized with younger children.

Findings related to the presence of NSSI and problems with impulsivity are of special interest. Some have found an association between impulsivity (Attention Deficit/Hyperactivity Disorder) and addiction (JSmith, Mattick, Jamadar, & Iredale, 2014) which may provide a more complex understanding and support for opioid theories of self-injury (Roth et al., 1996). This theory suggests that self-injury results in endogenous opiates being released in the body which reinforce and possibly facilitate addiction to opiates in the process. It is notable that the frequency of impulsiveness in this sample was 82% and the highest percentage of any of the other risk factors discussed. This may be a function of development as self-regulation improves with age. These findings provide additional support for the suggestion by Chapman et al. (2006) that impulsivity is part of the personality profile of those who self-injure. This theory suggests that self-injury results in endogenous opiates being released in the body which reinforce and possibly facilitate addiction to opiates in the process.

Though the current study did not find a strong association between race and NSSI, it does support previous findings that one is more likely to be male if engaging in NSSI at younger ages. Since adolescent self-harmers are predominantly female, mediating factors which influence a transition from primary association with being male to association with being female as children age warrants further exploration.

## Limitations

Data for this study were drawn from a sample of children receiving behavioral health care services. Relying on a clinical sample is a primary limitation in the generalizability of this study to community-based populations. As discussed, the large sample size used here was more likely to produce significant results, while effect size was low in all cases. This is a limitation of using Chi-square tests with such large samples (Khalilzadeh & Tasci, 2017). Additionally, binary coding may have led to artificial inflation of the number of self-harmers though, as explained, part of this study's purpose was to gauge the prevalence of NSSI in younger children.

Even though the CANS tool has been found to be valid and reliable, it cannot be assumed that all the assessments were administered the same way. As has been reviewed elsewhere (McConnell-Lewis, 2020), the lack of understanding between the differences in intent of among the types of self-injury may influence the coding on these tools. As researchers have not yet settled on standard lexicon for self-injury in relation to its intent as suicidal or not, it can be assumed that parents and children lack a sophisticated understanding of this difference as well. This may also explain the unexpected finding that more children in this sample were at suicide risk, than were at NSSI risk. An angry child hitting herself in the head or saying she wishes to be dead could be mislabeled by a caregiver as suicidal behavior.

## Future Directions

Fox et al. (2015) has suggested that further research needs to be done using samples in which all participants have a self-harm history. As the CANS contains two specific items related to NSSI and suicide and is used in all 50 states and with children

ages 5 to 18, there is potential for large amounts of data to be analyzed in isolated populations of NSSI.

Finally, because all the risk factors identified are modifiable, identifying these higher risk children at earlier ages establishes prospects for prevention and intervention. Training clinicians to include a single question about self-injury as part of their routine risk assessment, regardless of the age of the child, would be a simple, efficient and inexpensive way to begin identifying these children before adolescence. The addition of such a screening question by social workers in all fields as well as primary care, childcare or preschool settings, and public health agencies could identify and intervene with children and families at a much earlier point in the suicide trajectory.

Children as young as five years old engage in NSSI. Because of the well-established and strong association between NSSI and suicide attempts, social workers and other public health workers need to screen for suicide risk and intervene with young children and families. Effective early intervention could derail a course towards the second highest cause of death for those under the age of 18 in the US: suicide (National Institute of Mental Health, 2017).

## CHAPTER THREE

### TRAUMA AND NSSI IN YOUNG CHILDREN

#### Introduction

There are four types of deliberate self-harm behavior (DSH): stereotypic (Franklin & Nock, 2016), culturally sanctioned (ISSSI, 2018), non-suicidal self-injury (NSSI; Plener, Kapusta, Brunner, & Kaess, 2014; Whitlock, Exner-Cortens, & Purington, 2014) and suicidal self-injury (SSI; Plener et al., 2014). Stereotypic self-injury refers to behavior (i.e., head-banging) that may be demonstrated by people with developmental disabilities such as autism and mental retardation. While these may result in injury, the intention of the individual to do so is unclear. Behaviors that might cause physical damage but are socially sanctioned (i.e., piercing or tattooing) or are part of a recognized cultural, spiritual, or religious ritual, are not considered to be NSSI (ISSSI, 2018). The focus here was on NSSI defined as intentional, self-injurious behavior with the specific purpose of emotional regulation and without intent to die (Halicka & Kiejna, 2018).

Why study NSSI? Because NSSI is well-established as a predictor of suicide attempts in adolescents and adults (Harris et al., 2019) and suicide is the 10th leading cause of death in the US (Xu et al., 2018), the third leading cause of death in adolescents in the world (WHO, 2017). Tragically these numbers continue to rise (Hedegaard et al., 2018).

While historically considered to be a behavior that starts in adolescence and early adulthood (Bjureberg et al., 2019; Kiekens et al., 2019), there is evidence DSH occurs in younger children (Luby et al., 2019). The WHO defines adolescence as ages 10-17 years and child as a person 0-9 years of age, hence, these definitions will be used here (World



Health Organization Guidelines Review Committee, 2017). While there is increasing evidence that pre-adolescent children engage in self-harm behavior (Dervic & Oquendo, 2019; Dougherty et al., 2015; Martinez, 2013; McConnell-Lewis, 2020; Whalen et al., 2018), a recent meta-analysis of current trends in the study of NSSI (Fox et al., 2015), reviewed no studies with a sample exclusively made up of young children. Likewise, not a single study of NSSI focusing on pre-adolescent children exclusively was found.

#### NSSI and trauma

Emerging trends demonstrate a significant association between childhood trauma and NSSI (Baiden, Stewart, & Fallon, 2017; Chavez, 2019; Horowitz & Stermac, 2018; Liu et al., 2018). The NIMH (2020) defines trauma as "...a shocking, scary, or dangerous experience that can affect someone emotionally and physically" (p.1). This includes natural disasters, acts of violence, and accidents though the predominance of trauma research focuses on child maltreatment such as emotional, physical or sexual abuse and neglect (Brown et al., 2018). Zoroglu et al. (2003) reported that young people who had experienced any kind of interpersonal abuse or neglect were 2.7 times more likely to engage in self-mutilating and Liu et al. (2018) found childhood maltreatment increased the odds of NSSI by 3.42. Studies of natural disasters and accidents could not be located for this review, though traumatic events like this may be indirectly represented in studies of post-traumatic stress disorder (PTSD) and NSSI (Kimbrel et al., 2017; Webermann, Myrick, Taylor, Chasson, & Brand, 2016).

#### Sexual abuse

While not always clear if sexual abuse actually predicts NSSI (Lang & Sharma-Patel, 2011), the preponderance of the literature suggests the strongest relationship

between maltreatment and NSSI is within the sub-type of sexual abuse (Brodsky, Cloitre, & Dulit, 1995; Lang & Sharma-Patel, 2011; WHO, 2017). Tatnell, Hasking, Newman, Taffe, and Martin (2017) reported that youth with recent sexual abuse histories were seven times more likely to endorse NSSI compared to those without a sexual abuse history; Baiden et al. (2017) found that children with a history of sexual abuse were 60% more likely to have NSSI. Other researchers have concluded that level of tissue destruction associated with NSSI was more severe with those who have been sexually abused as they were more likely to engage in recurrent injuring (i.e., three or more events) as opposed to intermittent injuring (i.e., one or two events; Yates, Tracy, & Luthar, 2008).

#### Other trauma

Findings related to other types of trauma are less consistent. In comparisons between the outcomes of sexual, physical, and emotional abuse, (Brodsky et al., 1995) determined physical abuse was the only significant variable, (Wan et al., 2019) found emotional abuse to be the only significant variable, and a meta-analysis by Liu et al. (2018) found all but emotional abuse to have significant associations with NSSI. More severe maltreatment and familial association with the abuser/ abusers have been shown to be linked with increased self-injury and persistence of the behavior into adulthood (Brodsky et al., 1995; Yates et al., 2008). Richmond-Rakerd et al. (2019) conducted twin studies of the relationship between trauma and NSSI and found that genetic factors, not the type of trauma one experienced, were more predictive of NSSI behaviors.

This objective here was to explore the relationship between a trauma history and NSSI in pre-adolescent children. The aim of this study was to answer the questions:

1. Can engagement in NSSI behaviors be predicted from lifetime exposure to potentially traumatic experiences including sexual, physical, emotional abuse, and neglect, family or community violence, or experiencing natural disasters.
2. If NSSI can be predicted, which type of trauma can predict NSSI?

Based on the literature review, this author hypothesized that sexual abuse, emotional abuse, and physical abuse would be significant predictors of NSSI in children.

## Method

### Participants

Participants in this study were children as defined by the World Health Organization Guidelines Review Committee (2017), ages five to nine years old who received mental health services funded by the state mental health authority in the Midwestern US in calendar year 2018 (Indiana Family and Social Services Administration, 2019). For children who received more than one assessment in 2018, only the most recent assessment was included. Records of 21,419, five to nine-year-old children were obtained for the year 2018. To ensure that NSSI was defined as intentional, non-suicidal and not a part of stereotypic self-injury, 5148 (24%) records which indicated the presence of a developmental disability were excluded. The final study sample was comprised of 16,271 records.

### Measures

The Child and Adolescent Needs and Strengths (CANS) Comprehensive Assessment Ages 5-17 (Lyons, 2009), was the source of data for this study. While not specifically developed as a research tool, the CANS has served as such since its

development in 1999 (Anderson et al., 2003; Price, & Estle, 2003; Rosanbalm et al., 2016) and has shown to be reliable and valid at an item level (Anderson et al., 2003). The CANS tool is used to inform treatment planning that incorporates individual needs and strengths, to monitor the outcomes of services, and to improve quality of programming (Lyons, 2019). Scoring is based on a four-item rating scale describing the child's functioning without the support of services (See Figure 4). Ascending scores indicate a higher need for action or remediation in its corresponding domain. The state agency required all contracted behavioral health providers (community mental health centers and other child service agencies) to complete the CANS, in collaboration with the child and family, for all children and youth and their caregivers; updates were completed every six months. Clinical practitioners who completed the assessment, maintained certification to reliably rate the instrument.

A history of trauma was identified and measured by scores on CANS Trauma Module items: sexual abuse, physical abuse, emotional abuse, neglect, medical trauma, natural or manmade disaster, witness to family violence, community violence, witness/victim to criminal activity, and war/terrorism affected. The rating guide for these trauma items (0-4) is available in Appendix C and were developed based on the National Child Traumatic Stress Network CANS (Kisiel et al., 2011). NSSI was identified and defined as a rating  $\geq 1$  on the Child Risk Behaviors of 'self-mutilation' portion of the CANS instrument.

Sociodemographic variables of age, ethnicity, and race were also reported. This agency uses the race and ethnicity categories as defined by the state census bureau (Betty Walton, personal communication, May 6, 2020). The decision was made not to include

SES as a variable as the entire sample was at 200% of poverty level. In this state, the CANS tool is only used with families with this level of income.

#### Data Analysis

A secondary data analysis of 2018 CANS data was conducted. Field (2018) suggested that statistical model building ought to strive for parsimony. He recommends that stepwise methods in logistic regression analysis can interfere with this goal but when, in cases such as this, there is little previous research on which to base one's model building, the backward stepwise method is preferable as the likelihood ratio method is more reliable as a removal criterion.

Using SPSS 26 (IBM, 2019), a binary logistic regression was used to calculate the combined predictive power of the ten trauma items from the CANS (sexual abuse, physical abuse, emotional abuse, neglect, medical trauma, natural or manmade disaster, witness to family violence, community violence, witness/victim to criminal activity, and war/terrorism affected) for NSSI (See Figure 6). The logistic regression analysis was conducted using steps identified by (Mertler & Reinhart, 2016) using the backward stepwise method as discussed above.

While logistic regression does not require observance of specific assumptions, the data was reviewed to minimize issues that may affect power. Ratio of variables to cases, expected cell frequencies, multi-collinearity of variables and extreme values and outliers were examined. Field (2018) advised a 10:1 case to variable ratio: 15223:10 is adequate. No cells had less than a frequency of five. Multicollinearity was evaluated by running a linear regression model with all independent variables loaded against a generic dependent variable of participant identification number (See Table 8). Tolerance values for all

variables were greater than 1 and therefore no issues were identified with multicollinearity. To look for outliers, a Mahalanobis distance variable was computed and compared to the Chi-Square distribution table ( $p < .001$ ,  $df = 9$ ,  $\chi^2 = 29.588$ ; Mertler & Reinhart, 2016). As a result, 1048 cases were removed from the sample. (Mertler & Reinhart, 2016). This procedure resulted in zero frequencies in the war and terrorism item and this model was removed from the model

## Results

### Descriptive statistics

Of the 16,271 children who received a CANS assessment in 2018, 15223 cases were analyzed. Of those, 1299 (8.5%) also had a history of NSSI. Those with a history of NSSI and those without were well-matched on demographic characteristics including mean age (7.65 yrs. and 7.54 years, respectively), and race (black 16.1% and 19.6%, White 71.7% and 69.6% respectively), non-Hispanic ethnicity (92.1% and 90.5% respectively). There was a notable difference between groups regarding gender. Only 61.9% of the cases without NSSI were male, compared to 68% of the NSSI cases; female without NSSI was 37.8% and with NSSI was 31.8%. This is consistent with previous findings that self-injury and younger age are significantly associated with being male (Brodsky et al., 1995). These demographic variables were not included in the model building as the research question was focused on trauma exposure specifically. Results are in Tables 6 and 7.

### Logistic regression analysis

Backward stepwise logistic regression was conducted to determine which independent variables (trauma history including sexual abuse, physical abuse, emotional

abuse, neglect, medical trauma, natural disaster, witness to family violence, exposure to community violence, or victim of criminal activity) were predictors of NSSI behavior. As indicated, data screening resulted in the removal of 1299 outliers. Though the odds ratios are fairly small, the results indicated the overall model of seven predictors (sexual abuse [OR 1.14], physical abuse [OR 1.1.26], emotional abuse [OR1.296], neglect [OR .895], medical trauma [OR 1.34], exposure to natural disaster [OR 1.81] and witness to a crime [OR1.14] was statistically reliable in distinguishing between children who self-injure and those who do not. Regression results indicated that the overall model fit of two predictors (witness to community violence and family violence) was questionable (-2 Log Likelihood = 8716.302) but was statistically reliable in distinguishing between those who engage in NSSI ( $\chi^2(7) = 161.789, p < .000$ ). Such a large fit indices indicates fit is questionable here. The model explains 2.4% (Nagelkerke R<sup>2</sup>) of the variance in NSSI and correctly classifies 91.5% of cases. Sensitivity, however, is 0%, specificity is 100%, and both positive and negative predictive values are 0%. The only variable resulting in reduced odds of NSSI was neglect (OR .878). Regression coefficients were presented in Table 8.

## Discussion

Between the low probability of NSSI behavior and the vulnerability of a logistic regression to overfit a model (Mertler & Reinhart, 2016), reducing the sample sizes may have resulted in more meaningful outcomes. This contemporary cohort study provides new insights into the prevalence of and relationship between NSSI and trauma. Of foremost importance and barely studied, NSSI does occur in this sample of pre-adolescent children (9.1%).

The primary goal of the current study was to measure predictive power of trauma as related to NSSI. As the hypothesis was that sexual abuse, physical abuse, and emotional abuse would predict NSSI, a regression analysis was run to determine which categories of trauma would also predict NSSI. The alternative hypothesis was partially supported as sexual abuse, physical abuse, and emotional abuse were predictive factors and add to previous evidence, (Cerutti, Zuffiano, & Spensieri, 2018; Ford & Gomez, 2015; Smith, Kouros, & Meuret, 2014) but medical trauma, exposure to natural disaster and criminal were also predictive. Only the category of neglect resulted in decreased odds of NSSI which conflicts with others' findings (Liu et al., 2018).

Perhaps the most consequential finding is that NSSI does occur in young children; prevalence within this sample was 11%. Unfortunately, no existing work to guide intervention and treatment for those working with young children could be found. While a clinical psychiatric sample was used here, children in a variety of non-psychiatric settings can also have higher levels of trauma exposure, (i.e., child welfare, primary care, schools (Griffin et al., 2011; Mora et al., 2020; Zhukova, 2020) and these settings are likely to have a social work component.

Regarding gender and NSSI, the result here was that the positive NSSI group was 65% male and 35% female. This does add to previous evidence in young children but is directly contradictory to the gender proportions in the adolescent research. NSSI is a known risk factor for suicide, and while proportion of adolescent males to females who self-injure is small, the actual suicide rate for adolescent males is significantly higher than females (CDC, 2013; Rockett, 2017). It seems plausible that young boys who self-



injure are more likely to transition to more lethal methods of harm than are girls, which could partly explain the higher rates of suicide in males.

#### Limitations

Other findings need to be considered with a perspective that includes some limitations. The predictive values indicated previously, may be a function of the infrequency of NSSI behaviors in this sample (9.1%). In other words, the odds of correctly predicting that NSSI is not present by just predicting that no cases have an NSSI history will be higher than the 10% present. While trauma does seem to be predictive of NSSI, the odds ratios (OR) for these variables indicated little change in the likelihood of NSSI. Data for this study were drawn from a cohort of children receiving behavioral health care services and may not be applicable to a community-based sample. Additionally, collapsing the CANS item on self-injury from four levels to two may have led to artificial inflation of the number of self-harmers though, as explained, part of this study's purpose was to quantify the prevalence of NSSI in younger children as opposed to measuring severity.

While the CANS tool has been found to be valid and reliable, it cannot be assumed that all the assessments were administered the same way. As has been reviewed elsewhere (McConnell-Lewis, 2020), the lack of understanding between the differences in intent of among the types of self-injury is likely to influence the coding on these tools. The CANS tool assesses what needs there are and not on why the need is unmet (Effland, Walton, & McIntyre, 2011). The lack of standard terminology for self-injury in relation to its intent as suicidal or not, can interfere with consistent assessment of this behavior.

## Future directions

The most significant contribution this study makes to NSSI literature is the confirmation that intentional self-injury without clear intent for suicide does occur in children ages five to nine. Further work is needed to understand the epidemiology of self-injury in community-based children, the child's intent with this behavior, as well as risk factors and covariates. The addition of an intentional question about self-injury as separate, distinct and different behavior from suicidal behavior as a part of the worker's psychosocial history or regular risk assessment process may begin to identify these children and can be implemented at the individual social work practice level. Social workers and other providers in clinical, community, social service and school-based settings would benefit from specific training to understand the differences between NSSI and SSI and the recent evidence that it occurs in pre-adolescent children. In addition, existing screenings, questionnaires, and rapid assessment instruments could be revised to include such a question. Once the incidence of NSSI in children is established, as has occurred in the adolescent literature, EBP interventions can be developed and assessed.

Additional research regarding the role that trauma plays in NSSI needs additional analysis. The current focus on trauma-informed care seems to be an ideal backdrop to a more sophisticated evaluation of how trauma experiences influence NSSI and subsequently suicide behaviors.

The role that sex and gender may play in the trajectory of NSSI is also worth examination. There is some support here that the younger one is who self-injures, the more likely they are to be male though the great majority of adolescents who self-injure are female. The question of what protective factors, in the case of boys, and risks, in the

case of girls, are present that moderate this transition needs further study. Building skills in understanding and identifying risk factors for NSSI in younger children would result in effective prevention, treatment, and healthier outcomes for children and families and potentially help reduce the growing problem of suicide in this country.

## CHAPTER FOUR

### CONCLUSION

On the first day of a 1988 summer internship at an Indiana state psychiatric hospital, I was introduced to a woman who was covered in open, bleeding wounds. None were lethal or life-threatening; she had done this to herself with blades she had broken out of disposable razors from the unit. She explained that she had done this to herself so that she could live. It was the only way she felt better. First as a recreation therapist and later as an LCSW, I would go on to work with countless adolescent girls who cut, women who slapped themselves, peeled off their nails and covered them with gels, or burned themselves on their inner thighs so no one would see, and boys who choked and punched themselves. Most explained their self-injury as self-soothing; an escape from dysphoria. Some wanted to understand and to stop hurting themselves, but most were scared or hesitant to stop or even discuss strategies for changing this behavior. It worked for them and it was scary to try something different that might not work. These explanations have both baffled and intrigued me.

For the past 20 years, I have been in clinical practice with children and families. It is only in the last 10-15 years, however, that I have come across children, without developmental disabilities who were self-injuring. I have theories about why but turning to the literature to check these ideas left me without answers or guidance. This was the inspiration for this dissertation work.

A Google Scholar search of the literature using the keywords “adolescent adult NSSI” returned 4,860 results. A variety of definitions of adolescent, the use of convenience samples, and inconsistent definitions of NSSI have resulted in some samples

which include younger children. For this review, no studies were found that included a sample exclusively under the age of 10 with a focus on NSSI as separate and distinct from suicidal behavior. Janis Whitlock, PhD, the director of the Cornell Research Program on Self-Injury and Recovery, was unaware of any research in this area and indicated a study focusing on pre-adolescents would be a significant contribution to the field (Personal Communication, April 2019).

While the findings here were mostly consistent with the adolescent literature, three findings stand out and warrant further research. First, NSSI is a separate and distinct behavior from suicidal behavior and does occur in children younger than age 10 years. Evidenced-based interventions are non-existent (Hawton et al., 2006) and need more attention in the literature. Second, problems with impulsivity were the most frequent co-variant with NSSI as well as being significantly associated with trauma exposure. Through the theoretical lens of the opioid hypothesis, the overlapping features between impulsivity, ADHD, and addiction, may provide an etiological explanation for NSSI and warrants further research. Finally, the finding that the younger the child who self-injures the more likely they are to be male and black (Bridge et al., 2015), and adolescents who self-injure are likely to be female and white (Madge et al., 2008; Sornberger, Heath, Toste, & McLouth, 2012) reinforces a gap in the research. Combine this paradox with the fact that adolescents who suicide are increasingly black and male (Sheftall et al., 2016) highlights the need to identify variables influencing the transition from self-injury to suicide in young, black males. In the US, suicide is the second leading cause of death in teens (NIMH, 2017) and rates among black youth are increasing faster than any other racial group

Although these are important findings, the power of the analyses was negatively affected by a large sample size. In future work in this area, an alternative sampling method will be used. The same data and analysis could have been completed by random sampling the large population  $n = 16,271$  and therefore increasing the usefulness of the findings. Future work should also focus on community-based populations such as schools, childcare settings, social clubs etc., as I suspect most children who have been exposed to trauma events are much more frequent in those places as opposed to mental health clinics and treatment environments. Additionally, I have made a case for training the health care community to assess and differentiate between self-injury that is suicidal and that which is not. This concept must be discussed and identified in a wide variety of professional publications; ones that target non-mental health providers such as teachers, clergy, first responders, child welfare, nursing, etc.

Perhaps the most important contribution these studies make is to confirm that self-injury occurs in young children which opens the door for more advanced study. Training clinicians to routinely include a question about self-injury as a part of their risk assessment, even with young children, would be a simple, inexpensive, and efficient way to start identifying these kids and intervening as needed.

TABLES

Table 1: Deliberate Self-Harm Terminology

| <b>Terms</b>             | <b>Intent Identified?</b> | <b>Citations</b>   |
|--------------------------|---------------------------|--|
| Self-harm                | Yes                       | American Psychiatric Association (APA, 2013)                 |
|                          | No                        | AHRQ Agency for Healthcare Research and Quality (AHRQ, 2019) |
| Self-injury              | Yes                       |  |
|                          | No                        | Davies and Oliver (2016)                                     |
| Deliberate self-harm     | Yes                       | Romans, Martin, Anderson, Herbison, and Mullen (1995)        |
|                          | No                        | Simioni et al., (2018)                                       |
| Self-poisoning           | Yes                       | None   |
|                          | No                        | Hawton (1982); (Hawton, Cole, O'Grady, & Osborn, 1982)       |
| Non-suicidal self-injury | Yes                       | Kiekens et al., (2018)                                       |
|                          | No                        | Ougrin, Tranah, Stahl, Moran, and Rosenbaum Asarnow (2015)   |
| Suicidal behavior        | Yes                       | Cohen-Sandler, Berman, and King (1982)                       |
|                          | No                        | “mild suicidal behavior”<br>Pfeffer et al., (1986)           |
| Self-mutilation          | Yes                       | Haines et al., (1995) Ross and Heath (2003)                  |

*Note: Significant variations in terminology used with the literature addressing DSH, is a barrier to a consistent comparisons and generalizability of findings.*

Table 2: External Causes of Morbidity and Mortality: ICD-10 Codes (V01-Y98)

| <b>Code</b> | <b>Injury</b>  |
|-------------|--|
| X71         | Intentional self-harm by drowning and submersion                         |
| X72         | Intentional self-harm by handgun discharge                               |
| X73         | Intentional self-harm by rifle, shotgun and larger firearm discharge     |
| X74         | Intentional self-harm by other and unspecified firearm and gun discharge |
| X75         | Intentional self-harm by explosive material                              |
| X76         | Intentional self-harm by smoke, fire and flames                          |
| X77         | Intentional self-harm by steam, hot vapors and hot objects               |
| X78         | Intentional self-harm by sharp object                                    |
| X79         | Intentional self-harm by blunt object                                    |
| X80         | Intentional self-harm by jumping from a high place                       |
| X81         | Intentional self-harm by jumping or lying in front of moving object      |
| X82         | Intentional self-harm by crashing of motor vehicle                       |
| X83         | Intentional self-harm by other specified means                           |

<sup>1</sup>(World Health Organization, 2004)

<sup>1</sup> “This is an adaptation of an original work “International Statistical Classification of Diseases and Related Health Problems 10th Revision. Geneva: World Health Organization (WHO); 2004. Licence: CC BY-NC-SA 3.0 IGO”. This adaptation was not created by WHO. WHO is not responsible for the content or accuracy of this adaptation. The original edition shall be the binding and authentic edition”.



Table 3: CANS 5-17 General Scoring Format

| <b>Score</b> | <b>Level of Need</b>   | <b>Appropriate Action</b>                         |
|--------------|--|---|
| 0            | No evidence of need  | No action needed                                  |
| 1            | Significant history or possible need which is not interfering with functioning | Watchful waiting/Prevention/Additional assessment |
| 2            | Need interferes with functioning   | Action/Intervention                               |
| 3            | Need is dangerous or disabling   | Immediate/Intensive action                        |

2

<sup>2</sup> From *Communitrics: A theory of measurement for human service enterprises*, by J. S. Lyons (2009). New York: Springer. Copyright (2009) by the Praed Foundation. Adapted with permission.

Table 4: Descriptive and X<sup>2</sup> Demographics of Population

| Characteristics | N                         | %     | n    | %    | $\chi^2$ | p | df | $\Phi$ /Cramer's V | OR   | 99% CI       |
|-----------------|---------------------------|-------|------|------|----------|---|----|--------------------|------|--------------|
| Age             |                           |       |      |      | 14.178** |   | 4  | 0.03               |      |              |
|                 | 9                         | 5273  | 32.4 | 537  | 36.5     |   |    |                    | 1.33 | [1.20, 1.50] |
|                 | 8                         | 3754  | 23.1 | 329  | 22.3     |   |    |                    | 1.05 | [0.89, 1.20] |
|                 | 7                         | 3297  | 20.3 | 291  | 19.8     |   |    |                    | 1.06 | [0.89, 1.30] |
|                 | 6                         | 2626  | 16.1 | 207  | 14.1     |   |    |                    | 0.92 | [0.75, 1.10] |
|                 | 5                         | 1321  | 8.1  | 109  | 7.4      |   |    |                    | 0.99 | [0.75, 1.30] |
| Gender          |                           |       |      |      | 11.587** |   | 1  | 0.03               |      |              |
|                 | Female                    | 6154  | 37.8 | 497  | 33.7     |   |    |                    | 0.84 | [0.71, 0.95] |
|                 | Male                      | 10076 | 61.9 | 973  | 66.1     |   |    |                    | 1.20 | [1.10, 1.40] |
|                 | Missing                   | 41    | 0.08 |      |          |   |    |                    |      |              |
| Race            |                           |       |      |      | 23.293** |   | 6  | 0.04               |      |              |
|                 | Asian                     | 35    | .2   | 5    | 0.3      |   |    |                    | 1.57 | [0.46, 5.40] |
|                 | Black                     | 3129  | 19.2 | 239  | 16.2     |   |    |                    | .813 | [0.67, 0.98] |
|                 | Hawaiian-Pacific Islander | 11    | 0.1  | 0    | 0.0      |   |    |                    |      |              |
|                 | Native American           | 37    | 0.2  | 4    | 0.3      |   |    |                    | 1.19 | [0.31, 4.60] |
|                 | White                     | 11362 | 69.8 | 1046 | 71.0     |   |    |                    | 1.05 | [0.91, 1.20] |
|                 | Multi-racial              | 929   | 5.7  | 115  | 7.8      |   |    |                    | 1.49 | [1.10, 1.90] |
|                 | Other                     | 768   | 4.7  | 64   | 4.3      |   |    |                    | .917 | [0.65, 1.30] |
| Ethnicity       |                           |       |      |      | 10.316   |   | 6  | .025               |      |              |
|                 | Cuban                     | 8     | .04  | 2    | .1       |   |    |                    | 2.76 | [0.36, 21.0] |
|                 | Latino, Unknown Origin    | 123   | .8   | 10   | .6       |   |    |                    | .863 | [0.37, 2.00] |
|                 | Mexican                   | 557   | 3.4  | 36   | 2.4      |   |    |                    | .706 | [0.45, 1.10] |
|                 | Puerto Rican              | 86    | .5   | 11   | .74      |   |    |                    | 1.41 | [0.62, 3.20] |
|                 | Other Hispanic/Latino     | 754   | 4.6  | 59   | 4        |   |    |                    | .858 | [0.60, 1.20] |

|                             |              |       |       |      |       |                 |      |              |
|-----------------------------|--------------|-------|-------|------|-------|-----------------|------|--------------|
|                             | Not Hispanic | 14743 | 91    | 1355 | 92    |                 | 1.01 | [0.66, 1.60] |
| <b>Trauma History</b>       |              |       |       |      |       | <b>75.537*</b>  | 1    | 0.07         |
|                             | Present      | 5342  | 32.8% | 631  | 42.8% |                 | 1.60 | [1.39, 1.85] |
|                             | Not Present  | 10929 | 67.2% | 842  | 57.2% |                 | 1.33 | [1.16, 1.54] |
| <b>Anxiety</b>              |              |       |       |      |       | <b>107.588*</b> | 1    | 0.08         |
|                             | Present      | 7196  | 44.2% | 840  | 57.0% |                 | 1.76 | [1.53, 2.03] |
|                             | Not Present  | 9075  | 55.8% | 633  | 43.0% |                 | 0.57 | [0.49, 0.65] |
| <b>Depression</b>           |              |       |       |      |       | <b>217.011*</b> | 1    | 0.12         |
|                             | Present      | 4579  | 28.1% | 657  | 44.6% |                 | 2.20 | [1.93, 2.58] |
|                             | Not Present  | 11692 | 71.9% | 816  | 55.4% |                 | 0.50 | [0.39, 0.52] |
| <b>Impulsivity</b>          |              |       |       |      |       | <b>122.49*</b>  | 1    | 0.09         |
|                             | Present      | 11243 | 69.1% | 1205 | 81.8% |                 | 2.10 | [1.78, 2.55] |
|                             | Not Present  | 5028  | 30.9% | 268  | 18.2% |                 | 0.47 | [0.39, 0.56] |
| <b>Suicide Risk</b>         |              |       |       |      |       | <b>993.63*</b>  | 1    | 0.25         |
|                             | Present      | 2220  | 13.6% | 597  |       |                 | 4.31 | [3.72, 5.00] |
|                             | Not Present  | 14051 | 86.4% | 876  |       |                 | .232 | [0.02, 269]  |
| <b>Caregiver MH Problem</b> |              |       |       |      |       | <b>38.293**</b> | 1    | 0.05         |
|                             | Present      | 4483  | 27.6% | 510  | 34.6% |                 | 1.43 | [1.23, 1.66] |
|                             | Not Present  | 11556 | 71.0% | 950  | 64.5% |                 | 1.00 | [0.88, 1.13] |
|                             | Missing      | 232   | 1.4%  |      |       |                 |      |              |

Note: \* $p < .000$  \*\*\*  $p < .05$ , N= 16271, n= 1473

Table 5: Risk Factor\*Non-Suicidal Self-Injury Contingency Table

| Age  | n   | $\chi^2$            | df | p             | $\Phi$ | OR   | 95% CI         |
|--|-----|---------------------|----|---------------|--------|------|----------------|
| <i>Caregiver Mental Health Problem * Self-Injury History</i> |     |                     |    |               |        |      |                |
| 5  | 28  | 0.372               | 1  | .542          | -0.017 | 0.88 | [0.582, 1.330] |
| 6  | 67  | 1.302               | 1  | .254          | 0.022  | 1.18 | [0.89, 1.556]  |
| 7  | 100 | 8.114               | 1  | <b>.004**</b> | 0.05   | 1.40 | [1.11, 1.76]   |
| 8  | 119 | 13.033              | 1  | <b>.000*</b>  | 0.059  | 1.48 | [1.20, 1.834]  |
| 9  | 196 | 25.856              | 1  | <b>.000*</b>  | 0.071  | 1.54 | [1.30, 1.813]  |
| <i>Suicide Risk * Self-Injury History</i>                    |     |                     |    |               |        |      |                |
| 5  | 15  | 32.469              | 1  | <b>.000*</b>  | .157   | 4.06 | [2.55, 6.46]   |
| 6  | 52  | 106.129             | 1  | <b>.000*</b>  | .201   | 4.28 | [3.24, 5.64]   |
| 7  | 104 | 169.231             | 1  | <b>.000*</b>  | .227   | 4.06 | [3.28, 5.04]   |
| 8  | 144 | 216.343             | 1  | <b>.000*</b>  | .240   | 4.2  | [3.44, 5.13]   |
| 9  | 282 | 442.073             | 1  | <b>.000*</b>  | .290   | 4.76 | [4.07, 5.56]   |
| <i>Impulsivity * Self-Injury History</i>                     |     |                     |    |               |        |      |                |
| 5  | 97  | 23.81               | 1  | <b>.000*</b>  | 0.134  | 3.78 | [2.10, 6.81]   |
| 6  | 172 | 18.266              | 1  | <b>.000*</b>  | 0.083  | 2.10 | [1.48, 2.99]   |
| 7  | 240 | 22.141              | 1  | <b>.000*</b>  | 0.082  | 1.97 | [1.47, 2.64]   |
| 8  | 272 | 28.489              | 1  | <b>.000*</b>  | 0.087  | 2.07 | [1.57, 2.728]  |
| 9  | 424 | 35.483              | 1  | <b>.000*</b>  | 0.082  | 1.80 | [1.48, 2.20]   |
| <i>Depression * Self-Injury History</i>                      |     |                     |    |               |        |      |                |
| 5  | 24  | 1.629               | 1  | .202          | 0.035  | 1.33 | [.862, 2.04]   |
| 6  | 59  | 8.958               | 1  | <b>.003**</b> | 0.058  | 1.55 | [1.16, 2.07]   |
| 7  | 129 | 53.773              | 1  | <b>.000*</b>  | 0.128  | 2.24 | [1.80, 2.78]   |
| 8  | 147 | 42.5                | 1  | <b>.000*</b>  | 0.106  | 1.97 | [1.60, 2.42]   |
| 9  | 298 | 108.886             | 1  | <b>.000*</b>  | 0.144  | 2.3  | [1.96, 2.70]   |
| <i>Anxiety * Self-Injury History</i>                         |     |                     |    |               |        |      |                |
| 5  | 53  | 5.775 <sub>a</sub>  | 1  | <b>.016**</b> | 0.066  | 1.55 | [1.08, 2.22]   |
| 6  | 107 | 15.034 <sub>c</sub> | 1  | <b>.000*</b>  | 0.076  | 1.67 | [1.29, 2.17]   |
| 7  | 162 | 19.652 <sub>d</sub> | 1  | <b>.000*</b>  | 0.077  | 1.64 | [1.32, 2.05]   |
| 8  | 177 | 10.618 <sub>e</sub> | 1  | <b>.001**</b> | 0.053  | 1.41 | [1.15, 1.73]   |
| 9  | 341 | 56.286              | 1  | <b>.000*</b>  | 0.103  | 2.87 | [1.58, 2.21]   |
| <i>Trauma Adjustment * Self-Injury History</i>               |     |                     |    |               |        |      |                |
| 5  | 48  | 4.141 <sub>a</sub>  | 1  | <b>.042**</b> | 0.056  | 1.45 | [1.01, 2.09]   |
| 6  | 79  | 2.905 <sub>c</sub>  | 1  | .088          | 0.033  | 1.26 | [0.97, 1.65]   |

| <b>Age</b>                                 | <b>n</b> | <b><math>\chi^2</math></b> | <b>df</b> | <b><i>p</i></b> | <b><math>\Phi</math></b> | <b>OR</b> | <b>95% CI</b> |
|--|----------|----------------------------|-----------|-----------------|--------------------------|-----------|---------------|
| 7  | 136      | 24.657 <sub>d</sub>        | 1         | .000*           | 0.086                    | 1.73      | [1.39, 2.16]  |
| 8  | 132      | 7.193 <sub>e</sub>         | 1         | .007**          | 0.044                    | 1.33      | [1.08, 1.64]  |
| 9  | 236      | 44.250 <sub>f</sub>        | 1         | .000*           | 0.092                    | 1.72      | [1.46,2.02]   |
| <i>Gender (male) * Self-Injury History</i> |          |                            |           |                 |                          |           |               |
| 5  | 86       | 12.882 <sub>a</sub>        | 1         | .000*           | 0.099                    | 2.2       | [1.41,3.43]   |
| 6  | 134      | .356 <sub>c</sub>          | 1         | .551            | 0.012                    | 1.09      | [0.83,1.43]   |
| 7  | 202      | 8.377 <sub>d</sub>         | 1         | .004**          | 0.051                    | 1.42      | [1.12,1.81]   |
| 8  | 221      | 4.087 <sub>e</sub>         | 1         | .043**          | 0.033                    | 1.25      | [1.01,1.56]   |
| 9  | 330      | .000 <sub>f</sub>          | 1         | .990            | 0.000                    | 1.00      | [0.85,1.18]   |

Table 6: Sample Demographics

|           |                        | n     | %    | Cumulative % |
|-----------|------------------------|-------|------|--------------|
| Ethnicity | Not Hispanic/Latino    | 13796 | 90.6 | 90.6         |
|           | Puerto Rican           | 78    | .5   | 91.1         |
|           | Mexican                | 523   | 3.4  | 94.6         |
|           | Cuban                  | 8     | .1   | 94.6         |
|           | Other Hispanic/Latino  | 701   | 4.6  | 99.2         |
|           | Latino, Unknown Origin | 117   | .8   | 100          |
|           | Total                  | 15223 |      |              |
| Age       | 5 yrs.                 | 1237  | 8.1  | 8.1          |
|           | 6 yrs.                 | 2462  | 16.2 | 24.3         |
|           | 7 yrs.                 | 3083  | 20.3 | 44.6         |
|           | 8 yrs.                 | 3517  | 23.1 | 67.7         |
|           | 9 yrs.                 | 4924  | 32.3 | 100          |
|           | Total                  | 15223 | 100  |              |
| NSSI      | Not Present            | 13924 | 91.5 | 91.5         |
|           | Present                | 1299  | 8.5  | 100          |
|           | Total                  | 15223 | 100  |              |
| Gender    | Male                   | 9506  | 62.4 | 62.4         |
|           | Female                 | 5679  | 37.3 | 100          |
|           | Missing                | 38    | .2   |              |
|           | Total                  | 15223 | 100  |              |
| Race      | White                  | 10630 | 69.8 | 69.8         |
|           | Other                  | 726   | 4.8  | 74.6         |
|           | Native American        | 33    | .2   | 74.8         |
|           | Multi-racial           | 847   | 5.6  | 80.4         |
|           | Hawaiian               | 11    | 1    | 80.5         |
|           | Black                  | 2943  | 19.3 | 99.8         |
|           | Asian                  | 33    | .2   | 100          |
|           | Total                  | 15223 | 100  |              |

Table 7: Types of Trauma Experienced

| <b>History of:</b> | <b>n</b> | <b>%</b> |
|--------------------|----------|----------|
| Sexual Abuse       | 1730     | 11.4     |
| Physical Abuse     | 3095     | 20.3     |
| Emotional Abuse    | 4654     | 30.6     |
| Neglect            | 4671     | 30.7     |
| Medical Trauma     | 547      | 3.6      |
| Natural Disaster   | 116      | 0.80     |
| Family Violence    | 5227     | 34.3     |
| Community Violence | 1045     | 6.90     |
| Witness of a Crime | 1673     | 11.0     |
| War or Terrorism   | 0        |          |

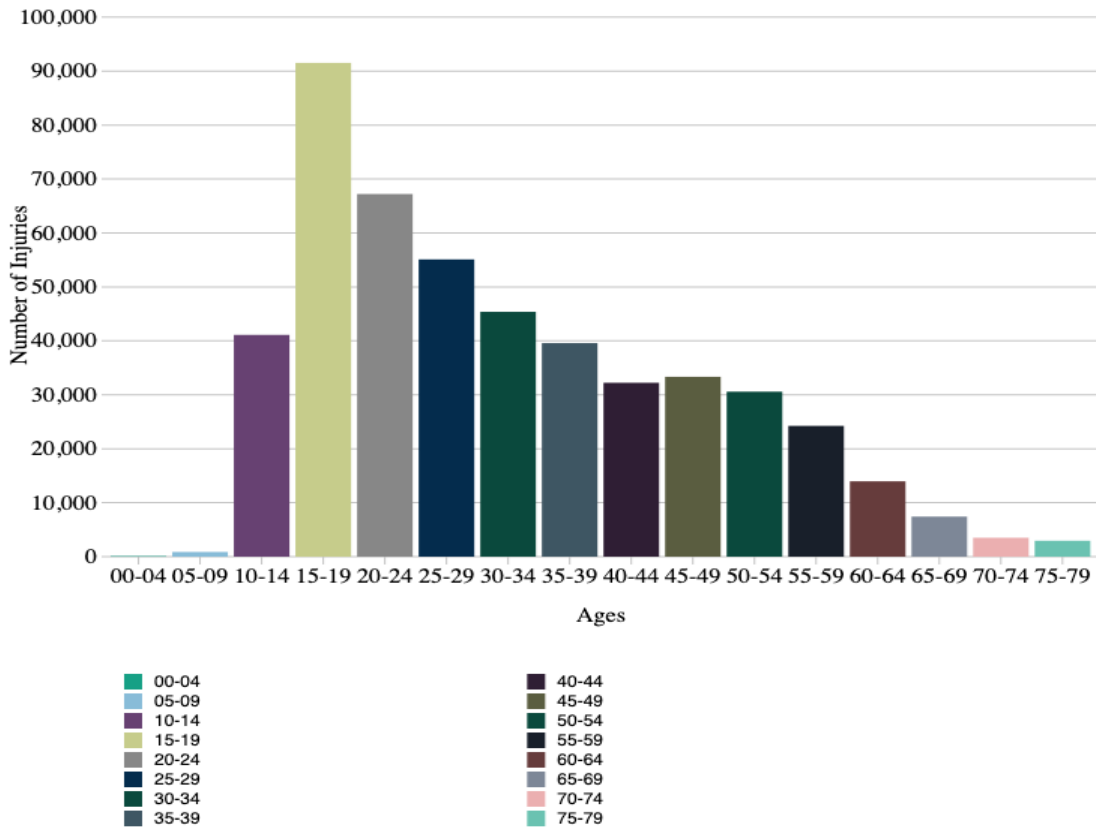
Table 8: Summary of Logistic Regression Analysis Predicting Non-Suicidal Self-Injury

|                                       | B      | SE   | Wald     | df | Sig  | OR    | 95% CI         |
|---------------------------------------|--------|------|----------|----|------|-------|----------------|
| Sexual Abuse                          | .132   | .053 | 6.237    | 1  | .013 | 1.142 | [1.029, 1.266] |
| Physical Abuse                        | .224   | .051 | 19.142   | 1  | .000 | 1.251 | [1.131, 1.383] |
| Emotional Abuse                       | .246   | .047 | 27.799   | 1  | .000 | 1.279 | [1.167, 1.402] |
| Neglect                               | -.116  | .040 | 8.576    | 1  | .003 | .891  | [0.824, 0.962] |
| Medical Trauma                        | .293   | .114 | 6.551    | 1  | .010 | 1.340 | [1.071, 1.677] |
| Natural and Manmade Disaster          | .578   | .266 | 4.710    | 1  | .030 | 1.782 | [1.058, 3.002] |
| Witness to Family Violence            | .034   | .039 | .775     | 1  | .379 | 1.035 | [0.959, 1.117] |
| Community Violence                    | .078   | .090 | .750     | 1  | .386 | 1.035 | [0.906, 1.290] |
| Witness / Victim to Criminal Activity | .102   | .068 | 2.277    | 1  | .131 | 1.081 | [0.970, 1.264] |
| Constant                              | -2.620 | .040 | 4328.874 | 1  | .000 | .073  |                |
| Sexual Abuse                          | .131   | .053 | 6.088    | 1  | .014 | 1.140 | [1.027, 1.264] |
| Physical Abuse                        | .234   | .050 | 21.533   | 1  | .000 | 1.263 | [1.145, 1.94]  |
| Emotional Abuse                       | .259   | .045 | 33.463   | 1  | .000 | 1.296 | [1.187, 1.415] |
| Neglect                               | -.111  | .039 | 8.002    | 1  | .005 | .895  | [0.828, 0.966] |
| Medical Trauma                        | .293   | .114 | 6.583    | 1  | .010 | 1.341 | [1.072, 1.677] |
| Natural and Manmade Disaster          | .593   | .266 | 4.971    | 1  | .026 | 1.809 | [1.074, 3.045] |
| Witness / Victim to Criminal Activity | .135   | .062 | 4.749    | 1  | .029 | 1.144 | [1.014, 1.291] |
| Constant                              | -2.610 | .038 | 4598.944 | 1  | .000 |       |                |



## FIGURES

Figure 1: 2017 CDC All Intentional Self-Harm, All ages

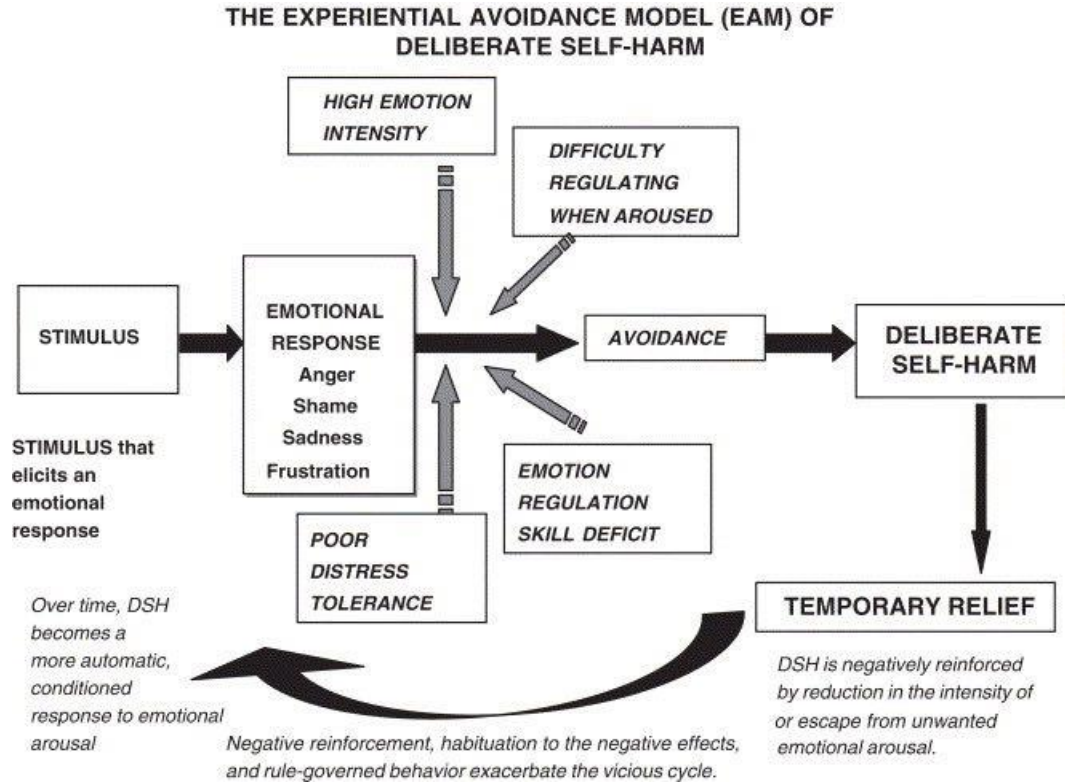


Self-Harm All Causes Injuries  
 Age Range: 0 to 4 - 75 to 79  
 Disposition: All Dispositions  
 Gender: All Genders  
 Year Range: 2017 - 2017

3(Centers for Disease Control and Prevention, 2003)

3 Adapted from Centers for Disease Control and Prevention National Electronic Injury Surveillance System-All Injury Program operated by the Consumer Product Safety Commission for numbers of injuries. Bureau of Census for population estimates accessed from <https://wisqars-nfviz.cdc.gov:8005/#!/non-fatal>

Figure 2: The Experiential Avoidance Model



4 (Chapman et al., 2006)

4 From *Solving the puzzle of deliberate self-harm: The Experiential Avoidance Model* by A. L. Chapman, K. L. Gratz, and M. Z. Brown, 2006, *Behaviour Research and Therapy*, 44, p.373. Copyright 2005 by Elsevier Ltd.

Figure 3: CANS 5-17 Risk Items

| <b>CHILD RISK BEHAVIORS</b>    |                            |                       |                       |                       |
|--------------------------------|----------------------------|-----------------------|-----------------------|-----------------------|
| 0 = no evidence                | 1 = history, watch/prevent |                       |                       |                       |
| 2 = recent, act                | 3 = acute, act immediately |                       |                       |                       |
|                                | <b>0</b>                   | <b>1</b>              | <b>2</b>              | <b>3</b>              |
| Suicide Risk                   | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Self-Mutilation                | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Other Self Harm                | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Danger to Others <sup>6</sup>  | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Sexual Aggression <sup>7</sup> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Runaway <sup>8</sup>           | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Delinquency <sup>9</sup>       | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Fire Setting <sup>10</sup>     | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Intentional Misbehavior        | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Bullying                       | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Figure 4: CANS Rating Guide for Variables Used

| <b>CANS Item</b>          | <b>Ratings (2,3 = actionable; 0,1 = not actionable)</b>   |
|---------------------------|---|
| Caregiver's mental health | <p>0 = Caregiver has no mental health needs</p> <p>1 = Caregiver is in recovery from mental health difficulties</p> <p>2 = Caregiver has some mental health difficulties</p> <p>3 = Caregiver has mental health use difficulties that make it impossible for them to parent at this time</p>  |
| Impulsivity/Hyperactivity | <p>0 = This rating is used to indicate a child with no evidence of age-appropriate impulsivity in action or thought</p> <p>1 = Mild levels of impulsivity evident in either action or thought, or limited impulse control</p> <p>2 = Problems with impulsive, distractible, or hyperactive behavior that interferes with the child's ability to function in at least one life domain; represents significant management problem; includes aggressive impulses</p> <p>3 = Dangerous level of impulsive behavior and puts self or others at risk of physical harm</p> |
| Depression                | <p>0 = No evidence</p> <p>1 = History of mild to moderate depression associated with negative life events and with minimal impact on functioning</p> <p>2 = Evidence of depression and/or significant irritability that has interfered with at least one life domain functioning</p> <p>3 = Evidence of disabling depression that interferes in any life domain</p>   |
| Anxiety                   | <p>0 = No evidence</p> <p>1 = History of mild to moderate anxiety associated with negative life event; includes mild phobia</p> <p>2 = Evidence of anxiety with anxious mood, or significant fearfulness which significantly interferes in child functioning in at least one life domain</p> <p>3 = Evidence of debilitating level of anxiety that has interfered in any life domain</p>  |

| <b>CANS Item</b>     | <b>Ratings (2,3 = actionable; 0,1 = not actionable)</b>   |
|----------------------|---|
| Adjustment to trauma | <p>0 = No history of significant trauma</p> <p>1 = History of mild adjustment problems associated with trauma that are likely to ease with time; may be in process of recovery from more severe response to trauma</p> <p>2 = Evidence of moderate adjustment to trauma that interferes in at least one life domain</p> <p>3 = Evidence of severe adjustment problems, including flashbacks, nightmares, significant anxiety, intrusive thoughts, re-experiencing trauma and requires intensive and immediate attention</p> |
| Suicide risk         | <p>0 = No current or history of suicidal ideation or behavior</p> <p>1 = History of suicidal ideation or behavior but none current within the last 30 days</p> <p>2 = Recent ideation or gesture but not in last 24 hours</p> <p>3 = Current (within past 24 hours) ideation or intent or command hallucinations that involve self-harm</p>   |
| Self-mutilation      | <p>0 = No evidence of any forms of self-injury</p> <p>1 = History of self-mutilation but not in last 30 days</p> <p>2 = Engages in self-mutilation that does not require medical attention</p> <p>3 = Engages in self-mutilation that requires medical attention</p>  |

5

<sup>5</sup> From *Communitometrics: A theory of measurement for human service enterprises*, by J. S. Lyons (2009). New York: Springer. Copyright (2009) by the Praed Foundation. Adapted with permission.

Figure 5: CDC Leading Cause of Deaths 2017

| Leading Causes of Death in the United States (2016) |                             |                                |                                |                                |                                |                                |                                 |                                 |
|---|-----------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|---------------------------------|---------------------------------|
| Data Courtesy of CDC                                |                             |                                |                                |                                |                                |                                |                                 |                                 |
| Rank  | Select Age Groups           |                                |                                |                                |                                |                                |                                 | All Ages                        |
|   | 10-14                       | 15-24                          | 25-34                          | 35-44                          | 45-54                          | 55-64                          | 65+                             |                                 |
| 1   | Unintentional Injury<br>847 | Unintentional Injury<br>13,895 | Unintentional Injury<br>23,984 | Unintentional Injury<br>20,975 | Malignant Neoplasms<br>41,291  | Malignant Neoplasms<br>116,364 | Heart Disease<br>507,118        | Heart Disease<br>635,260        |
| 2   | <b>Suicide</b><br>436       | <b>Suicide</b><br>5,723        | <b>Suicide</b><br>7,366        | Malignant Neoplasms<br>10,903  | Heart Disease<br>34,027        | Heart Disease<br>78,610        | Malignant Neoplasms<br>422,927  | Malignant Neoplasms<br>598,038  |
| 3   | Malignant Neoplasms<br>431  | Homicide<br>5,172              | Homicide<br>5,376              | Heart Disease<br>10,477        | Unintentional Injury<br>23,377 | Unintentional Injury<br>21,860 | CLRD<br>131,002                 | Unintentional Injury<br>161,374 |
| 4   | Homicide<br>147             | Malignant Neoplasms<br>1,431   | Malignant Neoplasms<br>3,791   | <b>Suicide</b><br>7,030        | <b>Suicide</b><br>8,437        | CLRD<br>17,810                 | Cerebro-vascular<br>121,630     | CLRD<br>154,596                 |
| 5   | Congenital Anomalies<br>146 | Heart Disease<br>949           | Heart Disease<br>3,445         | Homicide<br>3,369              | Liver Disease<br>8,364         | Diabetes Mellitus<br>14,251    | Alzheimer's Disease<br>114,883  | Cerebro-vascular<br>142,142     |
| 6   | Heart Disease<br>111        | Congenital Anomalies<br>388    | Liver Disease<br>925           | Liver Disease<br>2,851         | Diabetes Mellitus<br>6,267     | Liver Disease<br>13,448        | Diabetes Mellitus<br>56,452     | Alzheimer's Disease<br>116,103  |
| 7   | CLRD<br>75                  | Diabetes Mellitus<br>211       | Diabetes Mellitus<br>792       | Diabetes Mellitus<br>2,049     | Cerebro-vascular<br>5,353      | Cerebro-vascular<br>12,310     | Unintentional Injury<br>53,141  | Diabetes Mellitus<br>80,058     |
| 8   | Cerebro-vascular<br>50      | CLRD<br>206                    | Cerebro-vascular<br>575        | Cerebro-vascular<br>1,851      | CLRD<br>4,307                  | <b>Suicide</b><br>7,759        | Influenza & Pneumonia<br>42,479 | Influenza & Pneumonia<br>51,537 |
| 9   | Influenza & Pneumonia<br>39 | Influenza & Pneumonia<br>189   | HIV<br>546                     | HIV<br>971                     | Septicemia<br>2,472            | Septicemia<br>5,941            | Nephritis<br>41,095             | Nephritis<br>50,046             |
| 10  | Septicemia<br>31            | Complicated Pregnancy<br>184   | Complicated Pregnancy<br>472   | Septicemia<br>897              | Homicide<br>2,152              | Nephritis<br>5,650             | Septicemia<br>30,405            | <b>Suicide</b><br>44,965        |

(NIMH, 2017)

Figure 6: Trauma & Self-Mutilation CANS Items

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|                      |  |
|----------------------|--|
| Adjustment to trauma | 0 = No history of significant trauma<br>1 = History of mild adjustment problems associated with trauma that are likely to ease with time; may be in process of recovery from more severe response to trauma<br>2 = Evidence of moderate adjustment to trauma that interferes in at least one life domain<br>3 = Evidence of severe adjustment problems, including flashbacks, nightmares, significant anxiety, intrusive thoughts, re-experiencing trauma and requires intensive and immediate attention |
| Self-mutilation      | 0 = No evidence of any forms of self-injury<br>1 = History of self-mutilation but not in last 30 days<br>2 = Engages in self-mutilation that does not require medical attention<br>3 = Engages in self-mutilation that requires medical attention  |

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<sup>6</sup>(Effland et al., 2011; Lyons, 2009)

<sup>6</sup> From *Communitrics: A theory of measurement for human service enterprises*, by J. S. Lyons (2009). New York: Springer. Copyright (2009) by the Praed Foundation. Adapted with permission.

## APPENDIX A

### Child and Adolescent Needs and Strengths Assessment

| CHILD AND ADOLESCENT NEEDS AND STRENGTHS (CANS)  |  |             |  | INDIANA COMPREHENSIVE – 5 - 17   |  |      |  |
|--|--|-------------|--|--|--|------|--|
| First Name   |  | Middle Name |  | Last Name  |  | Date |  |
| Reason <input type="checkbox"/> Initial <input type="checkbox"/> Reassessment <input type="checkbox"/> Termination | Does the individual have Medicaid? <input type="checkbox"/> No <input type="checkbox"/> Yes (RID required) |             |  | DOB  |  |      |  |
| Medicaid RID #   |  |             |  |  |  |      |  |
| <b>Decision Model Questions (Required)</b>   |  |             |  | <b>CAREGIVER NEEDS &amp; RESOURCES</b>   |  |      |  |
| 0 - No ; 1 - Yes   |  |             |  | 0 = no evidence      1 = minimal needs<br>2 = moderate needs      3 = severe needs   |  |      |  |
|  |  |             |  | NA   0   1   2   3   |  |      |  |
| Has the child received intensive community based services in last 6 months?  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Has a decision been made by DCS or juvenile court to currently remove a child from home?                           |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| How old is the child?  |  |             |  |  |  |      |  |
| 0 = 5 to 11    1 = 12 to 14    2 = > 14  |  |             |  | ○ ○ ○  |  |      |  |
| <b>LIFE DOMAIN FUNCTIONING</b>   |  |             |  | <b>CHILD BEHAVIORAL / EMOTIONAL NEEDS</b>  |  |      |  |
| 0 = no evidence of problems      1 = history, mild<br>2 = moderate      3 = severe                                 |  |             |  | 0 = no evidence<br>1 = history or sub-threshold, watch/prevent<br>2 = causing problems, consistent with diagnosable disorder<br>3 = causing severe/dangerous problems  |  |      |  |
|  |  |             |  | NA   0   1   2   3   |  |      |  |
| Family Functioning   |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Living Situation   |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| School <sup>1</sup>  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Social Functioning   |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Recreation   |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Developmental/Intellectual <sup>2</sup>  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Communication  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Decision Making  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Job Functioning  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Legal  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Medical/Physical   |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Sexual Development   |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Sleep  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Independent Living   |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| <b>CHILD STRENGTHS</b>   |  |             |  | <b>CHILD RISK BEHAVIORS</b>  |  |      |  |
| 0 = centerpiece      1 = useful<br>2 = identified      3 = not yet identified                                      |  |             |  | 0 = no evidence      1 = history, watch/prevent<br>2 = recent, act      3 = acute, act immediately   |  |      |  |
|  |  |             |  | 0   1   2   3  |  |      |  |
| Family Strengths   |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Interpersonal  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Optimism   |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Educational  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Vocational   |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Talents/Interests  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Spiritual/Religious  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Community Life   |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Relationship Permanence  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Youth Involvement with Care  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Natural Supports   |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Resiliency   |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| <b>CULTURAL FACTORS</b>  |  |             |  | <b>Note: Shaded ratings trigger required Extension Modules on next page</b>  |  |      |  |
| 0 = no evidence      1 = minimal needs<br>2 = moderate needs      3 = severe needs                                 |  |             |  | 1 go to School Module      6 go to Violence Module<br>2 go to DD Module      7 go to SAB Module<br>3 go to Family Module      8 go to Runaway Module<br>4 go to Trauma Module      9 go to JJ Module<br>5 go to SUD Module      10 go to FS Module |  |      |  |
|  |  |             |  | 0   1   2   3  |  |      |  |
| Language   |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Cultural Identity  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Traditions & Rituals   |  |             |  | ○ ○ ○ ○ ○  |  |      |  |
| Cultural Stress  |  |             |  | ○ ○ ○ ○ ○  |  |      |  |

1

(Effland et al., 2011; Lyons, 2009)



## APPENDIX B

### Suicide Risk

This item is intended to describe the presence of suicidal behavior. All overt and covert thoughts regarding and efforts at attempting to kill oneself are rated on this item. Other self-destructive behavior is rated elsewhere.

A rating of “0” is reserved for children and adolescents with no current or historical suicidal thoughts, ideation or behavior. Since a history of suicidal ideation and gestures is a predictor of future suicide, any child or adolescent with a history is rated as at least a “1”. A “2” is used to describe a child or adolescent who was recently suicidal but who is not currently planning to kill him/herself. Thus, a youth who is thinking about suicide but was able to contract for safety would be rated as a “2”. A “3” is used to identify a child or adolescent who has either attempted suicide during the rating period or who during this time has an active intention and plan to commit suicide.

### Self-Mutilation

This item is used to describe repetitive behavior that results in physical injury to the child or adolescent. Carving and cutting on the arms or legs would be common examples of self-mutilation behavior. Generally body piercing and tattoos are not considered a form of self mutilation. Repeatedly piercing or scratching one’s skin would be included. Self mutilation is thought to have addictive properties since generally the self abusive behavior results in the release of endorphins (naturally produced morphine-like substances) that provide a calming feeling.

### Other Self Harm (Recklessness)

This item is used to describe behavior not covered by either Suicide Risk or Self-Mutilation that places a child or adolescent at risk of physical injury. This item could be called —Recklessness. Any behavior that the child engages in has significant potential to place the child in danger of physical harm would be rated here. This item provides an opportunity to identify other potentially self-destructive behaviors (e.g. reckless driving, subway surfing).

If the child frequently exhibits significantly poor judgment that has the potential to place them in danger, but has yet to actually place themselves in such a position, a rating of 1<sup>7</sup> might be used to indicate the need for prevention. To rate a 3<sup>7</sup>, the child or adolescent must have placed himself or herself in significant physical jeopardy during rating period.

<sup>7</sup> (Effland et al., 2011; Lyons, 2009)

<sup>7</sup> From *Communimetrics: A theory of measurement for human service enterprises*, by J. S. Lyons (2009). New York: Springer. Copyright (2009) by the Praed Foundation. Adapted with permission.

## APPENDIX C

### Child and Adolescent Needs and Strengths Assessment

#### TRAUMA MODULE

**Rating Guide** for Characteristics of Potentially Traumatic/Adverse Experiences Section

- 0 – No evidence of any trauma of this type
- 1 – A single incident of trauma occurred or suspicion exists of this type of trauma
- 2 – Multiple incidents or a moderate degree of trauma of this type
- 3 – Repeated and severe incidents of trauma of this type

The trauma experience rating guide and language in the TRAUMA MODULE were adapted from the NCTSN CANS (Kisiel, et al., 2011).

*Potentially Adverse Traumatic Experiences are rated over the lifetime of the youth:*

| <b>SEXUAL ABUSE</b> <i>This rating describes the child's experience of sexual abuse.</i> |   |
|--|---|
| 0  | There is <b>no evidence</b> that child has experienced sexual abuse.  |
| 1  | There is a <b>suspicion</b> that the child has experienced sexual abuse <b>with some degree of evidence</b> or the child has <b>experienced "mild" sexual abuse</b> including but not limited to <b>direct exposure to sexually explicit materials</b> . Evidence for suspicion of sexual abuse could include evidence of <b>sexually reactive behavior</b> as well as <b>exposure to a sexualized environment</b> or <b>Internet predation</b> . Children who have experiences secondary sexual abuse (e.g. <b>witnessing sexual abuse, having a sibling sexually abused</b> ) would also be rated here. |
| 2  | Child has experienced <b>one or a couple of incidents</b> of sexual abuse that were not chronic or severe. This might include a child who has <b>experienced molestation without penetration on a single occasion</b> .   |
| 3  | Child has experienced severe or chronic sexual abuse with <b>multiple episodes or lasting over an extended period of time</b> . This abuse may have involved <b>penetration, multiple perpetrators, and/or associated physical injury</b> .   |

| <b>PHYSICAL ABUSE</b> <i>This rating describes the child's experience of physical abuse.</i> |   |
|--|---|
| 0  | There is <b>no evidence</b> that child has experienced physical abuse.  |
| 1  | There is a <b>suspicion</b> that child has experienced physical abuse but <b>no confirming evidence</b> . <b>Spanking</b> without physical harm or threat of harm also qualifies. |
| 2  | Child has experienced a <b>moderate level of physical abuse</b> and/or <b>repeated forms of physical punishment</b> (e.g. hitting, punching).                                     |
| 3  | Child has experienced <b>severe and repeated physical abuse</b> with intent to do harm and that causes sufficient physical harm to necessitate hospital treatment.                |

| <b>EMOTIONAL ABUSE</b> <i>The rating describes the degree of severity of emotional abuse, including verbal and nonverbal forms. This item includes both "emotional abuse," which would include psychological maltreatment such as insults or humiliation towards a child and "emotional neglect" defined as the denial of emotional attention and /or support from caregivers.</i> |  |
|--|--|
| 0  | There is <b>no evidence</b> that child has experienced emotional abuse.  |
| 1  | Child has experienced <b>mild</b> emotional abuse. For instance, child may experience some <b>insults or is occasionally referred to in a derogatory manner</b> by caregivers.   |
| 2  | Child has experienced a <b>moderate degree of emotional abuse</b> . For instance, child may be <b>consistently denied emotional attention</b> from caregivers, <b>insulted or humiliated on an ongoing basis</b> , or <b>intentionally isolated</b> from others. |
| 3  | Child has experienced <b>significant or severe</b> emotional abuse over an <b>extended period of time</b> (at least one year). For instance, child is <b>completely ignored</b> by caregivers, or <b>threatened/terrorized</b> by others.                        |

|   |  |
|---|--|
|   | <b>NEGLECT</b> <i>This rating describes the degree of severity of neglect an individual has experienced. Neglect can refer to a lack of food, shelter or supervision (physical neglect) or lack of access to needed medical care (medical neglect), or failure to receive an academic instruction (educational neglect).</i> |
| 0 | There is <b>no evidence</b> that child has experienced neglect.  |
| 1 | Child has experienced <b>minor occasional</b> neglect. Child may have been left <b>home alone for a short period of time</b> with no adult supervision or there may be <b>occasional failure to provide adequate supervision of child.</b>   |
| 2 | Child has experienced a <b>moderate level</b> of neglect. Child may have been left <b>home alone overnight</b> or there may be <b>occasional failure to provide adequate food, shelter, or clothing</b> with corrective action   |
| 3 | Child has experienced a <b>severe level of neglect</b> including <b>multiple and/or prolonged absences</b> by adults, with minimal supervision, and <b>failure to provide basic necessities of life on a regular basis.</b>  |

|   |  |
|---|--|
|   | <b>MEDICAL TRAUMA</b> <i>This rating describes the severity of medical trauma. Not all medical procedures are experienced as traumatic. Medical trauma results when a medical experience is perceived by the child as mentally or emotionally overwhelming. Potential medical trauma include but are not limited to the following examples: the onset of a life threatening illness; sudden painful medical events; chronic medical conditions resulting from an injury or illness or another type of traumatic event.</i> |
| 0 | There is <b>no evidence</b> that child has experienced any medical trauma.   |
| 1 | Child has had a medical experience that was <b>mildly overwhelming</b> for the child. Examples include events that were <b>acute in nature</b> and <b>did not result in ongoing medical needs and associated distress</b> such as minor surgery, stitches or bone setting.   |
| 2 | Child has had a medical experience that was perceived as <b>moderately</b> emotionally or mentally overwhelming. Such events <b>might include</b> acute injuries and <b>moderately invasive medical procedures</b> such as major surgery that require only short term hospitalization.   |
| 3 | Child has had a medical experience that was perceived as <b>extremely</b> emotionally or mentally <b>overwhelming</b> . The event itself may have been <b>life threatening</b> and may have resulted in chronic health problems that alter the child's physical functioning.   |

|   |   |
|---|---|
|   | <b>NATURAL or MANMADE DISASTER</b> <i>This rating describes the severity of exposure to natural and manmade disasters.</i>  |
| 0 | There is <b>no evidence</b> that child has experienced any natural or manmade disaster.   |
| 1 | Child has been <b>exposed to disasters secondhand</b> (i.e. on television, hearing others discuss disasters). This would include secondhand exposure to natural disasters such as a fire or earthquake or manmade disaster, including care accident, plane crashes, or bombing.             |
| 2 | Child has been <b>directly exposed to a disaster or witnessed the impact of a disaster on a family or friend</b> . For instance, a child may observe a caregiver who has been injured in a car accident or fire or watch his neighbor's house burn down.                                    |
| 3 | Child has been directly exposed to <b>multiple and severe natural or manmade disasters</b> and/or a disaster <b>that caused significant harm or death to a loved one or there is an ongoing impact or life disruption</b> due to the disaster (e.g. house burns down, caregiver loses job). |

|   |   |
|---|---|
|   | <b>WITNESS TO FAMILY VIOLENCE</b> <i>This rating describes the severity of exposure to family violence.</i>   |
| 0 | There is <b>no evidence</b> that child has witnessed family violence.   |
| 1 | Child has witnessed <b>one episode</b> of family violence.  |
| 2 | Child has witnessed <b>repeated episodes</b> of family violence but no significant injuries (i.e. requiring emergency medical attention).   |
| 3 | Child has witnessed <b>repeated and severe episodes</b> of family violence or has had to intervene in episodes of family violence. <b>Significant injuries</b> have occurred and have been <b>witnessed</b> as a direct result of the violence. |

| <b>COMMUNITY VIOLENCE</b> <i>This rating describes the severity of exposure to community violence.</i> |  |
|--|--|
| 0  | There is <b>no evidence</b> that child has witnessed violence in the community.  |
| 1  | Child has witnessed <b>occasional fighting or other forms of violence</b> in the community. Child has <b>not been directly impacted</b> by the community violence (i.e. violence not directed at self, family, or friends) and exposure has been limited.  |
| 2  | Child has <b>witnessed multiple instances</b> of community violence and/or <b>the significant injury of others</b> in his/her community, or has <b>had friends/family members injured</b> as a result of violence or criminal activity in the community, or is the <b>direct victim</b> of violence/criminal activity that was <b>not life threatening</b> .   |
| 3  | Child has witnessed or experienced <b>severe and repeated instances</b> of community violence and/or <b>the death of another person in his/her community</b> as a result of violence, or is the <b>direct victim</b> of violence/criminal activity in the community that was <b>life threatening, or has experienced chronic/ongoing impact as a result</b> of community violence (e.g. family member injured and no longer able to work). |

| <b>WITNESS/VICTIM TO CRIMINAL ACTIVITY</b> <i>This rating describes the severity of exposure to criminal activity. Criminal behavior includes any behavior for which an adult could go to prison including drug dealing, prostitution, assault, or battery.</i> |   |
|---|---|
| 0   | There is <b>no evidence</b> that child has been victimized or witness significant criminal activity.  |
| 1   | There is a <b>strong suspicion or evidence</b> that Child is a witness of <b>at least one significant criminal activity</b> .   |
| 2   | Child has witnessed <b>multiple criminal activities</b> and/or is a <b>direct victim</b> of criminal activity or <b>witnessed the victimization of a family or friend</b> .   |
| 3   | Child has been <b>exposed to chronic and/or severe instances of criminal activity</b> and/or is a <b>direct victim</b> of criminal activity that was <b>life threatening or caused significant physical harm</b> or child witnessed the <b>death of a loved one</b> . |

| <b>WAR/TERRORISM AFFECTED</b> <i>This rating describes the degree of severity of exposure to war, political violence, torture or terrorism.</i> |  |
|---|--|
| 0   | No evidence that the youth has been exposed to war, political violence, torture or terrorism.  |
| 1   | There is suspicion that the child or youth has experienced or been affected by war, terrorism or political violence.   |
| 2   | Child or youth has experienced or been affected by war, terrorism or political violence. Examples include: Family members directly related to the youth may have been exposed to war, political violence, or torture resulting in displacement, injury or disability, or death; parents may have been physically or psychologically disabled from the war and are unable to adequately care for the youth; youth may have spent an extended amount of time in a refugee camp, or feared for his/her own life during war or terrorism due to bombings or shelling very near to him/her. Youth who did not live in war or terrorism-affected region or refugee camp, but family was affected by war. |
| 3   | Child or youth has been exposed to chronic and/or severe instances war or terrorism and/or is a direct victim of political violence or terrorism that was life threatening or caused significant physical harm or child witnessed the death of a loved one. Youth may have been directly injured, tortured, or kidnapped in a terrorist attack; youth may have served as a soldier, guerrilla, or other combatant in his/her home country.   |

8(Effland et al., 2011; Lyons, 2009)

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Adolescents: Ideas, Samples, and Methods. *New Directions for Child and Adolescent Development*, 169, 117– 130.

Zoroglu, S. S., Tuzun, U., Sar, V., Tutkun, H., Savaş, H. A., Ozturk, M., . . . Kora, M. E. (2003). Suicide attempt and self-mutilation among Turkish high school students in relation with abuse, neglect and dissociation. *Psychiatry and Clinical Neurosciences*, 57(1), 119-126.

## CURRICULUM VITAE

Lisa McConnell Lewis

### **Education**

|            |   |      |
|------------|---|------|
| <b>PhD</b> | Indiana University, Social Work<br>Dissertation: "Deliberate Self-Harm in Young Children"<br>Committee: Margaret E. Adamek, PhD (chair), Robert<br>Vernon, PhD, Matthew C. Aalsma, PhD, Betty Walton, PhD | 2020 |
| <b>MSW</b> | Indiana University, Social Work   | 1998 |
| <b>MS</b>  | Indiana University, Therapeutic Recreation  | 1992 |
| <b>BS</b>  | Indiana University, Therapeutic Recreation<br>Minored in Psychology   | 1988 |

### **Honors and Awards**

|   |               |
|---|---------------|
| <b>Excellence in Teaching Award,</b><br>Indiana University School of Social Work                            | 2007          |
| <b>Leadership and Education in Adolescent Health Fellow (LEAH)</b><br>Indiana University School of Medicine | 2005-<br>2007 |

### **Teaching Experience**

|   |           |
|---|-----------|
| <b>Indiana University, Indianapolis, IN,</b><br><b>Adjunct Instructor, School of Social Work</b>  | 2006-2020 |
| <ul style="list-style-type: none"><li>• SWK515: Social Welfare Policy: Mental Health and Healthcare, a graduate course averaging 25 students per semester, covering the following topics: healthcare policy and development, mental health policy and funding, topic, topic<ul style="list-style-type: none"><li>○ Developed quizzes, exams, and homework</li><li>○ Revised the syllabus to meet accreditation standards</li></ul></li><li>• SWK231: Social Work Practice Skills I, a graduate course averaging 25 students per semester, covering the following topics: healthcare policy and development, mental health policy and funding, topic, topic<ul style="list-style-type: none"><li>○ Developed quizzes, exams, and homework</li><li>○ Revised the syllabus to meet accreditation standards</li></ul></li><li>• SWK331<ul style="list-style-type: none"><li>○ Fall 2013. online</li></ul></li><li>• SWK332: Social Work Practice Skills II, a graduate course averaging 25 students per semester, covering the following topics: healthcare policy and development, mental health policy and funding, topic, topic<ul style="list-style-type: none"><li>○ Spring 2013</li><li>○ Developed quizzes, exams, and homework</li><li>○ Revised the syllabus to meet accreditation standards</li></ul></li></ul> |           |

- SWK322: Small Group Theory and Practice
  - Fall 2015, 2014, 2011, 2010 Spring 2014
  - course averaging 25 students per semester, covering the following topics: healthcare policy and development, mental health policy and funding, topic, topic
  - Developed quizzes, exams, and homework
  - Revised the syllabus to meet accreditation standards

## **Research Experience**

### **Deliberate Self-Injury in Young Children** 2020

Indiana University School of Social Work, Indianapolis, IN

Advisor: Margaret A. Adamak, PhD

### **Evaluation of the Indiana Department of Child Services Practice Model** 2007

Indiana University School of Social Work, Indianapolis

**Study Coordinator**, PI: Gail Folaron, PhD

- Conducted focus groups, individual and group interviews
- Individual and family interviews, survey development, distribution, coordination and data analysis
- Presentation of findings for local and national conferences
- Funded by US Department of Justice #49-I-UF-0371
- Skill/Accomplishment/Project

### **Emotional Regulation and Couple Behavior of Adjudicated Youth** 2006-2007

Center for Aids Research, Indiana University School of Medicine

Indianapolis, IN

**Investigator**, PI: Matthew Aalsma, PhD

### **Deliberate Self-Harm** 2005-2006

Indiana University School of Social Work

Indianapolis, IN

**Investigator**, Advisor: H.W. Kim,

## **Publications**

### *Journal Publications*

Vernon, R., et al. (2009). "Virtual worlds and social work education: Potentials for "Second Life". *Advances in Social Work* **10**(2).

Lewis, L. M. (2007). "No-Harm Contracts: A Review of What We Know", *Suicide and Life-Threatening Behavior*. **37**: 50-57.

Gudonis-Miller, L. C., et al. (2012). "Adolescent romantic couples influence on substance use in young adulthood." *Journal of Adolescence* **35**(3): 638-647.

Gentle-Genitty, C. S., et al. (2007). "A critical review of theory in social work journals: A replication study." *Advances in Social Work* 8(1): 62-80.

### **Conference Papers and Presentations**

**Lewis, L.**, Folaron, G., & Williamson, S. (2008). *Under construction: Measuring fidelity in an evolving child welfare model*. Society for Social Work Research Annual Conference, Washington D.C., January 16-20.

Folaron, G., Williamson, S., & **Lewis, L.M.** (2007). *The challenges of measuring fidelity in an evolving child welfare system*. Council on Social Work Education Annual Conference, San Francisco, California, October 22-31.

#### ***Presentations***

Lewis, L. M., et al. (2007). *Child welfare reform in Indiana: The new practice model*. Indiana Association for Social Work Education Annual Conference, Anderson, IN.

Aalsma, M. and L. M. Lewis (2007). *Measuring emotional regulation in an adolescent delinquent population*. Society for Adolescent Medicine Annual Conference, Denver, Colorado, March 28-31

Spigarelli, M., et al. (2007). *Adolescent health professional in-training institute*. Society for Adolescent Medicine, Denver, Colorado, March 28-31.

Lewis, L. M., (2007) *A structural equation model of deliberate self-injury*. PhD Research Symposium, Indiana University School of Social Work, Indianapolis, IN

Lewis, L. M. (2006). *Kids who cut themselves: Why do they do it?* Communities Aligned Toward Children's Health (CATCH), Indianapolis, IN.

### **Professional Training**

#### **Gambling 101**

Indiana Problem Gambling Treatment Resource Network, Greenwood, IN, May 9, 2019

#### **Caring for Kids: What Parents Need to know about Sexual**

National Center for Child Traumatic Stress, Online, July 9, 2019

#### **Problem Gambling: A Guide for Treatment Center Employees**

Indiana Problem Gambling Treatment Resource Network, May 14, 2019, online

#### **Cognitive Processing Therapy for PTSD**

Massachusetts General Hospital, Psychiatry Academy, November 1, 2018, Online



**Psychopharmacology**

Perry W Buffington, PhD, May 31, 2018-June 1, 2018, King of Prussia, PA

**Annual Spring Problem Gambling Workshop**

IPRC, March 21-22, 2018, Bloomington, IN

**Advanced CBT and Ethics Training**

Indiana Problem Gambling Awareness, May 30 – June 1, 2017, Bloomington, IN

**Psychological First Aid**

National Center for Child Traumatic Stress, Online, March 24, 2016

**Psychological and Pharmacological Treatments for Adults with PTSD**

Postgraduate Institute for Medicine, March 24, 2016, online

**Practical Assessment for PTSD**

VA Employee Education System, March 16, 2016, online

**Unlawful Harassment Prevention for Higher Education Faculty**

IUPUI, June 15, 2015, Indianapolis

**Relationship Development**

Community Hospitals of Indianapolis, August 31, 2012, Indianapolis

**Introduction to Structural Equation**

Gregory R. Hancock, University of Maryland

IUPUI, August 8-10, 2012, Indianapolis, IN

**Law, Ethics, and Confidentiality in Behavioral Health**

Community Hospitals of Indianapolis, January 18, 2012, Indianapolis

**Professional Affiliations**

Licensed Clinical Social Worker, 1999-Present

Licensed Clinical Addictions Counselor, 2011- Present

International Society of Self-Injury, 2019-Present

**Professional Service****Peer-Reviewed Articles for:**

Context Journal (2005-2009)

**Early Learning of Shelby County**

Advisory Board Member, Shelbyville, IN, 2018-present

**Shelby County Community Corrections**

Advisory Board Member, Shelbyville, IN, 2001-2010

**Indiana University School of Social Work**

Field Liaison for 25 MSW students, Indianapolis, IN

**Indiana University School of Social Work**

Field Instructor.