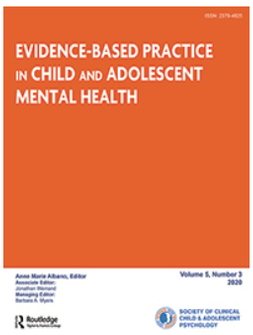

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Treatments for Self-Injurious Thoughts and Behaviors in Youth: Progress and Challenges

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ABSTRACT

Self-injurious thoughts and behaviors (SITBs) remain a common clinical problem in youth. This article reviews the state of knowledge regarding psychosocial treatments for SITBs in youth. Broadly speaking, psychosocial treatments that incorporate parents/family and that emphasize skills development (including emotion regulation and interpersonal skills) appear to produce the best outcomes. We also describe several challenges to the implementation of evidence-based psychotherapy, as well as potential solutions to these challenges, and provide an illustrative case example. Finally, because even evidence-based psychosocial treatments can take weeks to produce effects, increased attention has been given to biological approaches such as esketamine administration and transcranial direct current stimulation that have potential to yield rapid improvement for acute suicidal ideation, though evidence for the safety and efficacy of these approaches is in the early stages.

Self-injurious thoughts and behaviors (SITBs) refer to thoughts and behaviors involving suicidal intent (suicidal ideation, plans, and behaviors) as well as deliberate self-injury in the absence of any intent to die (non-suicidal self-injury [NSS]). These clinical phenomena have received increasing attention over the last several years due to rising rates. For example, deaths by suicide in the United States have increased by 33% since 1999 (Centers for Disease Control and Prevention, 2018), and the increased rate has been especially prominent among youth between the ages of 10 and 14. Adding to this concern, hospital visits for suicidal ideation and behavior among youth have doubled over the last 10 years (Burstein et al., 2019; Plemmons et al., 2018). In contrast to these rising trends in suicide deaths and hospital encounters for suicidality, however, actual ideation, suicide plans, and attempts among youth have either decreased or remained largely unchanged since 1991 (Lindsey et al., 2019). Collectively, these findings suggest that although youth are no more likely to have suicidal thoughts or to attempt suicide than in the past, these thoughts and attempts are likely to be more severe and lethal when they do occur (Liu et al., 2020). Effective intervention for at-risk youth is therefore more pressing than ever, especially given evidence that severity of suicidal ideation and attempts at an early age is strongly predictive of future attempts in this age group (Posner et al., 2011; Sapyta et al., 2012).

In addition to suicidal ideation and behavior, NSSI has been the subject of growing clinical concern. Not only is it an important clinical issue in its own right (American Psychiatric Association, 2013), but NSSI is now recognized as a stronger prospective predictor of suicide attempts than is a past history of suicide attempts (Ribeiro et al., 2016). NSSI typically has its onset in adolescence (Klonsky, 2011), and although engagement in this behavior often ceases by adulthood (Whitlock et al., 2006), even a single occurrence of NSSI has been associated with poorer psychiatric outcomes later in life (Whitlock, 2010; Whitlock et al., 2006). Effective clinical interventions for youth at risk for and with a history of NSSI are therefore especially important.

In the present article, we review current evidence-based psychosocial interventions targeting SITBs in youth. We also review practical and

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clinical barriers to implementing interventions for SITBs in youth and provide a case example to illustrate the complexity of treating youth presenting with self-harm and associated difficulties. Finally, we describe efforts to develop new biological approaches to treatment that have the potential to yield rapid improvement and provide a bridge to the evidence-based psychotherapies that take longer to implement.

Psychosocial treatments for self-injurious thoughts and behaviors

The treatment and prevention of SITBs in children and adolescents have largely focused on psychosocial interventions. Psychosocial interventions for SITBs in youth include a wide range of therapeutic approaches and orientations, including cognitive behavioral, dialectical behavioral, interpersonal, psychodynamic, family systems, and parent training interventions. To date, evidence suggests many of these psychosocial treatments are promising for the treatment of suicidal ideation, self-harming behaviors, and suicide attempts in youth and to improve overall treatment engagement (Glenn et al., 2019; Ougrin, Tranah, Stahl, Moran, & Asarnow, 2015; Yuan, Kwok, & Ougrin, 2019). Below, we review those therapeutic interventions for SITBs that have the strongest evidence in adolescents and discuss key features that are common across these interventions.

Dialectical behavior therapy (DBT) was initially developed for the treatment of SITBs behavior in adults (Linehan, 1993) and validated as a treatment for Borderline Personality Disorder. Over the decades it has been adapted for a range of disorders and problems, as well as for use with adolescents (DBT-A; Miller et al., 2006; Rathus & Miller, 2002). The DBT framework draws on cognitive behavioral, mindfulness, and acceptance principles (Linehan, 1993). Full model DBT-A includes engaging both adolescents and their caregivers in individual and group therapy, as well as telephone coaching. DBT-A targets difficulties in emotional and behavioral regulation and interpersonal effectiveness, with the goal of reducing SITBs in youth by bolstering youths' ability to manage negative emotions and by increasing validation in parent–teen interactions (Rathus & Miller, 2014). In a recent multi-site RCT enrolling 173 adolescents, DBT-A significantly reduced suicide attempts, NSSI, and overall self-harm when compared to a manualized supportive psychotherapy that included both individual and group components (McCauley et al., 2018). In a comprehensive review by Glenn and colleagues, DBT-A was classified as the only well-established treatment for SITBs in youth, indicating it has demonstrated clinical efficacy in reducing both self-harm and suicidal ideation in at least two independent RCTs (McCauley et al., 2018; Mehlum et al., 2014). The mechanisms that underlie the efficacy of DBT-A for adolescent self-harm have not yet been verified empirically, highlighting the need for future research in this area.

Cognitive behavioral therapy (CBT) is a psychotherapy intervention that targets both maladaptive thoughts and behaviors to enhance mood and daily functioning and is utilized for a wide range of psychiatric disorders in youth. CBT has been adapted specifically for suicide prevention and self-harm in adults (CBT-SP; Stanley et al., 2009), focusing on identifying proximal stressors that may indicate elevated risk for SITBs and developing skills to cope with these stressors more effectively. Adolescent-specific CBT approaches have also been developed and tested to target SITBs in youth. Empirical evidence for the efficacy of these CBT-based approaches remains mixed and suggests a combination of individual and family-based CBT is most promising for reducing SITBs in youth (Alavi et al., 2013; Esposito-Smythers et al., 2011; Esposito-Smythers et al., 2006; Glenn et al., 2019; Robinson et al., 2015). In an RCT testing a cognitive-behavioral family intervention for suicide attempts and self-harm in adolescents, the CBT intervention had significantly lower probability of a suicide attempt in the 3-month follow-up period as compared to an enhanced treatment as usual condition. However, no differences were found on NSSI in this sample (Asarnow et al., 2017). Further research is needed to replicate findings from CBT-informed interventions for self-injurious behaviors, and to determine whether these interventions impact both NSSI and suicidal behaviors in youth. Additionally, mechanisms-focused trials are needed to determine how and for whom CBT interventions work best.

Mentalization-Based Treatment for Adolescents (MBT-A) is a psychodynamic therapy approach guided by attachment theory that targets self-

harming behaviors by teaching mentalization skills (i.e., the ability to understand behaviors as they relate to thoughts and feelings; Bateman & Fonagy, 1999). MBT was adapted for adolescent self-harming behavior (MBT-A; Rossouw & Fonagy, 2012), and includes both individual and family components. MBT-A treatment has demonstrated initial efficacy in a single RCT, with adolescents in the MBT-A condition showing significant reductions in self-harm when compared to treatment as usual (Rassauw & Fonagy, 2012). Results from this study also showed that adolescents' improvement in self-reported mentalization and attachment status accounted for treatment effects. More recently, an RCT testing Attachment-Based Family Therapy (ABFT; Diamond et al., 2002), a psychodynamic family-based intervention, did not perform significantly better than treatment as usual (Diamond et al., 2019). Replication of the effects of psychodynamic approaches to treat adolescent self-harm and suicidality is needed.

A number of other psychotherapy approaches have been explored as a treatment for suicidal ideation, suicide attempts, and/or self-injurious behaviors in adolescents, including interpersonal psychotherapy (IPT-A), family therapy, and multisystemic therapy (MST). Evidence for the efficacy of these interventions for youth SITBs is in its early stages.

Importantly, some studies have explored whether these treatments are effective in subsamples of the population who may be particularly vulnerable to SITBs or are historically underrepresented in treatment research, including LGBTQ+ and racial and ethnic minority youth. There is some evidence to suggest DBT-A is effective for racial and ethnic minority treatment-seeking youth with a history of SITBs (Berk et al., 2020; Yeo et al., 2020). In one study, DBT-A was associated with improvements in emotion and self-regulation skills (Yeo et al., 2020); however, this study was not an RCT and did not report on SITB outcomes post-treatment. In an open-trial test of DBT in a predominantly Latinx youth sample, youth demonstrated significant reductions in suicide attempts, ideation, and NSSI. Importantly, both of these studies were not RCTs, and thus larger-scale studies testing the effectiveness of DBT in racial and ethnic minority samples are needed. Further, some populations may benefit from culturally based approaches to treat and prevent SITBs in youth. For example, suicide rates in American Indian/Alaska Native youth are particularly alarming (Centers for Disease Control and Prevention, 2018). Coordinated efforts to develop and disseminate theoretically driven, culturally based community-level interventions for suicide prevention in Native youth are needed (O'Keefe et al., 2018; Wexler et al., 2015).

Disparities in suicidality are present in youth, with LGBTQ+ youth reporting higher rates of NSSI, suicidal ideation, and behavior (e.g., Liu, 2019; Liu et al., 2020; Marshal et al., 2011; Mustanski & Espelage, 2020). However, to date, no studies have investigated whether the aforementioned treatments are similarly effective among LGBTQ+ youth. In a recent study of adults comparing treatment response to a mixed CBT/DBT skills-based partial hospitalization program, LGBQ+ adults demonstrated a similar treatment response, including with regard to SITBs, to their heterosexual counterparts (Beard et al., 2017). Within the LGBQ+ group, bisexual group status predicted higher levels of SITBs at time of discharge from the program, compared to individuals who identified as gay/lesbian, queer, or other/write-in response (Beard et al., 2017). While this study is promising, studies in adolescents are needed (and several are currently being conducted by NIH-funded researchers). Notably, in several trials of the DBT-A, CBT, and ABFT approaches highlighted above, studies recruited relatively diverse samples, but did not report whether there were differences in treatment response by LGBTQ+ status or by racial/ethnic minority status (e.g., Asarnow et al., 2017; Diamond et al., 2019; McCauley et al., 2018).

Two features common across treatments for SITBs in youth

Across each of the aforementioned psychosocial interventions for SITBs in youth are two core treatment components: family involvement and skills development. We describe each below.

It is well established in the child and adolescent treatment literature that family involvement, particularly from primary caregivers, is a critical component of many effective interventions across a wide range of psychiatric problems. Indeed, the interpersonal

context is critical to consider when evaluating the function of adolescent SITBs, and family factors may have a strong influence on adolescent outcomes. Caregivers play a critical role in keeping the environment safe when adolescents are at elevated risk for engaging in self-harming behaviors, and they may provide emotional support, validation, and modeling of effective regulation skills for their teen (Asarnow et al., 2015). Notably, across theoretical domains, interventions targeting adolescent self-harm and suicide risk that include a family component, either through multi-family groups, parent training, or family sessions, consistently perform better than individual approaches (Glenn et al., 2019). For example, DBT-A requires families to participate in a multi-family group, in which caregivers and adolescents learn a core set of skills (e.g., emotion regulation, interpersonal effectiveness, mindfulness; Miller et al., 2006; Rathus & Miller, 2002). Despite this commonality across treatment modalities, few studies have explored whether parent- or family-specific mechanisms account for adolescent symptom reduction or the necessary dose of parental involvement to achieve significant treatment benefits.

Further, skills-based approaches (e.g., DBT-A, CBT-individual plus family, IPT-A) that emphasize ways to downregulate negative emotional experiences and manage challenging interpersonal situations are especially encouraging. Research supports the theory that affects regulation is a core function of self-injurious behaviors, such that individuals engage in self-harm to alleviate negative emotions (Klonsky & Muehlenkamp, 2007). Thus, teaching concrete skills adolescents and their caregivers can employ to reduce their negative affect can reduce the likelihood that youth will engage in self-injury as a means to relieve negative emotional states. Research in emotion regulation and broad psychopathology, as well as SITBs more specifically, shows strong evidence for cross-sectional associations among deficits in regulation abilities and elevated symptoms (e.g., Cha et al., 2018; Compas et al., 2017; Pisani et al., 2013; Rajappa et al., 2012; Weinberg & Klonsky, 2009). As noted above, mechanisms-focused RCTs are a critical next step to better understand the role of specific targets, such as emotion regulation, in symptom reduction and improvement. Research in this area will serve to improve our understanding of how treatments work and may inform adaptations to improve the effectiveness of psychosocial interventions for SITBs in youth.

Taken together, the evidence-base for the treatment of self-harm and suicide in adolescents is encouraging, with several interventions demonstrating promise for suicidal ideation, suicide attempts, and/or non-suicidal self-injury. The inclusion of family and skills-development in interventions may be particularly important ingredients when treating SITBs in youth.

Challenges and practical barriers to the delivery of evidence-based treatments

The growing evidence base for the treatment of SITBs in youth is promising, and many challenges to care remain even in the context of these evidence-based approaches. As noted above, the treatments reviewed have many common characteristics: namely an emphasis on family-based manualized, structured treatments, which emphasize skill acquisition in the areas of cognitive restructuring, emotion regulation, distress tolerance, and mindfulness. In providing psychotherapeutic interventions, however, numerous barriers frequently emerge that need to be understood and addressed. Below we describe some of these barriers and challenges, as well as identify areas for future research.

First, the use of formal evidence-based practice protocols may be a barrier for practitioners, as these protocols often require intensive training and supervision to acquire proficiency in delivering the intervention. These protocols may also rely on having multiple therapists for a single patient, overtaxing the resources of many community-based mental health centers. However, one recent research study suggests intensive protocols, such as DBT-A, can be successfully implemented for youth in community mental health settings (Flynn et al., 2018). Notably, this study examined intervention sustainability in the community health setting and adolescent treatment outcomes post-implementation but did not directly test indices of provider compliance with DBT-A, knowledge of the evidence-based intervention, or attitudes toward using this approach. Further, evidence suggests the cost-per-consumer to implement evidence-based treatments, particularly CBT, relatively is low in large, public mental health settings

(Okamura et al., 2018). Studies examining the most effective and efficient methods for the implementation and dissemination of these interventions into health-care settings are an important direction for continued research.

Second, the burden of intensive treatment approaches is an important barrier to consider for adolescents and their families. Despite the growing number of efficacious interventions well suited for adolescents presenting with SITBs, a concerning number of youth still do not access mental health services at any level. In a recent review, less than half of adolescents with suicidal ideation or a recent suicide attempt reported any contact with the mental health system in the prior year (Hom et al., 2015). Many practical challenges, such as the cost and availability of transportation, insurance coverage, and work/school schedules may limit the accessibility of intensive interventions to many who could potentially benefit. To address this challenge, availability of efficacious alternative intervention delivery methods is needed (Kaonga & Morgan, 2019). In recent years, digital mental health interventions have emerged as both standalone and adjunctive treatments. Given smartphone use is ubiquitous among adolescents in the United States and Canada, leveraging these platforms to deliver brief, skills-based interventions is a promising line of inquiry. Preliminary evidence suggests these interventions demonstrate comparable treatment effects for depression in adolescents (e.g., Ranney et al., 2016), but whether digital health interventions may be effective for SITBs in youth remains unknown.

Third, one of the biggest challenges is supporting patients who have acquired a roster of useful skills, but who fail to use them in the moment. A careful behavioral analysis may be optimal to identify where and why the skill utilization fails and will direct a clinician toward appropriate intervention. For example, some of the disconnects between skill knowledge and skill use may be attributable to difficulty accessing skills in moments of particularly intense emotion or distress. For these individuals, the *in vivo* phone coaching approach provided by DBT-A may be the appropriate intervention to enhance real-life skills use. With advancements in technology, the development of ecological momentary interventions may also be especially well suited to support adolescents with in-the-moment application of skills. Finally, as noted above, family/parental involvement is another critical component to ensure adolescents have support implementing these skills in their daily lives.

Fourth, there are well-documented racial and ethnic disparities in access to mental health treatment, including access to psychotherapy and psychotropic medications, and mental health treatment outcomes (Alegria & Green, 2015; Cook et al., 2017; Rosenberg et al., 2020). Efforts to improve our understanding of whether the aforementioned intervention approaches are effective in racial and ethnic minority samples must be accompanied by efforts to enhance the accessibility of evidence-based services for these youth.

Finally, many adolescents presenting for treatment with SITBs meet clinical criteria for comorbid diagnoses, such as post-traumatic stress disorder (PTSD). Clarifying the contribution of comorbid presentations to the occurrence of SITBs is a critical step in case conceptualization and intervention delivery. For example, one of the primary diagnostic criteria for the diagnosis of PTSD is avoidance. Thus, understanding the function of avoidance may guide a clinician to integrate other evidence-based approaches into treatment that do not directly target SITBs (e.g., trauma-focused cognitive behavioral therapy), but may improve levels of distress that are associated with the occurrence of SITBs. Importantly, research shows consistent associations between trauma exposure and SITBs in adolescents, and therefore, further tests of trauma-informed approaches to SITBs are also needed (Asarnow & Mehlum, 2019).

Case example

Below is a case example illustrating the implementation of evidence-based psychotherapy for a youth with SITBs. The example includes both the family and skills-based components that are common to these treatments. While the case example reads as if it was relatively straightforward, there is a complex interplay of etiologic factors (family conflict, potential PTSD), SITBs (early-onset cutting, later onset suicidal ideation), treatment experiences (initial participation in ineffective therapy, initial noncompliance with some aspects of therapy), and outcomes

(cessation of SITBs, potential PTSD symptoms to linger and require future treatment).

S is a fifteen-year-old biracial cis-gender female who identifies as heterosexual. She reports cutting her arms and legs since age 12. Her parents are divorced and her father was previously physically abusive to S's mother, S, and her two younger siblings. S reports a history of symptoms consistent with a major depressive episode, including sad and irritable mood, disrupted sleep and appetite, and low self-worth. S also reports symptoms consistent with comorbid post-traumatic stress disorder following exposure to physical abuse in the home.

S's mother discovered that S was cutting when she was 14 and took S for a non-evidence-based supportive counseling, which did not alleviate S's symptoms. S's self-injurious behaviors worsened in frequency and severity, and S began to have thoughts about wanting to end her life. S identified several major life stressors that contributed to her presentation, including memories and nightmares of witnessing physical abuse, conflict with her mother over chores, school, and curfews, and frequent peer conflicts, including being teased by peers on social media.

On the recommendation of a school counselor, the mother sought DBT-A services locally. Consistent with the DBT-A model, S began seeing an individual DBT therapist weekly and attending multi-family group with her mother. S's mother also received parents' skills training. In addition, S had phone coaching available to her as needed.

S's therapist operated using a hierarchy of risk, first identifying safety concerns and therapy-interfering behaviors. Using a DBT approach, S's therapist first targeted S's self-injurious thoughts and behaviors. In the first 3 months of individual treatment, S's suicidal thoughts reduced in frequency and severity. In addition, both S and her mother begun to gain skills to help manage stress and conflict in the home. For example, S and mother would frequently take a "time out" to practice some calming breathing (mindfulness skills) together at home. These skills also led to improved monitoring of S's distress and improved parent-teen communication in times of distress.

After 3 months of individual and group treatment, the suicidal thoughts had remitted and individual therapy next shifted to addressing S's NSSI. In addition, S was engaged in the DBT-A skills training group because of the opportunity for peer interactions. She was grateful to encounter a new group of teens separate from her highly conflictual school peers. As peers in the group shared their success in managing their own self-harm urges, S became more engaged in trying these skills for herself. During this phase of the treatment, S also began to utilize therapist phone coaching between sessions. This *in vivo* practice helped S to improve her emotion regulation skills in the moment, and S was able to engage in distracting or self-soothing skills, rather than self-injury, to manage her emotions. In addition, S's mother continued to develop her own emotion regulation skills, modeling appropriate skills-use outside of the therapy context. This also facilitated a stronger bond between S and her mother, serving to strengthen this important attachment relationship.

After 6 months in treatment, S had not self-injured for 6 weeks. S and her mother continued DBT-A for a full year, completing a full course of treatment. After 1 year, she and her mother terminated treatment with a strong toolbox of emotion regulation, distress tolerance, mindfulness, and communication skills. Notably, while DBT-A treatment did facilitate improvement in overall coping skills, S may require additional trauma-specific treatment in the future to directly target symptoms of PTSD.

New interventions in development

The need for new developments in interventions for SITBs in youth to complement existing ones is particularly urgent with the continued increase in suicide rates over the last several years (Centers for Disease Control and Prevention, 2018). Of note is that the available effective treatments general requiring several weeks to months to have an effect. This somewhat lengthy time-course for treatment to take effect is significant given knowledge about the window in which suicidal teens are at greatest risk. That is, among youth hospitalized for suicidal behavior, the risk for reattempting or death by suicide is highest in the weeks after hospital discharge (Hawton & van Heeringen, 2009). In fact, it is generally well documented that risk for suicide attempts among psychiatric inpatients is highest in the weeks to first few months following discharge from inpatient care

(Brinkman-Sull et al., 2000; Hawton et al., 1999; Kienhorst et al., 1991; Prinstein et al., 2008; Yen et al., 2013). In the case of suicide deaths, 20% occur within a month of contact with psychiatric services (Luoma et al., 2002). Furthermore, a national population-based study of suicides within the first 3 months of discharge from psychiatric care found that the first 4-week post-discharge accounted for 43% of all suicides in the study (Hunt et al., 2009), which is consistent with another population-based study finding 47.7% of inpatients suicides occurred within the first-month post-discharge (Deisenhammer et al., 2007). What this means is that conventional treatments for suicidality, even if initiated immediately upon discharge from acute care settings (e.g., inpatient facilities and emergency departments), may not start yielding a therapeutic effect until after the period of greatest risk for the most acutely suicidal individuals has already passed.

Given this gap, two approaches are needed. First, the importance of investigating and investing in comprehensive universal interventions to prevent the initial onset of suicidal ideation or self-harm is evident (see Asarnow & Mehlum, 2019 for further discussion of these programs). In addition, the US. Preventive Services Task Force acknowledges that a comprehensive strategy is required to address racial-ethnic minority disparities in mental health-care access, including an emphasis on preventive intervention efforts (O'Brien et al., 2020). Second, rapid-acting interventions may offer another solution for adolescents in acute crisis. Rapid-acting interventions for acute suicidality may serve as a bridge until conventional treatments begin to take effect. Indeed, the National Institute of Mental Health has recently placed a specific emphasis on the need for development of such fast-acting interventions (National Institutes of Health, 2019).

One promising possibility that has received increasing interest is ketamine and its derivative esketamine, which can be administered intravenously or as a nasal spray. In contrast to traditional treatment options, ketamine produces a therapeutic effect within hours rather than weeks (Berman et al., 2000). Reflective of the potential of ketamine, esketamine has been recently approved by the FDA for treatment-resistant depression (U.S. Food & Drug Administration, 2019), and several studies have been suggestive of its potential for producing a rapid reduction of suicidal ideation (Bartoli et al., 2017; Wilkinson et al., 2018). Although in its early stages, research has also identified potential neural correlates of both depression and suicidal ideation reduction and ketamine (Ballard et al., 2014; Ionescu et al., 2018). Although there are understandable concerns regarding the potential psychotomimetic effects and addictive properties of ketamine, there is evidence that this potential for adverse events is relatively low (Acevedo-Diaz et al., 2020; Daly et al., 2018). However, to date, no studies to our knowledge have directly examined the impact of ketamine on adolescent brain development, nor the potential addictive properties in adolescent samples. Thus, rigorous research in this area is needed. Nonetheless, the need for strict monitoring of ketamine administration, particularly with youth, cannot be overstated, and additional research is required to evaluate its potential as a short-term, fast-acting intervention for suicidality.

Another potential future direction for treatment research may be found in the field of neurostimulation, in particular, transcranial direct current stimulation (tDCS). tDCS is a safe and noninvasive stimulation technique for modulating cortical excitability by applying weak electrical currents between two electrodes on the scalp, placed over the cortical regions of interest. In recent years, tDCS neuromodulation of various targets has been increasingly studied within the context of treatment research, for example, to treat major depression (Meron et al., 2015). Whether tDCS has potential to address suicide risk in at-risk populations has not yet been determined. However, there are some data to suggest that this is a possibility warranting evaluation. Specifically, several studies assessing neurocognitive indices of impulsivity have shown this construct to be associated with suicidal behavior (Liu et al., 2017). Moreover, and of particular relevance to addressing at-risk populations, these neurocognitive indices may be state sensitive indicators of suicide risk, demonstrating a stronger association with proximal than distal suicidal behavior. Within this context, tDCS may hold promise for the development of a new treatment modality insofar as it can specifically target these neurocognitive indices of impulsivity (Mayer et al., 2020).

Finally, the aforementioned period of risk, the first several weeks immediately post-discharge for intensive care, may be a high-risk period in part

because a substantial proportion of patients (30.3%) do not complete the transition to outpatient care after discharge (National Action Alliance for Suicide Prevention: Research Prioritization Task Force, 2019). Therefore, in addition to developing fast-acting interventions to bridge treatment to currently available therapies, there is a need for development of strategies to facilitate the transition to these therapies post-discharge, so as to ensure long-term reduction in suicide risk.

Conclusion

The field has made considerable progress in the treatment of SITBs in youth, largely due to the effectiveness of family-focused, skills-based psychosocial interventions. There is promising evidence for several scalable, cost-effective interventions to target suicide and self-harm in youth, including DBT-A, CBT, and MBT-A approaches. Notably, several clinical and practical challenges remain in the treatment of SITBs in youth, including lack of access to evidence-based treatments, burden on families, and clinical comorbidities and complexities that may reduce treatment effectiveness. There is also promise in fast-acting treatment approaches that may serve as a bridge for acutely suicidal youth engaging in the more time-intensive psychosocial treatment programs. Future research exploring the effectiveness of these interventions in subgroups of youth who may be especially vulnerable to suicidality is needed.

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