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COMMENTARY

# Suicidality in Autism Spectrum Disorder: a Commentary

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**Abstract** Recent studies report a higher prevalence of suicidality (ideation, attempts and deaths by suicide) among individuals with autism spectrum disorder (ASD) than in the general population. Unfortunately, there is little research addressing the conceptualization and management of suicidality in the ASD population. In this commentary, we explore potential modifications in the processes leading to suicidality in individuals with ASD and considerations relevant to clinical support and service development. Specifically, based on a multilevel framework, we highlight individual, contextual and systemic risk factors of suicidality in the ASD population noted in the literature. We discuss how patterns of ASD-related behaviours may modify specific pathways in theories of suicide as developed for the general population. We explore how ASD symptomology may contribute to maladaptive coping strategies and dynamics between those with ASD and their care providers. Considerations for prevention and proactive responses at various levels of practice and implications for support and service development are discussed as future directions in the field.

**Keywords** Suicidality · Psychology · Suicide ideation · Autism spectrum disorder · Support · Services

## Introduction

Suicidality is defined as ideation/thoughts, verbal or non-verbal threats, and successful and non-successful attempts to end one's life. Recent reports have drawn attention to the high prevalence of suicidality in individuals with autism spectrum disorder (ASD) (Cassidy et al. 2014) and a sevenfold increase in the number of deaths by suicide in the ASD population compared to the general population (Hirvikoski et al. 2016). Along with the increased prevalence of co-occurring mental health problems in individuals with ASD (50–70%; Simonoff et al. 2008), it is pressing to understand the interplay of ASD symptomology and suicidality in order to offer better care. This commentary identifies elements of suicidality related to the ASD population and considerations around how we conceptualize, and in turn, support individuals at risk.

Few studies offer information about prevalence of suicidality in ASD. In a systematic review on the topic, the rates range from 10.9 to 50% (Segers and Rawana 2014). These differences are explained in part by sampling differences (e.g. hospitals, community clinics, online parent report) which would reflect different personal and contextual factors and how ASD and suicidality were assessed and defined. More recently, in a large clinical sample of adults in the UK, Cassidy et al. (2014) reported a 66% rate of suicidal ideation (SI) (a tenfold increase from the general population) while 35% reported suicide plans or attempts. Given the range of salient factors across the lifespan, ASD heterogeneity, and the complexity of suicidality, it is not surprising that there are rate discrepancies. Consideration is warranted about how ASD

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may modify suicidality-related processes, including factors that mitigate risk.

## Risk Factors for Suicidality

Risk factors reported for suicidality in ASD can be categorized as personal psychological traits, developmental-contextual factors and systemic issues.

### Personal Traits: Depression and Anxiety

Within the ASD population, a diagnosis of depression is linked with suicidal behaviour and thoughts (Cassidy et al. 2014; Matson and Williams 2014; Paquette-Smith et al. 2014; Storch et al. 2013), but the interaction between ASD symptomology and depression on suicidality is unknown. Further, while depression is clearly reported to be a risk factor, it is unclear if depression mediates the relationship between ASD and suicidality or if there is an interaction between ASD and depression that uniquely affects the risk of suicidality. For example, while reinforcing the high prevalence of depression among adults with ASD (31%), Cassidy et al. (2014) showed that suicidality exists in the population beyond those with depression as 35% had plans/attempts and 66% had ideation, suggesting depression is not the only driver of suicidality. Paquette-Smith et al. (2014) reported difficulty with attention switching was predictive of suicide attempts (SA), perhaps reflecting increased perseverative behaviours, leading to maladaptive coping skills in response to stressors. The authors also found that communication difficulties, particularly the inability to fully express feelings and thoughts, were also predictive of SA; this draws attention to the larger struggle of ascertaining mental health status in ASD.

The specificity and sensitivity of ascertaining affective diagnoses in the ASD population is reduced by symptomology inherent to ASD. The inability to distinguish between affect (observed emotional state) and mood (self-reported internal feelings) may lead to false positives when ascertaining emotional states. This is compounded for those with ASD who have difficulty with expressive language; hence, a potential inability to convey one's state and risking a false negative. Therefore, measurement of depressive symptoms using scales developed for the general population may not be valid and lack internal consistency for this population. This extends beyond the clinician as the community surrounding the individual with ASD may not perceive cues related to SI and SA if there is a lack of expressive language and understanding of intention and meaning. Asking questions about current ideation (i.e.: "Are you having thoughts of suicidal ideation right now?") may be taken literally. One may honestly not be thinking of ending one's life at the moment of questioning and respond accordingly. Therefore, current tools designed for a non-ASD population need validation in ASD (for example, see McMorris and Perry 2015, and Rodgers et al. 2016).

Beyond ascertainment, the conceptualization of depression itself may also differ. Cognitive symptoms of depression (e.g. negative attributions) are more prevalent than affective or somatic symptoms in those with ASD compared to the general population (Gotham et al. 2015). Accordingly, there may be subtle but important differences in the relationship between ASD, depression and suicidality, including specific depression profiles that may be associated with an increased risk. Importantly, studies have found that there is no association between anxiety and suicidality in ASD (Paquette-Smith et al. 2014; Storch et al. 2013). Similarly, there may be an interaction between how anxiety presents in ASD, and one's awareness of anxiety and ASD relative to suicidality.

### Developmental-Contextual Factors: Sex and Age

Sex differences in both ASD and suicide are well known but the differences do not overlap. The increased ratio of the prevalence of males to females with ASD is well-established (Lai et al. 2013) as is the fact that males have a higher rate of suicide than females in the general population (Hawton 2000). However, in contrast to the increased risk of suicide in males in the general population, a recent study reported a loss of this typical sex difference, leading to a higher relative risk in females with ASD compared to those without ASD (Hirvikoski et al. 2016). Over the last few years, an increased awareness of sex differences in brain and behaviour studies in ASD is an encouraging trend (Alice et al. 2007; Baron-Cohen et al. 2011; Lai et al. 2013; Mandy et al. 2011) that should be extended into the matrix of ASD and suicidality.

Exploration of suicidality merits consideration of an individual's contextual setting along his/her life course. The developmental course plays a significant role as a proximal trigger for suicidality and other mental health concerns. With age, there may be increased social situation awareness and complexity in life situations. For example, emergence from adolescence to adulthood imposes potential uprooting (Arnett 2000). Transitioning from high school to the workforce or further education embeds the individual in a new community where protective factors such as routine may be less present (Lebowitz 2016), complicated by a potential lack of supports (Taylor and Seltzer 2011).

Although the literature does not offer a comprehensive understanding of developmental process relative to suicidality, studies of suicidality in ASD demonstrate an increase at this juncture within the life course. Forms of suicidality in ASD were reported in 14% of children (Mayes et al. 2013) and 11% of youth (Storch et al. 2013). In adults, the rates of SI range from 40 to 66% and SA range from 15 to 35% (Balfe and Tantam 2010; Cassidy et al. 2014). Based on this scant literature and the complexity of suicide, it is difficult to predict

how this may change in older age. Particularly, the conceptualization of death at an earlier age may not lead to a risk of active suicide plans or attempts as it would in adulthood. Further, other contextual factors may contribute to the rate and processes of suicidality in adulthood.

### Systemic Factors: Peer Victimization, Service Access and Community Participation

Peer victimization affects one's sense of belongingness which may lead to increased capability for suicide through repeated exposure to psychological and physical pain; known to increase the likelihood of SAs in the general population (Fuller-Thomson et al. 2016). This is concerning since peer victimization occurs more often in populations with disabilities (Sentenac et al. 2011) and individuals with ASD experience high rates of physical, emotional and sexual abuse. For instance, caregivers reported 18.5 and 16.6% of children with ASD had experienced physical and sexual abuse, respectively (Mandell et al. 2005). In the same study, those who were sexually victimized had a 4.4 times increased risk of SA whereas those physically abused had a 2.7 times increased risk. Patterns of negative life events including those mentioned above are reported to predict depression in children and youth with ASD (Fung et al. 2015; Ghaziuddin et al. 1995; Taylor and Gotham 2016) and precipitated SA or completed suicides in case reports (Richa et al. 2014). Adults with ASD experience three times more sexual victimization than those without ASD (Brown-Lavoie et al. 2014). This continual stress, even in cases of reduced theory of mind, could contribute to thwarted belongingness. The cumulative burden of these negative life events on individuals must be considered as a long-term risk factor.

Identifying temporally proximal and distal risk factors for suicide informs service needs for those at risk. Distal vulnerabilities are opportunities for targeted supports. Evidence for this as a worthy investment emerges from a Japanese study that compared adults with and without ASD treated for SAs within an emergency department (Kato et al. 2013). Relative to those without ASD, individuals with ASD had fewer mood disorders and more adjustment disorders, were more likely to live alone and were less likely to be users of psychiatric services. This highlighted the potential isolation, both socially and in terms of service use, that individuals with ASD can face. Interestingly, the authors reported that those with ASD were less likely to present with an acute precipitating event (a significant trigger within the last 24 h) before attending the emergency department. This finding suggests that proximal triggers may not be as prominent for those with ASD whereas distal factors, which allow for earlier intervention, may be an opportunity to mitigate risk.

A means of support for adults with ASD, potentially mitigating isolation and risk, is employment. A large predictor of subjective well-being is productivity, defined as having something meaningful to do each day (Cummins 1996, 2005). Work environments optimally allow personal development and contribution to family, community and civil society (Bowers et al. 2014; Lerner 2006), integrate routine and achieve basic needs. It follows that mental health and, at a fundamental level, belongingness and contribution to society may be nurtured by meaningful and generative vocational activity. In the general population, suicide is associated with unemployment and negatively correlated with institutional supports for the unemployed (Yur'yev et al. 2010). Among youth, lack of employment, education or training led to seven times increased risk of SI, independent of any prior mental health condition (Power et al. 2015). Given these considerations, the role of employment supports in populations such as those with ASD indeed may mitigate risk for adverse outcomes, including suicidality. Overall, in consideration of those discussed above, there are several factors leading to contemplating or acting to take one's own life that are persistent rather than spontaneous stressors for individuals with ASD. These stressors may lead to mood dysregulation and anxiety (Wood and Gadow 2010), potentially resulting in exacerbated symptomology and distress. This cycle of vulnerability and stress further risks a cumulative effect that could spiral into suicidality.

## Integration with Current Psychological Theories of Suicide

Psychological theories of suicide attempt to explain how various individual and/or contextual factors interplay to lead to a desire or behavioural attempt to end one's life (for a review of recent theories, see Gunn and Lester 2014 and O'Connor and Nock 2014). On the backdrop of the fluctuating nature of suicidality, most of these theories follow a diathesis-stress model (an individual tendency/predisposition coupled with an external stressor) while other theories focus on specific domains (e.g. emotional dysregulation, cognitive appraisal). Together, these theories provide a framework to identify baseline risk factors and thus identify individuals at high risk that need support.

Given the difference in the numbers of people that think about suicide and those that attempt suicide in the ASD population (Cassidy et al. 2014), it is important to consider pathways to suicide in this population relative to the distinction between ideation and behaviour. Further, in light of the goal of identifying better external supports, the diathesis-stress models are more applicable in this discussion. Two theories using the diathesis-stress framework to distinguish ideation from behaviour are Joiner's Interpersonal Theory of Suicide and O'Connor's Integrated Motivational-Volitional Model of Suicidal Behaviour.

Briefly, Joiner et al.'s (2005) theory distinguished suicidal thought/affect to actual suicide attempt by accounting for capability for suicide gained through painful experiences. His Interpersonal-Psychological Theory of Suicide proposed that a completed suicide requires three components: (1) thwarted belongingness/interpersonal disconnectedness, (2) perceived ineffectiveness and resultant burdensomeness on others and (3) acquired capability for suicide. In the model, the first and second components lead to suicidal ideation (SI) while the third is postulated to be necessary for a suicidal attempt (SA), namely, the capability to overcome self-preservation reflexes through reductions of fear and pain sensitivity (Joiner et al. 2005; Stellrecht et al. 2006; Van Orden et al. 2010). These domains are ripe for further research and, importantly, practical considerations for clinical assessment. In contrast, O'Connor's (2011) theory framed suicide through a behavioural perspective, outlining the linear process starting from a pre-motivational state (e.g. environment, life events), introducing motivational factors (e.g. defeat and humiliation that may lead to a sense of entrapment and potentially ideation) and lastly, volitional aspects (e.g. capability, impulsivity, planning, access, imitation) that lead to a suicide attempt. Within the motivational stage, factors are moderated by maladaptive individual and contextual factors. An enhanced interface of ASD-related traits with elements associated with the theories related to suicidality may advance understanding in this population, regardless of the dynamics in the temporal process. Therefore, we propose specific interactions below using the Interpersonal-Psychological Theory of Suicide.

Accordingly, there are possible unique contributions of ASD-related traits and experiences to the Interpersonal-Psychological Theory of Suicide aside from the factors identified above in the literature. First, thwarted belongingness (negative evaluations of reciprocal social relationships) and perceived burdensomeness (seeing oneself as a liability) require a level of social reciprocity and theory of mind, excluding some individuals with ASD from a typical understanding of this construct. External factors such as stigma and lack of support may deleteriously increase risk. The heterogeneity of ASD may interact with underlying psychological constructs, resulting in the curent difficulty with formulating generalized processes. Research is needed to differentiate the more homogenous subtypes of ASD to ascertain more granular risks and protective factors (Insel et al. 2010). Second, acquired capability may be more widespread and less particular to the specific manifestation of ASD. Self-injurious behaviour and self-harm without the intention of ending one's life may be associated with ASD, as well as exacerbating risk by lowering the threshold toward this capability while external factors such as peer victimization may provide an immediate contribution. Research is needed to explore how the validity of these constructs unfold and their applicability relative to ASD. Third, restrictive interests may include a specific fixation on the concept of death, dying and the afterlife versus others who may have a less perseverative orientation or fascination with less metaphysical topics (e.g. means of transportation). Although this may not directly lead to an acquired capability or inclination to suicide, perseverative thinking about the topic breeds familiarity with the idea which, if combined with other risk factors, may pose heightened risk. To this point, the moderating effect of restrictive interests in people with ASD on suicidal behaviour has not been studied.

## Future Considerations: Practice-Informed Research and Evidence-Informed Practice

Moving the field forward will require a more nuanced tool or method to capture suicidality and the identification of potential strategies and partnerships to support individuals. Awareness of risk factors and proactive targeting of internal and external factors may mitigate suicide risk. However, applying current tools for suicidality screening highlights issues similar to that which exists in broader mental health assessment. Specifically, administering non-ASD focused tools among individuals with ASD is not optimal as these measures may lack sensitivity and specificity relative to ASD expression. Standard practice presumes that suicidal thoughts can be ascertained, but these may present differently in an individual with ASD and/or be hidden due to differences in communication and understanding of internal states. Challenges in assessing these cognitive domains include the possible masking effect of ASD symptomology. Screening for events that precipitate or are associated with depression may offer improved monitoring. Awareness of the barriers to, and facilitators of, seeking help as identified by lived experience and the role of gatekeepers (laypersons in the community who can identify risks factors and warning signs, and refer to appropriate services) may help with screening and intervention efforts (Hom et al. 2015; Wyman et al. 2008).

In moving forward, there is need to advance understanding about processes underlying suicidality in ASD to guide assessment, monitoring and intervention. Individuals, families and service providers require guidance based on practice-informed and population-specific research. A better understanding is critically needed relative to developmental-contextual and other salient considerations that emerge in adolescence and adulthood as well as salient confounding issues. Social/relational and environmental influences such as social isolation and ongoing peer victimization merit examination relative to mental health impacts and potential SI. Screening tools for assessment of risk in ASD are urgently needed, as are population and intervention studies.

An important inquiry to consider is whether asking about suicide leads to SI among persons with ASD, as this may be

viewed as a barrier to addressing SI. In the general population, it is established that discussing suicide does not induce thoughts of suicide but rather, may offer beneficial long term outcomes (Dazzi et al. 2014). It is unknown if perseverative thinking in some individuals with ASD without adaptive coping skills may incline them to dwell on the topic without benefit. Research is needed to better understand the potential dynamics associated with these questions. Engaging ASD self-advocates is advised to identify experiences, confounding elements and potential solutions (such as targeted supports, visual aids, toolkit development) (Bennett 2015; also see http://mhautism.coventry.ac.uk/). Organizational and program policies/procedures should be outlined as many direct service providers may lack focused training and experience and would benefit from a better understanding of guidelines in such situations. As an example, guidance may be needed in appropriately asking about, and responding to, variant responses about SI.

Finding ways to support individuals living with these challenges is urgently needed. Given the limited attention to this area, an international collaborative model to share research findings, resources and practice methods is recommended in advancing this field. Suicidality requires a combination of sensitivity, understanding of risk factors, crisis management skills and knowledge about community resources. While most suicide prevention support services are not ASD-specific, a collaborative approach between crisis management experts and ASD service providers is expected to result in better support for individuals with ASD. Adapting existing outcome measures for ASD will allow for improving evaluation of interventions. Further, services such as an accessible support and information telephone line/contact to assist service providers and families could offer guidance and build capacity. Focused resources and an evidence-building approach are recommended in the aim of redressing this immensely important and under-developed area of suicidality and ASD.

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