Chapter 9

On the Randomness of Suicide

An Evolutionary, Clinical Call to Transcend Suicide Risk Assessment

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Abstract

Converging theoretical and empirical evidence points to suicide being a fundamentally aleatory event that risk of suicide is opaque to useful assessment at the level of the individual. This chapter presents an integrated evolutionary and clinical argument that the time has come to transcend efforts to categorise peoples' risk of taking their own lives. A brighter future awaits mental healthcare if the behaviour's essential non predictability is understood and accepted. The pain brain evolutionary theory of suicide predicts *inter alia* that all intellectually competent humans carry the potential for suicide, and that suicides will occur largely at random. The randomness arises because, over an evolutionary timescale, selection of adaptive defences will have sought out and exploited all operative correlates of suicide and will thus have exhausted those correlates' predictive power. Completed suicides are therefore statistical residuals events intrinsically devoid of informational cues by which the organism could have avoided self destruction. Empirical evidence supports this theoret ical expectation. Suicide resists useful prediction at the level of the individual. Regardless of the means by which the assessment is made, people rated 'high risk' seldom take their own lives, even over extended periods. Consequently, if a prevention treatment is sufficiently safe and effective to be worth allotting to the 'high risk' subset of a cohort of patients, it will be just as worthwhile for the rest. Prevention measures will offer the greatest prospects for success where the aleatory nature of suicide is accepted, acknowledging that 'fault' for rare, near random, self induced death resides not within the individual but as a universal human potentiality. A realistic, evolution informed, clinical approach is proposed that focuses on *risk communication* in place of risk assessment. All normally sapient humans carry a vanishingly small daily risk of taking their own lives but are very well adapted to avoiding that outcome. Almost all of us nearly always find other solutions to the stresses of living.

Keywords

evolution, pain brain, positive psychology, risk assessment, suicide

Key Points

- The pain-brain model of suicide offers the greatest explanatory power of the theories in the current evolutionary literature. It proposes that, notwithstanding population-level patterns, suicide will occur essentially at random among normal adolescent and adult individuals.
- Individual suicide risk cannot be usefully gauged by any known method. Suicide is probably not amenable to prediction even in principle.
- Treatment decisions decided purely on the basis of a risk assessment (safety plans, psychopharmacology, hospital admission, etc.) can be presumed to be misdirected. Individuals judged to be 'at risk' are probably in no greater danger of taking their own lives than are other vulnerable service users. All patients need suitable care and compassion with current situations managed accordingly.
- Someone troubled by suicidal thoughts needs to be listened to, empathically and

without judgement. They can be reassured that while all normally intelligent adolescents and adults are at some risk, suicide is an extremely unlikely outcome despite such thoughts.

- A review of a person's strengths, goals and psychological resources may be useful. Patients may benefit from the advice that they have inherited psychological defences that enabled their ancestors successfully to handle life's challenges.

Workers in mental health are often expected to take a view on whether a patient is a danger to themselves (APA, 2003; Graney et al., 2020; NICE, 2011; WHO, 2014). For psychiatrists, suicide risk assessment has become a routine activity, a professional responsibility and a core competency requirement (Rudd and Roberts, 2019; Silverman and Berman, 2014). However, as this chapter will explain, multiple lines of evidence are now pointing to the impotence of risk assessment in suicide prevention, and indeed to its potential harms. Both theory and epidemiology indicate that suicide – the act of deliberately killing oneself (WHO, 2014) – is a fundamentally random event. While patterns can be seen at the group level, virtually every intellectually competent human being carries a small risk of wilful self-destruction. This risk cannot, even in principle, be usefully assessed at the level of the individual.

We first set out the theoretical evidence of suicide's aleatoriness, drawing on Soper's (2018, 2021) pain-and-brain (henceforth 'pain-brain') evolutionary model, and then we show how the empirical evidence supports this theoretical position. In view of strong clinical benefits that would be expected to arise from accepting suicide's randomness, we recommend an alternative strategy for helping patients in distress – one that focuses on *risk communication*, transcending risk assessment.

9.1 Evolutionary Theory Points to Suicide's Randomness

The pain-brain theory holds that suicide evolved as a noxious by-product of two primary adaptations that, when combined, would logically result in deliberate self-killing. They come together in our species and ours alone (Soper, 2018, 2021). The first, pain, is an ancient self-protective signal that enables animals to navigate fitness hazards in their external and internal environments. The aversiveness of pain is designed precisely to induce action to end or escape it. The second suicidogenic adaptation is the exceptional intellect of the mature human brain, which is able to obey the imperative to escape pain, effectively but maladaptively, by terminating its own consciousness. These dual 'pain' and 'brain' conditions – motivation and means, respectively – are not only necessary for deliberate self-killing but sufficient. Any animal aware that it could relieve its suffering by ending its own life would be expected to seize the opportunity. By this light, suicide can be understood as the default human response to intolerable distress.

Pain-brain is not the only evolutionary model of suicide: alternatives have been advanced by Syme and Hagen (2018; Syme et al., 2016), deCatanzaro (1981) and others (see reviews in Bering, 2018; Gunn, 2017). However, it arguably offers the greatest explanatory power, predicting diverse patterns in suicidality, psychopathology and other psychological phenomena that are otherwise, as a set, unaccounted for (Gunn et al., 2021; Lester, 2019b; Soper, 2022).

9.1.1 Suicide Is an Adaptive Problem

The pain-brain evolutionary analysis suggests that suicide has existed as an ambient survival hazard from a time, deep in human prehistory, when a population of ancestral humans encephalised to the extent of being able to grasp the idea of their own personal mortality. A developmental counterpart of that ancient phylogenetic Rubicon can be seen being crossed today in the age pattern of suicide's first onset. Virtually non-existent in early childhood, suicidality emerges suddenly in adolescence and remains endemic thereafter (Borges et al., 2012). Potential for suicidal behaviour arrives during normal cognitive maturation, alongside heightened self-awareness and executive functions (Cuddy-Casey and Orvaschel, 1997; Shaffer and Fisher, 1981; Soper, 2018). The existence of a threshold of intellectual competence parsimoniously explains not only young children's immunity and suicide's ontogenesis, but also the absence of suicide among non-human animals (Preti, 2011) and the rarity of completed suicides among human adults with severe

intellectual disability (Baechler, 1975/1979; Tromans et al., 2020).

By a process of random mutation with selective retention, suicide, as a recurring fitness threat, drove the evolution of special-purpose anti-suicide adaptations. Indeed, so extreme is the threat that the task of avoiding suicide has likely posed a superordinate biological challenge for our species. Many important features have been hypothesised to contribute to our success in colonising and dominating the planet: bipedalism, tool-making, theory of mind, language, culture and so on. But as Soper (2019a, 2021) points out, none of these assets will have much of an impact on reproductive success if a hominid so endowed, on reaching reproductive age, kills itself. For these other attributes to shape human evolution, special-purpose adaptations had, in our ancestral past, to manage the fitness cost of suicidality.

9.1.2 Evolved Defences against Suicide: 'Fenders' and 'Keepers'

Figure 9.1 shows conceptually how these cost-managing adaptations are thought to work. At the top of the diagram, suicide's 'pain' and 'brain' precursors combine to generate very many potential suicidal trajectories, marked by a dense mass of dots. Virtually all of these are filtered out by successive lines of anti-suicide defences, arranged below, so that only very few instantiate as suicidal acts, marked by scattered dots near the bottom of Figure 9.1.

Blocking the way are, first, front-line defences, labelled *fenders*. These take two forms, pain-type and brain-type, respectively addressing suicide's 'pain' and 'brain' evolutionary authors. Various *pain-type fenders* seek to neutralise the motivation for suicide by limiting the experiencing of emotional distress. They manifest in diverse, uniquely human phenomena of positive psychology (Hirsch et al., 2018). Affective well-being is managed homeostatically, so that we are kept fairly happy most of the time and are able to deal with shocks without too much disruption. This warmer-than-neutral state is maintained by two levers: on one side, the negative impact of bad news is suppressed by psychodynamic defences and other forms of self-serving self-deception, while on the other side, recreational behaviours are promoted, for no adaptive purpose other than to induce pleasure. The whole affect-managing system is coordinated by an optimistic worldview, often involving religious or spiritual belief.

A separate set of encultured *brain-type fenders* denies access to the intellectual means of suicide, seeking to put the idea of self-killing beyond cognitive reach. By propagating an anti-suicide taboo, fear of what may come in an afterlife, and stigmatising punishments for loved ones left behind, brain-type fenders make suicide feel awkward to think or talk about, doubtfully effective as way to escape pain, and self-evidently wrong.

Towards the bottom of Figure 9.1 is an array of last-line defences, labelled *keepers*. These are emergency measures. They activate among post-pubescents at times of chronic and intense distress, aiming to stop suicidal ideas from escalating into actions. As with fenders, keepers also instantiate in pain-type and brain-type forms. *Pain-type keepers* make suicide unnecessary; they numb, divert or otherwise attenuate the power of emotional pain to motivate suicide, but at a cost of disrupting motivational systems generally. *Brain-type keepers* meanwhile downgrade intellectual functions sufficiently to make suicide difficult to organise, but at a cost of making any other equivalently complex task difficult too.

Keepers are thought to manifest in a variety of symptoms of common mental disorders, including addictions, non-suicidal self-harm and major depression, (Soper, 2018, 2021). This idea may feel counterintuitive, but it is not new or outlandish; it was advanced decades ago from within mainstream psychiatry. Himmelhoch (1988), in the *Journal of Clinical Psychiatry*, argued that diverse psychopathologies may demonstrate evolved anti-suicide defences in action. Hundert (1992), of Harvard Medical School, similarly proposed that psychotic delusions may perform an evolved anti-suicide function. Although not usually discussed in evolutionary terms, some depressive symptoms are thought to suppress the motivation to act on suicidal thoughts (Hendin, 1975; Rogers et al., 2018), to the extent that psychiatrists have long been trained to beware of patients' risk intensifying when depression starts to lift (Meehl, 1973). More detailed discussions of hypothesised evolved anti-suicide machinery can be found elsewhere (Gunn et al., 2021; Humphrey, 2018; Soper, 2018, 2021).

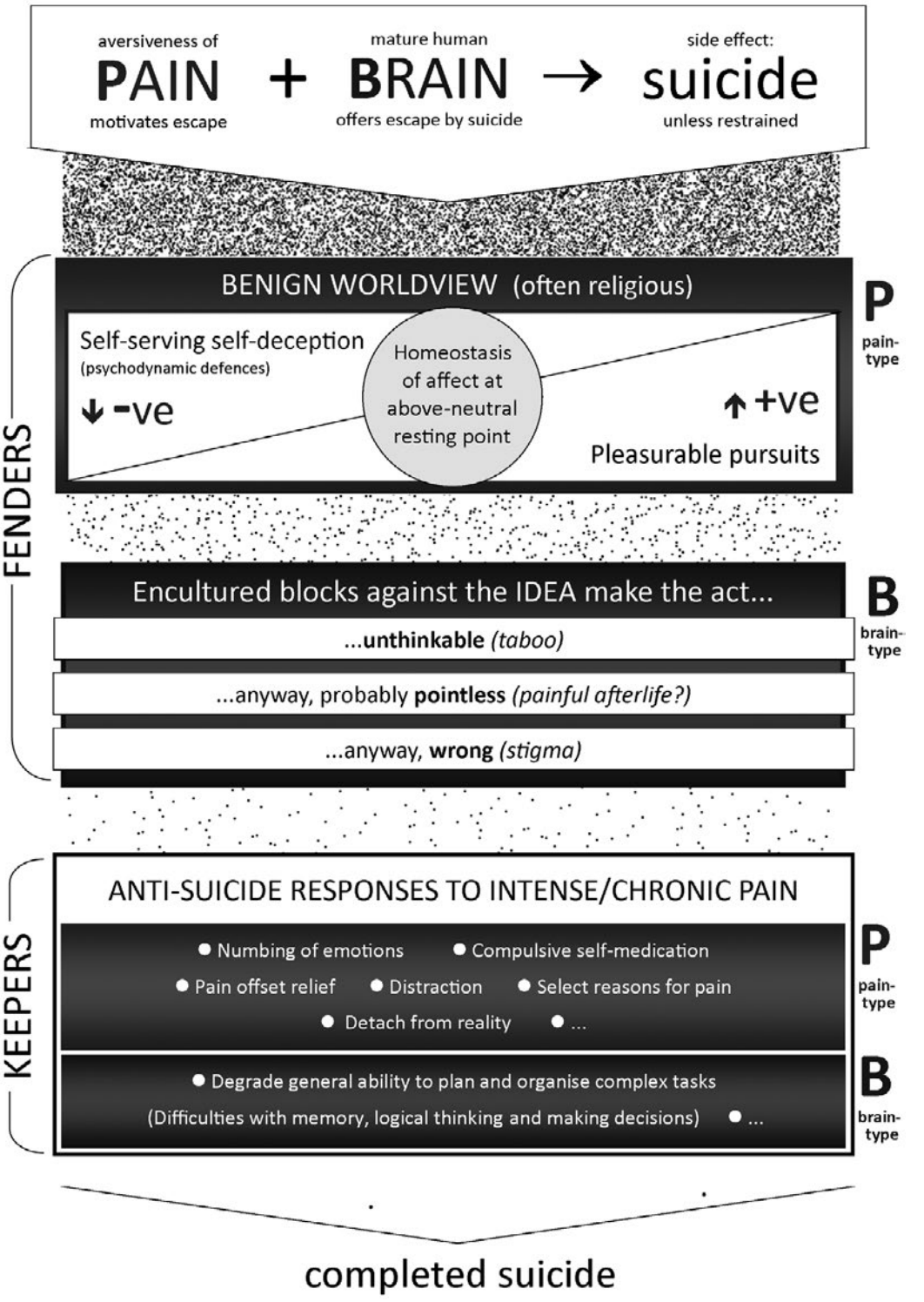

Figure 9.1 Schematic of evolved anti suicide defences. See text for commentary (adapted from Soper (2018), with permission)

9.1.3 Why Suicide Will Be Aleatory

Relevant to this chapter is the largely random nature of any filtrate that reaches the bottom of Figure 9.1 – suicidal trajectories that circumvent the organism's defences. Suicides will be intrinsically random because, over an evolutionary timescale, selection will have sought out all available cues from the organism's internal and external environment that usefully presage this fatal outcome.[1] Detectable correlates will have been fully exploited for the purpose of pre-empting and avoiding self-destruction. By acting on prognostic information, selection will have exhausted that information's predictive power. There should be no actionable indicators left (Soper, 2019b).

This randomising dynamic is not peculiar to suicide. Evolution by natural selection tends generally to promote adaptations up to the *edge of chaos* (Kauffman, 1993) – the boundary between order and disorder. Where all fitness-relevant regularities have been subsumed, what remains is noise, devoid of predictive utility. As Chapter 1 noted, the *environment of evolutionary adaptedness* is a statistical composite of the adaptation-relevant properties of ancestral environments (Tooby and Cosmides, 1990). By the same principle, completed suicides are statistical residuals – scenarios tagged with no adaptation-relevant markers with which the organism could have predicted and avoided self-destruction.

While evolved defences would eliminate suicide's predictive cues, they would not eliminate suicide. Defences would be selectively favoured only up to a least-bad compromise position, where the fitness benefit of responding to additional actuarial information is cancelled out by the incremental cost. The human brain has to strike a balance between blocking self-killing and impairing the emotional and cognitive functions that the organism needs to compete successfully against other mature adults for mates and other resources. Equilibrium is reached at a minimal, irreducible risk, manifest at a population level in a so-called natural (Yang and Lester, 2021) or base (Goldney, 2003) rate. Suicides are the residue left after the human brain has done the best it can with the information to hand. In other words, while 'Zero Suicide' may be a laudable policy aspiration (Brodsky et al., 2018), as a species we are not biologically set up for zero suicide; all normally intelligent post-pubescent humans will carry a low, but above-zero, risk of near-random self-killing.

In some ways, suicide is like a plane crash. The possibility of a crash is unfortunately in the nature of heavier-than-air flight because the default position of an aeroplane is not in the sky; planes have to work to stay aloft. There are any number of systems that could fail, resulting in a common outcome: a crash. Zero crashes could be achieved, in theory, simply by keeping every aircraft grounded. Indeed, before the invention of the flying machine, there were none to crash. But the benefits of modern flight are so great that, once all that *can* practically be done to prevent accidents *has* been done, we fly, and we accept the small residual hazard. The disasters that do happen are intrinsically unpredictable (or at least they should be) because they are what remains after all reasonable measures have been taken, based on the information available, to avoid them.

Nature similarly could achieve zero suicide in theory simply by 'grounding' human intelligence at the level of a non-human animal or a human infant. But this immunity would be self-defeating because mature humans need species-typical cognition for reproductive success. Suicides occasionally happen even though evolution has adapted us to survive in the continuous presence of the suicide hazard, in the same way that freak aviation disasters happen even though planes are designed specifically not to crash (Soper, 2019a). Our defences are very good, but they cannot be failsafe given the extraordinary engineering challenge that the human psyche has to meet: to have continuously to hand elective death as a way to relieve suffering, while not actually exercising that option. From this perspective, the remarkable feature of *Homo sapiens* is not so much that suicide ends the lives of 9.0 per 100,000 each year, accounting for 1.3% of deaths (WHO, 2021), but that most of us nearly always find other ways to deal with the stresses of living. As products of selection, humans are precisely built to avoid deliberate self-killing as far as is biologically practicable.

This evolutionary perspective is relevant because it means that for clinicians to forecast suicide accurately at the individual level they would

[1] No teleological meaning is intended by the use of metaphors such 'sought out' and 'exploited'. Natural selection operates, of course, by a 'blind' process.

have to outperform the patient's own organismic anti-suicide machinery. If the process of selection has done the expected thing, consuming all utilisable cues of danger, then the behaviour should be an aleatory phenomenon. Although there may be observable patterns at a macro level, individual suicides can be understood as outputs of a chaotic system (Lester, 2019a), or *mental accidents* (Ajdacic-Gross et al., 2019). They ought to be 'predictably unpredictable' (Soper, 2019b: 37).

9.2 Empirical Evidence of Suicide's Randomness

The empirical record agrees with the theoretical expectation: suicide does indeed appear to be an essentially random event. Despite decades of research, no mix of risk factors, alleged warning signs, so-called red flags or other supposed cues has been found that comes close to predicting suicidal behaviour with useful accuracy (Belsher et al., 2019; Carter et al., 2017; Chan et al., 2016; Corke et al., 2021; Fosse et al., 2017; Franklin et al., 2017; Large et al., 2016; Mulder et al., 2016). Regardless of the assessment method, the great majority (95.0–97.5%) of people assessed as 'high risk' do not take their own lives even over an extended period. That is to say, a judgement that a patient is at 'high risk' is likely to be a false positive, with a $\geq$95% chance of being wrong (Large et al., 2016). The most accurate assessment on a case-by-case basis is one where everyone is designated 'low risk'. Meanwhile, many – and in some studies most – suicides will occur among people who were not thought to be in particular danger (Large, 2017; NCISH, 2017; Wyder et al., 2021). Even though assessment tends to produce an exaggerated perception of the risk, where an individual's risk is declared, it is almost always 'low' prior to suicide (Rahman and Kapur, 2014). Most incidents occur among people who appeared normal to the extent that they remained outside of the mental healthcare system (NCISH, 2017; Stone et al., 2018); presumably, then, most cases are not associated with enough *prima facie* evidence of danger even to invite assessment.

These statistical realities put health workers in a corner. When confronted with an individual who has tried to take their own life, we naturally worry about what is to come, and some form of risk assessment is almost universally recommended. However, this is precisely the situation when predictive tools – anyway weak – are weakest: when all patients carry the prominent risk factor of self-harm, these tools cannot be used to discriminate between them (Corke et al., 2021). And we understandably have sometimes strong ideas about the future safety or vulnerability of our patients, but the science is challenging these preconceptions. It is telling us to be little more confident about suicidal outcomes than if we were shooting dice. A recent review makes the point unequivocally: 'Our ability to predict future suicidal behaviour is no better than chance' (Zortea et al., 2020: 73).

9.2.1 Multiple Lines of Empirical Evidence Converge on Suicide's Randomness

The virtually absolute erroneousness of suicide risk assessment, its predictive accuracy 'near 0' (Belsher et al., 2019: E1), is more than just a technical issue. It is not the kind of problem that can be finessed with more data or a cleverer methodology. Several strands of evidence from recent meta-analyses converge on suicide being opaque to prediction even in principle. One is the lack of progress in science's search for predictors. Although research in this field has grown exponentially over half a century, more recent studies achieve no better results than earlier ones (Carter et al., 2017; Franklin et al., 2017). Another is that no category of risk factor – mood disorder, suicidal ideation, past suicide attempt and so on – predicts significantly more accurately than any other (Franklin et al., 2017). That is to say, there is no detectable target for the research effort to home in on, no basis for narrowing the search space. Another is that no research methodology performs better than any other; for example, studies using larger samples produce greater statistical validity than those with smaller samples but no greater predictive power (Franklin et al., 2017).

Most tellingly, there is no advantage in combining risk factors or otherwise adding complexity to assessment techniques. Methods that take into account many input variables perform as poorly as those using only a few (Corke et al., 2021; Taylor et al., 2021). This finding points to the source of uncertainty as aleatory rather than epistemic. More knowledge doesn't help. Assessing suicide risk is like trying to forecast

the behaviour of dice: knowing more about the dice's weight, constituent materials, centre of gravity, etc., might allow finer calculation of actuarial probabilities but will be useless for determining which throw will produce a double six. Greater methodological sophistication does not overcome the essential randomness of the outcome.

This point deserves closer attention. Various professional bodies now explicitly recommend against simplistic assessments based on checklists of risk factors, score cards, risk scales and the like – instruments that remain in widespread use despite being uselessly inaccurate (APA, 2003; Belsher et al., 2019; Graney et al., 2020; NICE, 2012; Royal College of Psychiatrists, 2020). But the discommendation is curiously selective. It proscribes a particular *approach* to the endeavour, rather than the endeavour itself. It skips over the problem that more complex 'holistic' approaches that are put forward for use instead – 'comprehensive review' (Royal College of Psychiatrists, 2020), 'psychosocial assessment' (Steeg et al., 2018) and the like – are no more empirically supported than the formulaic tools they are meant to replace. Suicide risk assessment by clinical intuition is as unreliable as any other method (Carter et al., 2017; Corke et al., 2021; Franklin et al., 2017). Success is unlikely to be found in blending techniques either: adding a hunch, even an expert one, to actuarial prediction in this situation is as likely to introduce bias as to reduce error.

The aleatory uncertainty that thwarts a personalised psychosocial approach equally foils its mechanised opposite: artificial intelligence (AI), computerised algorithms and 'big data'. Whether the extra complexity is handled by medics or machines, more information does not produce better results (Corke et al., 2021). Notwithstanding the proleptic discourse surrounding AI in suicide prevention – 'the sense that we are on the cusp of a medical/scientific breakthrough' that pervades more than a century of literature in suicide research (Marsh, 2016: 28) – results so far indicate no easy progress in this direction (McHugh and Large, 2020). From an evolutionary perspective it is easy to see why: the human organism's own anti-suicide algorithm has had an immense head start. Success would require not only a recurring cue to be found that thousands of generations of intense selection missed, but also the available prognostic data would need to be processed and actioned more effectively than is already achieved by 'the most sophisticated computer in the known universe' (Lieberman, 2013: 200) – the human brain.

As a final line of evidence, commonplace experience accords with the epidemiology. Suicide strikes like a bolt from the blue. For the actors themselves, those who survive often report that their attempts were impulsive, passing from first thought to would-be final act within a matter of minutes (Deisenhammer et al., 2009). As for bereaved loved ones, shock, confusion and disbelief characterise their immediate reactions to the news (Dyregrov et al., 2012); that is to say, they had no forewarning. Mental health workers are similarly taken aback by suicides of patients, despite presumably knowing more than most about supposed 'red flags' (Castelli Dransart et al., 2017). Jaworski and Scott (2016: 216) capture the bewilderment of those left behind: 'Despite all the signs we are told to look for, suicide is like a bracket that arrives as a closing without any opening.'

9.2.2 The Gap between Evidence and Belief

In view of the above tessellating theoretical and empirical evidence, it is safe to deduce that suicides happen largely at random. A case for the behaviour's intrinsic non-predictability can be confidently argued.

In legal settings it *is* so argued, and to a judicial standard of proof. Psychiatrists can and do explain in court – empathically but with assurance – that an individual suicide is virtually never predictable (Ryan et al., 2015a; St John-Smith et al., 2009). Attorneys experienced in defending malpractice suits, when it is alleged that a clinician 'should have seen it coming', are ready to brief juries on the distorting effect of viewing suicide through the lens of hindsight (Schultz, 2000). After the event, the act can take on the appearance of predictability, almost of inevitability; but however the assessment is made, an assessor who rates an individual as being at 'high risk' before the event will almost certainly be wrong. It should not be a contentious point that no-one, physicians included, can be prescient or omnipotent in a scenario governed by aleatory uncertainty. As observed in a recent interview,

'psychiatrists are doctors, not soothsayers' (Sanati, 2021: 192).

Psychiatry has made a litigious rod for its own back in this regard because an expectation of liability arises in part from medicine's own counterfactual orthodoxy (Large et al., 2012). Despite the lack of an evidential substrate, there is a persistent assumption in medical science, implicit or explicit, that suicides can be foreseen with meaningful accuracy, and therefore in principle can be forestalled by personally targeted interventions. Thus, pages of the medical press list risk factors (Turecki and Brent, 2016), 'red flags' (Cole-King and Platt, 2017) and 'danger signals' (Campbell and Hale, 2017), while offering no empirical reason to believe that any combination thereof usefully distinguishes future suicides from non-suicides in clinical settings. Even the World Health Organisation (WHO, 2014: 29), in a poster-like graphic, declares as 'Fact' that '[t]he majority of suicides have been preceded by warning signs, whether verbal or behavioural' – while leaving the grounds for this assertion signally unexplained.

The zeitgeist rests on a fallacy. It assumes that suicide's correlates, weak and usually measured after the event, can be taken as portents. While it is invidious to spotlight examples, a meta-analysis by Pompili et al. (2016: 12–13) illustrates the error. Dismissing as 'myth' the idea that people who talk about suicide rarely do take their own lives, the authors claim that 'suicidal communication' is a clinically robust predictor:

> Our data shows that SC [suicidal communication] seems to have a good positive predictive value, at least among adults. Therefore it is critical that any explicit SC be followed by a referral to a mental health professional and the arrangement of an adequate prevention plan.

But the studies included in the meta-analysis do not support this recommendation. Being retrospective, they testify rather that fishing trips often yield fish. When tasked with finding plausible 'suicidal communication' with the benefit of hindsight, psychological autopsies frequently deliver. There is no evidence that talk of suicide reliably predicts self-killing and considerable evidence that it doesn't. A longitudinal community study (n = 3481) found that most suicide attempts (74%) happened among people who had not reported suicidal ideas, while few of those who had disclosed such ideas made an attempt even over a follow-up period of more than a decade (9%) (Kuo et al., 2001; see also ten Have et al., 2009). Vanishingly few completed suicide, it can be presumed, since attempters outnumber completers by some 30 times (CDC, 2021). A great many people admit to thinking about ending it all: one in five Europeans (Castillejos et al., 2021) and half of American college students (Drum et al., 2009) at some stage in their lives, and a quarter of young American adults in one stressful month alone (Czeisler et al., 2020). Nowhere close to this number go on to take their own lives, or try. Notwithstanding 'suicidal communication', the pooled 4.66 odds ratio calculated by Pompili et al. (2016) themselves from case–control studies points to suicide being extremely unlikely. Applying this multiple to a global baseline of about 1 suicide per 10,000 population per annum (WHO, 2021), the day-to-day odds against a particular individual dying in this way remain in the order of a million to one.

Pompili et al.'s (2016) article is widely cited and far from alone in misreading the epidemiology in this way. Another recent review, Mann et al. (2021), similarly cites post-mortem reports to argue that suicide is presaged by untreated depression, although there are equally no grounds to believe that depressive symptoms – or any other psychopathology – usefully indicate prospective risk (Carter et al., 2017; Franklin et al., 2017). The editor of a leading suicidology journal likewise insists, apparently on the strength of *post hoc* observation alone, 'It is important to reiterate that warning signs for suicide do clearly exist' (Joiner, 2010: 86). And so on.

There is a gulf between data and doctrine. We should in theory expect suicide to be a largely random outcome, and the empirical record agrees, but medicine's prevailing belief holds otherwise. Suicide's predictability constitutes a 'myth in search of facts' (Chiles et al., 2019: 8).

9.2.3 Why Do We Expect Suicide Risk to Be Assessable?

Faith in suicide risk assessment, despite clear evidence of its inutility, is a phenomenon worthy of study in its own right (Carter et al., 2017). Solving the puzzle as to why it endures is beyond the scope of this chapter, but we can point to suggestive clues.

There is no doubt much well-intentioned wishful thinking. We suspect that some clinicians,

confident in their powers of foresight (Gale et al., 2016), act on what they *feel* to be true, and certainly what we would *want* to be true – that suicide is somehow predictable and therefore preventable at the individual level. These feelings and desires are natural and understandable. But the science is telling us otherwise; it says that suicide's alleged precedents are simply not specific enough to be taken as actionable indicators.

For some mental health professionals, the futility of trying to measure suicide risk is an elephant in the room: the anomaly is in plain sight, but few want to discuss or acknowledge it (Chiles et al., 2019; Espeland et al., 2021). For others, the activity may be a reassuring routine, affirmed by the non-suicides both of those judged 'low risk' and of those judged, and treated, as 'high risk'. There is the ascendant issue of reputational risk management to consider, both professional (Groth and Boccio, 2019; Jacobson, 2017; Ross et al., 2020) and corporate (Power, 2004). Perhaps even pharmaceutical marketing interests may be involved (Jacobson, 2015). More alibi than rationale, incidental benefits might arguably arise where risk assessment leads to a wider and more useful therapeutic discussion between patient and carer (Draper, 2012). There is an operational issue: if not by this means, then some other way would have to be found to triage mental health patients (Lester, 2019b). More broadly, health workers and managers must work within organisational constraints – a pressure to conform not only to conventional practices but perhaps, psychologically, to conventional beliefs as well (Williams, 2021).

Motivated misbelief may arise also because we health workers, being human, have demons of our own. The very idea of suicide risk assessment helps to keep our finger reassuringly pointing the other way. As long as we view suicide as something that happens to *other* people, belonging to *them* and arising from *their* problems, we can imagine ourselves exempt. It is not easy to take on board the full implications of suicide's universality and randomness. Although extremely unlikely, it could happen to virtually any post-pubescent, ourselves included. Indeed, healthcare professionals have a higher rate of suicide than the general population (Milner et al., 2013). It may be higher still among psychiatrists (Dutheil et al., 2019). Defensive denial seems to be ubiquitous in this terrain, displayed in a near-universal conviction that self-killings can be pinned to some cause (residing in *others*) that is, in principle, identifiable. We need a specific reason, an acceptable answer to the question, 'Why?' (Campbell, 2001; Franklin, 2018). Selecting one is a secondary business, guided along encultured lines. Around the world and in different historical eras, different traditions rationalise suicide in different ways, usually from a judgemental, stigmatising (or *othering*; Zou et al., 2021) position. Popular explanations include bad luck, evil spirits, stupidity, vengeance, immorality and criminality (Bohannan, 1960;; Solano et al., 2018), as well as the psychosocial, pathology-focused paradigm that currently holds sway in the West (Hjelmeland and Knizek, 2019; Soper, 2021). This latter style of explanation, manifested in suicide risk assessment, may feel self-evidently 'right' to modern Western sensibilities, but it is no more objective than any other, no less socially constructed (Atkinson, 1978; Marsh 2010) and just as unevidenced. It has been dubbed by Kral (1998: 221) the 'great origin myth', and by Soper (2019b) *suigiston*, highlighting parallels with another ill-founded paradigm: early chemists' belief in the fiery element *phlogiston*. Non-existent as we now know, phlogiston was never found despite its intuitive appeal and a century-long scientific search. The same can be said of the special contingencies that supposedly lead people to take their own lives.

Besides such motley forces, there is also a feeling that to accept the full implications of suicide's randomness would be a nihilistic position, a counsel of despair. As Lester (2019b: 154) notes, there is a sense that 'poor prediction is better than no prediction'. To counter this sentiment, we devote the rest of this chapter to a positive vision: how mental healthcare might look, for the better, if we transcended the old notion of trying to assess suicide risk.

9.3 A Brighter Future: Mental Health beyond Suicide Risk Assessment

Suicide risk assessment is not cost-free. Consider the burdens that could be lifted by not doing it. They begin with the opportunity cost of time and other healthcare resources wasted in carrying out the procedure, of itself an intrusive, complex and time-consuming intervention (Cole-King et al., 2013). They extend into diverse unintended consequences for the healthcare organisation, patient and clinician.

9.3.1 Costs to Be Saved for the Organisation, Patient and Clinician

For the organisation, any treatment decision made on the basis of a 'high-risk' designation – including so-called safety plans (House, 2020), psychopharmacology (Braun et al., 2016) and hospitalisation (Large and Kapur, 2018) – may be presumed to misallocate resources given that the deciding assessment was almost certainly wrong. Although a hypothetical economic case may be argued (Ross et al., 2021), there is no clinical logic in rationing treatments in this manner. If an intervention is effective and benign enough for those (mis)judged to be 'at risk', it would be virtually as worthwhile (or, indeed, as unhelpful, or even harmful) for the rest of the patient cohort.

With regard to patients, an ethical issue to be addressed is to what extent it is acceptable to label as 'high risk' and impose onerous costs – disruptive interventions and potential stigma – on large numbers of people who were never going to take their own lives, in the hope of stopping the suicides of an unidentifiable few. This question is all the more pressing given that the countervailing benefit, measured in suicides prevented, is at best weak (Fox et al., 2020; Paris, 2021). It is doubtful, notably, whether lives are saved by administering antidepressants (Hengartner et al., 2021) or by hospitalisation (Chung et al., 2019; Large and Kapur, 2018).

For the clinician, suicide risk assessment creates avoidable stress and conflict (Elzinga et al., 2020; Espeland et al., 2021; Groth and Boccio, 2019). Clinicians face problems because the procedure brings with it the potential for blame and potential liability, especially if a patient is declared 'low risk' but does take their own life. Clinicians are thus called to manage an emergent secondary risk to themselves and their organisation, rather than focusing on the needs of the patient. Undrill (2007: 296) makes the point tersely: 'When a doctor constructs a patient as a source of threat to their professional integrity, they have stopped acting as a doctor to that patient.' As a form of insurance – as in 'cover yourself' (Espeland et al., 2021) – assessment would be expected to incentivise the assessor to err on the side of caution, to overrate the hazard. The low positive predictive value of risk assessments suggests that this is indeed what happens (Pokorny, 1983).

The assessment process raises conflict for patients too, because it may be in their interest not to be candid. Being defined as 'high risk' might lead to treatments they do not need, and being defined as 'low risk' might deprive them of treatments they needed and/or wanted (Large et al., 2011a). As already noted, the treatment given to those declared 'high risk' may be disruptive to their personal lives. Interventions may entail the prescribing of drugs with significant side effects, and/or protracted therapy, and possibly hospitalisation, with or without compulsion. There may also be psychological consequences: a person judged to be a threat to themselves may have to deal with resulting feelings of fear, deficiency and inadequacy, and a stigmatising social reaction (Mayer et al., 2020). In this light, it is understandable that many patients choose not to disclose their suicidal thoughts in clinical interviews (Blanchard and Farber, 2020; Obegi, 2021), and it is questionable whether an informed person would even consent to being assessed.

Thus, while the psychiatrist risk-assesses the patient, the patient might reasonably be risk-assessing the psychiatrist – as someone who can potentially harm them either by enforcing treatment that is not of value or by denying treatment that they want (Sanati, 2021). None of this gaming is conducive to a therapeutic relationship based on authenticity and trust (Michel and Jobes, 2011). The kind of reception that distressed patients find most helpful is one in which they feel heard and accepted, without judgement (Nicholas et al., 2020). This desired mode of relating is undermined by risk assessment, which can hardly but place the assessor in a judgemental position (Szmukler and Rose, 2013).

9.3.2 Benefits of Transcending Suicide Risk Assessment

We envision a different approach: one based on evolutionary understanding, acceptance of the empirical facts, and an embracement of suicide's aleatoric nature. Such a stance could form the basis of a more fruitful connection between health professional and patient because it relocates 'fault' for suicide outside of the individual (Ajdacic-Gross et al., 2019; Silverman and Maris, 1995). With the potential for suicide being understood as a dreadful but universal feature of the human condition, rather than a personal defect or

deficiency, clinician and client can meet each other as fellows. Neither is in especially exigent danger, and both face about as much risk as does any other post-pubescent human. Identifying as a peer, the health worker may more easily empathise. This is a big ask. Facing the patient on the same plane in this way implies, as noted earlier, that we health workers accept our own vulnerability. It also implies waiver of a power asymmetry that has privileged medicine for centuries (Weinberg, 2015). But such levelling does stand to make us more collaborative and effective therapists (Michel and Jobes, 2011).

Properly informed, the clinician can more helpfully focus on *risk communication* instead of risk assessment (Chiles et al., 2019; Ryan et al., 2015b; Sanati, 2021). We can offer genuine reassurance. This is not to dismiss a patient's concerns about their self-destructive ideas and behaviours: suicidality should be discussed fearlessly and with understanding (Large et al., 2017). It is not to ignore a current situation that needs to be managed with common sense. Nor is it to dismiss the clinician's understandable concern for the future of their patient. It is, rather, to present the actuarial fact that, over a foreseeable future, and however desperate the patient feels now, suicide remains an extremely unlikely outcome (Mammen et al., 2020). Suicidal crises and episodes of self-harm almost always resolve themselves in time (Fox et al., 2020; Moran et al., 2012). In Box 9.1, we offer suggestions on how suicidality may usefully be explained, its fearfulness de-stung and the danger put into realistic perspective.

In place of a process that 'others' distressed people, we can look for ways to 'belong' them (Reynolds, 2016). For sure they do belong, and the belonging begins on a vast scale. As a regular human being, having inherited protections that kept every one of their ancestors alive at least long enough to start a family, the patient can consider themselves well equipped to handle, in their own time and in their own way, whatever lies ahead. They possess a genius for survival that has accumulated over countless generations; in this real sense, all of their fore-fathers and -mothers are on their side.

Relieved of the need to dwell on the negatives of risk and disorder, the meeting can concentrate on the patient's strengths (Hirsch et al., 2018; Michaud et al., 2021; White et al., 2016). Clinicians can help patients to explore, appreciate and build on their own resources. They have, after all, survived thus far. It may be useful to review religious or spiritual beliefs; nourishing family, social and pet relations; and competences, projects, aspirations and so on. A focus on risk assessment has a magnifying effect on the perception of danger. By the same token, focusing on the patient's connections and capabilities can foster a vision of hope (Magyary, 2002; Wand, 2011).

Expectable benefits ripple out beyond the patient. Acceptance of suicide's essential randomness – as an unforeseeable biological accident – would help to ease the irrational guilt that often besets people bereaved in this way, health workers included (Greenberg and Shefler, 2014; Hendin et al., 2004). At a time of trauma, confusion and vulnerability, they need the facts stated unambiguously. *There were no signs*. There may be lessons to be learnt, but no one could have seen it coming. To insinuate otherwise, as an ethos of risk assessment does, is to add cruel and gratuitous torment to survivors' grief.

Wider benefits would arise from an implied shift in the burden of prevention from clinicians to public health policymakers. With there being no effective way to pick 'at-risk' individuals out for special treatment, effective interventions must necessarily take place at the level of populations. This is true even in mental healthcare settings: the most effective way to stop suicides in hospitals is by restricting access to lethal means, such as by the removal of ligature points, or by whole-cohort care programmes, rather than through treatment plans based on personal risk assessment (Chung et al., 2019; Large et al., 2011b; Tishler and Reiss, 2009). But as most suicides happen among people who have not accessed mental health services, the greatest scope for prevention lies in community-wide initiatives (Blanco et al., 2021; Davidson et al., 2018). In this regard, there is good evidence of the efficacy of means restriction (Chen et al., 2016; Westers, 2020). Indeed, the most likely explanation for the fall in the global suicide rate in recent decades is the reduced access to pesticides commonly used for self-poisoning in China, India and elsewhere (Mew et al., 2017). Wider still, acknowledgement that the real levers of suicide prevention operate more in the community than in the individual could help to refocus policymakers' attention on moderating the

Box 9.1 Risk communication: how to transcend suicide risk assessment

1 Be Sceptical of Simplistic Solutions

An interested reader can easily find guidelines as to how to assess and manage people who are judged to be 'suicidal'. These guidelines focus on people with suicidal ideation and behaviour, list numerous suicide risk factors and recommend various pathways based on suicide risk assessment. This approach is flawed because many, if not most, people who die by suicide have no known history of being 'suicidal' or have had little or no contact with mental health services. The guidelines fail both because many potential suicides are missed by the focus on those who are 'suicidal' and because suicide risk assessment is least effective among groups defined by self-harm or suicide attempts. Our first recommendation is to ignore simplistic or overly proscriptive guides to suicide risk management and instead to rely more on your humanity, clinical skills and global clinical judgement.

2 Be Alert for Distress

Focus on a broader group of people who might be loosely described as 'distressed' and do not arbitrarily exclude those judged not to be suicidal. To this end, you can use a very broad definition of 'distressed'. Common forms of distress are anxiety, depression and anger. Common causes of distress are perceived threats, losses, insult, injury and frustration. This is not an exhaustive list.

3 Be an Active Listener

With the aim of reducing suicide outcomes, listen carefully to any distressed person you meet. Be human, honest and as helpful as is appropriate. This does not mean you should be overwhelming; any interaction should be calm, nuanced and open. You can assume that almost all distressed people have some suicidal thinking. This thinking might be obvious, revealed by quiet questioning, or concealed. Learning about a person's suicidal thinking might help you understanding their distress, but it is rarely its cause. Many people with suicidal ideas rightly consider them to be products of their situation and experiences, but they may also view them as a potential way to stay in control. Focusing on suicidal thoughts can overshadow the distressed person's actual and perceived problems. An excessive focus on suicidal thoughts and behaviours can also be interpreted as a threat to the person's autonomy and agency. On the other hand, trying to understand why the person is distressed is likely to be intrinsically helpful.

4 Be Respectful

It is best to assume – just like yourself – that a distressed person has agency for decision-making and an ability to consider the thinking of others. Any consideration of future self-inflicted harm needs to acknowledge this fundamental human element; suicide risk assessment is not analogous to an insurer considering the fate of a house or a car, or an aviation engineer looking for cracks in an aircraft wing. Refrain from tick-box approaches and lists of risk factors.

5 Be Calm, Don't Panic

If you want to assist a distressed person, do not panic yourself. Suicidal thoughts and behaviours can be frightening, but deregulation of your feelings will heighten the patient's anxiety and emotions. Some patients will make choices you would not make yourself or that you think are too risky. Remember that suicide is a rare outcome even among the most overtly suicidal people and that each person is the product of both thousands of generations of selection and a lifetime of personal survival.

6 Tread Softly

Many distressed people will have difficulty trusting and communicating with you. While it might be better to have a more complete picture of the distressed person, knowing less should not cause you more anxiety. There is no evidence that more information improves judgements about future suicide. Don't interrogate; if you face a choice between maintaining or developing rapport and getting a more complete picture, tolerate a degree of uncertainty.

Box 9.1 (*cont.*)

7 Be Humble

Be realistic about your abilities and endeavour to empower the person. Every person has strengths that have kept them alive, and there is scant evidence that you can do much to improve on this. Don't exaggerate the effectiveness of suicide-preventing interventions or underestimate the side effects of any treatment.

8 Use Hospitalisation Sparingly

Make judgements that a distressed person needs to be contained in a hospital very carefully. No suicide risk factor or combination of risk factors can bring sufficient certainty about future suicide to detain a person against their will. Remember: psychiatric hospitalisation can be traumatic, stigmatising and isolating, and suicide rates in psychiatric hospitals are relatively high. The person's views need to be first and foremost in any decision about hospital care and, when the there is a clear lack of reasoning, the views of those who know the person best should be given weight.

9 Use the Medical Evidence Base

While the outcome of any assessment must suit and be helpful to the distressed person, advice about specific suicide-prevention measures should be based on evidence. It might be rational, for example, to take steps to limit access to lethal means of suicide (e.g. firearms) because of the evidence of the efficacy of such restrictions on lowering the suicide risk. But the role of hospitalisation, medications or psychotherapies should not be overstated and, conversely, the strength of the patient's own protective mechanisms should not be underestimated.

10 Be an Educated Educator

You will need to reduce the anxiety experienced by friends and relatives. This is a difficult but not impossible task, and it helps if you know the science. Educating colleagues steeped in psychiatric orthodoxy might be more challenging still, but it is essential because it can help them to help the distressed people they meet. In your educational role, also listen and explain, trust the intelligence of others and be persistently friendly, honest and knowledgeable.

socioeconomic root causes of mental ill health, not least poverty, injustice and displacement (Patel, 2015).

9.4 A New Direction for Suicide Research

Perhaps the largest gap in our understanding of suicidality, and certainly a neglected area of research, concerns the evolved psychological devices that usually keep suicide at bay (Gunn et al., 2021; Himmelhoch, 1988; Humphrey, 2018; Soper, 2021). We can be confident these exist – if they didn't, our species would not have come this far and we would not be here to discuss the matter – but little thought has been given as to what they are and how they operate.

We need this knowledge. It is likely that once we have an idea of how the organism's anti-suicide defences work, and in good part only then, we will be able to intervene in a manner cognisant of the human psyche's capacity for self-restoration. The prize here is that professionals in mental health may work according to a principle that is well known to their colleagues in physiological medicine. All wise medics know that it is the organism that does much of the healing. The physician expertly sets a fracture, but it is the organism that repairs the bone. Thus, the best prospects for success should be found in interventions that promote and capitalise upon the organism's own homeostatic mechanisms. There remains very little such understanding in psychopathology. It is known that most common mental disorders ease spontaneously given time and favourable psychosocial conditions, with or without medical intervention (Goldberg and Goodyer, 2005), but how and why this happens is unclear, and rarely even discussed. Perhaps it is by a related

mechanism that suicidal crises tend to be ephemeral, coming and going often within minutes (Drum et al., 2009). This rapid progression into and out of danger could offer important opportunities for preventative interventions, especially in the field of means restriction, because it suggests that obstructions that cause only a brief delay in a suicidal endeavour, or add only slightly to its complexity, would be expected to deliver disproportionately strong results.

9.5 Conclusion

Both evolutionary theory (Soper, 2018, 2021) and the empirical record (Corke et al., 2021) point to suicide being an essentially random event. It resists meaningful risk assessment at the level of the individual. An evolutionary view of the behaviour, as an unfortunate feature of our species from which no normal adolescent or adult is immune, offers a constructive reframing of suicidology's public health, clinical and research agenda. The stance emphasises that the primary onus for prevention rests at a public health level in population-wide measures. In clinical settings, it could help to accelerate the de-implementation of risk assessment; provide a coherent conceptual basis on which clinicians can explain suicidality to their patients and reassure them about the real nature of the hazard; and guide decisions about helpful interventions. An informed therapeutic encounter can arm the patient with a justified sense of empowerment, adequacy and self-confidence.

As for research priorities, suicidology's decades-long search for a usefully accurate method of risk assessment now looks to us to be misplaced. Better prospects for progress lie in seeking to identify, understand and exploit the evolved defences that keep most humans safe from self-killing. The focus could profitably shift from making arbitrary and unhelpful judgements of individual risk to asking more positively why, almost always, we choose to live.

References

Ajdacic Gross, V., Hepp, U., Seifritz, E. and Bopp, M. 2019. Rethinking suicides as mental accidents: towards a new paradigm. *Journal of Affective Disorders*, 252, 141 151.

APA 2003. *Practice Guideline for the Assessment and Treatment of Patients with Suicidal Behaviors*. New York: American Psychiatric Association.

Atkinson, J. M. 1978. *Discovering Suicide: Studies in the Social Organization of Sudden Death*. London: Macmillan.

Baechler, J. 1975/1979. *Les Suicides*. New York: Basic Books.

Bartley, B. A., Kim, K., Medley, J. K. and Sauro, H. M. 2017. Synthetic biology: engineering living systems from biophysical principles. *Biophysical Journal*, 112, 1050 1058.

Belsher, B. E., Smolenski, D. J., Pruitt, L. D., Bush, N. E., Beech, E. H., Workman, D. E., Morgan, R. L., Evatt, D. P., Tucker, J. and Skopp, N. A. 2019. Prediction models for suicide attempts and deaths: a systematic review and simulation. *JAMA Psychiatry*, 76, 642 651.

Bering, J. M. 2018. *A Very Human Ending: How Suicide Haunts Our Species*. London: Transworld.

Blanchard, M. and Farber, B. A. 2020. 'It is never okay to talk about suicide': patients' reasons for concealing suicidal ideation in psychotherapy. *Psychotherapy Research*, 30, 124 136.

Blanco, C., Wall, M. M. and Olfson, M. 2021. A population level approach to suicide prevention. *JAMA*, 325, 2339 2340.

Bohannan, P. (ed.) 1960. *African Homicide and Suicide*. Princeton, NJ: Princeton University Press.

Borges, G., Chiu, W. T., Hwang, I., Panchal, B. N., Ono, Y., Sampson, N., Kessler, R. C. and Nock, M. K. 2012. Prevalence, onset, and transitions among suicidal behaviors. In: M. K. Nock, G. Borges and Y. Ono (eds.), *Suicide: Global Perspectives from the WHO World Mental Health Surveys*. Cambridge: Cambridge University Press, pp. 65 74.

Braun, C., Bschor, T., Franklin, J. and Baethge, C. 2016. Suicides and suicide attempts during long term treatment with antidepressants: a meta analysis of 29 placebo controlled studies including 6,934 patients with major depressive disorder. *Psychotherapy and Psychosomatics*, 85, 171 179.

Brodsky, B. S., Spruch Feiner, A. and Stanley, B. 2018. The Zero Suicide Model: applying evidence based suicide prevention practices to clinical care. *Frontiers in Psychiatry*, 9, 33.

Campbell, D. and Hale, R. 2017. *Working in the Dark: Understanding the Pre Suicide State of Mind*. London: Routledge.

Campbell, F. 2001. Living and working in the Canyon of Why. *Proceedings of the Irish Association of Suicidology*, 6, 96 97.

Carter, G., Milner, A., Mcgill, K., Pirkis, J., Kapur, N. and Spittal, M. J. 2017. Predicting suicidal behaviours using clinical instruments: systematic review

and meta analysis of positive predictive values for risk scales. *British Journal of Psychiatry*, 210, 387 395.

Castelli Dransart, D. A., Treven, M., Grad, O. T. and Andriessen, K. 2017. Impact of client suicide on health and mental health professionals. In: K. Andriessen, K. Krysinska and O. T. Grad (eds.), *Postvention in Action: The International Handbook of Suicide Bereavement Support*. Boston, MA: Hogrefe, pp. 245 254.

Castillejos, M. C., Huertas, P., Martín, P. and Küstner, B. 2021. Prevalence of suicidality in the European general population: a systematic review and meta analysis. *Archives of Suicide Research*, 24, 810 828.

CDC 2021. *Preventing Suicide*. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control.

Chan, M. K., Bhatti, H., Meader, N., Stockton, S., Evans, J., O'Connor, R. C., Kapur, N. and Kendall, T. 2016. Predicting suicide following self harm: systematic review of risk factors and risk scales. *British Journal of Psychiatry*, 209, 277 283.

Chen, Y. Y., Chien Chang Wu, K., Wang, Y. and Yip, P. 2016. Suicide prevention through restricting access to suicide means and hotspots. In: R. C. O'Connor and J. Pirkis (eds.), *International Handbook of Suicide Prevention*, 2nd ed. Chichester: John Wiley and Sons, pp. 545 560.

Chiles, J. A., Strosahl, K. D. and Roberts, L. W. 2019. *Clinical Manual for Assessment and Treatment of Suicidal Patients*. Washington, DC: American Psychiatric Association.

Chung, D., Hadzi Pavlovic, D., Wang, M., Swaraj, S., Olfson, M. and Large, M. M. 2019. Meta analysis of suicide rates in the first week and the first month after psychiatric hospitalisation. *BMJ Open*, 9, e023883.

Cole King, A. and Platt, S. 2017. Suicide prevention for physicians: identification, intervention and mitigation of risk. *Medicine*, 45, 131 134.

Cole King, A., Green, G., Gask, L., Hines, K. and Platt, S. 2013. Suicide mitigation: a compassionate approach to suicide prevention. *Advances in Psychiatric Treatment*, 19, 276 283.

Corke, M., Mullin, K., Angel Scott, H., Xia, S. and Large, M. M. 2021. Meta analysis of the strength of exploratory suicide prediction models; from clinicians to computers. *BJPsych Open*, 7, 1 11.

Cuddy Casey, M. and Orvaschel, H. 1997. Children's understanding of death in relation to child suicidality and homicidality. *Clinical Psychology Review*, 17, 33 45.

Czeisler, M. É., Lane, R. I., Petrosky, E., Wiley, J. F., Christensen, A., Njai, R., Weaver, M. D., Robbins, R. C., Facer Childs, E. R., Barger, L. K., Czeisler, C. A., Howard, M. E. and Rajaratnam, S. M. W. 2020. *Substance Use, and Suicidal Ideation during the COVID 19 Pandemic*. Washington, DC: US Department of Health and Human Services/Centers for Disease Control and Prevention.

Davidson, C. L., Slish, M. L., Rhoades Kerswill, S., O'Keefe, V. M. and Tucker, R. P. 2018. Encouraging health promoting behaviors in primary care to reduce suicide rates. In: J. K. Hirsch, E. C. Chang and J. Kelliher Rabon (eds.), *A Positive Psychological Approach to Suicide: Theory, Research, and Prevention*. Cham: Springer, pp. 161 181.

DeCatanzaro, D. 1981. *Suicide and Self Damaging Behavior: A Sociobiological Perspective*. New York: Academic Press.

Deisenhammer, E. A., Ing, C. M., Strauss, R., Kemmler, G., Hinterhuber, H. and Weiss, E. M. 2009. The duration of the suicidal process: how much time is left for intervention between consideration and accomplishment of a suicide attempt? *Journal of Clinical Psychiatry*, 70, 19 24.

Draper, B. 2012. Isn't it a bit risky to dismiss suicide risk assessment? *Australian and New Zealand Journal of Psychiatry*, 46, 385 386.

Drum, D. J., Brownson, C., Denmark, A. B. and Smith, S. E. 2009. New data on the nature of suicidal crises in college students: shifting the paradigm. *Professional Psychology: Research and Practice*, 40, 213 222.

Dutheil, F., Aubert, C., Pereira, B., Dambrun, M., Moustafa, F., Mermillod, M., Trousselard, M., Lesage, F. X. and Navel, V. 2019. Suicide among physicians and health care workers: a systematic review and meta analysis. *PLoS ONE*, 14, e0226361.

Dyregrov, K., Plyhn, E. and Dieserud, G. 2012. *After the Suicide: Helping the Bereaved to Find a Path from Grief to Recovery*. London: Jessica Kingsley.

Elzinga, E., De Kruif, A. J., De Beurs, D. P., Beekman, A. T., Franx, G. and Gilissen, R. 2020. Engaging primary care professionals in suicide prevention: a qualitative study. *PLoS ONE*, 15, e0242540.

Espeland, K., Hjelmeland, H. and Knizek, B. L. 2021. A call for change from impersonal risk assessment to a relational approach: professionals' reflections on the national guidelines for suicide prevention in mental health care in Norway. *International Journal of Qualitative Studies on Health and Well Being*, 16, 1868737.

Forte, A., Sarli, G., Polidori, L., Lester, D. and Pompili, M. 2021. The role of new technologies to prevent suicide in adolescence: a systematic review of the literature. *Medicina*, 57, 109.

Fosse, R., Ryberg, W., Carlsson, M. K. and Hammer, J. 2017. Predictors of suicide in the patient population admitted to a locked door psychiatric acute ward. *PLoS ONE*, 12, e0173958.

Fox, K. R., Huang, X., GuzmÁN, E. M., Funsch, K. M., Cha, C. B., Ribeiro, J. D. and Franklin, J. C. 2020. Interventions for suicide and self injury: a meta analysis of randomized controlled trials across nearly 50 years of research. *Psychological Bulletin*, 146, 1117 1145.

Franklin, J. C. 2018. Suicide prediction remains difficult despite decades of research. Scientific American. Retrieved from www.scientificamerican .com/article/suicide prediction remains difficult despite decades of research/

Franklin, J. C., Ribeiro, J. D., Fox, K. R., Bentley, K. H., Kleiman, E. M., Huang, X., Musacchio, K. M., Jaroszewski, A. C., Chang, B. P. and Nock, M. K. 2017. Risk factors for suicidal thoughts and behaviors: a meta analysis of 50 years of research. *Psychological Bulletin*, 143, 187 232.

Gale, T. M., Hawley, C. J., Butler, J., Morton, A. and Singhal, A. 2016. Perception of suicide risk in mental health professionals. *PLoS ONE*, 11, e0149791.

Goldberg, D. and Goodyer, I. 2005. *The Origins and Course of Common Mental Disorders*. Hove: Routledge.

Goldney, R. D. 2003. A novel integrated knowledge explanation of factors leading to suicide. *New Ideas in Psychology*, 21, 141 146.

Graney, J., Hunt, I. M., Quinlivan, L., Rodway, C., Turnbull, P., Gianatsi, M., Appleby, L. and Kapur, N. 2020. Suicide risk assessment in UK mental health services: a national mixed methods study. *Lancet Psychiatry*, 7, 1046 1053.

Greenberg, D. and Shefler, G. 2014. Patient suicide. *Israel Journal of Psychiatry and Related Sciences*, 51, 193 198.

Groth, T. and Boccio, D. E. 2019. Psychologists' willingness to provide services to individuals at risk of suicide. *Suicide and Life Threatening Behavior*, 49, 1241 1254.

Gunn, J. F. 2017. The Social Pain Model. *Crisis*, 38, 281 286.

Gunn, J. F., Malo Ocejo, P. and Soper, C. A. 2021. Evolutionary psychology and suicidology. In: T. K. Shackelford (ed.), *The SAGE Handbook of Evolutionary Psychology*, Vol. 3. London: SAGE, pp. 51 93.

Hagström, A. S. 2020. Based theater and 'stigmatized trauma': the case of suicide bereavement. *Frontiers in Psychology*, 11, 1129.

Hendin, H. 1975. Growing up dead: student suicide. *American Journal of Psychotherapy*, 29, 327 338.

Hendin, H., Haas, A. P., Maltsberger, J. T., Szanto, K. and Rabinowicz, H. 2004. Factors contributing to therapists' distress after the suicide of a patient. *American Journal of Psychiatry*, 161, 1442 1446.

Hengartner, M. P., Amendola, S., Kaminski, J. A., Kindler, S., Bschor, T. and Ploderl, M. 2021. Suicide risk with selective serotonin reuptake inhibitors and new generation serotonergic noradrenergic antidepressants in adults: a systematic review and meta analysis of observational studies. *Journal of Epidemiology and Community Health*. DOI: 10.1136/jech 2020 214611.

Himmelhoch, J. M. 1988. What destroys our restraints against suicide? *Journal of Clinical Psychiatry*, 49, 46 52.

Hirsch, J. K., Chang, E. C. and Kelliher Rabon, J. (eds.) 2018. *A Positive Psychological Approach to Suicide*. Cham: Springer.

Hjelmeland, H. and Knizek, B. L. 2019. The emperor's new clothes? A critical look at the interpersonal theory of suicide. *Death Studies*, 44, 168 178.

House, A. 2020. Self harm and suicide in adults: will safety plans keep people safe after self harm? *BJPsych Bulletin*, 46, 1 3.

Humphrey, N. 2018. The lure of death: suicide and human evolution. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, 373, 20170269.

Hundert, E. M. 1992. The brain's capacity to form delusions as an evolutionary strategy for survival. In: M., Spitzer, F., Uehlein, M. A. Schwartz and C. Mundt (eds.), *Phenomenology, Language & Schizophrenia*. New York: Springer, pp. 346 354.

Jacobson, G. 2017. Practice and malpractice in the evaluation of suicidal patients. In: R. Schouten (ed.), *Mental Health Practice and the Law*. New York: Oxford University Press, pp. 61 92.

Jacobson, R. 2015. Many antidepressant studies found tainted by pharma company influence. *Scientific American*, 29, 26. Retrieved from www .scientificamerican.com/article/ many antidepressant studies found tainted by pharma company influence/

Jacobucci, R., Littlefield, A. K., Millner, A. J., Kleiman, E. M. and Steinley, D. 2021. Evidence of inflated prediction performance: a commentary on machine learning and suicide research. *Clinical Psychological Science*, 9, 129 134.

Jaworski, K. and Scott, D. G. 2016. Understanding the unfathomable

in suicide: poetry, absence, and the corporeal body. In: J. C. White, I. Marsh, M. J. Kral and J. S. Morris (eds.), *Critical Suicidology: Re thinking Suicide Research and Prevention for the 21st Century*. Vancouver, BC: UBC Press, pp. 209 228.

Joiner, T. E. 2010. *Myths about Suicide*. Cambridge, MA: Harvard University Press.

Kahne, M. J. 1966. Suicide research: a critical review of strategies and potentialities in mental hospitals (part II). *International Journal of Social Psychiatry*, 12, 177 186.

Kauffman, S. A. 1993. *The Origins of Order: Self Organization and Selection in Evolution*. Oxford: Oxford University Press.

Kral, M. J. 1998. Suicide and the internalization of culture: three questions. *Transcultural Psychiatry*, 35, 221 233.

Kuo, W. H., Gallo, J. J. and Tien, A. Y. 2001. Incidence of suicide ideation and attempts in adults: the 13 year follow up of a community sample in Baltimore, Maryland. *Psychological Medicine*, 31, 1181 1191.

Large, M. M. 2017. Emerging consensus on the positive predictive (and clinical) value of suicide risk assessment. *British Journal of Psychiatry*, Letter, 21 March.

Large, M. M. and Kapur, N. 2018. Psychiatric hospitalisation and the risk of suicide. *British Journal of Psychiatry*, 212, 269 273.

Large, M. M., Kaneson, M., Myles, N., Myles, H., Gunaratne, P. and Ryan, C. J. 2016. Meta analysis of longitudinal cohort studies of suicide risk assessment among psychiatric patients: heterogeneity in results and lack of improvement over time. *PLoS ONE*, 11, e0156322.

Large, M. M., Ryan, C. J. and Callaghan, S. 2012. Hindsight bias and the overestimation of suicide risk in expert testimony. *The Psychiatrist*, 36, 236 237.

Large, M. M., Ryan, C. J., Carter, G. and Kapur, N. 2017. Can we usefully stratify patients according to suicide risk? *BMJ*, 359, j4627.

Large, M. M., Ryan, C. J., Singh, S. P., Paton, M. B. and Nielssen, O. B. 2011a. The predictive value of risk categorization in schizophrenia. *Harvard Review of Psychiatry*, 19, 25 33.

Large, M. M., Smith, G., Sharma, S., Nielssen, O. and Singh, S. 2011b. Systematic review and meta analysis of the clinical factors associated with the suicide of psychiatric in patients. *Acta Psychiatrica Scandinavica*, 124, 18 19.

Lester, D. 2019a. Suicide, chaos theory, non linearity, and the tipping point. In: D. Lester (ed.), *The End of Suicidology: Can We Ever Understand Suicide?* New York: Nova Science Publishers, pp. 89 96.

Lester, D. (ed.) 2019b. *The End of Suicidology: Can We Ever Understand Suicide?* New York: Nova Science Publishers.

Lieberman, M. D. 2013. *Social: Why Our Brains Are Wired to Connect*. Oxford: Oxford University Press.

Magyary, D. 2002. Positive mental health: a turn of the century perspective. *Issues in Mental Health Nursing*, 23, 331 349.

Mammen, O., Tew, J., Painter, T., Bettinelli, E. and Beckjord, J. 2020. Communicating suicide risk to families of chronically suicidal borderline personality disorder patients to mitigate malpractice risk. *General Hospital Psychiatry*, 67, 51 57.

Mann, J. J., Michel, C. A. and Auerbach, R. P. 2021. Improving suicide prevention through evidence based strategies: a systematic review. *American Journal of Psychiatry*, 178, 611 624.

Marsh, I. 2016. Critiquing contemporary suicidology. In: J. C. White, I. Marsh, M. J. Kral and J. S. Morris, (eds.), *Critical Suicidology: Re thinking Suicide Research and Prevention for the 21st Century*. Vancouver, BC: UBC Press, pp. 15 30.

Mayer, L., RÜSch, N., Frey, L. M., Nadorff, M. R., Drapeau, C. W., Sheehan, L. and Oexle, N. 2020. Anticipated suicide stigma, secrecy, and suicidality among suicide attempt survivors. *Suicide and Life Threatening Behavior*, 50, 706 713.

McHugh, C. M. and Large, M. M. 2020. Can machine learning methods really help predict suicide? *Current Opinion in Psychiatry*, 33, 369 374.

Meehl, P. E. 1973. Why I do not attend case conferences. In: *Psychodiagnosis: Selected Papers*. Minneapolis: University of Minnesota Press, pp. 225 302.

Mew, E. J., Padmanathan, P., Konradsen, F., Eddleston, M., Chang, S. S., Phillips, M. R. and Gunnell, D. 2017. The global burden of fatal self poisoning with pesticides 2006 15: systematic review. *Journal of Affective Disorders*, 219, 93 104.

Michaud, L., Dorogi, Y., Gilbert, S. and Bourquin, C. 2021. Patient perspectives on an intervention after suicide attempt: the need for patient centred and individualized care. *PLoS ONE*, 16, e0247393.

Michel, K. and Jobes, D. A. 2011. *Building a Therapeutic Alliance with the Suicidal Patient*. Washington, DC: American Psychological Association.

Milner, A., Spittal, M. J., Pirkis, J. and Lamontagne, A. D. 2013. Suicide by occupation: systematic review and meta analysis. *British Journal of Psychiatry*, 203, 409 416.

Moran, P., Coffey, C , Romaniuk, H., Olsson, C., Borschmann, R., Carlin, J. B. and Patton, G. C. 2012. The natural history of self harm from adolescence to young adulthood: a population based cohort study. *Lancet*, 379, 236 243.

Mulder, R., Newton Howes, G. and Coid, J. W. 2016. The futility of risk prediction in psychiatry. *British Journal of Psychiatry*, 209, 271 272.

NCISH 2017. *The National Confidential Inquiry into Suicide and Homicide by People with Mental Illness. Annual Report: England, Northern Ireland, Scotland and Wales*. Manchester: University of Manchester.

NICE 2011. *Self Harm in Over 8s: Long Term Management (CG133)*. London: National Institute for Health and Care Excellence.

NICE 2012. *Self Harm: The NICE Guideline on Longer Term Management*. London: The British Psychological Society and The Royal College of Psychiatrists.

Nicholas, A., Pirkis, J. and Reavley, N. 2020. What responses do people at risk of suicide find most helpful and unhelpful from professionals and non professionals? *Journal of Mental Health*. DOI: 10.1080/09638237.2020.1818701.

Obegi, J. H. 2021. How common is the denial of suicidal ideation? A literature review. *General Hospital Psychiatry*, 72, 92 95.

Paris, J. 2021. Can we predict or prevent suicide? An update. *Preventive Medicine*, 152, 1 5.

Patel, V. 2015. Addressing social injustice: a key public mental health strategy. *World Psychiatry*, 14, 43 44.

Pokorny, A. D. 1983. Prediction of suicide in psychiatric patients: report of a prospective study. *Archives of General Psychiatry*, 40, 249 257.

Pompili, M., Murri, M. B., Patti, S., Innamorati, M., Lester, D., Girardi, P. and Amore, M. 2016. The communication of suicidal intentions: a meta analysis. *Psychological Medicine*, 46, 2239 2253.

Power, M. 2004. *The Nature of Risk: The Risk Management of Everything*. London: Demos.

Preti, A. 2011. Do animals commit suicide? Does it matter? *Crisis*, 32, 1 4.

Rahman, M. S. and Kapur, N. 2014. Quality of risk assessment prior to suicide and homicide (letter). *Psychiatric Bulletin*, 38, 46 47.

Reynolds, V. 2016. Hate kills: a social justice response to 'suicide'. In: J. C. White, I. Marsh, M. J. Kral and J. S. Morris (eds.), *Critical Suicidology: Re thinking Suicide Research and Prevention for the 21st Century*. Vancouver, BC: UBC Press, pp. 169 187.

Rogers, M. L., Ringer, F. B. and Joiner, T. E. 2018. The association between suicidal ideation and lifetime suicide attempts is strongest at low levels of depression. *Psychiatry Research*, 270, 324 328.

Ross, E. L., Zuromski, K. L., Reis, B. Y., Nock, M. K., Kessler, R. C. and Smoller, J. W. 2021. Accuracy requirements for cost effective suicide risk prediction among primary care patients in the US. *JAMA Psychiatry*, 78, 642 650.

Ross, N. E., Ciuffetelli, G. and Rozel, J. S. 2020. Legal concerns after a patient suicide. *Current Psychiatry*, 19, 22 23.

Royal College of Psychiatrists 2020. *Self Harm and Suicide in Adults: Final Report of the Patient Safety Group (College Report CG229)*. London: RCPsych.

Rudd, M. D. and Roberts, L. W. 2019. Assessment of suicide risk. In: L. W. Roberts (ed.), *Textbook of Psychiatry*, 7th ed. Washington, DC: American Psychiatric Association Publishing, pp. 91 110.

Ryan, C. J., Callaghan, S. and Large, M. 2015a. The importance of least restrictive care: the clinical implications of a recent High Court decision on negligence. *Australasian Psychiatry*, 23, 415 417.

Ryan, C. J., Large, M., Gribble, R., Macfarlane, M., Ilchef, R. and Tietze, T. 2015b. Assessing and managing suicidal patients in the emergency department. *Australasian Psychiatry*, 23, 513 516.

Sanati, A. 2021. Interview, Matthew Large. *BJPsych Bulletin*, 45, 190 192.

Schultz, D. T. 2000. Defending suicide related malpractice cases: a lawyer's perspective. *Journal of Psychiatric Practice*, 6, 345 348.

Shaffer, D. and Fisher, P. 1981. The epidemiology of suicide in children and young adolescents. *Journal of the American Academy of Child Psychiatry*, 20, 545 565.

Silverman, M. M. and Berman, A. L. 2014. Training for suicide risk assessment and suicide risk formulation. *Academic Psychiatry*, 38, 526 537.

Silverman, M. M. and Maris, R. W. 1995. The prevention of suicidal behaviors: an overview. *Suicide and Life Threatening Behavior*, 25, 10 21.

Solano, P , Pizzorno, E., Pompili, M., Serafini, G. and Amore, M. 2018. Conceptualizations of suicide through time and socio economic factors: a historical mini review. *Irish Journal of Psychological Medicine*, 35, 75 86.

Soper, C. A. 2018. *The Evolution of Suicide*. Cham: Springer.

Soper, C. A. 2019a. Adaptation to the suicidal niche. *Evolutionary Psychological Science*, 5, 454 471.

Soper, C. A. 2019b. Beyond the search for *suigiston*: how evolution offers oxygen for suicidology. In: V. Zeigler Hill and T. K. Shackelford (eds.), *Evolutionary Perspectives on Death*. Cham: Springer, pp. 37 61.

Soper, C. A. 2021. *The Evolution of Life Worth Living: Why We Choose to Live*. Cambridge, UK: Author.

Soper, C. A. 2022. Ethological problems with the interpersonal theory of suicide. *OMEGA Journal of Death and Dying*. DOI: 10.1177/00302228211073010

St John Smith, P., Michael, A. and Davies, T. 2009. Coping with a coroner's inquest: a psychiatrist's guide. *Advances in Psychiatric Treatment*, 15, 7 16.

Steeg, S., Quinlivan, L., Nowland, R., Carroll, R., Casey, D., Clements, C., Cooper, J., Davies, L., Knipe, D. and Ness, J. 2018. Accuracy of risk scales for predicting repeat self harm and suicide: a multicentre, population level cohort study using routine clinical data. *BMC Psychiatry*, 18, 113.

Stone, D. M., Simon, T. R., Fowler, K. A., Kegler, S. R., Yuan, K., Holland, K. M., Ivey Stephenson, A. Z. and Crosby, A. E. 2018. Vital signs: trends in state suicide rates United States, 1999 2016 and circumstances contributing to suicide 27 states, 2015. *Morbidity and Mortality Weekly Report*, 67, 617 624.

Syme, K. L. and Hagen, E. H. 2018. When saying 'sorry' isn't enough: is some suicidal behavior a costly signal of apology? A cross cultural test. *Human Nature*, 30, 117 141.

Syme, K. L., Garfield, Z. H. and Hagen, E. H. 2016. Testing the bargaining vs. inclusive fitness models of suicidal behavior against the ethnographic record. *Evolution and Human Behavior*, 37, 179 192.

Szmukler, G. and Rose, N. 2013. Risk assessment in mental health care: values and costs. *Behavioral Sciences & the Law*, 31, 125 140.

Taylor, A. K., Steeg, S., Quinlivan, L., Gunnell, D., Hawton, K. and Kapur, N. 2021. Accuracy of individual and combined risk scale items in the prediction of repetition of self harm: multicentre prospective cohort study. *BJPsych Open*, 7, E2.

Ten Have, M., De Graaf, R., Van Dorsselaer, S , Verdurmen, J., Van'T Land, H., Vollebergh, W. and Beekman, A. 2009. Incidence and course of suicidal ideation and suicide attempts in the general population. *Canadian Journal of Psychiatry*, 54, 824 833.

Tishler, C. L. and Reiss, N. S. 2009. Inpatient suicide: preventing a common sentinel event. *General Hospital Psychiatry*, 31, 103 109.

Tooby, J. and Cosmides, L. 1990. The past explains the present: emotional adaptations and the structure of ancestral environments. *Ethology and Sociobiology*, 11, 375 424.

Tromans, S., Umar, A., Torr, J., Alexander, R. and Bhaumik, S. 2020. Depressive disorders in people with intellectual disability. In: R. Alexander and S. Bhaumik (eds.), *Oxford Textbook of the Psychiatry of Intellectual Disability*. Oxford: Oxford University Press, pp. 105 116.

Turecki, G. and Brent, D. A. 2016. Suicide and suicidal behaviour. *Lancet*, 387, 1227 1239.

Undrill, G. 2007. The risks of risk assessment. *Advances in Psychiatric Treatment*, 13, 291 297.

Wand, T. 2011. Investigating the evidence for the effectiveness of risk assessment in mental health care. *Issues in Mental Health Nursing*, 33, 2 7.

Weinberg, S. 2015. *To Explain the World: The Discovery of Modern Science*. New York: Harper Collins.

Westers, N. J. 2020. 25 years of suicide research and prevention: how much has changed? *Clinical Child Psychology and Psychiatry*, 25, 729 733.

White, J. C., Marsh, I., Kral, M. J. and Morris, J. S. 2016. Rethinking suicide. In: J. C. White, I. Marsh, M. J. Kral and J. S. Morris (eds.), *Critical Suicidology: Re thinking Suicide Research and Prevention for the 21st Century*. Vancouver, BC: UBC Press, pp. 2 11.

WHO 2014. *Preventing Suicide: A Global Imperative*. Geneva: World Health Organization.

WHO 2014. *Suicide Worldwide in 2019: Global Health Estimates*. Geneva: World Health Organization.

Williams, D. 2021. Socially adaptive belief. *Mind & Language*, 36, 333 354.

Wyder, M., Ray, M. K., Russell, S., Kinsella, K., Crompton, D. and Van Den Akker, J. 2021. Suicide risk assessment in a large public mental health service: do suicide risk classifications identify those at risk? *Australasian Psychiatry*, 29, 322 325.

Yang, B. and Lester, D. 2021. Is there a natural suicide rate? An update and review. *Suicide Studies*, 2, 5 12.

Zortea, T. C., Cleare, S., Melson, A. J., Wetherall, K. and O'Connor, R. C. 2020. Understanding and managing suicide risk. *British Medical Bulletin*, 134, 73 84.

Zou, W., Tang, L. and Bie, B. 2021. The stigmatization of suicide: a study of stories told by college students in China. *Death Studies*. DOI: 10.1080/07481187.2021.1958396