

# How Behavioral Economics and Nudges Could Help Diminish Irrationality in Suicide-Related Decisions

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## Abstract

People regularly make decisions that are not aligned with their own self-interests. These irrational decisions often stem from humans having bounded rationality (e.g., limited computational power), which produces reliable cognitive biases that occur outside of people's awareness and influences the decisions people make. There are many important decisions leading up to a suicide attempt, and it is likely that these same biases exist within suicide-related decisions. This article presents an argument for the likely existence of cognitive biases within suicide-related decision making and how they may influence people to make irrational decisions. In addition, this article provides new evidence for using a behavioral economic intervention—nudges—as a potential way to combat rising suicide rates. We explore how nudges can help increase means safety, disseminate suicide prevention skills/materials, diminish well-known biases (e.g., confirmation bias), and uncover biases that may be occurring when making suicide-related decisions.

## Keywords

nudges, behavioral economics, suicide prevention, cognitive biases, decision making

Individuals make hundreds, most likely thousands, of decisions every day. These decisions range from the relatively unimportant (“What should I wear?”) to the life-changing (“Would I be better off dead?”). How do people come to the decision to enact a lethal or near lethal suicide attempt? A very important and underappreciated word in that previous sentence is *decision*. There are many decisions that precede an attempt, including perhaps one of the most important decisions a human could make—the decision to attempt suicide. A wealth of research already exists from cognitive psychology, social psychology, and economic literature, including pioneering works from Nobel Laureates, that helps explain human decision making. A nearly universally agreed-upon thesis across disciplines is that people depart from perfect rationality, and in fact, people can be reliably poor at making decisions that are in their own self-declared best interests. Although in common vernacular *irrationality* has a negative connotation, in its context here, irrationality is not a values-based judgment but rather is used in its academic definition that refers to decisions that go against an individual's own self-interest.

One of the most commonly used definitions for rationality/irrationality derives from neoclassical

economics, which states that rationality occurs when people select choices that maximize their subjective utility, in which utility of an uncertain feature is the total sum of the utilities involved and each weighted by its probability (H. A. Simon, 1986). Irrational choices often stem from people having bounded rationality (e.g., limited computational power), which produces cognitive biases. Cognitive biases encompass a wide range of errors and mental shortcuts that help shape our subjective realities and interfere with rational judgment by distorting perceptions, creating illogical interpretations, and disrupting probabilistic inferences, which occur outside of our awareness (Kahneman & Tversky, 1979; Tversky & Kahneman, 1974, 1981). These biases are more prevalent when choices involve delayed outcomes or are made during highly emotional times (Johnson & Bickel, 2002; Tversky & Kahneman, 1974, 1992). The integration of decision-making research has been a core subject of many scientific disciplines for decades; however, it is underemphasized in the extant

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suicide literature. This omission is problematic because a person must not only make a decision to attempt suicide but also make this decision often under the worst conditions for rational decisions: quickly and in a highly emotional state.

There is also a growing body of literature on how to manage cognitive biases to help people make more rational decisions. Several academic areas, such as behavioral economics, take these psychological phenomena (e.g., cognitive biases) into consideration when attempting to understand human decision-making behaviors. A result of this work is the behavioral economic-informed intervention, called *nudges* (Thaler & Sunstein, 2008). Nudges attempt to influence a person's choice, behavior, or judgment in a predictable way by circumventing, diminishing, or in some cases leveraging cognitive biases to increase the likelihood that a person will perform rationally in his or her own self-declared interests without restricting a person's choice or autonomy (Hansen, 2016; Thaler & Sunstein, 2008). A crucial aspect of constructing effective nudges is understanding what possible biases may be interfering with rational thought and then creating nudges that target those biases directly. Research has shown nudges to be cost- and time-effective interventions that are comparable with other traditional interventions in areas such as health care, education, and government campaigns (Benartzi et al., 2017; Reisch & Sunstein, 2016).

Specifically, nudges appear appropriate for use in suicide prevention efforts. Nudges have been shown to increase means safety and treatment-seeking behaviors, increase confidence in epidemiological accuracy, and help disseminate suicide prevention skills (Bauer, 2019; Bauer & Capron, 2019a, 2019b; Bauer, Tucker, & Capron, 2019; Jaroszewski, Morris, & Nock, 2019; Stanley, 2019). Similar to behavioral economics, suicide researchers and those involved in prevention work may benefit from integrating these psychological phenomena into their work when attempting to understand suicide-related decision making. The plethora of low-cost, effective nudge interventions from other areas could help reduce biases existing around suicide-related decisions (e.g., means storage practices, treatment seeking, suicide attempts). Given the tremendous (i.e., 10th leading cause of death in the United States) and growing (i.e., U.S. suicide rate up 33% since 1999; Hedegaard, Curtin, & Warner, 2018) public-health burden of suicide, nudges could be an innovative, low-cost, and scalable intervention.

### **Evidence for Disrupted Decision Making in Suicide Attempts**

From the extant literature on suicide (e.g., qualitative accounts, survival rates of attempt survivors, means safety, and means substitution) comes evidence that

most suicides are the result of irrational decision making. Many qualitative accounts from suicide attempt survivors describe how they remember thinking they made the wrong decision by attempting suicide mere moments after they began to enact an attempt (Godlasky & Dastagir, 2018). In addition to these qualitative data, there is evidence rejecting the common myth stating that individuals who want to die by suicide eventually will (Joiner, 2010). In a few large samples of suicide attempters, researchers found that approximately 90% of individuals did not go on to die by suicide (Owens, Horrocks, & House, 2002; Runeson, Haglund, Lichtenstein, & Tidemalm, 2016; Seiden, 1978; Tidemalm, Långström, Lichtenstein, & Runeson, 2008), and approximately 75% of those attempters did not go on to make another attempt (Owens et al., 2002; Seiden, 1978). A separate line of research showed that when lethal means (i.e., the item used in a suicide, e.g., a firearm) are made less available or more difficult to access, overall suicide rates decrease (Anestis & Anestis, 2015; Beautrais, Fergusson, & Horwood, 2006; Leenaars, Moksony, Lester, & Wenckstern, 2003; Loftin, McDowall, Wiersema, & Cottey, 1991; Lubin et al., 2010; Nordentoft, Qin, Helweg-Larsen, & Juel, 2006). People overwhelmingly do not substitute with other suicide methods (Amos, Appleby, & Kiernan, 2001; Daigle, 2005). If the thesis were true that most people who want to kill themselves will or if suicide were the choice that brought the most subjective utility, it is more likely that we would see higher rates of means substitution and a decrease in survivor rates. Instead, these studies suggest that people retrospectively find greater utility in continuing to live their life after a suicidal crisis has ended compared with the prospect of ending their life.

Compared with how most other major decisions in life are made, the decision-making process for attempting suicide often appears markedly different. People can have increased risk (e.g., depressive symptoms, suicidal ideation) for several years, but the actual decision to attempt suicide often occurs rather quickly (Millner, Lee, & Nock, 2017; T. R. Simon et al., 2001; C. L. Williams, Davidson, & Montgomery, 1980). Conclusions drawn from the extant literature regarding the role of impulsivity in suicide attempts remain equivocal. This is probably because impulsivity has many proposed constructs (e.g., delayed discounting of rewards, response inhibition, sensation seeking, risk taking, lack of forethought), is assessed by different measurement types (e.g., self-report, event-related potentials, behavioral observation), and has many possible interaction effects that correlate with suicide attempts (e.g., psychiatric disorders, capability for suicide; Anestis & Joiner, 2011; for a review, see Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001). Although suicide attempts cannot merely be attributable to impulsivity as the main

mechanism, impulsivity appears to be associated with suicidal behaviors. Primarily, disorders characterized by severe anxiety or agitation and poor impulse control are most associated with suicide plan and attempt (Nock, Hwang, Sampson, & Kessler, 2010; Nock et al., 2014). In addition, differences in delayed discounting correlate with high- versus low-lethality attempts (Dombrovski et al., 2011), and trait impulsivity facets (e.g., low premeditation, elevated urgency) distinguish individuals with varying aspects of suicidality (Klonsky & May, 2010).

Studies investigating the timeline of suicide-related thoughts and behaviors are also consistent with the notion that constructs related to impulsivity appear to be involved in suicidal behaviors (Millner et al., 2017; T. R. Simon et al., 2001; C. L. Williams et al., 1980). Several studies have found that the onset for suicidal ideation (i.e., thoughts desiring death by suicide) is years before an attempt, but the time between making the actual decision to attempt and attempting suicide is usually within an hour; many (25%–40%) occur within a 5-min period (Millner et al., 2017; T. R. Simon et al., 2001; C. L. Williams et al., 1980). These studies indicate that a considerable number of people sit with the actual decision to die for 5 min before making an attempt and are making that decision under extreme emotional distress. It is difficult to imagine making the decision to buy a house, to marry, or any other major life decision and then acting on that decision 5 min later. Suicide attempts are unlike nearly any other comparable decision humans make in that they are life-altering decisions made during highly emotional periods and acted on within mere minutes.

There are also the much less quantifiable parameters such as what factors need to be present and how much time is needed to make a rational decision about ending one's life. Looking at physician-assisted suicides, laws uniformly mandate several requests from the patient separated by waiting periods (weeks to months) made in different variations (e.g., verbal, written), have their cognitive capacity evaluated by mental-health professionals, and achieve consensus among two or more independent medical professionals reaching a similar prognosis (Pereira, 2011). This requirement results in an average of 48 weeks between the initial request and death in some U.S. states (National Center for Health Statistics, 2017). Most of these requests come from people with terminal illnesses. However, a few countries, such as The Netherlands, allow euthanasia because of psychiatric illnesses alone (Regional Euthanasia Review Committees, 2015) and have similar criteria (Kim, De Vries, & Peteet, 2016). In The Netherlands between 2011 and 2014, there were 85 cases of euthanasia/physician-assisted suicides compared with 7,101

noneuthanasia suicide deaths (Kim et al., 2016; Regional Euthanasia Review Committees, 2015; World Health Organization, 2018). Although there will probably never be a consensus on the criteria needed to classify a suicide as a rational suicide, there is a stark difference between the timing and procedures used by the legal system and those used by individuals considering suicide.

Finally, people with past suicide attempts have deficits in abilities and higher rates of behavior that are strongly linked to irrational decision making. Indeed, there is a burgeoning line of research evidencing problem-solving and decision-making deficits in individuals with a history of suicide-related thoughts and behaviors (Dombrovski & Hallquist, 2017) as well as a significant literature base finding high rates of gambling (Wong, Cheung, Conner, Conwell, & Yip, 2010) and addiction (Vijayakumar, Kumar, & Vijayakumar, 2011) behaviors in such individuals. Suicide attempters tend to make poorer decisions in laboratory experiments concerning decision making (e.g., Iowa Gambling Task, Cambridge Gambling Task; Jollant et al., 2005; Jollant et al., 2010; Richard-Devantoy, Berlim, & Jollant, 2014) by disregarding critical information such as ignoring probabilities or neglecting decision-relevant information and feedback (Ackerman et al., 2015; Clark et al., 2011; Dombrovski et al., 2010), possibly because of the presence of emotional dysfunction (Jollant et al., 2005). These decision-making deficits are reflected by the disruption of expected value signals in certain regions of the brain (e.g., ventromedial prefrontal cortex; Dombrovski, Szanto, Clark, Reynolds, & Siegle, 2013) and are similar to those found in patients with forms of dementia (Deakin, Rahman, Nestor, Hodges, & Sahakian, 2004).

Furthermore, studies have found that individuals with a history of suicidal behaviors showed decreased activation within the lateral orbitofrontal cortex during risky choices under uncertainty (Jollant et al., 2010), which adds to the evidence base suggesting individuals with a history of suicide attempts may have neurocognitive vulnerabilities to disadvantageous decision making (Jollant, Lawrence, Olié, Guillaume, & Courtet, 2011). Studies investigating the role of cognitive abilities in other domains that relate to accurate decision making (e.g., intelligence, executive functioning, memory, attention) show reliable yet modest effect sizes in their ability to distinguish suicidal ideators from attempters (Saffer & Klonsky, 2018; Szanto, 2017). Together, this research suggests that these types of stable factors related to impaired decision-making and problem-solving abilities likely create additional vulnerabilities to acting on a suicide attempt when a person enters a suicidal crisis and/or creates a higher likelihood of

making poor decisions throughout the lifetime that lead to worse outcomes.

### Why People Make Irrational Decisions

The traditional neoclassical economic model has been the preeminent model for understanding human decision making. This model states that humans are unemotional, calculating, economical maximizers with unbounded rationality, willpower, and selfishness. The neoclassical economic model rests on expected utility theory, which posits that people are rational and make decisions on the basis of probability—by accurately multiplying the possibilities of different outcomes (Colander, 2000). However, the Nobel Prize-winning work of Kahneman and Tversky (1979) massively shifted academic areas toward understanding economic and decision-making behaviors through prospect theory and the lens of bounded rationality. Unlike the neoclassical economic model, prospect theory suggests that humans are constrained by the limits of time, knowledge, and computational capacity when making inferences about unknown features of the world.

Thus, all humans are susceptible to cognitive biases that occur outside of their awareness and increase the likelihood of irrational decision making/making decisions that go against their own self-interests (Ariely, 2008; Gigerenzer & Selten, 2002; Kahneman & Tversky, 1979; H. A. Simon, 1955). The seminal works by Kahneman and Tversky (e.g., Kahneman & Tversky, 1979; Tversky & Kahneman, 1974, 1992) and the long line of research that has followed suggest that people make decisions that go against expected utility theory maxims. Research findings on cognitive biases include major discoveries such as the tendency for humans to be risk averse (Kahneman & Tversky, 1979), to be influenced by cues that are noninformative (Tversky & Kahneman, 1974), to be impatient when considering choices (Johnson & Bickel, 2002), and to derive utility from *perceived* differences between losses and gains as opposed to *actual* outcomes (Kahneman & Tversky, 1979). Although the neoclassical model can accurately account for most of human behavior, it has been unable to explain deviations from perfect rationality. Ultimately, the results from Kahneman and Tversky created a paradigm shift that replaces long-held classical notions proclaimed by expected utility theorists with the perspective that humans can regularly be imperfect statisticians because of bounded rationality and cognitive biases.

There has been considerable investigation into the processing of human thought and how unconscious processes can influence decision making. One model that is helpful in illustrating different types of decisions and has a sizable evidence base in explaining conscious

and unconscious reasoning is dual-process theory (Kahneman, 2011; Stanovich & West, 2000). Dual-process theory posits that two distinct and separate cognitive systems underlie human thinking and reasoning, referred to as System 1 and System 2 (Kahneman, 2011). In brief, System 1 is the implicit system and is defined by reasoning characteristics such as occurring unconsciously and being rapid and automatic, evolutionarily old, nonlogical, nonverbal, and associative (Kahneman, 2011). In contrast, System 2 is the slower, deliberate, rational explicit system that is evolutionarily recent and specific to humans (Evans, 2003). There are numerous different dual-processing theories (for a review, see Barrett, Tugade, & Engle, 2004), but all agree that feelings, thoughts, and behaviors are the result of the interaction between these two systems.

It is important to note that dual-process theory—as well as related dual/two-system theories—have shown mixed evidence (Evans & Stanovich, 2013) and garnered notable criticisms that are outside the scope of this article (Gigerenzer, 2010; Keren & Schul, 2009; Kruglanski & Gigerenzer, 2011; Osman, 2004). However, most critics still acknowledge that some judgments appear to be more intuitive and some appear to be more deliberative. Instead, critics disagree on topics such as whether these judgments come from separate cognitive systems (vs. a single-process account; Kruglanski & Gigerenzer, 2011; Osman, 2004) or lie on a continuum rather than discrete types/modes. We use dual-process theory throughout this argument to help readers understand these two types of decisions but do not posit that cognitive biases and nudges depend on a two-system model. Although cognitive biases are more often found within intuitive judgments, many well-established cognitive biases and departures from rational thinking are also found when making slow, deliberate choices as well (e.g., saving for retirement).

Both System 1 and System 2 are susceptible to cognitive errors and biases, but System 1 processing appears to rely more heavily on heuristics, such as the affect heuristic (Slovic, Finucane, Peters, & MacGregor, 2002, 2007). The affect heuristic proposes that every stimulus produces an affective evaluation that is not always conscious and can be used as a mental shortcut for people to make decisions or solve problems quickly (Bargh, 1997). These basic affective reactions have been seen to predict complex evaluations such as predicting economic performance of industries (Slovic et al., 2002). Recently, at least one study found that affect outperforms basic tenets of prospect theory in predicting human decisions (Charpentier, De Neve, Li, Roiser, & Sharot, 2016). In addition, thoughts and reasoning that occur in System 2 can also be found in System 1 with enough repetition. The more a schema, representation,

or script is activated in a person's life, whether it is through controlled or automatic processes, the greater its accessibility is (Barrett et al., 2004). Taken from studies such as Millner et al. (2017), the decision to attempt suicide and the biases that have been most present (e.g., perceived burdensomeness) could be more accessible than other choices/reasons for living at the time of an attempt because of the prolonged mulling and suicidal ideation stages, which consistently activated these ideas over an extended duration.

Perhaps one of most important considerations for integrating dual system theory tenets into suicide research is that System 1 is especially affected by emotion. For example, studies have found that utilitarian judgments (i.e., minimizing costs and maximizing benefits across affected individuals; Mill, 1863) often require significantly more cognitive resources (Devine, 1989; Wegener & Petty, 1997), whereas nonutilitarian judgments are more often the result of automatic emotional processes (Greene, Morelli, Lowenberg, Nystrom, & Cohen, 2008). From the viewpoint of the interpersonal theory of suicide (ITS; Joiner, 2007; Van Orden et al., 2010), individuals with a desire to die have a sense of perceived burdensomeness and view their death as having greater utility than if they were to live (Joiner, Hom, Hagan, & Silva, 2016; Van Orden et al., 2010). However, results from Greene et al. (2008) indicate that utilitarian thinking is disrupted when there is greater cognitive load (e.g., during an emotional crisis) and inhibits a person's ability to make utilitarian judgments. Therefore, it stands to reason that during an emotional crisis, people are more likely to make inaccurate forecasts about whether their death would positively affect others.

### **Factors That Help Create Cognitive Biases**

Humans have bounded rationality. When decision-making processes occur in highly emotional periods and require forecasting future affective states or predicting the utility of prospects in the distant future, people become worse at making rational decisions. Each of these factors increases the likelihood of cognitive biases being present and exerts a greater effect when choosing between uncertain options.

Emotion can negatively affect attention, memory, and the ability to make decisions (Brosch, Scherer, Grandjean, & Sander, 2013). Particularly relevant to suicide is how integral affect (i.e., affect that is part of a person's mental representation of the choices under consideration) and incidental affect (i.e., mood states that occur indirectly of a stimulus but are present and can influence decision-making processes) have been shown to explain and predict judgments and decisions (Västfjäll et al., 2016). Emotions often serve many functions in decision

making, such as information (e.g., "How do I feel about this?"), currency and utility (e.g., reward, punishment), a focus for new information or available representations, and a motivator (Peters, Västfjäll, Gärling, & Slovic, 2006). In addition, current mood states, irrespective of their affiliation with judgment, can influence subsequent risk judgments (Schwarz, 2004). Lastly, some evidence suggests that decision-making processes are impaired during stressful situations through laboratory experimental design (e.g., Iowa Gambling Task; Preston, Buchanan, Stansfield, & Bechara, 2007). Because suicidal crises are periods of intense emotional states, the emotions felt during that time may influence an individual's decision because he or she is contaminating judgments about the future.

The combination of our memories and appraisals of the past and present and our past and present emotions is often used to predict our emotions in the future, and these predicted emotions help motivate our actions (T. D. Wilson & Gilbert, 2008) and influence our judgments (Lerner & Keltner, 2000). However, research has repeatedly revealed that people are poor judges of their future emotional states (T. D. Wilson & Gilbert, 2005). This poor judgment is due in part to an individual's inability to accurately store and retrieve information about memories and their associated emotional content. Research suggests that our ability to accurately recall memories and past affective states—even those involving highly emotional events (e.g., 9/11, Kennedy assassination)—is quite poor (Hirst et al., 2009; Neisser & Harsch, 1992). In fact, people might forget more details when memories are formed during high-stress situations (Morgan et al., 2004), possibly because stress hormones disrupt memory processes at high levels of stress (Kirschbaum, Wolf, May, Wippich, & Hellhammer, 1996; Mabry, Gold, & McCarty, 1995). There is also substantial research suggesting that people can misremember details of an event (Loftus & Palmer, 1974; Wixted, Mickes, Clark, Gronlund, & Roediger, 2015), be manipulated to believe that they saw objects that were not present (Loftus, Miller, & Burns, 1978), or even be made to believe that events happened that never actually occurred (Loftus & Pickrell, 1995) and yet remain confident that such events are accurate (Porter, Yuille, & Lehman, 1999).

In addition to the malleability and inaccuracy of our memories (Semmler, Brewer, & Wells, 2004; Wixted et al., 2015; Wixted, Read, & Lindsay, 2016), our cognitions can also create inaccuracies when recalling previous emotional memories. Humans regularly misremember previous memories and affective states, partly because they are influenced by their current cognitive appraisals of past events as well as their current mood (Safer, Bonanno, & Field, 2001). What this evidence suggests

is that people change how they see the past on the basis of current appraisals and emotions. Thus, when we rely on memories of previous affective states to make predictions and judgments (e.g., “Will I still feel this bad/suicidal a year from now?”), there is a greater potential for bias because memory is malleable and influenced by current mood and appraisal.

Results from psychological, economical, and biological investigations show that most intelligent species heavily discount risks and rewards that are in the distant future and overweigh choices that are closer to the present (Kagel, Battalio, & Green, 1995). In addition, consumer research finds that although humans plan and prefer to act patiently, people act and behave impatiently (Frederick, Loewenstein, & O’Donoghue, 2002). If acting rationally, people should weigh the reward of two amounts by their absolute value; however, a hyperbolic decay model has been shown for hypothetical monetary rewards, real monetary rewards, as well as health issues such as drug and nicotine addictions (Johnson & Bickel, 2002). Furthermore, it has been well established that there is greater discounting for rewards relative to losses (Kirby & Maraković, 1996; Thaler, 1981).

Finally, neural imaging has revealed that near-term rewards are associated with increased activity in limbic and paralimbic cortical structures, which are abundant with dopaminergic innervation. However, these limbic system activations are absent when processing abstract and long-term rewards, and only activation in the lateral prefrontal cortex and its associated structures (as opposed to both, e.g., those with near-term rewards) are present (McClure, Laibson, Loewenstein, & Cohen, 2004). What these results suggest is similar to what Baumeister (1990) proposed in relation to suicidality: When people are faced with an abstract reward that will occur in the future (e.g., feeling better), they may heavily discount that option in favor of a more immediate reward (e.g., relief from pain), especially if emotions are present. That is, people may be unable to rationally weigh the long-term costs and benefits of dying versus living in relation to their own utility. Recent research has shown associations between an inability to delay larger rewards for smaller gains in people with suicidal ideation and suicide attempts (Cáceda et al., 2014; Dombrovski et al., 2011; Mathias et al., 2011). Such work provides further evidence that during a suicidal crisis, people may be unable to see alternative perspectives of their future lives and focus on immediate rewards (e.g., relief from pain), which is in line with theories of escape (Baumeister, 1990) and entrapment (O’Connor, 2011; J. M. G. Williams, Crane, Barnhofer, & Duggan, 2005).

## **Suicidal Crises as an Environment for Cognitive Biases to Thrive**

Suicidal crises appear to be an ideal environment for cognitive biases to thrive because these crisis periods are usually unexpected, involve novel decisions with distant outcomes, and contain high levels of emotion and arousal that stem from intense psychological pain, all of which impede a person’s ability to accurately make decisions. Psychological pain, whether it be derived from perceived burdensomeness, hopelessness, thwarted belongingness, and so on, has been supported as a necessary element of suicide death by nearly all classical and modern theories of suicide (Baumeister, 1990; Klonsky & May, 2015; O’Connor, 2011; Shneidman, 1993; Van Orden et al., 2010). From these theories, there is converging evidence that suicidal crises create the sensation of severely distressing emotional states involving incredible amounts of psychological pain. The physiological and emotional aspects of suicide are understudied because of low base rates for suicidal attempts and deaths and ethical constraints.

However, several studies and theoretical models can help infer what happens during these final moments. For instance, Joiner and Stanley (2016) posited that the moments leading up to a suicide attempt might mirror antipredator reactions and defense mechanisms such as physiological arousal/agitation and simultaneous “shutdown” states (e.g., social withdrawal, cessation of activities). These periods of suicidal crisis, as mentioned before, appear to be relatively brief. In fact, two recent proposals for acute suicide-specific diagnostic entities have been supported by preliminary research: the suicide crisis syndrome (Galynker et al., 2017; Yaseen, Hawes, Barzilay, & Galynker, 2019) and acute suicidal affective disturbance (Stanley, Rufino, Rogers, Ellis, & Joiner, 2016; Tucker, Michaels, Rogers, Wingate, & Joiner, 2016). Both entities are acute, presuicidal states that are characterized by a limited duration and a rapidly increasing severity that leads to suicide. These constructs offer further evidence that suicidal crises are brief periods of time when high emotional arousal states are present.

Substantial evidence indicates that acute stressors either occur before a lethal suicide attempt or are looming (e.g., job loss; Dempsey et al., 2018; Hedegaard et al., 2018). These same acute stressors have evidence across the life span; people who die by suicide at older ages and younger ages have common preceding events (e.g., loss of relationship; Conwell, Van Orden, & Caine, 2011). Although stressors and life events are important for understanding many suicidal crises, they are not present in all suicide attempts. Even with major

stressors nearby, suicidal crises are often unpredictable and unexpected (Bryan & Rudd, 2016; Franklin, Huang, & Bastidas, 2019); they leave little time to prepare for important decisions. A puzzling part of suicide risk assessment is explaining the seemingly unpredictable shift from a person wanting to live his or her life to the dramatic bimodal opposite of making the decision to die. Recently, some temporal models posited evidence that accounts for the fluctuation and severe, abrupt increases in suicide risk by incorporating fluid-vulnerability theory (Rudd, 2006) with dynamical-systems theory perspectives (Bryan & Rudd, 2016) and cusp-catastrophe modeling (Thompson, 1975). Together, these models suggest that even small changes in current circumstances can provoke a catastrophic change in mood, behavior, and motivation (Clair, 1998; Hufford, 2001; Isnard & Zeeman, 1976; Prinstein, 2008; Zeeman, 1976). Regardless of what the catalyst may be, the unexpected fluctuation into a suicidal crisis is problematic because people tend to be worse at making decisions they are inexperienced with.

### Summary of Argument

A few propositions appear to be well evidenced. First, people who survive an attempt often do not go on to die by suicide or attempt again. Second, people have a multitude of different risk and protective factors that interact and fluctuate to produce suicide readiness, which also makes the timing of a suicidal crisis more unpredictable. Third, stressors often precede or loom around the time of a suicide attempt, and these perturbations can cause sudden and large changes in behavior (e.g., suicide). Fourth, suicidal crises can occur quickly and are characterized by a spike in suicidal desire and physiological arousal, behavioral changes, alterations in cognition, and affective disturbances. Fifth, the ultimate decision to die is likely made within the state of a suicidal crisis. Finally, the time between the actual decision to die (arguably one of the most important decisions a person could make) and death is done very quickly and often without the same decision-making skills used in other life-altering decisions (e.g., buying a house).

Although there have been consistent common factors in prominent theories of suicide that infer cognitive biases are present (e.g., perceived burdensomeness, intractable pain) or occur in environments in which cognitive biases and errors are more probable (e.g., cognitive rigidity, pessimism), the integration of cognitive biases with how people make crucial suicide-related decisions has been understudied. The theories referring to irrational thought and cognitive distortions largely focus on how these maladaptive thinking patterns

influence depressed affect (e.g., defining situations in unrealistic ways; Baumeister, 1990; Beck & Clark, 1988) and have generated some of the most well-evidenced research theories for combatting depression (Beck, 1979). However, integrating well-established lines of research on the mechanisms that stimulate irrationality (e.g., cognitive biases) and investigations into how these cognitive biases influence suicide-related decision making is currently understudied. Recent meta-analytic work (Chu et al., 2017; Franklin et al., 2017) indicated that there is room for refinement and/or additional components that could be helpful in reducing suicide. The aforementioned argument and the literature review on decision making, biases, and behavioral economic interventions are meant to be supplementary to existing theories and suicide prevention efforts. Note that this argument does not assert that these principles and phenomena will be universally applicable, nor will they be a panacea for the immense challenge of reducing suicide deaths. Rather, increasing our knowledge around the cognitive biases that may exist during suicide-related decisions could yield important theoretical advances and offer a supply of untapped interventions. There is robust evidence for the global existence of cognitive biases and their effects on rational decision making; therefore, it is implausible that cognitive biases would not also apply to suicide-related decisions.

### Behavioral Economics and Nudges

Social and cognitive psychology have consistently found reliable cognitive biases that people are susceptible to when making decisions. A major problem with cognitive biases is that people have a difficult time recognizing these biases within themselves even if they can recognize the impact of biases on others' judgments (Pronin, Lin, & Ross, 2002). These foundational concepts have given rise to what is now a new competitor for the standard economic viewpoint: behavioral economics. By taking these phenomena into account, behavioral economics has discovered and implemented interventions that anticipate and manipulate cognitive biases in a way that influences people toward making decisions that are congruent with their own self-interests.

The most common of these interventions are *nudges*. Nudges are any small feature that attracts our attention and increases the probability that people will make particular decisions or behave a certain way yet allowing them to freely make decisions they believe are in their own self-declared best interests (Thaler & Sunstein, 2008). Nudges are based on two main principles: libertarian paternalism and choice architecture (Thaler, 2018). Libertarian paternalism is defined as allowing people to freely choose to make decisions that are in

their own self-declared self-interests, or put in another way, help people select the choices they would select if they were fully informed or had perfect information (Thaler, 2018). *Choice architecture* refers to the environment in which people make decisions (Thaler, 2018). Nudges therefore are any alterations to the environment in which people are making decisions that influence their choice, judgment, or behavior. Note that nudges never alter incentives or payoffs, and there are no rewards or punishments (i.e., no behavioral modification). In addition, although nudges often go unnoticed by an individual, nudges are always transparent and usually take the form of educating or making a behavior easier to accomplish (Sunstein, 2018). A crucial aspect in creating effective nudges is accurately identifying cognitive biases that may be causing individuals to depart from rational choices. If such biases are understood and recognized, then researchers can modify (i.e., via use of nudges) the environmental context in which a choice is made or behavior is completed (i.e., the choice architecture) to influence behavioral outcomes. Therefore, understanding and identifying cognitive biases that may be occurring proximally or distally to a suicide attempt are crucial to producing successful, useful nudges.

Nudges have been successful in providing highly scalable, time- and cost-effective interventions that can alter decision-making outcomes in a number of different areas of research and industry, including retirement savings (Carroll, Choi, Laibson, Madrian, & Metrick, 2009), college enrollment (Bettinger, Long, Oreopoulos, & Sanbonmatsu, 2012), energy conservation (Allcott, 2011), and influenza vaccinations (Milkman, Beshears, Choi, Laibson, & Madrian, 2011), among many others. Recently, governments (e.g., United States, United Kingdom) have been investing in nudges because of the extreme cost-benefit of some of these interventions. For example, with regard to retirement savings, for every \$1 spent on nudge interventions (e.g., active-decision nudge), it yielded \$100 in contributions per year in retirement savings (Carroll et al., 2009). In contrast, traditional programs to increase retirement savings have yielded far poorer returns comparatively. For instance, for every \$1 spent, U.S. tax incentives returned \$1.24 (Duflo, Gale, Liebman, Orszag, & Saez, 2007), retirement savings education/information returned \$14.58 (Duflo & Saez, 2003), and matching contributions at 20% yielded \$5.59 (Duflo, Gale, Liebman, Orszag, & Saez, 2006). A similar pattern emerges for college enrollment, energy conservation, and influenza vaccinations (Benartzi et al., 2017). Cost-effective interventions that are highly scalable are sorely needed in suicide prevention because suicide rates continue to rise (Hedegaard et al., 2018) and the field remains

underfunded compared with other leading causes of death (Godlasky & Dastagir, 2018).

Despite the impact that nudges have had in other fields, only a few areas of mental health have used these techniques, such as reducing college drinking (Perkins, 2002) and increasing enrollment into behavioral health interventions (Albarracín, Durantini, Earl, Gunnoe, & Leeper, 2008; Albarracín, Wilson, Durantini, Sunderrajan, & Livingood, 2016; K. Wilson, Durantini, Albarracín, Crause, & Albarracín, 2013). Because of the availability and substantial evidence in support of the effectiveness of these interventions, using these well-studied interventions in the context of suicide prevention could be a way to positively influence people to make choices pertaining to suicide-related decisions that are more in line with their own utility.

## **Nudges in Suicide Prevention Research**

### ***Treatment seeking and skill dissemination***

Suicide prevention faces challenges such as low treatment-seeking rates and difficulty disseminating evidenced-based practices and skills to the public (King et al., 2015; Luoma, Martin, & Pearson, 2002). Using well-known nudges such as social norms and framing techniques could be helpful in overcoming several of these challenges in suicide prevention work. One study by Bauer et al. (2019) found that presenting social norms nudges in a sample of college undergraduates increased engagement with an online treatment intervention by 164%. Likewise, a second study consisting of recent ideators ( $n = 148$ ) found that ideators who received a social norms nudge (“In a recent study, 97% of people stated that people having suicidal thoughts should seek support”) were more likely to enter a local crisis line phone number into their phone than ideators who did not receive a nudge (Bauer, 2019; Bauer & Capron, 2019b). These findings suggest that leveraging people’s desire to not deviate too far from what others perceive to be appropriate (Cialdini & Goldstein, 2004) and the tendency for people to overweight decisions held by the majority (Bond & Smith, 1996) may be a useful tool in increasing treatment-seeking behavior and providing suicide prevention materials.

Dissemination of skills is another important factor that could help people navigate a time of suicidal crisis, whether it be for themselves or in a peer-support role. One previous study using a framing technique in a general online sample found that people who were asked to learn suicide prevention skills for others who may go through a suicidal crisis in the future were 167% more likely to learn coping skills compared with those

who were asked to learn those same skills for themselves (Bauer et al., 2019). A replication study with an online sample of ideators ( $n = 118$ ) found that people completed a safety plan more often when it was framed as a way to help other people rather than to help themselves (Bauer, 2019; Bauer & Capron, 2019b).

### **Means safety**

A consistent line of evidence has suggested that restricting or limiting access to lethal means is associated with lower suicide death rates (Anestis & Anestis, 2015; Beautrais et al., 2006; Leenaars et al., 2003; Lubin et al., 2010). One challenge is that many people do not initially see the link between suicide means (i.e., firearm access) and increased suicide rates. For example, Bauer and Capron (2019a) presented two different groups ( $n = 298$ ,  $n = 276$ ) with a very similar vignette about a woman with several risk and protective factors; the only difference was a sentence about the main subject's access to a firearm. Despite this notable difference, each group's rating of her risk was nearly identical as measured by a visual analogue scale. In addition, Bauer and Capron (2019a) found that in an online sample of gun owners ( $n = 229$ ), 94.3% of gun owners agreed or strongly agreed that they had better safety procedures than the average gun owner. With such biases in mind, nudges may be useful in increasing safe storage practices. Although not directly pertaining to these specific biases, at least two studies found that using framing strategies (i.e., focusing on temporariness of means removal) or language substitution (i.e., "means safety" instead of "means restriction") can increase a person's willingness to engage in means safety counseling (e.g., temporarily removing access to lethal means; Stanley, 2019; Stanley, Hom, Rogers, Anestis, & Joiner, 2017). Thus, simple alterations within the choice architecture of means safety appear to be a cost- and time-effective strategy for producing small positive effects.

### **Enhancing other aspects of suicide prevention**

Suicides and suicide prevention is a multisystemic issue, and the onus of change and advancement should not be placed only on those suffering. Nudges can be helpful in collecting more accurate data and boosting confidence in the accuracy of the data collected and may help clinicians and activists as well. For example, one well-known behavioral economic technique is item-count technique (ICT; Droitcour et al., 1991), which has been shown to increase the endorsement of socially undesirable behaviors (Holbrook & Krosnick, 2009). ICT gives one set of participants a list of statements and

asks them to indicate *how many* statements are true for them but not *which* are true for them, thereby combating social desirability bias through increased anonymity. Through ICT, Bauer et al. (2019) found that participants are likely giving accurate suicide-related data when collected online; results showed that direct versus indirect questioning yielded practically equivalent percentages. This finding combats an oft-stated limitation within suicide research.

In addition, results from a recent study showed that people who received a nudge to reduce a form of confirmation bias rated suicide risk higher after being presented with a vignette leading with a series of protective factors followed by an obvious risk factor of suicide ("Last week, Dave was overheard saying, 'I don't want to live anymore'") compared with those who did not receive a nudge (Bauer, 2019; Bauer & Capron, 2019b). These results could have important implications for clinicians because there is the need to continually challenge one's conceptualization of a patient's suicide risk given its fluctuating nature. Finally, it appears that using nudges could be helpful in increasing support for suicide prevention education and resource materials. Recent findings indicated that using enhanced active choice (a technique that increases the salience of loss within a choice) led to increased signing of an online petition for suicide prevention awareness in community sectors, although the results only trended toward statistical significance (Bauer, 2019; Bauer & Capron, 2019b).

### **Future directions and ethics**

Future directions for research in this area are vast. One direction is understanding if cognitive biases are present during suicidal crises and if so, which ones are most prevalent. Only a limited number of studies have focused on bias in suicide-related contexts. Recently, Millner and colleagues (2019) found that those with a history of suicidal thoughts and behaviors but not those with other symptoms of psychopathology (e.g., depression, anxiety) were biased toward actively (rather than passively) escaping aversive conditions. This bias predicted suicidal behavior in a nonredundant manner of several other measures often correlated with suicidal behaviors. This finding is interesting for many reasons. First and foremost, this finding may lend credence to the idea that biases are inherent in suicidal individuals or have been conditioned within an individual and may be one missing part of the suicide capacity model (Chu et al., 2017; Klonsky & May, 2015). Another study by Szanto and colleagues (2015) found that suicide attempters were more susceptible to sunk cost bias and framing effects. In interpreting the framing effect susceptibility,

this finding may indicate an inability to see experiences from a different perspective (i.e., myside bias). Furthermore, sunk cost bias occurs when a person continues with failing plans despite irrecoverable costs (Arkes & Blumer, 1985). This susceptibility may be paralleling a form of entrapment in which suicide attempters are unable to recover past “costs” and persist with a plan to die; costs are the planning and other actions (e.g., mental rehearsal of suicide attempt, suicidal gestures toward others). Within the conceptualization of entrapment theory (Baumeister, 1990; O’Connor, 2011; Yaseen, Gilmer, Modi, Cohen, & Galynker, 2012), costs may also take the form of irrecoverable life losses (e.g., job loss, divorce) in which individuals are then unable to flexibly produce alternative views to one’s current situation and image (e.g., burdensome, hopeless).

The detailed results from Szanto and colleagues (2015) on sunk cost bias are particularly interesting because high-lethality attempters and low-lethality attempters (a group that was related to poorer/shorter planning) were more susceptible to this bias than suicidal ideators, and depressed individuals trended toward significance ( $p = .07$ ) in scoring more poorly than healthy controls. This might indicate that as a suicidal crisis becomes more proximal, cognitive biases become more intense. Further, investigation is needed to uncover whether such biases may be specific to individuals at risk for suicide and act as symptoms or how these biases interact during high levels of stress. Regardless, these studies represent the first forays into decision-making biases within suicide research and suggest that other cognitive biases may be playing an important role in suicide-related decisions.

The cognitive biases subsumed within affective forecasting may be especially relevant to suicide research because they rely on a person’s attempt to predict a future reward/loss and are probably based on current schemas and appraisals of past experiences. Affective forecasting is concerned with predictions about which emotion or emotions will be experienced, the valence of those emotions, and the duration and intensity of those emotions (T. D. Wilson & Gilbert, 2003). Note that affective forecasting has been found to influence decision making (Mellers & McGraw, 2001). Unfortunately, results from economic and psychological research showed a unified pattern that people do not accurately predict their future hedonic reactions because of numerous biases, including overly relying on memories and schemas, being influenced by current emotions, overemphasizing the importance of an event, and neglecting both their ability to rationalize why events happen and a person’s natural unconscious psychological immune system (T. D. Wilson & Gilbert, 2005). Although prospective and experimental study

designs concerning affective forecasting and suicide have not yet been conducted, results from one cross-sectional study found that individuals exhibiting attenuated positive forecasts toward future events distinguished dysphoric nonattempters from dysphoric attempters (Marroquín, Nolen-Hoeksema, & Miranda, 2013). Because many suicide attempts occur shortly after a stressor (e.g., breakup with a romantic partner) or with a significant stressor looming in the future (e.g., job loss), affective forecasting likely plays an integral role in many decisions to die.

Second, myside bias may make a person’s ability to make rational decisions more complicated. Myside bias is the inability to rationalize or produce arguments outside of the individual’s own argumentative stance (Stanovich, West, & Toplak, 2013). Myside bias may play a role in the variable that underlies many theoretical models of suicide: cognitive rigidity (Baumeister, 1990), or the inability to form alternative approaches to problems (Patsiokas, Clum, & Luscomb, 1979). Myside bias has been observed during suicidal crises (i.e., right after hospitalization; Levenson & Neuringer, 1971; Neuringer, 1964; Patsiokas et al., 1979) but not after the suicidal crisis has ended (Perrah & Wichman, 1987). The impact of having a limited ability to construct alternatives to arguments (e.g., reasons to live) and approaches to problems (e.g., other solutions to extreme distress) could be especially influential when making decisions about one’s future (e.g., decreasing salience of distal goals). The need for cognitive flexibility during crisis periods may be important because it is likely contributing to other foundational concepts in suicidal theories such as hopelessness (three-step theory, Klonsky & May, 2015; ITS, Van Orden et al., 2010; integrated motivational-volitional model, O’Connor, 2011; Weishaar & Beck, 1992) and entrapment (escape theory, Baumeister, 1990; integrated motivational-volitional model, O’Connor, 2011). Third, the hot/cold empathy gap is a bias that explains why humans regularly forget to account for “hot” (i.e., anger, despair) emotions in the future when making forecasts about their decisions during “cold” (i.e., calm) periods (Ariely & Loewenstein, 2006; Loewenstein, 2005). In addition, people often underestimate the influence of these hot emotions and overestimate the stability of their current preferences when in hot emotional states (Ariely & Loewenstein, 2006; Loewenstein, 2005). Because suicide attempts occur during highly emotional periods in which hot emotions are likely present, this cognitive bias appears to be particularly relevant. As an illustration of this bias, in one study, researchers found that a sample of young men were more willing to engage in unsafe sex and immoral behavior to obtain sexual gratification when aroused compared with when unaroused (Ariely &

Loewenstein, 2006). What this study suggests is that men in the nonarousal condition did not take into account how their emotions would influence their decision making. The hot/cold empathy gap could explain why people are inaccurate at forecasting their future behaviors and could play an important role in decisions leading up to suicide attempts. For example, one study by Janis and Nock (2008) found that although previous nonsuicidal self-injury (NSSI) is a predictor of future NSSI, a person's forecast of his or her own future NSSI does not enhance this prediction and may suggest a hot/cold empathy gap when forecasting such behaviors. In addition, this phenomenon may explain some of the disconnect between an individual's confidence in using coping skills (e.g., distraction techniques) or safety aides (e.g., a safety plan) and their execution in the future as well as discrepancies between self-reported perceptions of self-efficacy in effectively managing a suicidal crisis on questionnaires and actual self-efficacy during a suicidal crisis.

An important alternative to behavioral economics and cognitive biases explaining decisions is information asymmetry. Information asymmetry is when one party has either more or better information than the other, causing the party with less or worse information to make an ill-informed or irrational decision (Healy & Palepu, 2001). From this viewpoint, much of the irrationality in suicide-related decision making might not be from cognitive biases but instead may be due to the individual not knowing all of the information needed to make a rational decision (e.g., the high probability that a majority of people want them to seek help if they are having thoughts of suicide). However, suicide-related decisions, especially the decision to attempt, appear to have less clear information in terms of risk and probabilities compared with those in heavily studied areas such as contracting and insurance. For instance, if a person is given the information that "There is a high probability that you will feel better in 12 to 18 months" but does not internalize or believe this information, is it appropriate to say that this person is *actually* fully aware of all the information necessary to make a rational decision? Studies examining whether suicide-related decisions are driven mainly by cognitive biases or information asymmetry (or both) will be important for accurately guiding future interventions and mechanistic investigations.

Equally important to investigating possible biases is identifying experimental/laboratory manipulations that evoke enough parallels to mimic an actual suicidal crisis without causing the participant harm. Currently, investigations attempting to detect cognitive biases and correct departures from rationality when making decisions distally from an attempt (e.g., engaging with resources)

have been studied (Bauer et al., 2019; Jaroszewski, Morris, & Nock, 2019). Therefore, manipulations that are akin to a crisis period are needed to reliably study and eventually gain a more accurate understanding of these cognitive biases in the context of suicide-related decisions occurring more proximal to an attempt. Recently, such techniques that may allow for this have been proposed and studied with initial success. For instance, the enhanced distress tolerance task (Anestis & Capron, 2016) induces both physical pain and emotional stress to parallel aspects of a suicidal crisis/suicide attempt and measure persistence through a distressing task. In another task, Franklin, Huang, and Bastidas (2019) used virtual reality suicide scenarios (i.e., jumping from heights, shooting oneself) to produce a safe experimental condition that was also rated as suicide-relevant, realistic, and unpleasant and was related to many commonly cited risk factors for suicide (e.g., male sex, suicidal desire, agitation). Finally, tasks such as the Mannheim Multicomponent Stress Test (Kolotylova et al., 2010) simultaneously induce motivational (loss of money), cognitive (mental arithmetic), acoustic (white noise), and emotional stressors (affective pictures) and has been shown to be a safe but psychologically stressful laboratory paradigm that could be beneficial for resembling aspects found during a time of a suicidal crisis (Stanley et al., 2016; Tucker et al., 2016; Yaseen et al., 2012). Using such tasks may offer further understanding regarding the mechanisms for how decisions operate when used in conjunction with cognitive bias research.

Finally, ethical considerations are of great importance because nudges can have a large impact on people's behavior and occur largely outside of their awareness. For example, a recent study found that in a sample of ideators ( $N = 578$ ), even though 70% stated they thought they were better than the average person at spotting nudges, less than 1% ( $n = 4$ ) were able to spot a nudge that was presented less than 5 min before in that same survey (Bauer, 2019; Bauer & Capron, 2019b). Note that the vast majority of participants in this study of ideators indicated that they would be okay with being nudged out of a suicide attempt (82.4%) and gave even higher approval for nudging someone else out of a suicide attempt (90%). Likewise, a recent survey found that the majority of participants (i.e., physicians and nonphysicians) approved of using nudges in medical care choices (Fridman, Hart, Yadav, & Higgins, 2018). However, individuals are always free to choose what they believe is in their own best interests, no rewards/punishments or other incentives are altered, and nudges are always transparent (even if they are not spotted by an individual; Sunstein, 2018). Nudges may be more powerful when a person does not have a

preference for one choice over another or when performing a behavior that better aligns with his or her goals. Given this idea, an important question to ask is what would the harm be if the intended action was performed? From the current research on nudges and suicide prevention, the desired outcome has mainly been in providing people with coping skills and treatment resources, both of which appear to be much more beneficial than harmful.

Nudges have been highly effective, scalable, and economical throughout several areas of industry, academia, and government (Halpern, 2015; Sunstein, 2014; Whitehead, Jones, Lilley, Pykett, & Howell, 2017), which shows that small changes can have large impacts on society (Agarwal, Chomsisengphet, Mahoney, & Stroebel, 2014). In addition to being time and cost-effective (Benartzi et al., 2017), nudges are relatively easy to understand, interpret, and communicate across disciplines. Furthermore, results from studies using nudges often make cost-benefit analyses readily available for others to interpret, which may be helpful for policymakers and grant-funding bodies. As an example of the aforementioned points, the combination of three recent nudge experiments cost less than \$1,000 and resulted in approximately 100 recent ideators filling out a safety plan, 100 ideators putting the Suicide Prevention Lifeline into their phones, 90 people receiving education on coping skills, 80 people entering a local crisis line into their phone, and 15 individuals increasing their means safety practices (e.g., separated ammunition from firearm storage; Bauer, 2019; Bauer & Capron, 2019; Bauer & Capron, 2019b). Given the many decisions leading up to a suicide attempt and the information stating that crises are relatively brief and small, scalable options such as nudges could be beneficial for increasing rational decision-making processes and behaviors.

## Conclusion

If there is a way to reverse the disturbing trend of increasing suicide deaths in the United States (Hedegaard et al., 2018), it will likely be a concerted effort by researchers, practitioners, policymakers, and the private sector and will need to span across the continuum of prevention to postvention. Currently, our ongoing efforts and conceptualizations of suicide are incomplete, and additional components are needed. Indeed, recent meta-analytic work and prediction modeling (Franklin et al., 2017; Walsh, Ribeiro, & Franklin, 2017) supports the notion that our understanding has not just been stagnant for half a century but that the equifinality of suicide suggests that the field may be further from a solution than previously realized. From this evidence, suicidal risk factors may be more akin to Mischel's

(1973) envisioning of personality. An extravert may have a predisposition toward being assertive; however, they are not the only people who can be assertive. Given the right circumstances (e.g., needing to speak with doctors on behalf of a sick parent), an introvert has the capability to act oppositely and be assertive as well (Mischel, 1973). The situation may be similar with risk factors for suicide—although certain people may have vulnerabilities for suicide risk, under the right circumstances, *anyone* can be at risk. For example, some suicide attempters have never had a previous mental-health diagnosis (or even met criteria at the time of an attempt) and only began to think about suicide hours before they attempted suicide (Peterson, Peterson, O'Shanick, & Swann, 1985). In this way, perhaps everyone can become capability of dying by suicide. If so, then an important avenue for suicide research is to investigate variables that all individuals are susceptible to, such as cognitive biases, and study how these biases affect not only decisions occurring distally from an attempt but also the universal decision made across all suicides.

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