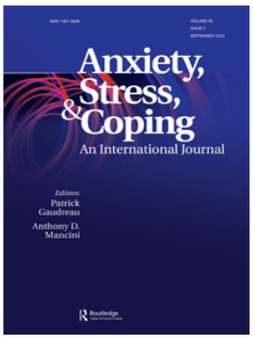

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Big ideas series: self-regulation shift theory: trauma, suicide, and violence

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Other

Big ideas series: self-regulation shift theory: trauma, suicide, and violence

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ABSTRACT

Background: Traumatic stress, suicide, and impulsive violence arguably are three of the most consequential problems facing societies today. Self-regulation shift theory is introduced to capture the underlying coping dynamics involved in these three grave challenges.

Objectives: Self-regulation shift theory, based in a nonlinear dynamical systems framework, focuses on critical psychological self-regulation thresholds and the role of cognitive self-appraisals in human adaptation to help understand these three significant societal challenges.

Methods: This essay reviews existing evidence within the posttraumatic adaptation process utilizing SRST for understanding dynamic self-regulation. This is followed by integrating SRST within existing current theoretical models for suicidal behaviors and violent outbursts.

Conclusions: The essay concludes with methodological suggestions for future research applying SRST and how this research offers important opportunities to develop early warning systems that promote hope when hope seems impossible.

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Introduction

Over 45,979 people die from suicide every year in the U.S.; while 1.2 million go to the hospital following an assault; and around 70 million experience a potentially traumatic event (Center for Disease Control and Prevention, 2022; Norris, 1992). The societal costs are staggering. Fatal and non-fatal self-harm resulted in $490 billion in medical costs in 2019 (Center for Disease Control and Prevention, 2022). In 2017, violent crime resulted in an estimated $280 million in tangible costs and $1.7 trillion in losses related to quality of life (Miller et al., 2020). In this essay, we will apply self-regulation shift theory (SRST) to these three grave challenges: traumatic stress adaptation, suicidal behavior, and impulsive violence. SRST provides a new theoretical approach that focuses on critical psychological thresholds and the role of cognitive self-appraisals in human adaptation to extreme situations or emotional states.

SRST was introduced as an extension of Social Cognitive Theory (SCT; Benight et al., 2017; Bandura, 1997) detailing the importance of self-regulatory appraisals in posttraumatic coping. A central theme throughout this essay will be the importance of psychological coping limits in self-regulation. Although SRST is couched within an SCT framework, much of the foundation can also be traced back to seminal works of other prominent scholars including Carver and Scheier (1982;

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2005), Carver (1997), Festinger (1957), and Ford (1987) among others. Before offering the details for SRST and its application to the areas of trauma, suicide, and impulsive violence, it is important to cover the foundation of SCT.

Social cognitive theory and self-efficacy beliefs

The center point of SCT is personal agency. Personal agency is defined as the ability to effectively interact in one's environment to obtain valued goals. Self-regulation is the dynamic process that facilitates human agency through bi-directional interactions among person (e.g., cognitive and affective), behavioral, and social contextual variables (Bandura, 1997). Self-efficacy is a key motivational factor critical to adaptive self-regulation. Through self-evaluation of valued goal attainment or failure, individuals generate self-appraisals of efficacy which promote recalibration and ultimately behavioral changes (Bandura, 1997). A blessing and a curse is the fact that humans have the ability to observe themselves in context. This ability is central to the self-regulation process in which we evaluate ourselves in our attempts to obtain valued pursuits.

Self-efficacy appraisals, which are generated through our self-evaluations, strongly predict important outcomes in different contexts including academic pursuits, health behaviors, athletic activities, stress response, and posttraumatic adaptation (Bandura, 1997; Benight & Bandura, 2004; Schönfeld et al., 2017; Sheeran et al., 2016; Shoji et al., 2016; Talsma et al., 2018). Self-efficacy perceptions also predict goal setting, performance, and perseverance (or giving up) following environmental *setbacks* (Bandura, 1997; Schönfeld et al., 2017). However, the effect of self-efficacy judgments on motivational processes (e.g., goal setting, effort, performance) may be dependent upon several moderating factors such as level of goal valence, task difficulty, and even level of self-efficacy (cf. Schönfeld et al., 2017). Specifically relevant to this essay, lower perceived efficacy has critical psychosocial and mental health implications including impaired coping, depression, and suicide (Schönfeld et al., 2017; Valois et al., 2015).

Research evaluating the importance of coping self-efficacy (CSE), a self-appraisal directly tied to management of stressful or posttraumatic adaptational demands, has consistently found that CSE level is an important predictor of important posttraumatic outcomes for a wide range of extreme experiences including: sexual assault (DeCou et al., 2019; Mahoney et al., 2021), childhood sexual abuse (Cieslak et al., 2008; Singer et al., 2016), domestic violence (Benight et al., 2004; Lambert et al., 2013), war (Chung et al., 2017; Solomon et al., 1991; Smith et al., 2013), hurricanes (Benight et al., 1999; Hirschel & Schulenberg, 2009; Wadsworth et al., 2009), and terrorist attacks (Benight et al., 2000). Longitudinal research provides a window into how these appraisals serve an important mediational role between stress or trauma exposure (i.e., impact variables) and subsequent psychological outcomes. CSE is a powerful mediator over time following a major disaster (Benight & Harper, 2002; Bosmans et al., 2013), after acute physical injuries (Bosmans et al., 2015; Flatten et al., 2008), and when coping with a serious motor vehicle accident (Benight et al., 2008). Luszczynska et al. (2009) found in their meta-analytic review that CSE was a stronger predictor of critical longitudinal outcomes following mass traumas with large effect sizes (*r's* ranging from -.55 to -.62) compared to the small to medium effects observed for dissociation, social support, or previous psychopathology (r's ranging from .17 to .35; Ozer et al., 2008). Importantly, change in CSE over time has also predicted posttraumatic adaptation (Benight et al., 2018; Benight et al., 2008).

Collectively, this research supports the importance of CSE in understanding posttraumatic adaptation yet is limited to snapshots of the self-regulation process. SRST is based on this theoretical foundation and outlines the self-regulatory nonlinear dynamics associated with trauma adaptation particularly targeting critical coping thresholds.

Self-regulation shift theory (SRST)

SRST was developed to bring more precision into the analysis of evolving coping dynamics as individuals work to self-regulate following extreme events (Benight et al., 2017). SRST is based on a

nonlinear dynamic systems (NDS) framework (Boker, 2001; Guastello et al., 2008; Levy et al., 2012). NDS is a general approach to modeling systemic change. Dynamic self-regulation (Boker, 2001; Neufeld, 1999) based on system feedback loops (Carver, 1997; Carver & Scheier, 1982) is central to the process. Although dynamic self-regulation is always at work, environmental stress creates perturbations and challenges a system's ability to self-regulate. Changes in a system's ability to self-regulate can result in discontinuous critical shifts in a system's state (e.g., normal heart rhythm to atrial fibrillation, approach coping to giving up). Of particular interest to SRST is the understanding of coping thresholds resulting in abrupt change (i.e., discontinuous) in psychological functioning.

SRST has four primary tenets. First, humans function as a dynamical living system that self-organizes adapting to changing internal and external conditions (Ford, 1987). Based on our capacity for self-observation, we judge our goal attainment and make adjustments (Bandura, 1997; Carver & Scheier, 1982; Ford, 1987). Second, under certain conditions, living systems can be pushed into nonlinear dynamic shifts from one organized state to another based upon environmental and internal pressures. Third, coping behavior is based on the primary goal of stress reduction during extreme stress where we judge our current coping capability against the future projection of handling the challenges that are coming (Gallagher et al., 2020). And fourth, a subset of individuals will reach a critical threshold when they believe it is just not possible to "bridge the gap" or regain a sense of control over their recovery. It is proposed that individual differences will drive who reaches this threshold depending upon the severity of environmental conditions and our belief in the ability to manage them (i.e., CSE beliefs).

This "tipping point" is referred to as the self-determination violation effect where a critical psychological threshold (or limit) is reached and one's sense of primary control over oneself and the world is shattered. The system shifts and reorganizes into a new impaired state (e.g., trauma casualty, active suicidal person, or enraged violent offender). Indeed, the self-determination violation effect propels the individual into a personal agency crisis leading to dramatic drops in coping self-efficacy perceptions, chaotic destabilizing behaviors, elevations in physiological reactivity and psychological distress. The implications of this state on decision making, affect regulation, and social-interpersonal behaviors are critical. The negative consequences can be severe with potential large increases in negative emotional states (e.g., posttraumatic distress, depression, anger, despair), severely impaired coping, suicidal actions, and violence. Of course, a host of important internal and external factors will play a role in pushing an individual toward the self-determination violation and self-damaging self-beliefs and behaviors (e.g., rejection from a loved one, substance use, trauma trigger, or a provocative shove to name a few). The focus of this essay is to first review existing evidence within the posttraumatic adaptation process utilizing SRST for understanding dynamic self-regulation, followed by how SRST may be useful for suicidal behaviors and violent outbursts. In the application of SRST to suicide and violence, we will demonstrate how SRST extends and contributes to the most prominent theoretical frameworks of each area.

Posttraumatic stress adaptation and SRST

The initial evidence testing SRST with trauma survivors utilized cusp catastrophe modeling to test the contribution of CSE and other moderating factors on discontinuous shifts in psychological outcomes. Before we review the evidence reported, it is important to provide some background and details on cusp catastrophe modeling and how it works. Benight et al. (2017) first reported on SRST following trauma in two samples of motor vehicle crash (MVC) survivors. They utilized cusp catastrophe modeling which is a nonlinear dynamic statistical method that identifies static and fluctuating variables that contribute to nonlinear shifts (e.g., shift from healthy to impaired self). Adaptation to trauma is not a static, linear process. SRST suggests it is dynamic and nonlinear. This process includes "tipping points" where self-appraisals of efficacy interact with environmental factors to result in ongoing changes in efficacy self-appraisals and resulting in sudden shifts in distress levels. Because cusp analysis is not widely known, we provide an overview of it here.

A cusp catastrophe model includes two (independent) variables, the *bifurcation* and the *asymmetry* parameters, and one outcome (dependent) variable. These three variables are related in a nonlinear fashion to define the shaded surface as shown in Figure 1. A cube has been drawn in Figure 1 to help the viewer orient the surface to the axes.

The lines shown on the bottom cube face of Figure 1 indicate how many possible outcomes are available to each point in that plane. In the region where a single line is present, only one outcome is possible. In the region where three lines overlap, three outcomes are possible due to a "folding" of the cusp surface over that region. The boundary of this region is known as the cusp curve and the point at the upper left of the boundary is known as the bifurcation point. The region where three outcomes are possible is known as a *multistable* region.

One approach to cusp modeling that was utilized in the initial SRST studies is based on Guastello and colleagues (Guastello, 1988; Guastello et al., 2011) and models the cusp surface as a polynomial:

$$Surface = \beta_0 + \beta_1 z^3 + \beta_2 z^2 + \beta_3 bz + \beta_4 a$$

where a is the asymmetry parameter, b is the bifurcation parameter, and z is the outcome. The cusp model is considered a good empirical model if (a) it is significant, (b) is a better fit to the data than an appropriate comparison model (e.g., cubic), and (c) the coefficients β_1 (for nonlinearity), β_3 (for the

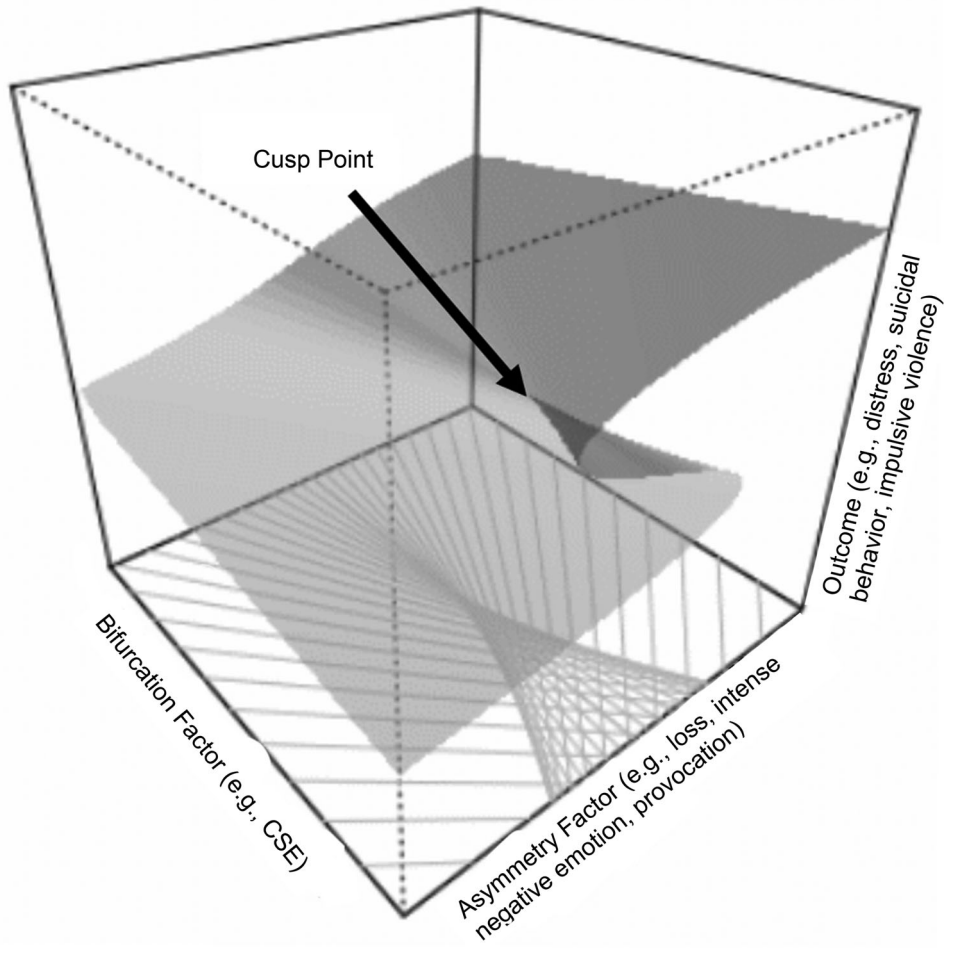

Figure 1. Annotated Cusp catastrophe surface.

bifurcation parameter, CSE), and β_4 (for the asymmetry parameter, such as loss) are statistically significant. There is a mathematical calculation that demonstrates why the β_2 coefficient is not required to be significant. The details of the mathematics behind this are beyond the scope of the current essay.

It should be noted that there are competing approaches to the estimate of possible cusp model parameters (e.g., Butner et al., 2014; Guastello et al., 2011; Wagenmakers et al., 2005). There are debates over the necessary properties of datasets (e.g., under what conditions cross-sectional data can substitute for longitudinal data). We refer the reader to Butner et al., 2014; Isvoranu et al. (2022); and Ryan and Dablander (2022). The nature of dynamic systems includes change across time. SRST, in particular, targets the coping dynamics as they unfold over time. Thus, for studies investigating trauma adaptation, suicidal behaviors, and impulsive violence we suggest ecological momentary assessment methodology combined with biosensor and smart phone sensor time series data to offer the most insight into these processes.

Indeed, one of the primary tenets of SRST is that human beings function as a living system that dynamically adapts to an ever-changing environment. To understand a dynamic system, time-series data must be collected. The use of cusp modeling implies that each sequence of data can be envisioned as a continuous path on the cusp surface (e.g., such as an ant walking along the surface) except that sudden shifts in outcome occur when the combination of asymmetry parameter and bifurcation parameter "move" across the cusp curve from the multistable region to the region where only one outcome is possible. In this way, a cusp model can account for both continuous and discontinuous (sudden) changes in outcome. It is also important to consider that due to hysteresis, or systemic lagging, nonlinear shifts back from the initial shift do not occur at the same point, but rather beyond the initial shift point. For example, significant loss from a massive wildfire functions as an asymmetry (or contextual) factor that combined with CSE determines the threshold for a nonlinear upward shift in distress. We would predict that replacing the losses would result in nonlinear shift back down in distress at a point beyond the initial shift.

The cusp can be applied to SRST by equating z with the level of distress, *a* with some environmental impact, such as loss due to a fire, and *b* with CSE. As drawn in Figure 1, larger CSE is toward the upper left of the figure, loss increases as one approaches the lower left of the figure, and distress increases as one moves downward. Hence, for medium to high values of CSE, relatively smooth and gentle changes in distress are expected as the loss increases or decreases. However, for lower values of CSE increasing loss can produce much different behavior. If a person's combination of CSE, loss, and distress starts on the upper level of the cusp surface (e.g., the upper right in Figure 1) at first increasing loss will result in gradual increase in distress. However, as loss increases, there comes a point (the "edge" of the upper level of the cusp surface) where there is a sudden, discontinuous increase in distress.

Application of Cusp to SRST

The cusp catastrophe modeling showed support for SRST and the importance of CSE in non-linear shifts in functioning 3 months after an MVC. Acute perceived CSE served as a bifurcation factor generating a negative non-linear shift in functioning (e.g., dramatic uptick in posttraumatic symptoms). Importantly, in both MVA samples those who would be considered less affected by the accident (e.g., lower injury severity or initial distress scores) were most at risk for this 3-month negative dynamic shift when their appraised coping efficacy was lower. These results highlighted the importance of self-referent appraisals (i.e., CSE perceptions) within the dynamic self-regulation process over time, supporting a major tenet of SRST.

In a second set of studies with wildfire disaster survivors, similar results were found (Benight et al., 2020). The first wildfire sample (Waldo Canyon Fire – Colorado) showed a similar upward nonlinear shift in distress between an early assessment (2-months) and 4-months. CSE measured at the initial assessment was found again to be a significant bifurcation factor influencing when the upward shift in distress occurs. The lower CSE scores were, the more the cusp in distress from the lower state to

the upper state was likely to occur. In addition, the higher the perceived loss scores the stronger the likelihood of being in the higher distressed state. In the second study we tested the nonlinear shift following wildfires in California between 2017 and 2018. Results demonstrated that a negative nonlinear shift in distress occurred approximately 11 months post-wildfire and 1 year 4 months. CSE (measured at 10.5 months) again was a significant bifurcation variable determining when the cusp occurs, with lower CSE driving the negative nonlinear upward shift in distress.

Collectively, four different samples ranging from MVC trauma exposure to managing the recovery from different wildfire disasters have demonstrated the utility of SRST in predicting the importance of self-regulation appraisals (i.e., CSE) as a driver for nonlinear dynamic shifts in psychological distress. Importantly, there were differences in what conditions were found to interact with CSE to influence the bifurcation depending upon the trauma. For MVC survivors we found those who had less injuries and less peritraumatic distress demonstrated the shift with lower CSE. Contrastingly, we found those more affected by the wildfires (greater loss) showed the shift with lower CSE. This suggests that different traumatic recovery environments may interact differently with efficacy perceptions. Future research is needed to help disentangle the impact of different environmental factors in the threshold shifts.

Thus, SRST appears to be helpful in elucidating the process of human adaptation to traumatic stress. With traumatic recovery demands the self-regulation challenges revolve around making sense of what has happened and finding a way forward. In suicidal individuals the challenge is between choosing to live or take one's life, where self-regulation takes center stage.

Suicidal ideation/behavior

Suicidal ideation and acts have been rising (Han et al., 2018; Plemmons et al., 2018) across the U.S. with an individual taking their life every 11 s (Center for Disease Control and Prevention, 2022). Many people think about suicide, but not all individuals who contemplate the idea engage in suicidal behavior (Fergusson et al., 2003; Have et al., 2009). Predicting who will make this shift has been the holy grail for suicide researchers. Significant literature exists separating suicidal from non-suicidal individuals (Klonsky & May, 2010; Taliaferro & Muehlenkamp, 2014; Wyder & De Leo, 2007). However, it has been more difficult to determine who will actually take the step to take one's life.

Researchers have begun to unravel this by looking at the dynamics of suicidal ideation and behavior across time in a more detailed manner (Bryan & Rudd, 2016; Rogers & Joiner, 2019). These researchers suggested suicidality is a nonlinear process demonstrated by complexity and variation across time. Indeed, greater variation in suicidal ideation over time (e.g., hours, days, weeks) predicted greater risk for suicidal behavior and multiple attempts (Bryan et al., 2019; Bryan & Rudd, 2018). Importantly, the inability to self-regulate uniquely predicted suicidal behavior during high stress (Choi et al., 2013) and low stress (Briere et al., 2019) environments. Thus, effective self-regulation is critical to (a) mitigate intensity and variability in suicidal ideation across time and (b) prevent the transition from suicidal ideation to behavior. The interpersonal theory of suicide and the fluid vulnerability theory of suicide offer important perspectives for determining who will engage in suicidal behavior.

SRST and contemporary theories of suicide behavior

Contemporary theories of suicide provide important perspectives on self-regulation and our understanding of suicidal behaviors. The interpersonal theory of suicide (IPTS) outlines three primary contributors to suicide risk (Van Orden et al., 2010): (1) perceived burdensomeness, (2) thwarted belongingness, and (3) capability to commit suicide. IPTS posits that suicidal ideation is promoted by a sense of perceived burdensomeness to others and a sense of social isolation or lack of belonging. Indeed, social isolation has been shown to have one of the strongest and most reliable correlates

of suicidal ideation, attempt, and completion (Van Orden et al., 2010). When added to a belief in one's ability to commit suicide, the risk for suicide completion is greater based on IPTS.

Meta-analytic findings provide overall support for the importance of burdensomeness, belongingness, and perceived capability in prediction of ideation and suicide completion (Chung et al., 2017). However, the size of the interactive effects (exclusive of lower order effects) among these factors were weak to moderate pointing to the need for theoretical refinement. Chu et al. suggested hopelessness related to burden and belonging as a potentially important factor that has not been extensively studied. The inclusion of perceived hopelessness in relation to these factors directly places this theory in the realm of self-regulation and SRST. Personal agency is central to SRST and is built from a strong sense of capability for managing one's current challenges. Hopelessness appraisals, the antithesis of personal agency, related to burden and isolation reflect the SRST self-determination violation specific to one's value as a human being. These hopeless appraisals, as theorized in SRST, portend an impending critical threshold moving from ideation to action. Fluid vulnerability theory takes a further step in clarifying the dynamic nature of the self-regulation process underlying suicide (Rudd, 2006).

Fluid vulnerability theory (FVT) initially proposed that suicide risk is based on the interaction of predisposition toward suicide (baseline factors) with dynamic environmental triggers that can move someone toward greater suicide risk (Rudd, 2006). Bryan et al. (2020) extended this work by adopting a dynamical systems perspective. Bryan et al. argued that in system dynamics when one part of a system is knocked off balance the other components respond to regain homeostasis. However, under certain conditions the system can be pushed toward a threshold (i.e., destabilized) where it can shift to a new state. Obviously, SRST also draws from this same dynamical systems perspective.

Rudd as well as Bryan et al. outlined the self-regulatory process of general coping with challenging environmental and internal stressors as an individual seeks to regain emotional balance. They highlight how more suicide risk predispositions (e.g., previous suicide attempts, demographics, trauma history) increases the likelihood of being triggered by environmental conditions (e.g., social rejection, stress). Suicidal emergence (i.e., ideation, plan, attempt) from the Bryan et al. systems perspective emerges through the fluid self-regulation process leading to a shift in state where the individual becomes actively suicidal. Bryan et al. utilize cusp catastrophe modeling (also utilized in testing SRST) to identify static and fluctuating variables that contribute to nonlinear shifts such as moving from suicidal ideation to action. The authors suggested that the interaction of predispositions (i.e., preexisting suicide risk) with environmental and internal triggers funnels through self-regulative processes in predicting differential nonlinear trajectories and threshold shifts towards suicidal behavior. For example, adequate self-regulatory capabilities would help promote healthy coping strategies to remain in *homeostasis* or a low-risk state of suicidality. However, if self-regulatory processes are disrupted, then a person may shift to higher suicidal risk and actual suicidal behavior. SRST offers important underlying self-regulatory dynamics for this threshold shift (see Benight et al., 2017, p. 2018).

SRST asserts that CSE is a central component in self-regulatory processes (Benight et al., 2017). If a person perceives that the environmental coping demands outweigh one's capabilities, the foundation of personal agency is compromised. This self-determination violation moves the individual to a critical threshold where nonlinear shifts ensue (e.g., chaotic coping behaviors, suicidal actions). Indeed, this process outlined in SRST shines a light on the juncture where ideation accelerates to the lethal level. The interaction between predispositions and environmental triggers operates through self-appraisals of CSE driving the bifurcation between choosing to stay alive or take one's life.

Adapted from Bryan and colleagues (2020) and taking IPTS into consideration, SRST is applied to suicidal emergence using three specific trajectories. A *stable* trajectory may reflect a pattern of sustained coping self-efficacy. This may be particularly evident for individuals with low environmental stress or for individuals who have had consistent success with managing stress. The dynamic process

of effective self-regulation keeps these individuals from acting on their suicidal thoughts based on the perception of high capability for dealing with feelings of hopelessness and isolation. The effective management of these cognitive and possible environmental challenges would keep the self-determination violation at bay without progression towards suicidal behavior.

A *dysregulated* trajectory (Bryan et al., 2020), we would argue, reflects a pattern of instability with coping self-efficacy. This may be particularly evident for individuals with persistent cycles of environmental stress who have had inconsistent success with managing stress. Individuals in this trajectory will face repeated challenges to their sense of personal agency leading to a significant wavering of their CSE beliefs. An example of this trajectory would be a graduate student who is struggling to meet the consistent high level scholastic demands leading to repeated challenges to their perceived efficacy, an increase in maladaptive coping behaviors (e.g., alcohol intake), and an enhanced social isolation. The instability of perceived coping capabilities would slowly push the individual towards their critical self-determination threshold. Once the perceived challenges exceed the individual's belief in their ability to cope, a personal agency crisis is reached and the probability for a suicidal plan and suicidal behavior drastically increases.

Lastly, a *discontinuous* trajectory (Bryan et al., 2020), which the cusp suggests may be driven by relatively small changes in CSE when CSE is low results in a sudden drop in well-being. In almost all cases, this is followed quickly by a further sudden drop in CSE as the individual struggles to self-regulate. This trajectory would be most evident for individuals with a rapid onset of severe environmental stress. Individuals in this trajectory experience the severe stress as inescapable and reach their critical threshold abruptly losing any perception that they have sufficient coping capabilities. For instance, an individual with a predisposition to depression who suffers a motor vehicle crash resulting in life altering physical injuries would be at extreme risk for rapidly experiencing the self-determination violation effect and enacting suicidal behavior.

It is important to note that some individuals in this discontinuous trajectory may also have persistently low levels of coping self-efficacy even with low levels of environmental stress (i.e., history of childhood abuse). Similar to findings from Briere and colleagues (2019), if an individual perceives limited or no coping self-efficacy, even minor stress could result in a self-determination violation and an abrupt shift toward suicidal behavior. One could argue that these individuals could be considered a separate rapid shift trajectory.

SRST has demonstrated some initial utility of applying nonlinear methodology to understand self-regulatory processes with trauma recovery. In relation to suicidality, SRST offers a framework for understanding the self-regulatory processes that complement and extend the existing theories of suicide. SRST's explanatory model for dynamic self-regulation processes may assist in the prediction of threshold shifts towards suicidal behavior, which is essential for prevention and intervention efforts. As SRST may provide important information for self-directed violence, it may also be helpful for violence directed towards others.

Violent behavior

Interpersonal violence is a significant problem in the U.S. and beyond including mass shootings, race-based attacks, and intimate partner outbursts. Violent behavior is particularly costly. Whereas most forms of violent crime in the United States have decreased over time (Morgan & Truman, 2020), violent crime increased between 2020 and 2021 by 5.6% (FBI, 2021) and is continuing to go up (Rosenfeld & Lopez, 2021). This uptick in violent crime, the impact on individuals and families, and the substantial fiscal impact highlight the need to understand how violent outbursts occur.

In contrast with premeditated violence, our focus in this essay is on impulsive or reactive violent behaviors where an individual is unable to maintain behavioral control (Barratt, 1991; Swogger et al., 2015). This poor self-regulation may result from a host of factors including a history of trauma, brain injury, substance use, or some combination of these (Alford et al., 2020), many of which are also contributors to suicide risk. Understanding the self-regulatory failure underlying impulsive violent

outbursts has important implications for violence prevention (e.g., early warning pre-violence) and post-violence interventions. We argue that self-regulation impairment, as a key component of SRST, is a focal point for understanding impulsive violent behavior.

Research on community, clinical, and offender populations has consistently highlighted that ineffective emotion regulation is a key factor involved in violent outbursts (Ammerman et al., 2015; Davidson et al., 2000; Miles et al., 2015; Miles et al., 2016), importantly also with suicidal behavior (Ammerman et al., 2015). Among the various facets of emotion dysregulation, poor ability to control impulses when highly emotionally charged was particularly important in predicting aggressive behavior. Specifically anger regulation (Ammerman et al., 2015) – and to a lesser extent shame (see Velotti et al., 2014 for review) – has been a primary focus in the literature demonstrating that level of anger mediated associations between emotion dysregulation and greater aggressive behavior (Stefanile et al., 2021).

Whereas the impulsive aggression literature has provided some understanding of predictors for impulsive violence, this literature has limited theoretical foundation. The General Aggression Model (GAM; Anderson & Bushman, 2002) and I^3 Theory (Slotter & Finkel, 2011) have provided frameworks for understanding the interaction between person and the environment that increases the propensity for impulsive violence. As we review these theories, we suggest how SRST can offer important contributions to understanding self-regulatory limits.

SRST and theoretical approaches to violent behavior

The GAM (Anderson & Bushman, 2002) is an overarching theory of aggressive or violent behavior. The theory integrates personal (e.g., values) and situational (e.g., provocation) factors processed through one's emotional state and cognitive appraisals that lead to impulsive violence. Attribution appraisals of others' behaviors, intention to retaliate, and anger-related affect are thought to precede violent behavior. Provided proper internal resources (e.g., cognitive capacity) and inadequate motivation to pursue violent behavior, violent outbursts are avoided. However, the motivational process is limitedly explained within GAM. SRST provides motivational mechanisms driven by self-regulatory dysregulation.

This immediate appraisal process is thought to be automatic within GAM, with little consideration for the underlying self-regulation process outlined in SRST that is unfolding across time. We argue that the dysregulation resulting from intense emotion leads to perceptions of personal helplessness (i.e., a self-determination violation). Given the right mix of precipitating factors (i.e., personal and provocative factors), SRST suggests the most proximal coping demand would be the ability to retain control over oneself and the threatening environment (i.e., stable state). However, perceiving oneself as incapable to manage this demand would reflect a sense of personal helplessness. Consistent with Bryan et al.'s (2020) perspective, this helplessness would result in a dysregulated destabilized system and increase the likelihood of shifting to another state. Thus, individuals will be at high risk for violence when faced with the three-way interaction uniting lower perceived efficacy for not engaging in violence, intense negative emotions (e.g., anger, helplessness, fear, shame), and triggering environmental cues pushing the system to a critical threshold and violent behavior.

The cusp model applied to impulsive violence includes both continuous and discontinuous changes. Depending upon the combination of CSE level and asymmetry (e.g., degree of negative emotion), a person may experience relatively gentle changes (when CSE is higher) or drastic ones (when CSE is lower). SRST posits that the required combination/threshold for discontinuous change is a low CSE and high negative emotion.

Several studies of adolescent offenders offer insight into the emergence of violent behavior. These studies highlight the role of self-efficacy appraisals and the ability to regulate through nonviolent means as a mechanism through which violent behavior may emerge (Caprara et al., 2002; Jaggers et al., 2007; McMahon et al., 2009). SRST emphasizes that the nonlinear shift towards impulsive violent behavior is grounded in a desperate attempt to regain control (i.e., re-establish personal

agency). The focus on the self-regulation process as it evolves across time is also a missing piece for I^3 Theory.

I^3 Theory (Slotter & Finkel, 2011) focuses on the interactions among various factors associated with increased or decreased likelihood of violence, including instigating triggers, impelling forces, and inhibiting forces. *Instigating triggers* involve situational aspects that may provoke violent behavior. *Impelling forces* refers to situational or dispositional factors that increase the readiness for the individual to react violently (e.g., dispositional hostility), whereas *inhibiting forces* assist in overriding the impulse to react violently (e.g., cognitive executive functioning). Violent behavior results from an imbalance between impelling forces and inhibiting forces with greater instigating factors pushing the system toward violence. Missing from the I^3 theory is the mechanism through which this critical tipping point occurs. SRST offers a critical piece of the puzzle with specific dynamics related to cognitive executive control.

As with the application of SRST to GAM, SRST suggests that individuals who have reached a threshold at which they no longer perceive themselves as capable of self-regulating without resorting to violent behavior lose the capacity to engage cognitive executive control that inhibits aggression. Factors related to one's history (e.g., brain injury, trauma history) as well as one's current circumstances (e.g., substance use, anger), may push individuals over the edge of this tipping point leading to a shift away from executive control to dysregulation. Once this shift occurs, violent outbursts are more likely to occur.

Summary

For both suicide and violence research, SRST offers important underlying self-regulatory processes that promote suicide and impulsive violent behaviors as they emerge across time. Adopting a nonlinear dynamical systems perspective for both suicide (as proposed by Bryan et al., 2020) and impulsive violence offers new frontiers for theoretical and research method advancements. SRST provides a testable model for how self-appraisal processes promote critical nonlinear dynamic shifts that are central to suicide and impulsive violence.

Time series data from those at risk for suicide as well as violent and non-violent offenders provide opportunities to examine these dynamics. Coppersmith et al. (2019) conducted an interesting ecological momentary assessment (EMA) study gathering daily social support ratings on individuals at high risk for suicide. Critical information on social support fluctuations were found over a 28-day period. For understanding violence, another EMA study of juvenile offenders' day-to-day changes in self-reported negative affect, impulsivity, antisocial behavior, and fear of punishment, as well as staff-reported antisocial behavior were successfully collected (Pihet et al., 2015). Humber and colleagues (2013) similarly demonstrated the feasibility of collecting daily self-reports from adult male inmates. Such rich sources of data, which may be examined in conjunction with historical data, may be used to capture the dynamic processes relating to self-regulation and violence, as well as the precipitating factors that instigate a nonlinear, discontinuous shift into a dysregulated state (see Bryan et al., 2020; Burge et al., 2016; & Katerndahl et al., 2021). Linear statistical approaches used to test these theories do not adequately capture the dynamic interactions that emerge across time when trying to identify the nonlinearity of trauma recovery, suicide, or violent behavior. Cusp catastrophe modeling (Wagenmakers et al., 2005), Markov regime switching analyses (Merrill, 2011), time-varying network analyses (Isvoranu et al., 2022), and orbital decomposition (Guastello et al., 2011) analyses offer important methods to consider. These approaches were designed for time-series data analyses and hence address the multi-level nature of nested data structure in time-series data.

Ultimately, research focusing on these dynamic self-regulation processes across time may offer important opportunities to develop early warning systems (EWS) for posttraumatic maladaptation, suicidal behaviors, and impulsive violence. EWS predictions have been used extensively in ecology (Scheffer et al., 2009) and more recently in medicine (e.g., multiple sclerosis; Twose et al.,

2020) and psychology (e.g., Dablander et al., n.d.; Helmich et al., 2021; Schreuder et al., 2020; Wichers & Groot, 2016) to anticipate sudden changes in a system's behavior. However, this area of research is relatively new to psychology and would benefit from theoretically driven studies (Helmich et al., 2021). Such warning systems, if robust enough, could provide personal agency support to help the individual move back from a critical tipping point thereby reducing critical negative and possible life-threatening consequences. Research in this area, however, is still in its infancy; issues such as sampling frequency (e.g., how far in advance can an EWS be detected?) and sensitivity and specificity are still underdeveloped, yet advances have recently been offered (Viol et al., 2022).

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References

Alford, M., O'Rourke, S., Doyle, P., & Todd, P. (2020). Examining the factors associated with impulsivity in forensic populations: A systematic review. *Aggression and Violent Behavior*, *54*, 101409–10. https://doi.org/10.1016/j.avb.2020.101409

Ammerman, B. A., Kleiman, E. M., Uyeji, L. L., Knorr, A. C., & McCloskey, M. S. (2015). Suicidal and violent behavior: The role of anger, emotion dysregulation, and impulsivity. *Personality and Individual Differences*, *79*, 57–62. https://doi.org/10.1016/j.paid.2015.01.044

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology*, *53*(1), 27–51. https://doi.org/10.1146/annurev.psych.53.100901.135231

Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.

Barratt, E. S. (1991). Measuring and predicting aggression within the context of a personality theory. *The Journal of Neuropsychiatry and Clinical Neurosciences*, *3*(2), S35–S39.

Benight, C. C., & Bandura, A. (2004). Social cognitive theory of posttraumatic recovery: The role of perceived self-efficacy. *Behaviour Research and Therapy*, *42*(10), 1129–1148. https://doi.org/10.1016/j.brat.2003.08.008

Benight, C. C., Cieslak, R., Molton, I. R., & Johnson, L. E. (2008). Self-evaluative appraisals of coping capability and posttraumatic distress following motor vehicle accidents. *Journal of Consulting and Clinical Psychology*, *76*(4), 677–685. https://doi.org/10.1037/0022-006X.76.4.677

Benight, C. C., Freyaldenhoven, R., Hughes, J., Ruiz, J. M., Zoesche, T. A., & Lovallo, W. (2000). Coping self-efficacy and psychological distress following the Oklahoma City Bombing: A longitudinal analysis. *Journal of Applied Social Psychology*, *30*, 1331–1344.

Benight, C. C., Harding-Taylor, A. S., Midboe, A. M., & Durham, R. (2004). Development and psychometric validation of a domestic violence coping self-efficacy measure (DV-CSE). *Journal of Traumatic Stress*, *17*(6), 505–508. https://doi.org/10.1007/s10960-004-5799-3

Benight, C. C., & Harper, M. (2002). Coping self-efficacy perceptions as a mediator between acute stress response and long-term distress following natural disasters. *Journal of Traumatic Stress*, *15*(3), 177–186. https://doi.org/10.1023/A:1015295025950

Benight, C. C., Ironson, G., Klebe, K., Carver, C., Wynings, C., Greenwood, D., Burnett, K., Baum, A., & Schneiderman, N. (1999). Conservation of resources and coping self-efficacy predicting distress following a natural disaster: A causal model analysis where the environment meets the mind. *Anxiety Stress and Coping*, *12*, 107–126.

Benight, C. C., Shoji, K., & Delahanty, D. L. (2017). Self-Regulation shift theory: A dynamic systems approach to traumatic stress. *Journal of Traumatic Stress*, *30*(4), 333–342. https://doi.org/10.1002/jts.22208

Benight, C. C., Shoji, K., Harwell, A., & Felix, E. (2020). Non-linear dynamic shifts in distress after wildfires: Further tests of the self-regulation shift theory. *Frontiers in Psychology*, *11*), https://doi.org/10.3389/fpsyg.2020.551962

Benight, C. C., Shoji, K., Yeager, C. M., Weisman, P., & Boult, T. E. (2018). Predicting change in posttraumatic distress through change in coping self-efficacy after using the My trauma recovery eHealth intervention: Laboratory investigation. *JMIR Mental Health*, *5*(4), e10309. https://doi.org/10.2196/10309

Boker, S. M. (2001). Differential models and differential structural equation modeling of intraindividual variability. In L. M. Collins, & A. G. Sayer (Eds.), *New methods for the analysis of change* (pp. 5–27). American Psychological Association. https://doi.org/10.1037/10409-001

Bosmans, M. W. G., Benight, C. C., van der Knaap, L. M., Winkel, F. W., & van der Velden, P. (2013). The associations between coping self-efficacy and posttraumatic stress symptoms 10 years post-disaster: Differences between men and women. *Journal of Traumatic Stress*, *26*(2), 184–191. https://doi.org/10.1002/jts.21789

Bosmans, M. W. G., Hofland, H. W., De Jong, A. E., & Van Loey, N. E. (2015). Coping with burns: the role of coping self-efficacy in the recovery from traumatic stress following burn injuries. *Journal of Behavioral Medicine*, *38*(4), 642–651. https://doi.org/10.1007/s10865-015-9638-1

Briere, J., Kwon, O., Semple, R. J., & Godbout, N. (2019). Recent suicidal ideation and behavior in the general population. *Journal of Nervous & Mental Disease*, *207*(5), 320–325. https://doi.org/10.1097/NMD.0000000000000976

Bryan, C. J., Butner, J. E., May, A. M., Rugo, K. F., Harris, J., Oakey, D. N., Rozek, D. C., & Bryan, A. O. (2020). Nonlinear change processes and the emergence of suicidal behavior: a conceptual model based on the fluid vulnerability theory of suicide. *New Ideas in Psychology*, *57*, 100758–9. https://doi.org/10.1016/j.newideapsych.2019.100758

Bryan, C. J., Rozek, D. C., Butner, J., & Rudd, M. D. (2019). Patterns of change in suicide ideation signal the recurrence of suicide attempts among high-risk psychiatric outpatients. *Behaviour Research and Therapy*, *120*, 103392. https://doi.org/10.1016/j.brat.2019.04.001

Bryan, C. J., & Rudd, M. D. (2016). The importance of temporal dynamics in the transition from suicidal thought to behavior. *Clinical Psychology: Science and Practice*, *23*(1), 21–25. https://doi.org/10.1111/cpsp.12135

Bryan, C. J., & Rudd, M. D. (2018). Nonlinear change processes during psychotherapy characterize patients who have made multiple suicide attempts. *Suicide and Life-Threatening Behavior*, *48*(4), 386–400. https://doi.org/10.1111/sltb.12361

Burge, S. K., Katerndahl, D. A., Wood, R. C., Becho, J., Ferrer, R. L., & Talamantes, M. (2016). Using complexity science to examine three dynamic patterns of intimate partner violence. *Families, Systems, & Health*, *34*(1), 4–14. https://doi.org/10.1037/fsh0000170

Butner, J. E., Dyer, H. L., Malloy, T. S., & Kranz, L. V. (2014). Uncertainty in cost performance as a function of the cusp catastrophe in NASA program performance management. *Nonlinear Dynamics, Psychology, and Life Sciences*, *18*(4), 397–417.

Caprara, G. V., Regalia, C., & Bandura, A. (2002). Longitudinal impact of perceived self-regulatory efficacy on violent conduct. *European Psychologist*, *7*(1), 63–69. https://doi.org/10.1027//1016-9040.7.1.63

Carver, C. S. (1997). Dynamical social psychology: Chaos and catastrophe for all. *Psychological Inquiry*, *8*(2), 110–119. https://doi.org/10.1207/s15327965pli0802_4

Carver, C. S., & Scheier, M. F. (1982). Control theory: A useful conceptual framework for personality-social, clinical, and health psychology. *Psychological Bulletin*, *92*(1), 111–135. https://doi.org/10.1037/0033-2909.92.1.111

Carver, C. S., & Scheier, M. F. (2005). Engagement, disengagement, coping, and catastrophe. In A. J. Elliot, & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 527–547.

Center for Disease Control and Prevention. (2022). Preventing suicide [Fact sheet]. https://www.cdc.gov/suicide/pdf/NCIPC-Suicide-FactSheet.pdf.

Choi, K. H., Wang, S.-M., Yeon, B., Suh, S.-Y., Oh, Y., Lee, H.-K., Kweon, Y.-S., Lee, C. T., & Lee, K.-U. (2013). Risk and protective factors predicting multiple suicide attempts. *Psychiatry Research*, *210*(3), 957–961. https://doi.org/10.1016/j.psychres.2013.09.026

Chung, M. C., AlQarni, N., Al Muhairi, S., & Mitchell, B. (2017). The relationship between trauma centrality, self-efficacy, posttraumatic stress and psychiatric co-morbidity among Syrian refugees: Is gender a moderator? *Journal of Psychiatric Research*, *94*, 107–115. https://doi.org/10.1016/j.jpsychires.2017.07.001

Cieslak, R., Benight, C. C., & Lehman, V. C. (2008). Coping self-efficacy mediates the effects of negative cognitions on posttraumatic distress. *Behaviour Research and Therapy*, *46*(7), 788–798. https://doi.org/10.1016/j.brat.2008.03.007

Coppersmith, D. D. L., Kleiman, E. M., Glenn, C. R., Millner, A. J., & Nock, M. K. (2019). The dynamics of social support among suicide attempters: A smartphone-based daily diary study. *Behaviour Research and Therapy*, *120*, 103348–6. https://doi.org/10.1016/j.brat.2018.11.016

Dablander, F., Pichler, A., Cika, A., & Bacilieri, A. (n.d.). *Anticipating critical transitions in psychological systems using early warning signals: Theoretical and practical considerations*. *Psychological Methods*.

Davidson, R. J., Putnam, K. M., & Larson, C. L. (2000). Dysfunction in the neural circuitry of emotion regulation--A possible prelude to violence. *Science*, *289*, 591–594. https://doi.org/10.1126/science.289.5479.591

DeCou, C. R., Mahoney, C. T., Kaplan, S. P., & Lynch, S. M. (2019). Coping self-efficacy and trauma-related shame mediate the association between negative social reactions to sexual assault and PTSD symptoms. *Psychological Trauma: Theory, Research, Practice, and Policy*, *11*(1), 51–54. https://doi.org/10.1037/tra0000379

Federal Bureau of Investigation. (2021, September 27). FBI releases 2020 crime statistics [Press release]. https://www.fbi.gov/news/pressrel/press-releases/fbi-releases-2020-crime-statistics.

Fergusson, D. M., Beautrais, A. L., & Horwood, L. J. (2003). Vulnerability and resiliency to suicidal behaviours in young people. *Psychological Medicine*, *33*(1), 61–73. https://doi.org/10.1017/S0033291702006748

Festinger, L. (1957). *A theory of cognitive dissonance*. Row, Peterson.

Flatten, G., Walte, D., & Perlitz, V. (2008). Self-efficacy in acutely traumatized patients and the risk of developing a post-traumatic stress syndrome. *Psycho-Social Medicine*, *5*, 1–8.

Ford, D. H. (1987). *Humans as self-constructing living systems: A developmental perspective on behavior and personality*. Erlbaum.

Gallagher, M. W., Long, L. J., & Phillips, C. A. (2020). Hope, optimism, self-efficacy, and posttraumatic stress disorder: A meta-analytic review of the protective effects of positive expectancies. *Journal of Clinical Psychology*, *76*(3), 329–355. https://doi.org/10.1002/jclp.22882

Guastello, S. J. (1988). Catastrophe modeling of the accident process: Organizational subunit size. *Psychological Bulletin*, *103*(2), 246–255. https://doi.org/10.1037/0033-2909.103.2.246

Guastello, S. J., Koopmans, M., & Pincus, D. (2008). *Chaos and complexity in psychology: The theory of nonlinear dynamical systems*. Cambridge University Press.

Guastello, S. J., Peressini, A. F., & Bond Jr, R. W. (2011). Orbital decomposition for ill-behaved event sequences: Transients and superordinate structures. *Nonlinear Dynamics, Psychology, and Life Sciences*, *15*(4), 465–476.

Han, B., Compton, W. M., Blanco, C., Colpe, L., Huang, L., & McKeon, R. (2018). National trends in the prevalence of suicidal ideation and behavior among young adults and receipt of mental health care among suicidal young adults. *Journal of the American Academy of Child & Adolescent Psychiatry*, *57*(1), 20–27.e2. https://doi.org/10.1016/j.jaac.2017.10.013

Have, M. T., De Graaf, R., Van Dorsselaer, S., Verdurmen, J., Van't Land, H., Vollebergh, W., & Beekman, A. (2009). Incidence and course of suicidal ideation and suicide attempts in the general population. *The Canadian Journal of Psychiatry*, *54* (12), 824–833. https://doi.org/10.1177/070674370905401205

Helmich, M. A., Olthof, M., Oldehinkel, A. J., Wichers, M., Bringmann, L. F., & Smit, A. C. (2021). Early warning signals and critical transitions in psychopathology: Challenges and recommendations. *Current Opinion in Psychology*, *41*, 51–58. https://doi.org/10.1016/j.copsyc.2021.02.008

Hirschel, M. J., & Schulenberg, S. E. (2009). Hurricane Katrina's impact on the Mississippi Gulf Coast: General self-efficacy's relationship to PTSD prevalence and severity. *Psychological Services*, *6*(4), 293–303. https://doi.org/10.1037/a0017467

Humber, N., Emsley, R., Pratt, D., & Tarrier, N. (2013). Anger as a predictor of psychological distress and self-harm ideation in inmates: A structured self-assessment diary study. *Psychiatry Research*, *210*(1), 166–173. https://doi.org/10.1016/j.psychres.2013.02.011

Isvoranu, A.-M., Epskamp, S., Waldorp, L. J., & Borsboom, D. (2022). *Network psychometrics with R: A guide for behavioral and social scientists*. Routledge. https://doi.org/10.4324/9781003111238

Jaggers, R. J., Morgan-Lopez, A. A., Howard, T. L., Browne, D. C., Flay, B. R., & Aya, A. (2007). Mediators of the development and prevention of violent behavior. *Prevention Science*, *8*(3), 171–179. https://doi.org/10.1007/s11121-007-0067-4

Katerndahl, D., Burke, S. K., Villacampa, M. P. M., Becho, J., & Rodriguez, J. (2021). Violence towards women and their decisions to take action: A complex systems approach. *Medical Hypotheses*, *151*, 1–11. https://doi.org/10.1016/j.mehy.2021.110589

Klonsky, E. D., & May, A. (2010). Rethinking impulsivity in suicide. *Suicide and Life-Threatening Behavior*, *40*(6), 612–619. https://doi.org/10.1521/suli.2010.40.6.612

Lambert, J. E., Benight, C. C., Wong, T., & Johnson, L. E. (2013). Cognitive bias in the interpretation of physiological sensations, coping self-efficacy, and psychological distress after intimate partner violence. *Psychological Trauma: Theory, Research, Practice, and Policy*, *5*(5), 494–500. https://doi.org/10.1037/a0029307

Levy, L. R., Yao, W., McGuire, G., Vollick, D. N., Jette, J., Shanahan, M. J., Hay, J. M., & Neufeld, R. W. J. (2012). Nonlinear bifurcations of psychological stress negotiation: New properties of a formal dynamical model. *Nonlinear Dynamics, Psychology, and Life Sciences*, *16*(4), 429–456.

Luszczynska, A., Benight, C. C., & Cieslak, R. (2009). Self-efficacy and health-related outcomes of collective trauma. *European Psychologist*, *14*(1), 51–62. https://doi.org/10.1027/1016-9040.14.1.51

Mahoney, C. T., Lynch, S. M., & Benight, C. C. (2021). The indirect effect of coping self-efficacy on the relation between sexual violence and PTSD symptoms. *Journal of Interpersonal Violence*, *36*(21-22), 9996–10012. https://doi.org/10.1177/0886260519881525

McMahon, S. D., Felix, E. D., Halpert, J. A., & Petropoulos, L. A. N. (2009). Community violence exposure and aggression among urban adolescents: Testing a cognitive mediator model. *Journal of Community Psychology*, *37*(1), 895–910. https://doi.org/10.1002/jcop.20339

Merrill, S. J. (2011). Markov chains for identifying nonlinear dynamics. In S. J. Guastello, & R. A. M. Gregson (Eds.), *Nonlinear dynamical systems analysis for the behavioral sciences using real data* (pp. 401–424). Taylor & Francis Group.

Miles, S. R., Menefee, D. S., Wanner, J., Tharp, A. T., & Kent, T. A. (2016). The relationship between emotion dysregulation and impulsive aggression in veterans with posttraumatic stress disorder symptoms. *Journal of Interpersonal Violence*, *31*(10), 1795–1816. https://doi.org/10.1177/0886260515570746

Miles, S. R., Tharp, A. T., Stanford, M., Sharp, C., Menefee, D., & Kent, T. A. (2015). Emotion dysregulation mediates the relationship between traumatic exposure and aggression in healthy young women. *Personality and Individual Differences*, *76*, 222–227. https://doi.org/10.1016/j.paid.2014.11.058

Miller, T. R., Cohen, M. A., Swedler, D. I., Ali, B., & Hendrie, D. V. (2020). Incidence and costs of personal and property crimes in the United States, 2017. https://ssrn.com/abstract=3514296.

Morgan, R. E., & Truman, J. L. (2020). *Criminal victimization, 2019*. U.S. Department of Justice Bureau of Justice Statistics. https://bjs.ojp.gov/content/pub/pdf/cv19.pdf

Neufeld, R. W. J. (1999). Dynamic differentials of stress and coping. *Psychological Review*, *106*(2), 385–397. https://doi.org/10.1037/0033-295X.106.2.385

Norris, F. H. (1992). Epidemiology of trauma: Frequency and impact of different potentially traumatic events on different demographic groups. *Journal of Consulting and Clinical Psychology*, *60*(3), 409–418. https://doi.org/10.1037/0022-006X.60.3.409

Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2008). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Trauma: Theory, Research, Practice, and Policy*, *S*(1), 3–36. https://doi.org/10.1037/1942-9681.S.1.3

Pihet, S., Etter, S., Schmid, M., & Kimonis, E. R. (2015). Assessing callous-unemotional traits in adolescents: Validity of the inventory of callous-unemotional traits across gender, age, and community/institutionalized status. *Journal of Psychopathology and Behavioral Assessment*, *37*, 407–421.

Plemmons, G., Hall, M., Doupnik, S., Gay, J., Brown, C., Browning, W., Casey, R., Freundlich, K., Johnson, D. P., Lind, C., Rehm, K., Thomas, S., & Williams, D. (2018). Hospitalization for suicide ideation or attempt: 2008-2015. *Pediatrics*, *141*, 1–10. https://doi.org/10.1542/peds.2017-2426

Rogers, M. L., & Joiner, T. E. (2019). Exploring the temporal dynamics of the interpersonal theory of suicide constructs: A dynamic systems modeling approach. *Journal of Consulting and Clinical Psychology*, *87*(1), 56–66. https://doi.org/10.1037/ccp0000373

Rosenfeld, R., & Lopez, E. (2021). *Pandemic, social unrest, and crime in U.S. cities: June 2021 update*. Council on Criminal Justice.

Rudd, M. D. (2006). Fluid vulnerability theory: A cognitive approach to understanding the process of acute and chronic suicide risk. In T. E. Ellis (Ed.), *Cognition and suicide: Theory, research, and therapy* (pp. 355–368). American Psychological Association.

Ryan, O., & Dablander, F. (2022). Equilibrium Causal Models: Connecting Dynamical Systems Modeling and Cross-Sectional Data Analysis. https://doi.org/10.31234/osf.io/q4d9g

Scheffer, M., Bascompte, J., Brock, W. A., Brovkin, V., Carpenter, S. R., Dakos, V., Held, H., van Nes, E. H., Rietkerk, M., & Sugihara, G. (2009). Early-warning signals for critical transitions. *Nature*, *461*(7260), 53–59. https://doi.org/10.1038/nature08227

Schönfeld, P., Preusser, F., & Margraf, J. (2017). Costs and benefits of self-efficacy: Differences of the stress response and clinical implications. *Neuroscience & Biobehavioral Reviews*, *75*, 40–52. https://doi.org/10.1016/j.neubiorev.2017.01.031

Schreuder, M. J., Hartman, C. A., George, S. V., Menne-Lothmann, C., Decoster, J., van Winkel, R., Delespaul, P., De Hert, M., Derom, C., Thiery, E., Rutten, B. P. F., Jacobs, N., van Os, J., Wigman, J. T. W., & Wichers, M. (2020). Early warning signals in psychopathology: What do they tell? *BMC Medicine*, *18*(1), 1–11. https://doi.org/10.1186/s12916-020-01742-3

Sheeran, P., Maki, A., Montanaro, E., Avishai-Yitshak, A., Bryan, A., Klein, W. M. P., Miles, E., & Rothman, A. J. (2016). The impact of changing attitudes, norms, and self-efficacy on health-related intentions and behavior: A meta-analysis. *Health Psychology*, *35*(11), 1178–1188. https://doi.org/10.1037/hea0000387

Shoji, K., Cieslak, R., Smoktunowicz, E., Rogala, A., Benight, C. C., & Luszczynska, A. (2016). Associations between job burnout and self-efficacy: A meta-analysis. *Anxiety, Stress, & Coping*, *29*(4), 367–386. https://doi.org/10.1080/10615806.2015.1058369

Singer, M. J., Humphreys, K. L., & Lee, S. S. (2016). Coping self-efficacy mediates the association between child abuse and ADHD in adulthood. *Journal of Attention Disorders*, *20*(8), 695–703. https://doi.org/10.1177/1087054712465337

Slotter, E. B., & Finkel, E. J. (2011). I^3 theory: Instigating, impelling, and inhibiting factors in aggression. In P. R. Shaver, & M. Mikulincer (Eds.), *Human aggression and violence: Causes, manifestations, and consequences* (pp. 35–52). American Psychological Association. https://doi.org/10.1037/12346-002

Smith, A., Benight, C. C., & Cieslak, R. (2013). Social support and postdeployment coping self-efficacy as predictors of distress among combat veterans. *Military Psychology*, *25*(5), 452–461. https://doi.org/10.1037/mil0000013

Solomon, Z., Benbenishty, R., & Mikulincer, M. (1991). The contribution of wartime, pre-war, and post-war factors to self-efficacy: A longitudinal study of combat stress reaction. *Journal of Traumatic Stress*, *4*(3), 345–361. https://doi.org/10.1002/jts.2490040304

Stefanile, C., Matera, C., Nerini, A., Puddu, L., & Raffagnino, R. (2021). Psychological predictors of aggressive behavior among men and women. *Journal of Interpersonal Violence*, *36*(1-2), NP920–NP941. https://doi.org/10.1177/0886260517737553

Swogger, M. T., Walsh, Z., Christie, M., Priddy, B. M., & Conner, K. R. (2015). Impulsive versus premeditated aggression in the prediction of violent criminal recidivism. *Aggressive Behavior*, *41*(4), 346–352. https://doi.org/10.1002/ab.21549

Taliaferro, L. A., & Muehlenkamp, J. J. (2014). Risk and protective factors that distinguish adolescents who attempt suicide from those who only consider suicide in the past year. *Suicide and Life-Threatening Behavior*, *44*(1), 6–22. https://doi.org/10.1111/sltb.12046

Talsma, K., Schüz, B., Schwarzer, R., & Norris, K. (2018). I believe, therefore I achieve (and vice versa): A meta-analytic cross-lagged panel analysis of self-efficacy and academic performance. *Learning and Individual Differences*, *61*, 136–150. https://doi.org/10.1016/j.lindif.2017.11.015

Twose, J., Licitra, G., McConchie, H., et al. (2020). Early-warning signals for disease activity in patients diagnosed with multiple sclerosis based on keystroke dynamics. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, *30*, 113133. https://doi.org/10.1063/5.0022031

Valois, R. F., Zullig, K. J., & Hunter, A. A. (2015). Association between adolescent suicide ideation, suicide attempts and emotional self-efficacy. *Journal of Child and Family Studies*, *24*(2), 237–248. https://doi.org/10.1007/s10826-013-9829-8

Van Orden, K. A., Witte, T. K., Cukrowicz, K. C., Braithwaite, S. R., Selby, E. A., & Joiner Jr, T. E. (2010). The interpersonal theory of suicide. *Psychological Review*, *117*(2), 575. https://doi.org/10.1037/a0018697

Velotti, P., Elison, J., & Garofalo, C. (2014). Shame and aggression: Different trajectories and implications. *Aggression and Violent Behavior*, *19*(4), 454–461. https://doi.org/10.1016/j.avb.2014.04.011

Viol, K., Schöller, H., Kaiser, A., Fartacek, C., Aichhorn, W., & Schiepek, G. (2022). Detecting pattern transitions in psychological time series – A validation study on the Pattern Transition Detection Algorithm (PTDA). *PLOS ONE*, *17*(3), e0265335. https://doi.org/10.1371/journal.pone.0265335

Wadsworth, M. E., Santiago, C. D., & Einhorn, L. (2009). Coping with displacement from Hurricane Katrina: predictors of one-year post-traumatic stress and depression symptom trajectories. *Anxiety, Stress & Coping*, *22*(4), 413–432. https://doi.org/10.1080/10615800902855781

Wagenmakers, E.-J., Molenaar, P. C. M., Grasman, R. P. P. P., Hartelman, P. A. I., & van der Maas, H. L. J. (2005). Transformation invariant stochastic catastrophe theory. *Physica D: Nonlinear Phenomena*, *211*(3-4), 263–276. https://doi.org/10.1016/j.physd.2005.08.014

Wichers, M., Groot, P. C., & Psychosystems, ESM Group, EWS Group (2016). Critical slowing down as a personalized early warning signal for depression. *Psychotherapy and Psychosomatics, 85*(2), 114–116. https://doi.org/10.1159/000441458

Wyder, M., & De Leo, D. (2007). Behind impulsive suicide attempts: Indications from a community study. *Journal of Affective Disorders*, *104*(1-3), 167–173. https://doi.org/10.1016/j.jad.2007.02.015