Literature Review Request

Requestor (becky.stoll@centerstone.org)
e. Samantha.Barstack@centerstone.org
p.

Date Requested: 8/30/2024
Deadline: 10/4 /2024

Date Submitted: 10/2 /2024

Question in Review: Is there any literature that outlines the neuropsychological impacts of crisis events on decision-making, self-efficacy, and accessing care?

Reason for Request: Crisis Standardization

Office of Psychology | Department of Clinical Program Development

Literature Reviewer:
Samantha Barstack, MEd, LPC-MHSP (temp)

Step 1 | Pre-Work: Information Gathering
Step 2 | Literature Review
Step 3 | Research Synthesis + Recommendations

Report Reviewers:
Neesha Roberts, M.S., LPC-MHSP, *Manager, Clinical Program Development*
Shane Kuhlman, PhD, *Chief Psychology Officer & Licensed Psychologist*

Executive Summary: This literature review focuses on the neurobiological underpinnings of crisis events and how the brain is impacted in way that may interfere with help-seeking behaviors. The literature highlights that a singular crisis event can impact the brain enough to impair the prefrontal cortex and more consistent acute stress can have significant long-term impairment. There is very little literature available, and the limited research was extrapolated to meet the needs of this review. The research indicates that psychological first aid, an evidence-supported trauma response, is likely an effective approach. Psychological first aid, specifically the Six C's approach, can improve functioning of the prefrontal cortex and boost self-empowerment and self-efficacy.

Step 1 | Pre-Work: Information Gathering

Step 2 | Literature Review

1. Research Question
2. Question in Review: Is there any literature that outlines the neuropsychological impacts of crisis events on decision-making, self-efficacy, and accessing care?

3. Keywords

   Neurobiological Underpinnings, Crisis Events, Acute Stress, Psychological First Aid, Self-Efficacy

4. Scope of Review

   Number of Site-Reviewed Abstracts: 21
   Number of Years Covered: 15
   Number of Reviewed Abstracts (with no full text) included due to Relevance: 10
   Number of Studies Reviewed: 11

   Sources of Reviewed Abstracts:

   NCBI
   MEDLINE with Full Text
   Wiley
   Medicaid

   Sources of Reviewed Studies:

5. Databases Selected for All Searches

   Social Sciences Full Text (H.W. Wilson)
   APA PsycArticles
   Health Business Elite
   NCBI
   MEDLINE with Full Text
   Wiley

6. See other file for abstracts and articles reviewed.

The SIX Cs model for Immediate Cognitive Psychological First Aid: From Helplessness to Active Efficient Coping (researchgate.net)

Step 3 | Conclusion + Recommendations

Conclusion

Crisis hotlines can be used by individuals who have never reached out for help or by those who have multiple episodes of crisis who then do not engage in the services referred through these crisis lines or mobile crisis services. As a result, Centerstone has begun to implement three different pathways for individuals who are receiving post-crisis follow-up services. The first pathway is the "De-escalation" pathway, where the individual is at higher risk of suicide. The focus of this pathway is on helping the person reach a pre-crisis state while checking on their current safety plan's effectiveness. For this pathway, follow-up is generally completed within 72 hours. Based on our decade of experience conducting post-crisis follow-up, we saw the need to develop two additional pathways for individuals who are not at an immediate suicide risk. The second pathway is the "Resource" pathway. This pathway involves longer connection with the individual to address the potential contextual challenges that are contributing to the crisis and to reduce the barriers to service linkage. The goal is to provide education and connection so that the individuals on this pathway are more likely to utilize the services offered to them. The final pathway is the "Service Linkage" pathway, which involves more short-term case management-type activities, where barriers to services are addressed and connection with referral services are followed-up on. The ongoing challenge of some individuals not utilizing referral and follow-up services in the days after crisis services contact has necessitated the question of how a crisis can have short-term and potentially longer-term neurobiological impact on the brain that can potentially influence whether a person has the necessary faculties to utilize the services available.

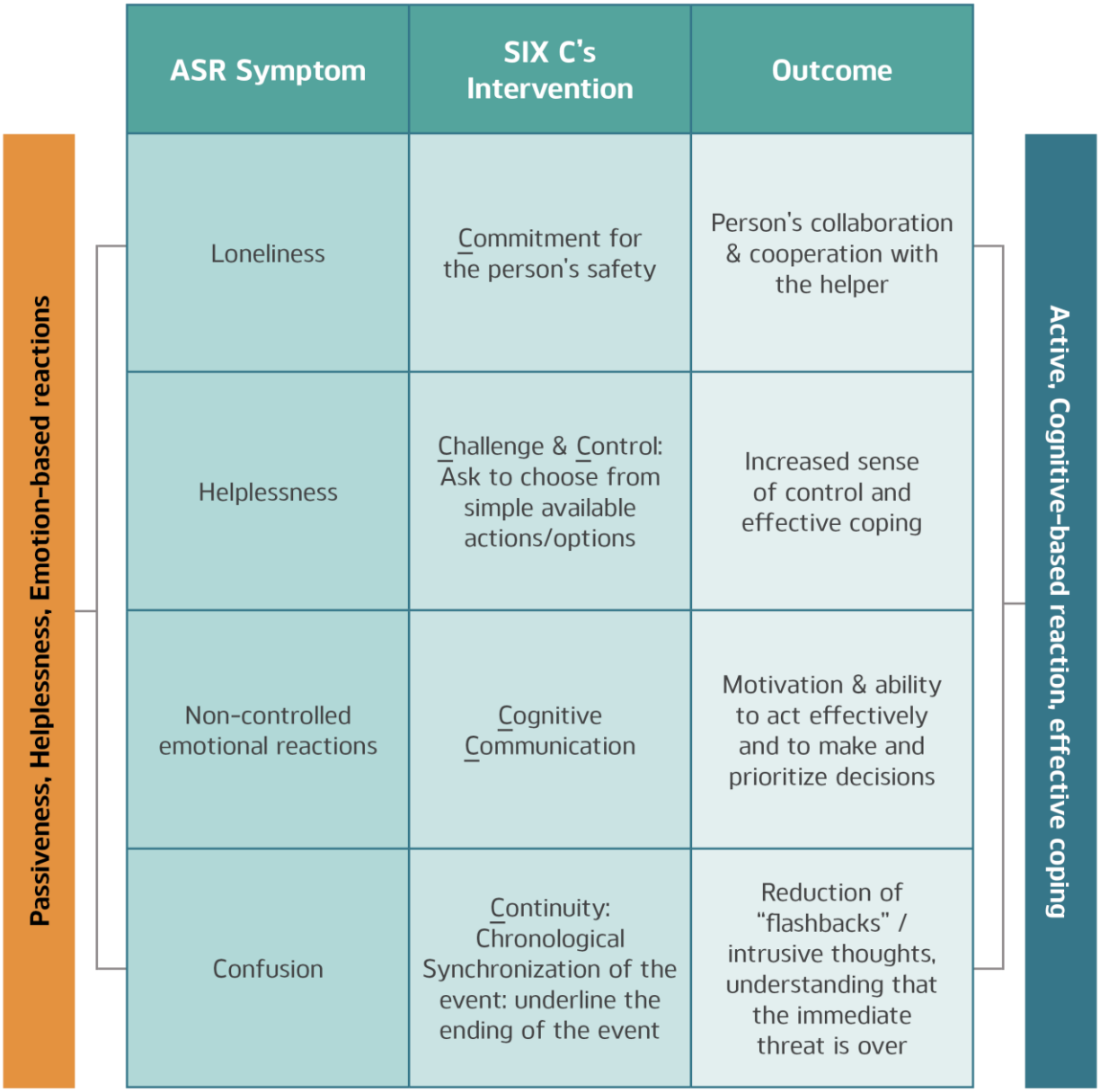
An individual's ability to cope adaptively with acute stressors is an impressive and important evolutionary capacity (Darwin, 1859). Acute stress can occur as the consequence of a single, acute event or as an outcome of serious ongoing environmental and contextual challenges. During a crisis event, the prefrontal cortex (PFC), which is responsible for rational, higher-level thought, is turned off by the limbic system which activates our "fight or flight" response system. Within our limbic system, the hypothalamus communicates with the rest of the body to preserve and regulate energy in preparation for the fight or flight response. As our brain shifts during crisis response, accessing the neocortex (prefrontal cortex) becomes increasingly difficult. During acute stress, "brain regions do not function in isolation, but are organized into functional networks of dynamically interacting regions" (van Oort et al., 2017). However, acute stress response is intended to be limited, this is to ensure that the individual experiencing crisis can return to homeostasis during recovery (McEwen and Gianaros, 2011). Short-term, these changes to our brain are intended to be adaptive, however for individuals who experience extended or consistent crisis stress levels, there is a significant shrinkage of the dendrites in the amygdala, increasing overactivity of the stress response. Further, consistent activation of acute stress impacts the prefrontal cortex which impacts individuals' sense of control, resilience and can ultimately impair memory consolidation. Even more, crisis influences the level of expression of glucocorticoid receptors in which over expression results in long-term mood related behaviors. Ultimately, what this means it that those who experience several episodes of acute stress are likely to experience difficulties managing and coping with that stress precipitating another episode. The more acute stress episodes and individual experiences, the more challenges that they will likely experience to manage those episodes as accessing care becomes increasingly difficult when the prefrontal cortex is consistently impaired. While it is important to remember that each individual perceives and reacts differently to each situation, the literature highlights that acute stress significantly impacts how an individual can receive support (Bernstein, 2016). Individuals who regularly utilize crisis services are likely experiencing acute stress activation resulting in long term deficits to the prefrontal cortex which plays a significant role in and individuals feeling of control, self-efficacy and future orientation.

It is important to note that while the impetus for this research was related to frequent users of crisis services and the neurobiological implications of repeated crisis, the literature also underlines the neurobiological impacts for individuals who are experiencing a crisis event for the first time. For any individual experiencing acute crisis events, there can be a significant impact to cognitive processing in

the following few hours and even days (Arnstein, 2012). The short-term impact of one acute stress event can range from memory loss to significant disruption of cognitive functioning in terms or ordered decision-making (McEwen, 2017). Informed care that takes the potential cognitive deficits into account can play a significant role in reducing the long-term consequences of a single crisis event. Further, services that do not appropriately address these neurobiological impacts may precipitate future crisis episodes.

Acute stress reaction research immediately after exposure to trauma or crisis have generally been focused on natural disasters, shootings, or large conflicts. However, the same acute stress reactions in the brain can occur when an individual is experiencing a significant sense of fear and helplessness during a mental health crisis. Again, while much of the literature focuses on greater conflict (natural disaster, terrorist attack, large accidents), similar mechanisms in the brain occur during all types of perceived crisis events (Bernstein, 2016). Literature highlights that, "in both animals and human models that there is a window of opportunity in the immediate hours of a perceived traumatic event, to reduce anxiety and confusion, restore stability and effective coping, and that this window is not wider than six hours (Farchi et al., 2018). One generalized approach to early intervention after traumatic events is Psychological First Aid, which is built on the concept of resilience and is designed to help individuals in the aftermath of a crisis. Further, "PFA is based on an understanding that people affected by traumatic events will experience early stress reactions which may cause sufficient distress to impede adaptive coping and recovery" (Farchi et al., 2018). This same ideology can be extrapolated to mental health crisis episodes. Hobfoll (2007) highlighted five core principles of psychological first aid: (1) to foster a sense of safety, (2) to provide calmness, (3) to induce a sense of self and community efficacy, (4) connectedness and (5) hope. There have been significant challenges supporting psychological first aid as an evidence-based practice as it prescribes general expectations and processes and lacks a more standardized approach.

More recent research expands on these core principals by introducing a model that is based on the underpinnings of crisis (1) Hardiness, (2) Sense of Coherence, (3) Self-Efficacy, and (4) Neuropsychology of the stress response. The recent literature outlines three attitudes that result in the necessary stimulus to turn potentially threatening and stressful situations into opportunities for personal growth, "Commitment is the willingness to be involved with people, things and situations rather than to be disconnected, isolated or alienated. Control involves struggling to be in charge of the events taking place in our lives through our own ability to make choices between available options, instead of sinking into passivity and helplessness. Challenge implies being willing to learn constantly from one's experience instead of avoiding uncertainties and potential threats" (Farchi et al. 2018). The sense of coherence outlines resources (social, psychological, and cultural) that help people defy illness: comprehensibility, manageability, and meaningfulness. Sense of coherence is heavily influential in coping and processing stressors in way the helps to reduce the sense of helplessness often associated with crisis. Along those same lines, self-efficacy, the confidence in one's ability to influence events that affects one's life (Bandura 1987), helps to predict long term recovery and adaptive stress response. The final component of this adapted PFA model underlines the neuropsychology of the stress response specifically the interaction between the limbic system and the prefrontal cortex. The prefrontal cortex is very sensitive to the damaging effects of stress, even more acute unmanageable stress can cause significant failure in the prefrontal cognitive function (Arnsten et al., 2012). For individuals who experience more consistent crisis, the ongoing hyperactivity of the amygdala which effectively reduces control of the prefrontal cortex, can result in a vicious circle in which the amygdala controls brain behavior resulting in an ongoing increased sense of helplessness. Ultimately, this acute stress cycle, in which patients who are regular users of crisis services, have limited ability to hardiness, self-efficacy, and the sense of coherence, contributes heavily to the ability of these individuals to utilize referral services, even when they are made more accessible.



Adapted from: Farchi, M., Levy, T. B., Gershon, B. B., Hirsch-Gornemann, M. B., Whiteson, A., & Gidron, Y. (2018). The SIX Cs model for immediate cognitive psychological first aid: From helplessness to active efficient coping. International Journal of Emergency Mental Health and Human Resilience, 20(2), 1-12.

The more recent development of PFA, the Six C's Model, integrates this updated model of crisis and the neurobiological underpinnings of stress. The first intervention works to address the amygdala hyperactivity, which short term contributes to the PFC shut down, but long-term contributes to PFC impairment. This intervention involves cognitive verbal communication involving short cognitive questions which is intended to reduce the hyperactivity of the amygdala while increasing activation of the prefrontal cortex. The next intervention is intended to address the sense of helplessness which, for individuals who experience more consistent states of crisis, can be a significant deterrent to receiving care. This intervention involves challenging the individual with simple cognitive tasks related to

resolution in the event. This may also help contribute to regulation of the PFC. The next intervention is to help shift that sense of helplessness to sense of control through providing options for the person to choose from to create a sense of power. This intervention further reduces the over-active amygdala. Disconnection and loneliness are one of the most frequent precursors of ongoing crisis. By providing a verbal commitment to the individuals safety and support, the individual can feel that they are not alone in their suffering. The final component is to reduce confusion in the aftermath of crisis. This is a consequence of the sympathetic nervous system when can disrupt memory when crisis occurs. Helping an individual create a narrative of the basic chronological elements of the crisis can work to reduce confusion and stress and develop an improve sense of control (Farchi et al., 2018). Again, it is important to note that while this intervention was intended and evidence-based for individuals who experience a significant traumatic event, the consequences of crisis and acute stress in a mental health episode often mimics the brain's reaction to a significant traumatic event.

The literature on acute stress events underlines the important consequences when the stress cycle is overactivated. For individuals who are frequently utilizing crisis services, or utilizing the services for the first time, they are likely experiencing those consequences as a barrier to accessing care and follow-up. With each crisis episode, where their acute stress system is activated, the brain's crisis response is becoming a significant hinderance to their ability to engage in adaptive coping and seek out resources that are going to support long-term mental wellness. The brain's crisis system is intended for short-term activation, however because many of these individuals are likely undergoing long-term stressors and safety challenges, this reoccurring activation is limiting the functioning of the neocortex. The neocortex is highly correlated with adaptive coping, self-efficacy, and resilience. When these factors are diminished, the individual experiencing ongoing crisis is more likely to experience helplessness, disconnection, and powerlessness. Ultimately, these factors heavily influence whether an individual will follow-up with services. With this knowledge in mind, utilizing interventions that work to counteract the potential consequences of the activation of the sympathetic nervous system and help support the individual to feel empowered and connected is the best approach in resolving this challenge.

Recommendations

There is a clear pattern of some individuals not following up with services after crisis events and then finding themselves repeatedly accessing crisis services. Regardless of the frequency of the crisis, the literature underlines that a single crisis event can have an impact on the individual's ability to seek out available resources. This is likely due to the impacts of a hyperactive sympathetic nervous system. The consequences of which reduce the individual's sense of power, control, and adaptive coping which in turn can result in more crisis episodes. The pathways that Centerstone has created are a good first step in addressing the ongoing concerns of getting individuals connected to the things they need to live lives they feel are worth living. The concept of these pathways and of meeting an individual where they are is an important step in improving crisis care and providing them with social determinant resources, not just mental health services, that contribute to an individual's general well-being. However, for some of these individuals, access to the resources alone is not enough. With this significant impact of crisis and stress on the brain, when individuals do not feel empowered to utilize these resources, they will not, regardless of how accessible they are made available. Therefore, incorporating an evidence-based, standardized psychological first aid approach like the Six C's Model, may be an important step in not only meeting the individual with where they are but encouraging them that they can take control of their own healing.

Resources

Arnsten, A., Mazure, C.M., & Sinha, R. (2012). Neural circuits responsible for conscious self-control are highly vulnerable to even mild stress. When they shut down, primal impulses go unchecked and mental paralysis sets in. SciAm, 306(4): 48-53.

Bandura, A., Cioffi, D., Taylor, C.B., & Brouillard, M.E. (1988). Perceived self-efficacy in coping with cognitive stressors and opioid activation. J Pers Soc Psychol, 55(3): 479-488.

Bernstein, R. (2016.) The Mind and Mental Health: How Stress Affects the Brain. Health and Human Services. Retrieved on July 5, 2020, from **https://www.tuw.edu/health/how-stress-affects-the-brain/#:~:text=Chronic%20stress%20has%20a%20shrinking,brain%20more%20receptive%20to%20stress**.

Cohen, H., Matar, M.A., Buskila, D., Kaplan, Z., & Zohar, J. (2008). Early post-stressor intervention with high-dose corticosterone attenuates posttraumatic stress response in an animal model of posttraumatic stress disorder. Biol Psychiatry, 64(8): 708-717.

Farchi, M., Levy, T. B., Gershon, B. B., Hirsch-Gornemann, M. B., Whiteson, A., & Gidron, Y. (2018). The SIX Cs model for immediate cognitive psychological first aid: From helplessness to active efficient coping. *International Journal of Emergency Mental Health and Human Resilience*, *20*(2), 1-12.

Hobfoll, S.E., Hall, B.J., Canetti-Nisim, D., Galea, S., Johnson, R.J., & Palmieri, P.A. (2007). Refining our understanding of traumatic growth in the face of terrorism: Moving from meaning cognitions to doing what is meaningful. Appl Psychol, 56(3): 345-366.

McEwen B. S. (2017). Neurobiological and Systemic Effects of Chronic Stress. *Chronic stress (Thousand*

Oaks, Calif.), *1*, 2470547017692328. https://doi.org/10.1177/2470547017692328

McEwen, B. S., & Gianaros, P. J. (2011). Stress- and allostasis-induced brain plasticity. *Annual review of medicine*, *62*, 431–445. https://doi.org/10.1146/annurev-med-052209-100430

van Oort, J., Tendolkar, I., Hermans, E. J., Mulders, P. C., Beckmann, C. F., Schene, A. H., Fernández, G., & van Eijndhoven, P. F. (2017). How the brain connects in response to acute stress: A review at the human brain systems level. *Neuroscience and biobehavioral reviews*, *83*, 281–297. https://doi.org/10.1016/j.neubiorev.2017.10.015

Wang, L., Norman, I., Edleston, V., Oyo, C., & Leamy, M. (2024). The Effectiveness and Implementation of Psychological First Aid as a Therapeutic Intervention After Trauma: An Integrative Review. *Trauma, Violence, & Abuse*, *25*(4), 2638-2656. https://doi.org/10.1177/15248380231221492