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The many faces stress

[Psychological stress and neuronal plasticity. An expanded model of the stress reaction process as the basis for understand central nervous system adaptation processes]. Huether G, Doering S, Rüger U, Rüther E, Schüssler G. Huether G, et al. Z Psychosom Med Psychoanal. 1996;42(2):107-27. Z Psychosom Med Psychoanal. 1996. PMID: 8711955 Review. German. Display options Format AbstractPubMedPMID The mammalian stress response is an integrated physiological and psychological reaction to real or perceived adversity. Glucocorticoids (GCs) are an important component of this response, acting to redistribute energy resources to both optimize survival in the face of challenge and restore homeostasis after the immediate threat has subsided. Release of GCs is mediated by the hypothalamo-pituitary-adrenocortical (HPA) axis, driven by a neural signal originating in the paraventricular nucleus (PVN). Stress levels of GCs bind to glucocorticoid receptors (GRs) in multiple body compartments, including brain, and consequently have wide-reaching actions. For this reason, GCs serve a vital function in feedback inhibition of their own secretion. Fast, non-genomic feedback inhibition of the HPA axis is mediated at least in part by GC signaling in the PVN, acting by a cannabinoid-dependent mechanism to rapidly reduce both neural activity and GC release. Delayed feedback termination of the HPA axis response is mediated by forebrain GRs, presumably by genomic mechanisms. GCs also act in the brainstem to attenuate neuropeptidergic excitatory input to the PVN via acceleration of mRNA degradation, providing a mechanism to attenuate future responses to stressors. Thus, rather than having a single defined feedback switch, GCs work through multiple neurocircuits and signaling mechanisms to coordinate HPA axis activity to suit the overall needs of multiple body systems. Fig. 1 The HPA axis regulates the… Fig. 1 The HPA axis regulates the endocrine stress response with activation mediated by CRH-containing… Fig. 1 The HPA axis regulates the endocrine stress response with activation mediated by CRH-containing neurons in the hypothalamic PVN. The release of CRH onto cells of the anterior pituitary induces the secretion of ACTH into systemic circulation. At the adrenal cortex, ACTH stimulates synthesis and release of GCs (cortisol in humans and corticosterone in rodents). GCs then activate MRs and GRs providing a feedback signal to regulate HPA axis activity Fig. 2 GCs can rapidly inhibit CRH… Fig. 2 GCs can rapidly inhibit CRH release from PVN neurons by acting on membrane-associated… Fig. 2 GCs can rapidly inhibit CRH release from PVN neurons by acting on membrane-associated receptors. Receptor activation leads to retrograde eCB signaling at CB1 receptors which suppresses excitation of presynaptic glutamatergic neurons Fig. 3 GC negative feedback can generally… Fig. 3 GC negative feedback can generally be divided into three interacting domains. First, GCs… Fig. 3 GC negative feedback can generally be divided into three interacting domains. First, GCs provide rapid, nongenomic inhibition of excitatory inputs to the PVN. In addition, GCs affect RNA stability in brain structures with direct, excitatory innervation of the PVN. Forebrain genomic GC signaling is also a key component of feedback regulation. Importantly, these structures have little or no direct interactions with the PVN and require intermediary synapses in PVN-projecting cell groups. Specifically, GCs act in the plPFC and the ventral subiculum to inhibit the PVN via GABAergic synaptic relays. BST: bed nucleus of stria terminalis, DMH dorsomedial hypothalamus, EC endocannabinoid, GLP-1 glucagon-like peptide-1, Glu glutamate, NTS nucleus of the solitary tract, PH posterior hypothalamus, plPFC prelimbic prefrontal cortex, VMH ventromedial hypothalamus, vSub ventral subiculum, + denotes excitation and − inhibition Fig. 4 Depending on physiological demand and… Fig. 4 Depending on physiological demand and anticipatory signals from the forebrain, GCs may provide… Fig. 4 Depending on physiological demand and anticipatory signals from the forebrain, GCs may provide feedforward excitation of the HPA axis. GCs can upregulate CRH signaling in the amygdala and BST, potentially prolonging GC secretion. GCs may also act on glutamatergic neurons in the ilPFC and BLA to excite PVN CRH neurons via synaptic relays in the hypothalamus. BLA basolateral amygdala, CeA central amygdala, ilPFC infralimbic prefrontal cortex, MeA medial amygdala, NE norepinephrine, + denotes excitation and − inhibition Exploring conceptual and theoretical frameworks for nurse practitioner education: a scoping review protocol. Wilson R, Godfrey CM, Sears K, Medves J, Ross-White A, Lambert N. Wilson R, et al. JBI Database System Rev Implement Rep. 2015 Oct;13(10):146-55. doi: 10.11124/jbisrir-2015-2150. JBI Database System Rev Implement Rep. 2015. PMID: 26571290 Fluoxetine treatment reverses chronic stress-induced promotion on Fk506-binding protein 5 expression and multiple effects on glucocorticoid receptor phosphorylation in the paraventricular nucleus of mice. Zhu BL, Tang JY, Chen WJ, Qian JJ, Zhang F, Zhang XL, Chen TT, Jiang B, Zhao HY. Zhu BL, et al. Pharmacol Biochem Behav. 2025 Jan;246:173916. doi: 10.1016/j.pbb.2024.173916. Epub 2024 Nov 29. Pharmacol Biochem Behav. 2025. 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Maybe that could explain why your attempts at relaxation and stress management haven't worked as well as you hoped. You might need a little more self-care than you thought in order to effectively balance all the disruptive forces you actually face. Recognizing the many ways stress shows up in your life can help you manage it more effectively. Why does stress management matter? It matters because adequately dealing with life stress can help reduce negative health risks associated with the strain chronic stress plays on your body. In order to sufficiently address the stressors in your life, however, you first have to recognize how its many faces manifest. Believe it or not there are three types of stress: eustress, neustress, and distress. Eustress-or good stress-occurs when positive things happen in your life causing euphoria and motivation. For example, falling in love, starting a dream job, or taking a luxurious vacation could all create eustress. Because these experiences bring pleasure and joy you might not realize when they create a stress response in your body. If the exhilaration of new beginnings starts to turn into sleepless nights because you're too excited to settle down, or if you're so giddy you can't eat, you might want to pull a few stress management tools out of your personal wellness toolkit. Effective and timely stress management can help bring your body into a more balanced state and decrease the risk of experiencing negative health effects from stress induced strain. The second type of stress is called neustress or neutral stress. This kind of stress occurs when you're exposed to situations that have no direct effect on you. For example, hearing about devastating natural disasters in another part of the world can create neustress. You might not directly experience it but the news can still create a stress response, especially for empathetic people. Prolonged exposure to neustress can lead to distress, the third type of stress. For example, hearing excessive news coverage about an event can lead to feeling fearful or angry, two emotions that frequently trigger the body's stress response. Recognizing this can help you better support yourself when being barraged with information, especially if it's unpleasant news. Distress, or negative stress, is the most commonly acknowledged form of stress. This is what most people mean when they say they're feeling stressed. Distress can occur over a brief, intense period or over a long, subtle period. Either way it's important to be aware of when you experience it so you can effectively manage it. Recognizing the subtle way stress shows up in your life empowers you to intervene before you start to experience health problems. Simple personal wellness habits like remembering to take slow, deep breaths or taking a short, relaxing walk can help reduce stress affects. Stress prevention or reduction can't always happen, but effective stress management can help reduce its negative effects. Be well, Dr. Donna © 2014 Donna L. Hamilton, MD The Ultimate Health and Wellness Guide Dr. Donna Hamilton, MD has a mission to help everyone live the healthy, satisfying lives they're meant to lead. A dynamic holistic wellness speaker, Dr. Hamilton passionately teaches what being healthy really means and how to do it in a way that fits your unique needs. Her easy, practical tips assist you with assessing the entire wellness landscape and appropriately planning your personal wellness journey. Her workbook Wellness Your Way combines evidence based counseling and coaching skills with her primary care medicine wisdom to assist readers on this journey. For more information or to book Dr. Hamilton for speaking engagements visit www.DonnaHamiltonMD.com or www.ManifestExcellence.com Donna Hamilton, MD, MS, FAAPChief Wellness Officer at Manifest ExcellenceBestselling author, dynamic holistic wellness speaker and wellness luminary Dr. Donna Hamilton, MD, has a mission to help everyone live the healthy, satisfying lives we're all meant to lead. Dr. Hamilton passionately teaches what being healthy really means and how to do it in a way that fits your unique needs. Her easy, practical tips assist you with assessing the entire wellness landscape and appropriately planning your personal wellness journey. A wellness thought leader, she champions a comprehensive approach to health by addressing mental, emotional, social, spiritual & physical well-being with a simple and potent message. Her book Wellness Your Way offers a practical strategy to assist readers in creating a happier, healthier life. For more information or to book Dr. Hamilton for speaking engagements visit www.ManifestExcellence.com or www.DonnaHamiltonMD.com Three studies examined how various forms of stress uniquely contribute to physical illness. We compared negative affect and perceived stress in Study 1, neuroticism and perceived stress in Study 2, and negative affect, neuroticism, and perceived stress in Study 3. We also controlled for health-related covariates (i.e., exercise, nutrition, substance use, and BMI). In all three studies (ns = 271, 577, and 300), participants completed online surveys for course credit. The results of Study 1 demonstrated that both negative affect and perceived stress predicted physical illness. In Study 2, neuroticism and perceived stress each predicted illness symptoms, and an additional interaction between neuroticism and perceived stress, were found. In Study 3, where all three stress factors were included, only negative affect predicted illness symptoms. Taken together, these results suggest that negative affect uniquely explains most of the variance in physical illness symptoms while controlling for other forms of stress. Keywords: Physical illness; illness symptomatology; negative affect; neuroticism; perceived stress; stress.