Attachment as a Health Blueprint: From Early Relationships to Chronic Illness and Aging

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In her clinical practice, therapist Nicole McLeod does not only listen to what clients share, she pays close attention to how individuals' nervous systems respond. "Attachment informs so much of what I do," she explained in an interview. "I'm always taking the temperature of the bond" (Nicole, McLeod, personal communication, October 29th, 2025). She's trained to notice how clients react when she subtly challenges them or pays them a compliment, those reactions act as data points to inform the approach of her treatment. For Nicole, attachment is not an abstract psychological concept; it is "alive all the way through" a person's life and will continuously show up in how they cope with closeness and conflict (personal communication, October 29th, 2025).

For Nicole, the lens of attachment is not solely psychological but physiological too. She describes securely attached people as people who can regulate their nervous systems and "hold on to themselves" when someone disagrees with them or takes space (personal communication, October 29th, 2025). In contrast, anxiously attached adults may internalize minor disconnection "like abandonment" and feel as if they are "on a treadmill all the time, just kind of going, going, going" in their efforts to maintain the connection (personal communication, October 29th, 2025). Avoidantly attached adults in comparison, often present calm or self-contained, but Nicole describes "a little war going on inside" as they suppress and detach from their emotional state (personal communication, October 29th, 2025). Her metaphors encapsulate a reality that emerging scientific research has begun to investigate; attachment lives in the body.

Attachment theory was derived from John Bowlby's observations of infant-caregiver dynamics. However, modern research highlights that attachment patterns persist into adulthood, shaping how individuals respond to stress and regulate their nervous system (Pietromonaco & Beck, 2019). Insecure attachments whether anxious, avoidant, or disorganized have been

associated with chronic dysregulation of stress systems, cardiovascular strain, chronic pain, elevated inflammation, and increased risk of neurodegenerative disease (Kidd et al., 2013; Smyth et al., 2015; Davies et al., 2008; Oladi & Dargahi, 2018; Zheng et al., 2020).

Despite contemporary research, attachment is still often discussed primarily in emotional and relational contexts. However, Nicole's attention to how attachment remains active in the nervous system is representative of an ongoing shift in the realm of psychology; relational patterns leave measurable traces "under the skin," contributing to long term health outcomes (Pietromonaco & Beck, 2019). This paper argues that insecure adult attachment is a measurable predictor of negative health outcomes, as it contributes to chronic dysregulation of biological stress systems. Through the integration of empirical data and clinical insights, the following sections explore how attachment-based differences in stress response help to explain why insecurely attached adults are more vulnerable to physical illness than the securely attached.

The theory of attachment, originally developed by John Bowlby, suggests that the relationship infants have with their primary care givers create "internal working models" which influence emotional regulation and expectation of support through life (Pietromonaco & Beck, 2019). The concept of insecure attachment is described by two dimensions, anxiety and avoidance, which represent emotional regulation strategies of hyper or hypoactivation (Kidd et al., 2013; Pietromonaco & Beck, 2019).

A secure attachment is defined by comfort with closeness, confidence to rely on others, and emotional flexibility. Pietromonaco and Beck (2019) highlight that securely attached adults employ more adaptive coping strategies and therefore experience a more regulated physiological stress response. This clinical representation aligns with Nicole's observation of secure oriented

individuals are “better able to regulate their nervous systems” and “hold onto themselves” during instances of tension or conflict (Nicole, McLeod, personal communication, October 29th, 2025).

Conversely, insecure attachment reflects patterns of nervous system dysregulation. Adults high in attachment anxiety commonly fear abandonment and display heightened emotional/physiological reactivity to relational uncertainty or stress. Smyth et al. (2015) established that anxiously attached adults display significantly greater cortisol reactivity during psychosocial stress; this suggests their stress response activates intensely when stimulated by a perceived threat. Whereas adults high in attachment avoidance operate to suppress any distress and disengage under any perceived emotional threats. While avoidance may present calmly externally, research indicates that avoidance is associated with an altered or blunted daily cortisol rhythm (Kidd et al., 2013), reflecting a different form of physiological strain. Collectively the hormone pattern irregularities of the insecurely attached contribute to the argument that insecure attachment is not only emotional but a measurable predictor or biological stress.

The hypothalamic-pituitary-adrenal (HPA) axis is the body’s central stress response system. When a threat is perceived by the mind or body the HPA axis initiates a hormonal cascade resulting in the release of cortisol, which is essential for regulating metabolism, heart rate, and the body’s ability to respond to stress (Zheng et al., 2020). Ideally, cortisol follows a diurnal rhythm in our bodies, spiking shortly after we wake and gradually declining throughout the day (Kidd et al., 2013). However, repeated or chronic activation of the HPA axis disturbs this, leading to cortisol hypersecretion, irregular release patterns such as flattening or blunting; all of which have been associated with negative long-health outcomes (Faresjö et al., 2024; Hounkpatin et al., 2024).

Smyth et al. (2015) were able to successfully link attachment insecurity to HPA axis dysregulation by conducting the Trier Social Stress Test (TSST) on 72 participants. The TSST is a standardized psychosocial stress test designed to activate the HPA axis by asking its participants to complete a series of tasks in front of a group such as giving an unprepared speech or solving a difficult math problem. The study revealed that a high score of attachment anxiety positively correlated with cortisol reactivity ($r = .289$, $p = 0.010$), ultimately showing anxiously attached individuals had significantly higher levels of cortisol even when controlling for smoker/nonsmoker, BMI, and age (Smyth et al., 2015). This study demonstrates that anxious attachment intensifies the HPA axis activation.

Another study by Kidd et al. (2013) provides complementary evidence of insecure attachment affecting the diurnal pattern of cortisol. In a large sample of 1807 adults, the authors found that anxious attachment was associated with overall higher cortisol levels throughout the day and a less pronounced diurnal slope, suggesting that the anxious attachment not only the heightens acute stress response but supports chronic HPA axis activation. Meanwhile, the avoidant attachment is associated with another maladaptive pattern. While avoidant adults did not display heightened acute cortisol reactivity, they were associated with a lower cortisol output throughout the day (Kidd et al., 2013; Smyth et al., 2015). Although this represents the opposite direction of dysregulation from anxious attachment holders, the flattened or blunted cortisol rhythms are associated with impaired immune and metabolic function (Pietromonaco & Beck, 2019).

These scientific findings align with therapist Nicole McLeods clinic observations where anxiously attached clients often remain in a state of hypervigilance, on the look out for any perceived relational threat (Nicole, McLeod, personal communication, October 29th, 2025). Her

observations coincide with Smyth et al.'s (2015) results which state that anxiously attached individuals can be characterized by increased HPA activation under perceived stress. Similarly, Nicole's description of avoidantly attached individuals as those who seek to detach from or suppress their emotional state parallels the flattened cortisol profiles linked to avoidants by Kidd et al. (2013).

Insight from internal medicine physician Dr. Jennifer Montis further highlight the health implications for chronic HPA dysregulation. She explains that while short term cortisol release is adaptive, chronic activation of the HPA axis results in persistent state where "cortisol stays high in the absence of stress"; resulting in a myriad of negative health impacts such as, worsened insulin resistance, elevated heart rate and blood pressure, weakened immune system, and increase susceptibility to malignancy due epigenetic changes (Jennifer, Montis, personal communication, November 20th, 2025). Furthermore, Dr. Montis emphasized that in modern society we often experience "micro stress doses" from our alarms first this in the morning to the onslaught of texts or emails we wake up to; she notes that repeated and small stressors trigger the HPA axis, contributing to its continual activation (personal communication, November 20th, 2025).

Furthermore, Hounkpatin et al. (2024) highlights that elevated concentrations of cortisol regardless of attachment pattern is a predictor of multiple negative health outcomes. Notably, cardiovascular and metabolic illnesses such as myocardial infarction (heart attack), atrial fibrillation (irregular hearth rhythm), hypertension (high blood pressure), and elevated inflammatory markers (hs-CRP). Collectively these findings demonstrate that the irregular cortisol patterns associated with insecure attachments have significant physiological implications.

If having an insecure attachment keeps the body's stress systems switched 'on,' the next step to look at is how this chronic activation influences immune function and risk of disease. Epidemiological and biomarker studies have shown that adults high in attachment insecurity are more likely to develop pain conditions, cardiovascular disease, and clusters of chronic illnesses, even after accounting for traditional health risk factors. In a sample of 5645 adults from the U.S. National Comorbidity Survey, McWilliams and Bailey (2010) found that high anxious attachment ratings are associated with greater odds of several cardiovascular conditions, even after adjusting for age, gender, race, and lifetime psychiatric disorders. For every one-unit increase of measuring anxious attachment there was a 24% increase in odds of high blood pressure, a 49% increase in odds of a stroke, and a 45% increase in odds of a heart attack (odd ratios [ORs] = 1.24, 1.49, 1.45, McWilliams & Bailey, 2010). The same study reports that anxious attachment predicts higher odds of chronic pain conditions such as migraines with ORs of 1.27 – 1.31 (McWilliams & Bailey, 2010). These findings support that attachment insecurity is not merely a psychological vulnerability but a measurable risk factor for cardiovascular health and pain.

Similarly, Pietromonaco and Beck (2019) found that in a sample of 400 adults, anxiously attached individuals are predicted to have a higher likelihood of self-reported stroke, heart attack, chronic pain, and high blood pressure. Additionally the authors highlight disease specific examples in which insecure attachment predicts poorer outcomes; for example, women with inflammatory bowel disease, both anxious and avoidant, were associated with greater severity of the disease (Pietromonaco & Beck, 2019).

Studies which focused on identifying chronic stress biomarkers such as hair cortisol concentration (HCC) help to clarify the mechanism; as HCC allows for an analysis of cumulative

cortisol exposure over several months. A Swedish population based study of 4,281 adults showed that those in the highest decile of HCC had significantly higher odds of multiple cardiovascular risk factors and inflammatory markers (Faresjö et al., 2024). Compared to individuals with low HCC, the highest decile individuals had 2.49 times higher odds of prior myocardial infarction, 2.25 times higher odds of atrial fibrillation, and 1.49 higher odds of hypertension (Faresjö et al., 2024). Furthermore, HCC was associated with increased concentrations of C-reactive proteins (OR = 1.50) and abnormal white blood cell counts (OR = 1.47), both of which signify systemic inflammation and altered immune system function (Faresjö et al., 2024).

Longitudinal studies focused on multiple long-term conditions (MLTC) further explains the relationship between stress and disease. In the cohort study of elderly adults from the English Longitudinal Study of Ageing, Hounkpatin et al. (2024) uncovered that high HCC strongly predicted an increased risk of individuals developing MLTC over a six year follow up period. Every standard deviation increase of HCC was associated with a 20% higher likelihood of MLTC (Hounkpatin et al., 2024). As insecurely attached individuals are more likely to endure chronic stress and cortisol dysregulation, this implies that attachment may aid in the prediction of who is most at risk to develop multiple chronic disease later in life.

Further evidence from Puig et al. (2013) discovered at the end of a 32 year long study involving 163 adults that insecurely attached infants were 3-7 times more likely to develop an inflammatory related illness in decades later than their secure counterparts. This observation was further supported by Hounkpatin et al. (2024) in a study of 4295 individuals over the age of 50 where the levels of cortisol in the participants hair were periodically measured over the course of six years; their results revealed that participants with high hair cortisol levels had a 12-15%

increased risk of developing multiple long term health conditions. This confirmed chronic stress to be a measurable biomarker for predicting health outcomes.

During our interview, Dr. Jennifer Montis emphasized that chronic stress “shows up everywhere in internal medicine,” noting patterns of immune dysregulation, inflammation and multisystem issues in her patients (personal communication, November 20th, 2025). Dr. Montis’ clinical observations mirror the mechanisms proposed by the literature, emphasizing that the consequences of chronic attachment related stress manifest in our bodies as inflammation and chronic disease.

Patterns of stress regulation continue to influence health into older adulthood, particularly in neurological and cognitive outcomes. Longitudinal evidence supports that secure attachment in early development serves as a protective factor against cognitive decline; with securely attached individuals demonstrating significantly better memory function in late life (Walsh et al., 2019). Chronic cortisol dysregulation which is common in those with an insecure attachment, also contributes to neurodegenerative risks. A meta analysis conducted in 2020 found that the hypersecretion of cortisol was associated with a significantly elevated risk of developing Alzheimer’s disease; this indicates that prolonged HPA axis activation may have measurable consequences for brain function and health (Zheng et al., 2020). Lastly, evidence from a 14 year long cohort study confirmed that secure attachment was strong associated with higher quality of life, better self reported health ratings, and fewer functional limitations (Platts et al., 2023). Collectively these findings demonstrate that insecure attachment stress influence trajectories of aging and cognitive resilience.

The perspectives offered from the interviews provide real examples of how attachment related stress patterns appear in clinical work in different fields. Therapist Nicole McLeod

emphasized that “children are amazing observers and terrible interpreters” and that early experiences especially during “those really important imprintable times” shape how individuals go on to regulate their emotions throughout life (Nicole, McLeod, personal communication, October 29th, 2025). She went on to highlight that securely attached adults are typically able to “regulate their nervous systems a lot better,” whereas insecurely attached adults tend to be more “keyed up”, more prone to burn out, and struggle with emotional flexibility (personal communication, October 29th, 2025). Nicole’s clinical observation of seeing “more avoidant partners that are men and more anxious partners that are women,” suggest another pattern of insecure attachment related to early caregiving norms towards different genders (personal communication, October 29th, 2025).

From the medical perspective, Dr. Jennifer Montis explained how chronic stress becomes biologically embedded through cortisol dysregulation and deficits in the body’s “anti stress system,” which is driven by oxytocin (Jennifer, Montis, personal communication, November 20th, 2025). She described oxytocin as “the hormone of well-being,” noting that high levels “inhibit stress… decrease cortisol, and blood pressure,” while low levels are linked to depression and heightened physiological strain (personal communication, November 20th, 2025). Dr. Montis emphasized that individuals who begin life with limited physical connection or inconsistent caregiving may develop a lifelong pattern of “low levels of oxytocin,” which increase their baseline stress, and their likelihood of compensatory dopamine producing behaviours such as overeating or other dysregulated coping strategies (personal communication, November 20th, 2025). Montis’ clinical observations reinforce the scientific data linking insecure attachment to low levels of oxytocin, increased risk of chronic stress, and long-term vulnerability to disease.

The body of evidence presented in this paper allows for us to conclude, that life long insecure attachments contribute to negative physical health outcomes by shaping patterns of chronic stress, cortisol dysregulation, and inflammation. Findings from longitudinal and epidemiological studies have successfully and consistently linked attachment insecure with higher levels of physiological stress and higher rates of chronic illness. While the clinical insights further explained how these mind body mechanisms appear in medical patients and therapy clients. Collectively, this research strongly suggests that attachment is responsible for more than how navigate connection, it plays a measurable role in shaping physical health trajectories.

The most important takeaway from speaking with two professionals was the distinction that these stress pathways are malleable rather than fixed. Dr. Jennifer Montis explained that one can strengthen their body's "anti-stress system," predominantly driven by oxytocin, which can offset chronic cortisol activation; practices such as physical touch, movement, music, and time with pets can naturally stimulate oxytocin release and support nervous system regulation (Jennifer, Montis, personal communication, November 20th, 2025).

Similarly, Nicole McLeod notes that people can "earn" secure attachments through awareness, consistent practice, and experiencing supportive relationships; highlighting that attachment patterns can be viewed as states rather than permanent states (Nicole, McLeod, personal communication, October 29th, 2025). Together these perspectives offer meaningful avenues for improving well-being; enhancing connection, cultivating healthy regulation strategies, and intentionally forming the relational environments that support our long-term health.

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