

Scientific arguments against solitary confinement

This report summarizes psychological and neuroscientific evidence from over 20 peer-reviewed studies.

Compiled by the [Scientist Action and Advocacy Network](#), May 2017. For questions or comments, email info@scaan.net.

Scientific review of the psychological, physical, and neural effects of long-term solitary confinement demonstrates the vital importance of reforming how prison systems utilize this controversial method. The Humane Alternatives to Long-Term Solitary Confinement (HALT) Act provides necessary steps forward both in restricting the use of isolation and in providing alternative options for more effective rehabilitation.

Social isolation causes severe and lasting neurological and psychiatric problems. The environment in solitary confinement is characterized by a near-complete isolation from social interaction, an extreme deprivation of sensory and intellectual stimulation, and a severe lack of physical activity. Individuals who are subject to these conditions for extended periods of time develop serious cognitive, psychological, and physiological symptoms, including memory loss, hallucinations, stupor, anxiety, paranoia, depression, post-traumatic stress disorder, and suicidal ideations.¹⁻⁶ These symptoms emerge in individuals who have no history of mental illness, and worsen in individuals with a history of mental illness.^{5,7} The mental and social impairments resulting from solitary confinement can occur within only a few days of isolation.^{5,8} Furthermore, the risk of developing mental health symptoms and rates of hospitalization for mental health reasons increase with time spent in isolation.^{5,9} Symptoms can persist for years, even after individuals have been released from solitary and from prison.^{5,6}

Social isolation is used to induce neurological and behavioral problems in lab animals. Laboratory animals who are socially isolated display pronounced behavioral changes, such as increased aggression,¹⁰ anxiety- and depression-like behaviors,^{11,12} and cognitive impairments in learning^{13,14} and memory.¹⁵ Correspondingly, drastic neural abnormalities are observed in the brains of animals who have been socially isolated.^{14,16-20} Even less than two weeks of isolation can result in structural changes in the brain, such as decreased myelination in the prefrontal cortex,²⁰ a region of the brain crucial for many cognitive functions including decision making. Just two days of social isolation produces a significant disruption in neurogenesis, the development of new neurons, which plays a role in learning and memory and mood disorders, and this perturbation can persist for weeks.¹⁸ The behavioral and neural changes are so closely correlated to those observed in human patients that housing animals in social isolation is commonly used to create laboratory

versions of neuropsychiatric disorders such as anxiety,^{17,21} depression^{12,16} and schizophrenia.¹⁵

Housing of animals in laboratories is more strictly regulated than the housing of humans in prison. Because the impact of housing conditions on behavior and biology is so well established, formal regulations were created. It is federally mandated that most animals be housed with other animals of the same species. Only in extenuating circumstances is an animal to be housed in isolation, and for as little time as possible.²² Veterinarians and the facility's Institutional Animal Care and Use Committee oversee and approve the housing of animals to ensure these regulations are followed. In contrast, most states—including New York—allow people to be held in solitary confinement indefinitely, with few or no provisions to mitigate their social deprivation.

Solitary confinement reduces prison and public safety. The distressing symptoms suffered from time in isolation are accompanied by behavioral changes that directly counteract the purported intention of solitary confinement to reduce violence and behavioral problems. Instead, housing in solitary confinement increases the risk of both self- and other-directed violence.^{4,23} States that reformed the use of solitary confinement have reported decreases in serious incidents and use of force in their prisons.^{24,25} Because of the sustained medical and psychological impacts of this environment, individuals who spend time in solitary confinement are likely to have difficulty reintegrating into society and are more likely to reoffend, indicated by higher rates of recidivism for those who spent significant time in solitary, and even more so for those released directly out of solitary into society.²⁶⁻²⁸

Summary. Scientific research shows that solitary confinement fundamentally alters an individual's brain, causing serious and sustained mental health issues, and increasing abnormal and aggressive behaviors. Solitary confinement is damaging to the individual in isolation, as well as to the surrounding community, and it increases recidivism. There is a growing consensus about the harmful and counterproductive impact of solitary confinement.²⁹ The United Nations guidelines on the treatment of prisoners prohibit solitary confinement for more than 15 consecutive days.³⁰ The HALT Act would establish similar limits and introduce more effective alternatives to solitary confinement, and is a necessary, positive step toward a criminal justice system that makes society more healthy, just, and safe.

References

- [1] Stuart Grassian. "Psychiatric Effects of Solitary Confinement". English. In: *Wash. U. J. L. & Pol'y* 22.1 (Jan. 2006), pp. 325–383.
- [2] Stuart Grassian and Nancy Friedman. "Effects of sensory deprivation in psychiatric seclusion and solitary confinement". In: *International Journal of Law and Psychiatry* 8.1 (Jan. 1986), pp. 49–65. ISSN: 0160-2527. DOI: [10.1016/0160-2527\(86\)90083-X](https://doi.org/10.1016/0160-2527(86)90083-X).
- [3] Stuart Grassian. "Psychopathological effects of solitary confinement". In: *AJP* 140.11 (Nov. 1983), pp. 1450–1454. ISSN: 0002-953X. DOI: [10.1176/ajp.140.11.1450](https://doi.org/10.1176/ajp.140.11.1450).
- [4] Craig Haney. "Mental Health Issues in Long-Term Solitary and "Supermax" Confinement". en. In: *NCCD news* 49.1 (Jan. 2003), pp. 124–156. ISSN: 0027-6235. DOI: [10.1177/0011128702239239](https://doi.org/10.1177/0011128702239239).
- [5] Peter Scharff Smith. "The Effects of Solitary Confinement on Prison Inmates: A Brief History and Review of the Literature". In: *Crime and Justice* 34.1 (2006), pp. 441–528. ISSN: 0192-3234. DOI: [10.1086/500626](https://doi.org/10.1086/500626).
- [6] Brian O. Hagan et al. "History of Solitary Confinement Is Associated with Post-Traumatic Stress Disorder Symptoms among Individuals Recently Released from Prison". In: *Journal of Urban Health* (2017). DOI: [10.1007/s11524-017-0138-1](https://doi.org/10.1007/s11524-017-0138-1).
- [7] Eric Lanes. "The Association of Administrative Segregation Placement and Other Risk Factors with the Self-Injury-Free Time of Male Prisoners". In: *Journal of Offender Rehabilitation* 48.6 (Aug. 2009), pp. 529–546. ISSN: 1050-9674. DOI: [10.1080/10509670903081342](https://doi.org/10.1080/10509670903081342).
- [8] Volkart R et al. "Solitary confinement as risk factor for psychiatric hospitalization". German. In: *Psychiatr Clin (Basel)* 16.5-6 (1983), pp. 365–377.
- [9] Dorte Maria Sestoft et al. "Impact of Solitary Confinement on Hospitalization Among Danish Prisoners in Custody". In: *International Journal of Law and Psychiatry* 21.1 (1998), pp. 99–108.
- [10] L. Valzelli. "The "isolation syndrome" in mice". en. In: *Psychopharmacologia* 31.4 (Dec. 1973), pp. 305–320. ISSN: 0033-3158, 1432-2072. DOI: [10.1007/BF00421275](https://doi.org/10.1007/BF00421275).
- [11] Shayan Amiri et al. "Co-occurrence of anxiety and depressive-like behaviors following adolescent social isolation in male mice; possible role of nitergic system". In: *Physiology & Behavior* 145 (June 2015), pp. 38–44. ISSN: 0031-9384. DOI: [10.1016/j.physbeh.2015.03.032](https://doi.org/10.1016/j.physbeh.2015.03.032).
- [12] Angela J. Grippo, Bruce S. Cushing, and C. Sue Carter. "Depression-like behavior and stressor-induced neuroendocrine activation in female prairie voles exposed to chronic social isolation". In: *Psychosom Med* 69.2 (2007), pp. 149–157. ISSN: 0033-3174. DOI: [10.1097/PSY.0b013e31802f054b](https://doi.org/10.1097/PSY.0b013e31802f054b).
- [13] Jasmina Kercmar et al. "Adolescent social isolation changes social recognition in adult mice". In: *Behavioural Brain Research* 216.2 (Jan. 2011), pp. 647–651. ISSN: 0166-4328. DOI: [10.1016/j.bbr.2010.09.007](https://doi.org/10.1016/j.bbr.2010.09.007).
- [14] Inmaculada Pereda-Pérez et al. "Long-term social isolation in the adulthood results in CA1 shrinkage and cognitive impairment". In: *Neurobiology of Learning and Memory* 106 (Nov. 2013), pp. 31–39. ISSN: 1074-7427. DOI: [10.1016/j.nlm.2013.07.004](https://doi.org/10.1016/j.nlm.2013.07.004).
- [15] Charles A. Marsden, Madeleine V. King, and Kevin C. F. Fone. "Influence of social isolation in the rat on serotonergic function and memory – Relevance to models of schizophrenia and the role of 5-HT6 receptors". In: *Neuropharmacology. Serotonin: The New Wave* 61.3 (Sept. 2011), pp. 400–407. ISSN: 0028-3908. DOI: [10.1016/j.neuropharm.2011.03.003](https://doi.org/10.1016/j.neuropharm.2011.03.003).
- [16] Claudia Lieberwirth et al. "Social isolation impairs adult neurogenesis in the limbic system and alters behaviors in female prairie voles". In: *Horm Behav* 62.4 (Sept. 2012), pp. 357–366. ISSN: 0018-506X. DOI: [10.1016/j.yhbeh.2012.03.005](https://doi.org/10.1016/j.yhbeh.2012.03.005).
- [17] Alessandro Ieraci, Alessandra Mallei, and Maurizio Popoli. "Social Isolation Stress Induces Anxious-Depressive-Like Behavior and Alterations of Neuroplasticity-Related Genes in Adult Male Mice". en. In: *Neural Plasticity* 2016 (Jan. 2016), e6212983. ISSN: 2090-5904. DOI: [10.1155/2016/6212983](https://doi.org/10.1155/2016/6212983).
- [18] Christie D. Fowler et al. "The effects of social environment on adult neurogenesis in the female prairie vole". eng. In: *J. Neurobiol.* 51.2 (May 2002), pp. 115–128. ISSN: 0022-3034.
- [19] Alexis M. Stranahan, David Khalil, and Elizabeth Gould. "Social isolation delays the positive effects of running on adult neurogenesis". en. In: *Nat Neurosci* 9.4 (Apr. 2006), pp. 526–533. ISSN: 1097-6256. DOI: [10.1038/nn1668](https://doi.org/10.1038/nn1668).
- [20] Jia Liu et al. "Impaired adult myelination in the prefrontal cortex of socially isolated mice". en. In: *Nat Neurosci* 15.12 (Dec. 2012), pp. 1621–1623. ISSN: 1097-6256. DOI: [10.1038/nn.3263](https://doi.org/10.1038/nn.3263).
- [21] Angela J. Grippo et al. "Social Isolation Disrupts Autonomic Regulation of the Heart and Influences Negative Affective Behaviors". In: *Biological Psychiatry. Stress and Anxiety: Developmental and Therapeutic Perspectives* 62.10 (Nov. 2007), pp. 1162–1170. ISSN: 0006-3223. DOI: [10.1016/j.biopsych.2007.04.011](https://doi.org/10.1016/j.biopsych.2007.04.011).
- [22] National Research Council of the National Academies. Committee for the Update of the Guide for the Care and Use of Laboratory Animals. *Guide for the care and use of laboratory animals*. 8th ed. Washington D.C.: The National Academic Press, 2011. ISBN: 978-0-309-15400-0.
- [23] K. King, B. Steiner, and S. Ritchie Breach. "Violence in the Supermax: A Self-Fulfilling Prophecy". In: *The Prison Journal* 88.1 (2008), pp. 144–168. DOI: [10.1177/0032885507311000](https://doi.org/10.1177/0032885507311000).
- [24] Terry A. Kupers et al. "Beyond Supermax Administrative Segregation". In: *Criminal Justice and Behavior* 36.10 (2009), pp. 1037–1050.
- [25] American Civil Liberties Union of Maine. *Change is Possible: A Case Study of Solitary Confinement Reform In Maine*. Tech. rep. 2013.
- [26] David Lovell, L. Clark Johnson, and Kevin C. Cain. "Recidivism of Supermax Prisoners in Washington State". en. In: *Crime & Delinquency* 53.4 (Oct. 2007), pp. 633–656. ISSN: 0011-1287. DOI: [10.1177/0011128706296466](https://doi.org/10.1177/0011128706296466).
- [27] Daniel P. Mears and William D. Bales. "Supermax Incarceration and Recidivism*". en. In: *Criminology* 47.4 (Nov. 2009), pp. 1131–1166. ISSN: 1745-9125. DOI: [10.1111/j.1745-9125.2009.00171.x](https://doi.org/10.1111/j.1745-9125.2009.00171.x).
- [28] Shira E Gordon. "Solitary Confinement, Public Safety, and Recidivism". In: *University of Michigan Journal of Law Reform* 47 (2014).
- [29] United States Court of Appeals For the 3rd District. "Williams v. Secretary Pennsylvania Department of Corrections". In: 14-1469 (2017).
- [30] United Nations, General Assembly. *United Nations Standard Minimum Rules for the Treatment of Prisoners (the Nelson Mandela Rules)*. (17 December 2015), available from undocs.org/A/RES/70/175.