



The brain in solitude: an (other) eighth amendment challenge to solitary confinement

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ABSTRACT

Solitary confinement is not cruel and unusual punishment. It is cruel and unusual if one or more of its accompanying material conditions result in a wanton and unnecessary infliction of pain upon an individual. This requirement is met when such conditions involve a “deprivation of basic identifiable human needs” to an extent that they inflict harm or create a “substantial risk of serious harm” and they are enacted with “deliberate indifference” by prison personnel. With limited exceptions, the Supreme Court and lower federal courts have perpetuated a narrow application of these standards. In particular, Courts have often discounted the generalized mental pain caused by extreme isolation. Accordingly, Courts have often neglected the duration of solitary confinement as an autonomous aspect of constitutional scrutiny. Growing neuroscientific research has emphasized that social interaction and environmental stimulation are of vital importance for physiological brain function. It has further highlighted that socio-environmental deprivation can have damaging effects on the brain, many of which may entail irreversible consequences. Drawing on these insights, this article suggests that solitary confinement is in and of itself cruel and unusual punishment even under the current standards. Avenues for a profound rethinking of solitary confinement regimes are presented and discussed.

KEYWORDS: solitary confinement, social neuroscience, eighth amendment, neuroplasticity, extreme isolation, punishment

INTRODUCTION

The reality of solitary confinement¹ in the USA is notorious. Official reports, legal and psychological literature, and media accounts have presented a myriad of stories of incarcerated people who were forced into extreme isolation for 22 or over 23 hours for indefinite time frames with no meaningful social contact beyond sporadic interactions with prison guards—often in precarious living conditions.² While such reality exists and persists in many correctional facilities, the practice of solitary confinement is nonetheless legitimate, as it is presumably able to meet the disciplinary, security, and safety-related needs of prisons.

There is neither uniform regulation nor consistent administration of solitary confinement across states.³ Rather, the policies and practices that govern solitary confinement are largely left to the discretion of single prison administrations of each state. The administrative arbitrariness of solitary confinement, which has often resulted in abuses of the practice,⁴ has given rise to a number of national and international movements that demand either the abolishment or a radical reform of solitary confinement in the USA. These strains have led to several reforms in some jurisdictions⁵ as well as the formulation of recommendations and guidelines by the Department of Justice⁶ and national associations.⁷ These interventions encourage restriction of the use of solitary confinement by placing constraints on the maximum amount of time that can be spent

- 1 Solitary confinement refers to the practice of correctional administrators of placing an inmate in restricted housing or in a supermax security facility. Solitary confinement includes isolation through disciplinary segregation, administrative segregation, protective segregation, and temporary segregation. Disciplinary segregation involves short-term confinement (eg 30 days) in a restrictive housing unit to sanction inmates for specific infractions. Administrative segregation is used to separate inmates that are deemed a significant threat to the safety and security of the facility. It refers to long-term classification to the supermax unit or facility within a correctional system. Protective custody refers to the practice of segregating inmates for their own protection because they are at high risk of victimization. Temporary segregation is the placement of an inmate in restrictive housing that can occur for a wide range of institutional needs. It usually refers to short-term classification, but it can sometimes precede disciplinary or administrative segregation placements. Each type of segregation entails the same restrictive conditions—intense isolation and absolute control—and treatment by prison staff. See Ryan Labrecque, *The Use of Administrative Segregation and Its Function in the Institutional Setting*, In National Institute of Justice 250315, RESTRICTIVE HOUSING IN THE U.S.: ISSUES, CHALLENGES AND FUTURE DIRECTIONS 49, 51–53 (2016).
- 2 See *id.* at 53–54.
- 3 For an overview, see American State Correctional Association and Liman Center (ASCA-Liman), *Reforming Restrictive Housing: The 2018 ASCA-Liman Nationwide Survey of Time-in-Cell* (Oct., 2018), https://law.yale.edu/sites/default/files/documents/pdf/Liman/asca_liman_2018_restrictive_housing_revised_sept_25_2018_-_embargoed_unt.pdf.
- 4 See, eg Amnesty International, *The Shocking Abuse of Solitary Confinement in US Prisons*, <https://www.amnestyusa.org/the-shocking-abuse-of-solitary-confinement-in-u-s-prisons/>; Editorial, *The Abuse of Solitary Confinement*, *The New York Times* (June 20, 2012), <https://www.nytimes.com/2012/06/21/opinion/the-abuse-of-solitary-confinement.html>.
- 5 See *supra* note 3.
- 6 U.S. Department of Justice, *Report and Recommendations Concerning the Use of Restrictive Housing* (Jan. 2016), <https://www.justice.gov/archives/dag/file/815551/download> (recommending several substantial reforms to the use of solitary confinement in the U.S., including banning solitary confinement for children and urging all jurisdictions to reconsider the use of solitary confinement for young adults aged 18–25 by calling on correctional staff to be trained on young adult brain development and incorporate “developmentally responsive” policies for this population) (last visited February 3, 2019).
- 7 American Correctional Association, *Restrictive Housing Expected Practices* (Jan. 2018), http://www.aca.org/ACA_Prod_IMIS/ACA_Member/Standards___Accreditation/Standards/Restrictive_Housing_Committee/ACA_Member/Standards_and_Accreditation/Restrictive_Housing_Committee/Restrictive_Housing_Committee.aspx?hkey=458418a3-8c6c-48bb-93e2-b1fcbca482a2 (issuing guidelines

in extreme isolation or by banning the use of solitary confinement for more vulnerable prison populations, including people with mental disabilities and juveniles.

Nevertheless, progress in limiting or improving solitary confinement regimes has proved to be slow and generally inconsistent. The official report of the American State Correctional Association and Liman Center (ASCA-Liman) in 2018 indicates that the number of people forced into isolation has decreased in two dozen of states yet increased in 11 others.⁸

In addition to a lack of uniform standards and policies regulating solitary confinement regimes across the country, there is also a narrow and highly deferential application of the constitutional standard for determining the legitimacy of solitary confinement under the Eighth Amendment ban on cruel and unusual punishments.⁹ As of *Estelle*,¹⁰ the Supreme Court has established that conditions of confinement—including solitary confinement—amount to cruel and unusual punishment, provided that they result in “an unnecessary and wanton infliction of pain”¹¹ upon incarcerated people. This requirement is met when such conditions involve a “deprivation of basic identifiable human needs”¹² to an extent that they inflict harm or create a “substantial risk of serious harm”¹³ and are enacted with “deliberate indifference”¹⁴ by prison personnel. Although it is not an explicit criterion of the conditions of confinement test, when appraising the constitutionality of a prison condition, Courts also consider a state’s “legitimate penological interest” in holding a prisoner in that condition.¹⁵

Regarding solitary confinement specifically, the Court and lower federal courts have—with limited exceptions—perpetuated a narrow application of the conditions of confinement standard. In particular, Courts have often discounted the generalized mental pain that is caused by living in social isolation in environmentally impoverished cells. Accordingly, they have frequently neglected the duration of solitary confinement as an autonomous aspect of constitutional scrutiny. In so doing, Courts have often overlooked the effects of the distinguishing aspect of solitary confinement compared to normal confinement, namely extreme isolation, otherwise referred to as social and environmental (or socio-environmental) deprivation.¹⁶

In recent times, another avenue has been undertaken to challenge the constitutionality of solitary confinement. Such mode relies upon insights from social neuroscience examining the traumatic and potentially permanent effects of social and environmental deprivation on the brain. Social neuroscience research has suggested that social interaction in enriched environments is of vital importance for physiological brain function

limiting solitary confinement for several groups of prison population including prisoners with serious mental illness).

8 *Supra* note 3, at 4 (estimating about 61,000 individuals in solitary confinement in the fall 2017).

9 See *Hutto v. Finney*, 437 U.S. 678, 685 (1978) (establishing that “[c]onfinement in a prison or in an isolation cell is a form of punishment subject to scrutiny under Eighth Amendment standards.”).

10 *Estelle v. Gamble*, 429 U.S. 97 (1976).

11 *Gregg v. Georgia*, 428 U.S. 153, 173 (1976).

12 *Rhodes v. Chapman*, 452 U.S. 337, 347 (1981).

13 *Farmer v. Brennan*, 511 U.S. 825, 837 (1994).

14 *Estelle*, 429 U.S. 97; *Wilson v. Seiter*, 501 U.S. 294 (1991).

15 *Estelle*, 429 U.S. 97, at 103 (citing *Gregg*, 428 U.S. 153, at 182–83).

16 I shall use “extreme isolation,” “social and environmental deprivation,” and “socio-environmental deprivation” interchangeably throughout the article.

and mental health. Further studies have revealed an array of brain deteriorations that social and environmental deprivation can impart within even after a brief period of time. Such deteriorations have been associated with a number of potentially irreversible mental conditions. Moreover, many of the mental conditions that correlate with such deteriorations due to isolation in deprived environments have been associated with an increased risk of maladaptive action tendencies and socially dysfunctional behaviors, including aggression. An equally significant topic of research from this branch of neuroscience has reported the organic nature of social pain endured by social isolation.

While neuroscientific findings on the damaging consequences of socio-environmental deprivation integrate and strengthen the validity of the copious research on the deleterious psychological effects of solitary confinement, they also exhibit the potential to offer new support for challenges to solitary confinement. First, these studies support the claim that solitary confinement is *per se* a condition that deprives individuals of identifiable basic human needs, namely those of social interaction and environmental stimulation. Second, within several days of isolation spent in a deprived setting, there is a risk of physical deteriorations in the brain. Third, the damaging consequences for mental health and behavior that follow such deterioration could continue upon re-introduction of the person to the social environment and may seriously compromise the person's long-term social functioning. Based on these insights, this article makes a case for finding solitary confinement *per se* cruel and unusual under any aspect of the current conditions of confinement standard. Furthermore, it illustrates avenues for a profound rethinking of solitary confinement regimes.

The article proceeds as follows. The next section, Part I, conducts a succinct analysis of conditions of confinement jurisprudence (hereby, conditions jurisprudence) to illustrate the current constitutional status of solitary confinement. Subsequently, Part II discusses how conditions jurisprudence has attributed predominant irrelevance to the generalized mental pain that extreme isolation causes. Part III then addresses the general oversight of the duration of extreme isolation as an autonomous aspect of constitutional scrutiny under the Eighth Amendment. Part IV reviews neuroscientific literature on social and environmental deprivation by first analyzing neuroscientific research on the need for social interaction and environmental stimulation to preserve physiological brain function and mental health (Part IV.A). The review continues with an analysis of the set of neuroscientific research on the traumatic effects of social isolation and environmental deprivation for the brain, mental and physical health, and social behavior as well as on the organic nature of social pain (Part IV. B and IV.C). Afterward, Part V engages with the reviewed neuroscientific insights to develop and advance several challenges to solitary confinement. Specifically, this part argues that solitary confinement *per se* fails to meet the current conditions standard in three main respects. First, solitary confinement *per se* deprives individuals of basic human needs, namely social interaction and environmental stimulation. Second, such deprivation can precipitate objectively serious and potentially permanent brain deteriorations also in healthy individuals. Third, the types of deteriorations and the extent of their risk are too excessive in relation to the penological prison interests of discipline, security, and safety. Part VI additionally argues from a more scholarly perspective that solitary confinement and its risks and consequences are also incompatible with the retributive, incapacitative, deterrent, and rehabilitative justifications for punishment. In view of

these arguments, the article maintains that solitary confinement is an innately cruel and unusual punishment from any Eighth Amendment-relevant perspective. Part VII concludes the article with a proposal to abolish solitude in prisons that supports a profound rethinking of solitary confinement regimes under strict (and possibly uniform) temporal, social, and environmental standards.

SOLITARY CONFINEMENT IN “CONDITIONS JURISPRUDENCE”

Existing literature has recounted at length the history of solitary confinement. Abundant studies have also provided extensive and detailed analyses of the origins and the interpretive evolution of the Eighth Amendment. While this article does not fully review the numerous reconstructions of other scholars over the years, its scope does include specific aspects of conditions jurisprudence and its application to solitary confinement. These aspects offer a basis for the normative arguments in Part V.

The meaning of “cruel and unusual punishments”¹⁷ has not received a definitive interpretation in Courts decisions.¹⁸ Nonetheless, over the years the Supreme Court has developed two approaches to establish the confines of cruel and unusual punishment.¹⁹ The first approach, which generally applies to penalties that are formally meted out by courts or in statutes, evaluates whether the punishment in question is proportional to the severity of the crime committed.²⁰ Thus, a punishment is cruel and unusual when “by [its] excessive length or severity [it is] greatly disproportioned to the offenses charged.”²¹ Such judgment must be made with consideration to the “evolving standard of decency that marks the progress of a maturing society.”²²

The second approach, which generally applies to the treatment of people in prison including the conditions of their confinement, evaluates whether the “punishment” in question involves an “unnecessary and wanton infliction of pain.”²³ The governing

17 In its original reading, the Eighth Amendment is recognized as protecting against “inhuman and barbarous” treatment. See, eg *In Re Kemmler*, 136 U.S. 436 (1890); see also *Furman v. Georgia*, 408 U.S. 238, 272–273 (1972) (Brennan, J, concurring) (“The true significance of [cruel and unusual] punishments is that they treat members of the human race as non-humans, as objects to be toyed with and discarded. They are thus inconsistent with the fundamental premise of the Clause that even the vilest criminal remains a human being possessed of common human dignity.”). On many occasions, however, the Court stressed that the clause is not static but dynamic and flexible. See, eg *Hutto v. Finney*, 437 U.S. 678, 685 (1978) (citations omitted) (“The Eighth Amendment’s ban . . . ‘proscribes more than physically barbarous punishments’ . . . It prohibits penalties that . . . transgress today’s ‘broad and idealistic concepts of dignity, civilized standards, humanity, and decency.’”).

18 See Tom Stacy, *Cleaning Up the Eighth Amendment Mess*, 14 WILLIAM & MARY BILL OF RIGHTS J. 475, 480 (2005) (“It is difficult to identify any other area of constitutional law in which the Court’s use of the text has been as uneven, inconsistent, and unexplained.”).

19 See Note, *The Psychology of Cruelty: Recognizing Grave Mental Harm in American Prisons*, 128 HARV. L. REV. 1250, 1253 (2015).

20 See *Graham v. Florida*, 560 U.S. 48, 61 (2010) (referring to *Atkins* and *Roper*, the Court explained that such proportionality evaluation first involves a consideration of “objective indicia of society’s standards, as expressed in legislative enactments and state practice” to determine whether there is a national consensus against the sentencing practice at issue.” Next, such evaluation involves an independent judgment of constitutionality that looks at “the standards elaborated by controlling precedents and by the Court’s own understanding and interpretation of the Eighth Amendment’s text, history, meaning, and purpose. . . .”).

21 *Weems v. United States*, 217 U.S. 349, 371 (1910).

22 *Trop v. Dulles*, 856 U.S. 86, 101 (1958).

23 *Gregg v. Georgia*, 428 U.S. 153, 173 (1976).

standard to determine if the treatment or the conditions within the prison in question amount to an unnecessary and wanton infliction of pain requires that it (they) result(s) in unquestioned and “serious deprivation [s] of basic human needs”²⁴ to an extent that it/they inflict (s) harm or create (s) a “substantial risk of harm” that is objectively serious²⁵ (the “objective prong” of the standard). The standard also requires that prison officials must be “deliberately indifferent”²⁶ to the fact that such treatment or condition inflicts or creates a risk of inflicting serious harm upon the individual (the “subjective prong” of the standard). Furthermore, a punishment (including the treatment of prisoners and their living conditions in prisons) results in an unnecessary and wanton infliction of pain, even though applied in pursuit of a legitimate penological aim, if it goes beyond what is necessary to achieve that aim.²⁷ The ultimate criterion for evaluating the “unnecessary and wanton infliction of pain” standard lies also in the developing concepts of decency that mark the progress of a maturing society.²⁸

Still, solitary confinement is not *per se* cruel and unusual punishment.²⁹ Nevertheless, solitary confinement “becomes” cruel and unusual when its *accompanying material conditions* amount to a wanton or unnecessary infliction of pain under the above-mentioned criteria set by the Court. Throughout history, Courts have manifested a tendency to a narrow interpretation and application of the conditions standard in relation to solitary confinement. Such approach has sparked criticism from legal scholars who have moved an objection of “underinclusivity” against the Courts’ approach to solitary conditions cases. Notably, Courts have been underinclusive in tending to discount the generalized mental pain that extreme isolation causes. As a consequence, they have often neglected the duration of solitary confinement as an independent aspect of constitutional scrutiny. In the following section, I shall discuss all of these aspects in turn.

SOLITARY CONFINEMENT AND THE OBJECTIVE PRONG OF THE CONDITIONS STANDARD

The narrowness of Courts’ applications of the conditions standard to solitary confinement cases emerges first from the dominant interpretation of the notion of “basic human need.” The Supreme Court has generally stated that constitutional protections that relate to conditions of confinement following a criminal conviction derive from the acknowledgment that “[p]risoners retain the essence of human dignity inherent in all persons” and that, through incarceration, “society takes from prisoners the means to provide for their own needs.”³⁰ Therefore, “[a] prison that deprives prisoners of basic

24 *Rhodes v. Chapman* 452 U.S. 337, 347 (1981).

25 *Farmer v. Brennan* 511 U.S. 825, 837 (1994).

26 *Estelle v. Gamble* 429 U.S. 97 (1976); *Wilson v. Seiter* 501 U.S. 294 (1991).

27 *Estelle*, 429 U.S. 97, at 103 (citing *Gregg*, 428 U.S. 153, at 182–83).

28 *Trop*, 856 U.S. 86, at 101.

29 Courts are virtually unanimous in their holdings that solitary confinement, absent other harsh conditions, is constitutional. See *Hutto*, 437 U.S. 678, at 686; see also *Haines v. Kerner*, 492 F.2d 937, 942 (7th Cir. 1974) (per curiam) (“[S]olitary confinement has traditionally been an appropriate means of maintaining prison discipline”); *Bono v. Saxbe*, 620 F.2d 609, 612 (7th Cir. 1980) (“. . . the decision to place a prisoner [in solitary confinement] is not a violation . . . of the Eighth Amendment.”).

30 *Brown v. Plata*, 563 U.S. 493, 510 (2011).

sustenance . . . is incompatible with the concept of human dignity and has no place in civilized society.”³¹

The concept of “basic human need” has not received a detailed or unanimous interpretation by federal courts. Generally, Courts have understood “basic human needs” as specific and identifiable minimal life necessities³² that include food, water, shelter, exercise, medical care, and sanitation.³³ Thus, the predominant understanding of “basic human need” mainly concerns specific “physical needs”³⁴ that are considered to be necessary for one’s survival. In addition, the Supreme Court has established that only “extreme deprivations” are sufficient to support a condition of confinement claim.³⁵ This requirement is met when the deprivation is sufficiently serious to deny “the minimal civilized measure of life’s necessities.”³⁶

The requirement of an extreme deprivation of a specific, identifiable basic human need has greatly reduced the possibility of challenging solitary confinement based on its general conditions. With few exceptions,³⁷ the lack of proof that a person living in extreme isolation has been deprived of a necessary means of survival renders harsh or restrictive conditions of solitary confinement insufficient to equate to a wanton and unnecessary infliction of pain.³⁸

The bar for successfully meeting the objective prong of the conditions standard is made even higher by the requirement that the deprivation of (a) basic human need(s) must either result in or pose “a substantial risk of serious harm.”³⁹ This requirement is measured by “whether society considers the risk . . . to be so grave that it violates contemporary standards of decency to expose *anyone* unwillingly to such a risk.”⁴⁰

Courts have been vague about the type of harm—either physical or psychological—that must be (potentially) suffered to meet the standard.⁴¹ However, some authors have observed that Courts ultimately tend to understand “serious harm” as “physical”

31 *Id.*

32 *Rhodes*, 452 U.S. 337, at 347 (“Conditions . . . alone or in combination, may deprive inmates of the minimal civilized measure of life’s necessities. Such conditions could be cruel and unusual under the contemporary standard of decency But conditions that cannot be said to be cruel and unusual under contemporary standards are not unconstitutional. To the extent that such conditions are restrictive and even harsh, they are part of the penalty that criminal offenders pay for their offenses against society.”).

33 See *Wilson*, 501 U.S. 294, at 304–05; see also *Gibson v. Lynch* 652 F. 2d 348, 352 (3rd Cir. 1981) (“[T]he conditions of Gibson’s confinement . . . met his basic needs for nutrition and shelter and did not ‘involve . . . unnecessary and wanton infliction of pain.’”); *Atkins v. County of Orange*, 372 F. Supp. 2d 377, 406 (S.D.N.Y.2005) (citations omitted) (“The failure to regularly provide prisoners with . . . toilet articles including soap, razors, combs, toothpaste, toilet paper, access to a mirror and sanitary napkins for female prisoners constitutes a denial of personal hygiene and sanitary living conditions.”).

34 *Supra* note 19, at 1260.

35 *Hudson v. McMillian*, 503 U.S. 1, 9 (1992).

36 *Rhodes*, 452 U.S. 337, at 347.

37 See, eg *Ruiz v. Johnson*, 154 F. Supp. 2d 975, 984–86 (S.D. Tex. 2001).

38 See *Wilson*, 501 U.S. 294, at 305 (establishing that it has to be proved that the conditions cumulatively produced the deprivation of a single, identifiable human need).

39 *Farmer*, 511 U.S. 825, at 832–51.

40 *Helling v. McKinney*, 509 U.S. 25, 36 (1993).

41 *Rhodes*, 452 U.S. 337, at 364 (Brennan, J. concurring) (citing *Laaman v. Helgemoe*, 437 F.Supp. 269, 323[1977]) (“When ‘the cumulative impact of the conditions of incarceration threatens the physical, mental, and emotional health and well-being of the inmates . . .’ the court must conclude that the conditions violate the Constitution.”); *Brown*, 563 U.S. 493, at 510 (“Just as a prisoner may starve if not fed, he or she may suffer or die if not provided adequate medical care.”).

harm.⁴² The premise of such understanding is that the objectively serious harm must result from a serious deprivation of specific basic human needs. The latter, as noted above, have been generally understood to encompass physical needs, which include food, water, medical care, shelter, or sanitation. The deprivation of such physical needs leads to kinds of harm—starvation, thirst, or diseases due to poor hygiene—that are fundamentally physical.⁴³

The exception (that proves the rule) to the general interpretation of “objectively serious harm” as essentially physical harm is represented by the body of cases⁴⁴ that have identified the solitary confinement of people with mental disabilities as unconstitutional. Such exception is grounded in the idea that mental illness renders people more vulnerable to the harmful effects of extreme isolation. The leading case of this trend is *Madrid v Gomez*,⁴⁵ wherein the federal district court likened the placement of persons with mental illness in solitary confinement to “putting an asthmatic in a place with little air to breathe.”⁴⁶ Although the court recognized that prolonged isolation in scarce environments risks producing significant psychological traumas in incarcerated people with no history of mental illness as well, the court held that, “for many inmates, it does not appear that the degree of mental injury suffered significantly exceeds the kind of generalized psychological pain that courts have found compatible with Eighth Amendment standards.”⁴⁷ By relying upon such presumption of resilience of the general prison population to the harms of extreme isolation, the court essentially upheld that extreme isolation does not pose such a significant risk of serious psychological injury for all prisoners in solitary confinement. Therefore, solitary confinement is not a “*per se*” Eighth Amendment violation.

Cases such as *Madrid* represent key progress in solitary conditions jurisprudence. However, they simultaneously confirm the still-prevailing neglect of the generalized mental harm or pain due to extreme isolation among the healthy prison population. By qualitatively differentiating the risks of solitary confinement for mentally ill inmates from the generalized risk of psychological harm that is accrued through solitary confinement, Courts have failed to recognize that solitary confinement innately involves dangerous psychological risks for people who are forced into isolation in impoverished environments. Such failure has manifested a substantial underestimation of the devastating mental effects that extreme isolation can precipitate in any individual.⁴⁸

42 *Supra* note 19, at 1251, 1260–62.

43 See Laura Matter, Note, *Hey, I Think We're Unconstitutionally Alone Now: The Eighth Amendment Protects Social Interaction as a Basic Human Need*, J. GENDER, RACE & JUST. 265, 296 (2010–2011) (observing that “[C]ourts have found that exercise and personal hygiene are fundamental to maintaining the physical body. People need food and water, at the most basic level, to keep their bodies alive. People need exercise and hygiene to maintain a body in which to live.”).

44 See *Madrid v. Gomez*, 889 F. Supp. 1146 (N.D. Cal. 1995); *Jones' El v. Berge*, 164 F. Supp. 2d 1096 (W.D. Wis. 2001); *Palakovic v. Wetzel*, 854 F. 3d 209 (3d Cir 2017); *United States v. D.W.* 198 F. Supp. 3d 18 (E.d.n.y. 2016); *Peoples v. Annucci*, 180 F. Supp. 3d 294 (S.D.N.Y. 2016); *Sanders v. Melvin*, 873 F.3d 957 (7th Cir. 2017); *Wallace v. Baldwin* F. 3d 17–247 (7th Cir 2018).

45 889 F. Supp. 1146.

46 *Id.*, at 1265.

47 *Id.*

48 See *infra* Part II.

SOLITARY CONFINEMENT AND THE SUBJECTIVE PRONG OF THE CONDITIONS STANDARD

In *Estelle* and *Wilson*,⁴⁹ the Supreme Court upheld that Eighth Amendment claims arising from confinement conditions that are not formally imposed as a sentence for a crime also require proof of a subjective component, ie the deliberate indifference of prison officials to a prisoner's health or safety. The subjective "deliberate indifference" aspect of the conditions standard generally requires that a state official "knows of and disregards an excessive risk to inmate health or safety;"⁵⁰ therefore, "the official must both be aware of facts from which the inference could be drawn that a substantial risk of serious harm exists, and he must also draw the inference."⁵¹ Essentially, "an official's failure to alleviate a significant risk that he should have perceived but did not . . . cannot under our cases be condemned as the infliction of punishment" in violation of the Eighth Amendment.⁵²

In *Farmer*,⁵³ the Court clarified that deliberate indifference is equivalent to subjective recklessness, as is conceived of in criminal law. As such, the subjective prong of the conditions standard refers to the official's culpable state of mind and requires proof that corrections officials knew of and disregarded an excessive risk to an individual's health and safety. While the test remains individualized for the relevant case and prison official, the Court in *Farmer* also recognized that some risks of harm are so objectively clear that "a fact finder may conclude that a prison official knew of a substantial risk from the very fact that the risk was obvious."⁵⁴ Therefore, the proof of the official's awareness or disregard can also rely on circumstantial evidence that the risk was manifestly and generally known to be ignored.

The deliberate indifference test is surrounded by scholarly criticism. Arguments include that this subjective element may constitute an obstacle to successfully challenging objectively harmful conditions of solitary confinement, as is often difficult to prove in solitary confinement litigations.⁵⁵ Such difficulty is particularly manifest in cases that require the proof of prison officials' deliberate indifference to the (risks of) mental harm induced by solitary confinement,⁵⁶ especially among people with mental illness. Prison officials are not trained in mental health and have no knowledge of the symptoms or risks of a mental condition. Thus, they may avoid liability by

49 *Estelle*, 429 U.S. 97; *Wilson*, 501 U.S. 294, at 300 (holding that "[t]he source of the intent requirement is not the predilections of this Court, but the Eighth Amendment itself, which bans only cruel and unusual punishment. If the pain inflicted is not formally meted out as punishment by the statute or the sentencing judge, some mental element must be attributed to the inflicting officer before it can qualify."). For a critical comment on the Court's opinion in *Wilson*, see Amy Newman, *Eighth Amendment—Cruel and Unusual Punishment and Conditions Cases*, 82 J. CRIM. L. & CRIMINOLOGY 979 (1991–1992).

50 *Farmer*, 511 U.S. 825, at 837.

51 *Id.*

52 *Id.*, at 838.

53 *Id.*, at 839.

54 *Id.*, at 842.

55 See, eg Lori Marschke, *Proving Deliberate Indifference: Next to Impossible for Mentally Ill Inmates*, VALP. U. L. REV. 487 (2004); Elizabeth Bennion, *Banning the Bing: Why Extreme Solitary Confinement is Cruel and Far Too Usual*, 90 IND. L. J. 741, 770–71 (2015); Sharon Dolovich, *Cruelty, Prison Conditions and the Eighth Amendment*, 84(4) NYU L. REV. 881, 892 (2009).

56 See Bennion *id.*, at 770 (arguing that "the deliberate-indifference standard creates perverse incentives for authorities to turn a blind eye to severe human suffering. So long as they do not notice an inhumane condition, they will not be held responsible for failing to change it—even if they reasonably should have noticed it.").

simply claiming that they did not have actual knowledge of a mental need.⁵⁷ As a consequence, prisoners who report significant mental harm “face a tougher burden in proving [prison officials’] actual knowledge than their physically ill counterparts.”⁵⁸ Admittedly, physical conditions are more easily recognized (and recognizable) by a layman, and one’s knowledge of them is easier to prove in litigation.

In view of its arguable provability, several authors have substantially called for reconsidering or even eliminating⁵⁹ the subjective prong of the conditions test and focus only on the objective conditions of confinement. Importantly, with specific regard to solitary confinement, some authors have highlighted that the condition of extreme isolation alone should be sufficient to grant a presumption of deliberate indifference to the health and safety of the person who has been forced into solitary confinement.⁶⁰

PENOLOGICAL INTERESTS

Although it is not an explicit criterion of the conditions of confinement test, the Supreme Court has explicated that a factor to consider in assessing the constitutionality of a prison condition is the state’s “legitimate penological interest” in holding a prisoner in that condition.⁶¹ Thus, when appraising whether one or more prison conditions deprive individuals of their basic human needs and risk inflicting serious harm, the gravity of the (risk of) harm incurred by an inmate is weighed against the legitimate penological needs of the prison in terms of discipline, security, and safety.⁶²

57 Marschke *supra* note 55, at 530. See also Dolovich *supra* note 55, at 892 (arguing that the main “problem with Farmer’s recklessness standard [is that] it holds officers liable only for those risks they happen to notice—and thereby creates incentives for officers not to notice— despite the fact that when prison officials do not pay attention, prisoners may be exposed to the worst forms of suffering and abuse. A more appropriate standard would at the very least hold prison officials liable for failures to recognize substantial risks of serious harm that a reasonable prison official, appropriately attentive to prisoners’ basic needs, would have recognized.”).

58 Marschke *id.*, at 490.

59 See, eg Ian M. Kysel, *Banishing Solitary: Litigating an End to the Solitary Confinement of Children in Jails and Prisons*, 40 NYU REV. LAW & SOC. CHANGE 675, 701 (2016); Jason Stern, *Prison (In)Justice: An Examination of the Deliberate Indifference Standard in 42 U.S.C. § 1983 Jail-Suicide Claims*, 10 SETON HALL CIR. REV. 173 (2013); Alexander Reinert, *Eighth Amendment Gaps: Can Conditions of Confinement Litigation Benefit from Proportionality Theory?* 36 FORDH. URB. L.J. 53 (2009).

60 See, eg Bennion, *supra* note 55, at 773 (observing that “an analysis of prison conditions under the Eighth Amendment should not require a finding of deliberate indifference. . . . There was intent in imprisoning the inmate Thus all state-created conditions of confinement could be interpreted as punishments regardless of whether any particular official manifested deliberate indifference regarding particular prison conditions.”).

61 Rhodes, 452 U.S. 337, at 346 (citing *Gregg*, 428 U.S. 153, at 182–83) (holding that a condition of confinement may also amount to unnecessary and wanton infliction of pain—and is, therefore, cruel and unusual—when it is “totally without penological justification.”). See also *Young v. Quinlan*, 960 F.2d 351, 364 (1999) (“Segregated detention is not cruel and unusual punishment *per se*, as long as the conditions of confinement are not foul, inhuman or totally without penological justification.”); *Horne v. Coughlin*, 155 F.3d 26, 31 (2d Cir. 1998) (holding that placement of prisoner with mental illness did not violate Eighth Amendment, in part, because it was not “without penological justification”); *Jones’ El*, 164 F. 2d, at 1116–1117 (W.D. Wis. 2001) (acknowledging that “[t]he conditions at Supermax are so severe and restrictive that they exacerbate the symptoms that mentally ill inmates exhibit. . . . Many of the severe conditions serve no legitimate penological interest; they can only be considered punishment for punishment’s sake.”).

62 See, eg *Rhodes*, 452 U.S. 337, at 364 (Brennan, J, concurring) (“The court must examine the effect upon inmates of the condition of the physical plant [lighting, heat, plumbing, ventilation, living space, noise levels, and recreation space]; sanitation [control of vermin and insects, food preparation, medical facilities, lavatories and showers, clean places for eating, sleeping, and working]; safety [protection from violent, deranged, or diseased inmates, fire protection, emergency evacuation]; inmate needs and services [clothing, nutrition,

Moreover, the presence of a legitimate prison interest may influence the determination of whether prison officials were deliberately indifferent to the protected interests of the inmate.⁶³

In regard to solitary confinement, policy makers and corrections officials widely believe that the use of solitary confinement is an effective strategy to increase safety and promote order throughout the prison system because it reduces criminal activity and prison violence.⁶⁴ Therefore, the necessity and effectiveness of solitary confinement in safeguarding prison interests allegedly counterbalance the adverse impact that it may have on prisoners who are forced into isolation. In this way, there is an implicit trade-off between the adverse impact of solitary confinement on prisoners—ie the loss of social interaction—and the benefits of prison, namely discipline, security, and safety. Thus, the potential “benefits” of solitary confinement for the individual inmate, the other inmates, and the prison staff neutralize the harm that is linked with stays in extreme isolation.

This balancing argument is implicitly supported by the Courts’ attitude of judicial deference of solitary confinement management to prison administrators and officials.⁶⁵ Lacking any established criteria for assessing the legitimacy of a penological interest in a given prison condition,⁶⁶ such as solitary confinement, Courts have often “defer[ed] to prison officials when they claim that a particular condition or treatment is necessary.”⁶⁷ In fact, Courts have explicitly acknowledged the greater competence of prison administrators and officials compared to Courts in terms of operating prisons

bedding, medical, dental, and mental health care, visitation time, exercise and recreation, educational, and rehabilitative programming]; and staffing [trained and adequate guards and other staff, avoidance of placing inmates in positions of authority over other inmates].”). See also *Farmer*, 511 U.S. 825, at 833 (quoting *Cortes-Quinones v. Jimenez-Nettleship*, 842 F. 2d 556, 558 [CA1], cert. denied, 488 U. S. 823 [1988]) (“[P]rison officials have a duty . . . to protect prisoners from violence at the hands of other prisoners.”); *Ayers v. Coughlin*, 780 F. 2d 205, 209 (2d Cir.1985) (“The failure of custodial officers to employ reasonable measures to protect an inmate from violence by other prison residents has been considered cruel and unusual punishment.”).

63 See, eg *Scarver v. Litscher*, 434 F.3d 972, 975–977 (7th Cir. 2006).

64 See, eg The Crime Report, *Corrections Officers Defend Solitary Confinement as A Key Deterrent* (Aug. 25, 2015), <https://thecrimereport.org/2015/08/25/2015-08-corr-officers-defend-solitary/>.

65 See, however, *Cruz v. Beto*, 405 U.S. 319, 321 (1972) (“Federal courts sit not to supervise prisons but to enforce the constitutional prison rights of all ‘persons,’ including prisoners. We are not unmindful that prison officials must be accorded latitude in the administration of prison affairs, and that prisoners necessarily are subject to appropriate rules and regulations. But persons in prison, like other individuals, have the right to petition the Government for redress of grievances...”). See also *Procunier v. Martinez*, 416 U.S. 396, 404–406 (1974) (“[t]he problems of prisons in America are complex and intractable . . . Most require expertise, comprehensive planning, and the commitment of resources, all of which are peculiarly within the province of the legislative and executive branches of government. For all of those reasons, courts are ill-equipped to deal with the increasingly urgent problems of prison administration and reform. . . . But a policy of judicial restraint cannot encompass any failure to take cognizance of valid constitutional claims whether arising in a federal or state institution. When a prison regulation or practice offends a fundamental constitutional guarantee, federal courts will discharge their duty to protect constitutional rights.”).

66 See also Brittany Glidden & Laura Rovner, *Requiring the State to Justify Supermax Confinement for Mentally Ill Prisoners: A Disability Discrimination Approach*, 90(1) DENV. U. L. REV. 55, 62–63 (2012) (noting that the test for whether a condition violates the Eighth Amendment does not contemplate the role of the prison’s legitimate penological interest since “[n]either the objective nor the subjective components of the Eighth Amendment test specify how an asserted penological interest will be considered and whether it can preclude a finding that a particular condition is cruel and unusual.”).

67 *Id.*, at 62.

and understanding their dynamics.⁶⁸ These arguments posit that prison administrators and officials, rather than judges, have the most accurate sense of available resources, the most knowledge of which individuals are most in need of these resources, and the strongest ability to track prisoners' evolving treatment needs.⁶⁹ Moreover, they have the right expertise in managing safety and protection needs that may arise in a prison setting.⁷⁰

This attitude of judicial deference has proved particularly frequent in solitary confinement litigation cases. In many of these cases, even if a question of fact did exist as to whether the conditions of solitary confinement posed a serious risk of substantial harm that implicated the Eighth Amendment, prison administration still successfully claimed a legitimate penological interest in inflicting isolated confinement upon a prisoner. For instance, in *Scarver v Litscher*,⁷¹ the Seventh Circuit recognized that the plaintiff had endured mental suffering due to his placement in supermax confinement, observing that he had repeatedly banged his head against the wall of the cell. Although it acknowledged that this situation was concerning, the court demonstrated its unwillingness to interfere with correctional management of dangerous inmates and held that “[p]rison authorities must be given considerable latitude in the design of measures for controlling homicidal maniacs without exacerbating their manias beyond what is necessary for security. It is a delicate balance.”⁷²

According to Glidden and Rovner, while Courts do not always express their opinions so openly, “a similar underlying sentiment is regularly present in such cases, and may be influencing the decision even absent any explicit language.”⁷³ Moreover, these and other authors⁷⁴ have observed that prison officials are not required to thoroughly justify the specific conditions that accompany solitary confinement. Rather, generic assertions of safety and security often suffice as a legitimate penological interest in

68 See, eg *Bell v. Wolfish*, 441 U.S. 520, 547 (1979) (concluding that “[p]rison administrators . . . should be accorded wide-ranging deference in the adoption and execution of policies and practices that in their judgment are needed to preserve internal order and discipline and to maintain institutional security.”).

69 See E. Lea Johnston, *Conditions of Confinement at Sentencing: The Case of Seriously Disordered Offenders*, 63 CATH. U. L. REV. 625, 626 (2014) (observing that sentencing law does not provide judges with “the tools necessary to prevent anticipated and unjustified harm to prisoners”).

70 See *Turner v. Safley*, 842 U.S. 78, 85 (1987) (“[r]unning a prison is an inordinately difficult undertaking that requires expertise, planning, and the commitment of resources, all of which are peculiarly within the province of the legislative and executive branches of government.”). See also *Rhodes*, 452 U.S. 337, at 354 (Brennan, J. concurring) (“No one familiar with litigation in this area could suggest that the courts have been overeager to usurp the task of running prisons, which, as the Court today properly notes, is entrusted in the first instance to the ‘legislature and prison administration rather than a court.’); *Gibson*, 652 F.2d 348, at 352 (citing *Gittlemacker v. Prasse*, 428 F.2d 1, 4 [3rd Cir. 1970]) (stating that “the need to classify prisoners coming into the system and segregate them is an area where the court should not “intervene in matters of state prison administration, recognizing that a wide latitude for judgment and discretion must be extended to prison officials.”).

71 434 F.3d 972. See also *Ruiz v. Johnson*, 37 F. Supp. 2d 855, 915 (S.D. Tex. 1999) (quoting *Young v. Quinlan*, 960 F.2d 351, 364 [1999] and recognizing that “segregation ‘may be a necessary tool of prison discipline, both to punish infractions and to control and perhaps protect inmates whose presence within the general population would create unmanageable risks’” and that “[t]he need for such segregation is certainly within defendants’ discretion.”).

72 *Scarver*, 434 F.3d 972, at 976.

73 *Supra* note 66, at 61.

74 Eg, Thomas L. Hafemeister & Jeff George, *The Ninth Circle of Hell: An Eighth Amendment Analysis of Imposing Prolonged Solitary Confinement on Inmates with a Mental Illness*, 90(1) DENV. U. L. REV. 1 (2012).

holding a prisoner in isolation.⁷⁵ For instance, as Hafemeister and George have noted, a justification that prison officials have often advanced in defending the harsh regimes of supermax facilities is that “they house the ‘worst of the worst’; the violent, dangerous inmates who simply cannot be housed anywhere else.”⁷⁶ Such assertions—and judicial deference to them—are common among Eighth Amendment analyses and have often resulted in a lack of careful scrutiny of the material conditions of solitary confinement. Thus, even though the Supreme Court explicated that the “touchstone” of the penological evaluation of prison conditions “is the effect upon the imprisoned”⁷⁷ and that affording “deference to the findings of state prison officials in the context of the [E] ighth [A] mendment would reduce that provision to a nullity in precisely the context where it is most necessary,”⁷⁸ the risk *de facto* exists that the legitimate interests of prisons will prevail over the concern for the negative consequences of harsh conditions, such as those of solitary confinement, for incarcerated people.⁷⁹

MENTAL PAIN IN EXTREME ISOLATION

The literature has extensively reported the psychological effects of solitary confinement.⁸⁰ Numerous psychological, psychiatric and observational studies have carefully documented the high amount of adverse consequences of living in isolation in deprived environments for mental health, well-being, and behavioral attitudes in both mentally ill and healthy populations. Suicidal thoughts, depression, and attentional and memory deficits are just a few examples of the mental anguish that people incarcerated in extreme isolation can suffer, especially under medium- to long-term extreme isolation and in particularly scarce settings. Beyond the most severe psychopathological effects, psychological literature has also widely documented a link between social isolation and the experience of social pain, which entails “the painful feelings following social rejection or social loss,”⁸¹ as well as an adverse impact of social pain on physical and mental health and psychological well-being, including poor self-esteem, humiliation, a feeling of meaninglessness, greater rejection-sensitivity, and increased aggression.⁸²

Although these studies have been largely replicated and have entered courtrooms on many occasions as well, “lower courts have only rarely recognized grave mental harm

75 *Supra* note 66, at 64.

76 *Supra* note 74, at 45 (discussing the “myth” of the worst of the worst in deference defense).

77 *Rhodes*, 452 U.S. 337, at 364 (Brennan, J. concurring) (citing *Laaman v. Helgemoe*, 437 F.Supp. 269, 323[1977]) (“In determining when prison conditions pass beyond legitimate punishment and become cruel and unusual, the ‘touchstone is the effect upon the imprisoned.’”).

78 *Johnson v. California*, 543 U.S. 499, 511 (2005) (quoting *Spain v. Proconier*, 600 F.2d 189, at 193–94). See also *Brown*, 563 U.S. 493, at 510–511 (recognizing that “Courts may not allow constitutional violations to continue simply because a remedy would involve intrusion into the realm of prison administration.”).

79 *Supra* note 66, at 63 (noting that “without explicit direction as to *how* penological interest should be considered—including the weight it should be given and whose burden of proof it is to demonstrate the validity of that interest—courts often do the exact opposite of what was directed by the Supreme Court and defer to prison officials’ interests in determining whether a condition is constitutional.”).

80 See *infra* Part IV.B.

81 Naomi Eisenberger, *The Neural Bases of Social Pain: Evidence for Shared Representations with Physical Pain*, 74 PSYCHOSOM. MED. 126, 126 (2012). See *infra* Part IV.C.

82 *Id.*

in the conditions of confinement context,⁸³ and the Supreme Court has never done so.⁸⁴ However misguided, Courts have generally⁸⁵ been unwilling to recognize that the mental harm that extreme isolation causes is *per se* sufficient to comprise an Eighth Amendment violation.⁸⁶

There are at least two main interrelated reasons for the Courts' neglect of the generalized mental suffering due to solitary confinement. The first concerns a tendency to discount social interaction as a basic human need.⁸⁷ As noted, Courts tend to interpret the "deprivation of basic human needs" requirement in terms of identifiable physical needs, such as water, food, or sanitation. Only on a few exceptional occasions have lower courts recognized social interaction as a basic human need.⁸⁸

The second, and consequential, reason for the neglect is that although the lack of social interaction results in serious harm, "that harm is mental, not physical."⁸⁹ According to Jules Lobel,⁹⁰ U.S. law views mental harm, and mental pain accordingly, as "a second-class citizen"⁹¹ compared to physical harm and pain. In principle, U.S. law has endorsed a "dualistic presumption"⁹² of harm/pain, which views physical and mental harm/pain as qualitatively and hierarchically different types of suffering—the former being more objective, tangible and serious than the latter.⁹³

Regarding the specific relation of mental harm/pain to confinement conditions, Lobel has recalled⁹⁴ the Prison Litigation Reform Act (PLRA).⁹⁵ This federal law was

83 See, eg *Ruiz*, 154 F. Supp. 2d 975, at 984–86 (referring to *Ruiz*, 37 F. Supp. 2d 855, at 861) (finding that solitary confinement "violated the prohibition against cruel and unusual punishment contained in the Eighth Amendment to the U.S. Constitution, as to the plaintiff class generally and to the subclass of mentally ill inmates housed in such confinement.").

84 See *supra* note 19, at 1252. See, however, *Hudson*, 503 U.S. 1, at 16–17 (Blackmun, J, concurring) (holding that psychological pain is actionable under the Eighth Amendment).

85 However, see, eg *Johnson v. Wetzel*, 209 F.Supp 3d 766, 778 (2016) (discussing the constitutionality of prolonged solitary confinement and recognizing that "[t]he Eighth Amendment protects an inmate's physical and mental health. Hence, conditions of confinement which unreasonably jeopardize an inmate's mental health are the proper subject of constitutional scrutiny.").

86 See also Claire A. Nolasco et al., *Construing the Legality of Solitary Confinement: Analysis of United States Federal Court Jurisprudence*, AM. J. CRIM. J. (2018). DOI: <https://doi.org/10.1007/s12103-018-9463-5> (noting that "the physical and psychological harms wrought by segregation, isolation, and solitary confinement are rarely considered when courts make constitutional determinations of such practices.").

87 See, eg *supra* notes 19 and 43.

88 See *Wilkerson v. Stalder*, 639 F. Supp. 2d 654, 679 (M.D. La. 2007) ("[t]he court finds that . . . the cumulative effect of over 28 years of confinement in lockdown at Louisiana State Penitentiary constitutes a sufficiently serious deprivation of at least one basic human need, including . . . social contact and environmental stimulation."); *United States v. Corozzo*, 256 F.R.D. 398, 401 (2009) ("[h]uman beings require the company of other humans to stay healthy."); *Freeman v. Berge*, 283 F. Supp. 2d 1009, 1015 (W.D. Wis. 2003) ("[B]asic human needs include social interaction and sensory stimulation.").

89 *Supra* note 19, at 1251.

90 See Jules Lobel, *Prolonged Solitary Confinement*, 11 U. PA. J. COST. LAW 115, 133 (2008).

91 Jules Lobel & Huda Akil, *Law and Neuroscience: The Case of Solitary Confinement*, 147 DAEDALUS 61, 67 (2018) ("[T]he United States treats mental pain as a second-class citizen. . .").

92 See Amanda Pustilnik, *Imaging Brains, Changing Minds: How Pain Imaging Can Inform the Law*, 66 A.L. REV. 1099, 1101 (2015) (observing that "nowhere is the law's casual dualism between mind and body more uneasily maintained than in questions of pain.").

93 One most emblematic example comes from tort doctrine of damage compensation for chronic pain, which requires a proof of physical injury to award compensation for suffering. See Pustilnik, *id.*

94 Lobel *supra* note 90, at 133–34; see also Lobel & Akil *supra* note 91, at 66–67.

95 Prison Reform Litigation Act (1995), Pub. L. No. 104–134, § 803(d), 110 Stat. 1321 (1996), codified at 42 U.S.C. § 1997.

enacted in 1995 with the aim of decreasing the incidence of prison litigation within the court system by requiring prisoners to first exhaust available administrative remedies.⁹⁶ Thereby, the PLRA ultimately sought to curb the discretion of the federal courts in remedial actions. In the part that regulates the requirements for filing a lawsuit, the PLRA sets an explicit physical injury prerequisite to ask for monetary compensation.⁹⁷ Meanwhile, mental or emotional injury is not sufficient to support a federal civil action without evidence of physical injury.⁹⁸

The “physical injury versus mental and emotional pain” distinction within the PLRA provision has limited the high number of lawsuits to be filed in federal courts over the years.⁹⁹ Furthermore, such distinction has been echoed by cases that have challenged the mental anguish of solitary confinement. In fact, Courts have often discounted mental or emotional harm in the absence of proof of physical harm.¹⁰⁰

Conclusively, the general oversight of mental harm and pain following extreme isolation strictly relates to and follows a tendency to discount social interaction as a basic human need. Although the lack of social interaction results in serious mental pain, social interaction is a “mental need,”¹⁰¹ not a physical need. Thus, unlike food and water, it does not qualify as an essential precondition for human life.

Finally, by excluding social interaction from the range of relevant human needs that warrant constitutional protection, Courts have substantially placed the conditions of normal confinement and of solitary confinement on the same level. Based on several opinions, if the conditions of the latter are substantially and materially equivalent to the conditions of the former, then the Eighth Amendment is not implicated.¹⁰² In such case, neither social interaction nor the mental harm/pain that derive from its deprivation are worthy of constitutional protection.

96 42 U.S.C. §1997e(a): “No action shall be brought with respect to prison conditions under section 1983 of this title, or any other Federal law, by a prisoner confined in any jail, prison, or other correctional facility until such administrative remedies as are available are exhausted”.

97 The requirement of physical injury does not apply to claims for injunctive and declaratory relief.

98 42 U.S.C. §1997e(e): “No Federal civil action may be brought by a prisoner confined in a jail, prison, or other correctional facility, for mental or emotional injury suffered while in custody without a prior showing of physical injury.”

99 Rachel Poser, *Why It's Nearly Impossible For Prisoners to Sue Prisons*, *The New Yorker* (May 30, 2016), <https://www.newyorker.com/news/news-desk/why-its-nearly-impossible-for-prisoners-to-sue-prisons>.

100 Lobel *supra* note 90, at 133 (observing that “[w]hile courts have recognized that placing seriously mentally ill prisoners in prolonged solitary confinement risks causing them mental pain that rises to the level of cruel and unusual punishment, . . . [n]onetheless, the courts, prison officials, and legislators have been unwilling to recognize that significant risk of mental pain and illness [for ordinary prisoners] as constituting an Eighth Amendment violation.”). See, eg *Bono*, 620 F. 2d 609, at 614 (“[I]nactivity, lack of companionship and a low level of intellectual stimulation do not constitute cruel and unusual punishment even if they continue for an indefinite period of time,” and that “[e]xpert testimony that such segregation could cause psychological harm is not determinative.”).

101 *Supra* note 19, at 1251.

102 See *Hutto* 437 U.S. 678, at 686 (“If new conditions of confinement are not materially different from those affecting other prisoners, a transfer (to isolation) for the duration of a prisoner’s sentence might be completely unobjectionable and well within the authority of the prison administrator.”); *Gibson*, 652 F. 2d 348, at 352 (3rd Cir. 1981) (“Our review of the record and the district court’s findings reveals no denial of Gibson’s rights and indeed the record discloses that in all respects Gibson’s treatment was governed by the same rules and regulations as the other inmates.”).

DURATION OF EXTREME ISOLATION

The limited relevance that conditions jurisprudence affords to mental pain is linked to another critical aspect that Eighth Amendment analyses of solitary confinement have often overlooked: the duration of extreme isolation. As the Introduction has anticipated, solitary confinement regimes vary from state to state. Therefore, there is no uniform standard that mandate a maximum amount of time that can be spent in extreme isolation.¹⁰³ While federal reports¹⁰⁴ and national associations¹⁰⁵ have issued guidelines that recommend maximum time limits for solitary confinement, such limits fall largely under the discretionality of prison administrations. Such discretionality entails that solitary confinement has an open-ended nature; specifically, it can last for a few days, or an indefinite period, or it can even be permanent.¹⁰⁶

The Supreme Court as well as lower courts have only rarely addressed the length of solitary confinement as an autonomous aspect of constitutional scrutiny under the Eighth Amendment.¹⁰⁷ Rather, they have typically considered the length of solitary confinement to be an aspect to evaluate in conjunction with (and depending on) the accompanying material conditions of extreme isolation.¹⁰⁸ Thus, although Courts have occasionally recognized that prolonged solitary confinement may be considered as a relevant factor in the determinations of the Eighth Amendment ban,¹⁰⁹ this factor has not been treated as an autonomous aspect of constitutional scrutiny.¹¹⁰

Lower federal courts have admittedly been more inclined to acknowledge the autonomous relevance of the duration—and, accordingly, of its effects—as an element

103 See, eg Delaware Code § 3902 (2014 through 146th Gen Ass): “In every case of sentence to imprisonment for a term exceeding 3 months, the court may by the sentence direct that a certain portion of the term of imprisonment, not exceeding 3 months, shall be in solitary confinement; and any person so sentenced shall not be allowed to work during that portion of the term of imprisonment.”; Tennessee Code § 41–21–402 (2012): “(a) Any inmate who neglects or refuses to perform the labor assigned, willfully injures any of the materials, implements or tools, engages in conversation with any other inmate or in any other manner violates any of the regulations of the penitentiary, may be punished by solitary confinement for a period not exceeding thirty (30) days for each offense, at the discretion of the warden or the person acting in the warden’s place.”; Wisconsin Statute § 302.40 (2012 through Act 45): 302.4: “For violating the rules of the jail, an inmate may be kept in solitary confinement, under the care and advice of a physician, but not over 10 days”; Model Penal Code § 304.7(3): “For serious or flagrant breach of the rules . . . the offender [may] be confined in a disciplinary cell for a period not to exceed thirty days.”; Louisiana Rev Stat § 15:685 (2014): “No prisoner in the state penitentiary shall be placed in solitary confinement, except in enforcing obedience to the police regulations of the penitentiary.”

104 See, eg *supra* note 6.

105 See, eg *supra* note 7.

106 See *supra* notes 1 and 2—and accompanying text.

107 See *supra* note 90, at 120 (discussing prolonged solitary confinement in supermax prisons and observing that “while cases have permitted prolonged solitary confinement in very restrictive supermax conditions, none have addressed Eighth Amendment claims of the subcategory of prisoners who have been in essence relegated to such confinement on a permanent or virtually permanent basis.”). See also Kenneth Cole III, *Constitutional Status of Solitary Confinement*, 57(3) CORN. L. REV. 476, 480 (1972) (noticing that “even if the conditions of solitary were more humane, its duration might still make it a form of unconstitutional punishment.”).

108 *Hutto*, 437 U.S. 678, at 687 (observing that unpleasant conditions of confinement “might be tolerable for a few days and intolerably cruel for weeks or months.”).

109 *Id.*, at 686 (acknowledging that “the length of confinement cannot be ignored in deciding whether the confinement meets constitutional standards . . .”).

110 *Id.*, at 713 (Rehnquist, J., dissenting) (observing that “[t]he prohibition against extended punitive isolation . . . has not been shown to be inconsistent with the Constitution . . .”).

to assess separately from the material conditions of solitary confinement.¹¹¹ For instance, in *Sostre v Rockefeller*,¹¹² the court engaged extensively with the issue of duration. The district court attempted to set limits on the length of solitary confinement, stating that “to be constitutional, punitive segregation . . . must be limited to no more than fifteen days and may be imposed only for serious infractions of the rules.”¹¹³ Meanwhile, in *O’Brien v Moriarty*, the court similarly observed that, where solitary confinement is “[i]mposed inappropriately, or for too long a period, even the permissible forms of solitary confinement might violate the Eighth Amendment.”¹¹⁴

Compared to lower courts, the Supreme Court has been more hesitant to recognize an autonomous constitutional relevance of the duration of solitary confinement. On the contrary, it has been more willing to situate the duration in a dependent relation with the accompanying material conditions of solitary confinement. Such approach is self-evident in *Hutto*. In this case, the Court followed the logic of *In re Medley*¹¹⁵ in ruling that solitary confinement alone “is not necessarily unconstitutional, but it may be, depending on the duration of the confinement *and* (emphasis added) conditions thereof. . . .”¹¹⁶ Hence, the Court then stated,

[i]t is perfectly obvious that every decision to remove a particular inmate from general prison population for an indeterminate period could not be characterized as cruel and unusual. If new conditions of confinement are not materially different from those affecting other prisoners, a transfer for the duration of a prisoner’s sentence might be completely unobjectionable and well within the authority of the prison administrator.¹¹⁷

As emerges from these and other passages, the Court’s opinion considers the duration of solitary confinement to be part of the issue of whether or not solitary confinement complies with constitutional requirements. However, it is only one among many other factors that required inclusion in such scrutiny.¹¹⁸ Thus, the length of solitary

111 See, eg *Meriwether v Faulkner*, 821 F.2d 408, 416 (7th Cir.1987) (“[T]he duration of a prisoner’s confinement in administrative segregation or under lockdown restrictions is certainly an important factor in evaluating whether the totality of the conditions of confinement constitute cruel and unusual punishment.”); *Davenport v. DeRobertis*, 844 F.2d 1310, 1313 (7th Cir. 1988), *cert. Denied*, 488 U.S. 908 (1988) (recognizing that isolating an inmate for months or for years can cause psychological damage and may violate the Eighth Amendment).

112 312 F. Supp. 863 (S.D.N.Y. 1970) *rev’d in part sub nom Sostre v. McGinnis*, 442 F. 2d 178, 191–192 (1971) (reversing in part the decision of the District Court, the Second Circuit recognized the adverse psychological effects of lengthy periods spent in isolation. However, it held that solitary confinement could “not be limited in the future to any particular length of time.”).

113 *Sostre*, 312 F. Supp. 863, at 871.

114 *O’Brien v. Moriarty*, 489 F.2d 941, 944 (1st Cir. 1974). See also *Morris v Trivisono* 499 F. Supp. 149, 160 (D.R.I. 1980) (noticing that “even if a person is confined to an air-conditioned suite at the Waldorf Astoria, denial of meaningful human contact for such an extended period [eight years and a half] may very well cause severe psychological injury.”); *Duponte v. Wall* 288 F. Supp. 3d 504 (2018). *Contra*, see, eg *In re Long Term Administrative Segregation of Inmates Designated as Five Percenters*, 174 F. 3d 464, 472 (4th Cir. 1999) (observing that “the indefinite duration of the inmates’ segregation does not render it unconstitutional.”).

115 *In Re Medley* 134 U.S. 160 (1890).

116 *Hutto*, 437 U.S. 678, at 685.

117 *Id.*, at 686.

118 *Hutto*, 437 U.S. 678, at 687 (“The length of time each inmate spent in isolation was simply one consideration among many. We find no error in the court’s conclusion that, taken as a whole, conditions in the isolation cells continued to violate the prohibition against cruel and unusual punishment.”).

confinement is constitutionally objectionable when accompanying material conditions of solitary confinement fail to meet constitutional standards.¹¹⁹

As observed, one reason that the duration of solitary confinement does not autonomously fall within the scope of constitutional analysis under the Eighth Amendment derives from the excessive judicial deference to individual prison administrations in deciding on and applying solitary confinement regimes.¹²⁰ In embracing this *laissez-faire* attitude, Courts have largely delegated determinations of the length of solitary confinement to prison administrations. As noted, the rationale cites the higher capacity of administrations to understand and address legitimate interests of prisons that may require the imposition of longer terms of isolation.

Despite this long-standing judicial attitude, broader Eighth Amendment concerns regarding long-term solitary confinement have recently reentered lower courts as well as the Supreme Court. Over the past decade, several courts have resolved that the deprivations that attend long-term isolation do run afoul of the Eighth Amendment.¹²¹ For instance, in *Jonhson v Wetzel*,¹²² the district court acknowledged the empirical claim that “psychological stressors such as isolation can be as clinically distressing as physical torture.”¹²³ Although the court did not challenge the constitutionality of solitary confinement *per se*,¹²⁴ it found that the psychological deteriorations that a person suffers as a direct result of his or her prolonged stay in isolation (36 years in the relevant case) are sufficient grounds for an Eighth Amendment violation.

In the same vein, Justice Kennedy’s concurring opinion in *Davis v Ayala* acknowledged that extended solitary confinement raises serious constitutional questions regardless of its accompanying conditions. As such, the duration of solitary alone should fall within the Court’s scrutiny of constitutionality under the Eighth Amendment.¹²⁵ Of equal importance is the criticism of Justice Kennedy regarding the excessive deferential attitude of the Court towards prison administrations.

119 *Id.*, at 686–87 (“A filthy, overcrowded cell and a diet of ‘grue’ might be tolerable for a few days and intolerably cruel for weeks or months.”).

120 See Hans Toch, *Opening Pandora’s Box: Ameliorating the Effects of Long-Term Segregation Conditions*, 82 PRISON SERVICE J. 15, 16 (2005) (observing that “courts have hesitated to tell prison administrators that conditions of confinement in their supermax or control units are constitutionally impermissible or unacceptable, even where judicial dicta reek of personal disapproval of such conditions.”).

121 See *Shoatz v. Wetzel*, No. 2:13-CV-657, 2016 WL 595337 (W.D.Pa., 2016); *Ashker v. Brown*, No. 09–5796, WL 1435148 (N.D.Cal. 2013); *Wilkerson v. Stalder*, 639 F.Supp. 2d 654 (M.D.La. 2007); *Johnson v. Wetzel*, 209 F.Supp. 3d 766 (2016).

122 209 F. Supp. 3d 766 (2016).

123 *Id.* quoting Jeffrey L. Metzner, M.D., et al., *Solitary Confinement and Mental Illness in U.S. Prisons: A Challenge for Medical Ethics*, 38 J. AM. ACAD. PSYCHIATRY & LAW 104, 104 (2010).

124 *Id.*, at 777 (“It is undisputed that a prisoner’s placement in solitary confinement does not, in itself, violate the Constitution”).

125 *Davis v. Ayala* 576 U.S. (2015) (Kennedy, J. concurring) (observing that a terrible “human toll [is] wrought by extended terms of isolation” and “[y]ears on end of near-total isolation exacts a terrible price.” and holding that “[i]n a case that presented the issue [of prolonged solitary confinement], the judiciary may be required, within its proper jurisdiction and authority, to determine whether workable alternative systems for long-term confinement exist, and, if so, whether a correctional system should be required to adopt them.”). See also *Smith v. Ryan* 581 U.S. (2017) (Breyer, J. concurring) (raising constitutional concerns about the penological aims of the excessive length of solitary confinement on death row in a case involving a man, Smith, who spent 40 years in solitary confinement awaiting to be executed, and concluding that “Smith’s confinement reinforces the need for this Court, or other courts, to consider in an appropriate case the underlying constitutional question.”); *Ruiz v. Texas* 136 S. Ct. 1246 (2017) (Breyer, J. dissenting) (recalling the Court’s reasoning

Prison officials may “have discretion” to use solitary confinement as a “temporary” measure to meet protection or safety needs in prisons;¹²⁶ nonetheless, this does not prevent Courts from assessing, “within [their] proper jurisdiction and authority” the appropriateness of long-term of solitary confinement in view of its widely documented effects on prisoners and, as a consequence, “to determine whether workable alternative systems for long-term confinement exist, and, if so, whether a correctional system should be required to adopt them.”¹²⁷ Justice Kennedy further held that the Court’s unwillingness to address the excessive length of solitary confinement as a specific matter of constitutional scrutiny is tantamount to an implicit acceptance of the adverse effects that a long period of extreme isolation may have on confined individuals.¹²⁸ Because the psychological consequences of solitary confinement have been widely established and attracted general attention and concern,¹²⁹ failure to address them equates to the adoption of an attitude of indifference.

More recently, in *Apodaka v Raemish* and *Lowe v Raemish*¹³⁰ Justice Sotomayor has likewise expressed “deeply troubling concern” over the extreme mental pain caused by long-term isolation *per se*. Referencing Charles Dickens’s 1842¹³¹ written account of the horrors of solitary confinement in Philadelphia’s Eastern State Penitentiary, Justice Sotomayor emphasized Dickens’ conclusion that, back in those days, the penal officers were not aware of the “immense amount of torture and agony which [solitary confinement] inflict [ed] upon the sufferers.”¹³² However, as Justice Sotomayor noted, [Today] [w]e are no longer so unaware. [emphasis added] Courts and corrections officials must accordingly remain alert to the clear constitutional problems raised by keeping prisoners like Apodaca, Vigil, and Lowe in “near-total isolation” from the living world . . . in what comes perilously close to a penal tomb.¹³³

The aforementioned recent opinions manifest a clear urge to interpretively change the conditions standard under the Eighth Amendment clause. This impetus emerges from a clear admission of the inhumanity that is intrinsic to leaving a person in extreme isolation for an excessively long amount of time.¹³⁴ However laudable, such recognition

In re Medley, and observing that “extended solitary confinement alone raises serious constitutional questions . . .”).

126 *Davis*, 576 U.S. (Kennedy, J. concurring) (“Of course, prison officials must have discretion to decide that in some instances temporary, solitary confinement is a useful or necessary means to impose discipline and to protect prison employees and other inmates.”).

127 *Id.*

128 *Id.* (“In imposing this capital sentence, the court is well aware that during the many years you will serve in prison before your execution, the penal system has a solitary confinement regime that will bring you to the edge of madness, perhaps to madness itself.”).

129 *Id.*

130 *Apodaka v Raemish* 586 U.S. (2018); *Lowe v Raemish* 586 U.S. (2018) (Sotomayor, J. dissenting). In these two cases, plaintiffs alleged Eighth Amendment violations at the Colorado State Penitentiary, where inmates in solitary confinement were not allowed to exercise outside due to security reasons. *Apodaka* and *Lowe* were confined in isolation for 23 years.

131 CHARLES DICKENS, *A TALE OF TWO CITIES* (1842).

132 *Id.*

133 *Apodaka and Lowe*, 586 U.S. (Sotomayor, J. dissenting).

134 See also *supra* note 90, at 122, fn. 32 (observing that “[w]hile no case has thus far addressed that question, to condemn a prisoner to a situation with virtually no meaningful contact with other humans for the rest of their life or for very many years, is to strip the person of their humanity and to risk such serious psychological

still loses sight of the actual constitutional “crux” of solitary confinement, ie extreme isolation. The following sections precisely address this issue.

THE BRAIN IN SOLITUDE

The analysis of conditions jurisprudence in regard to solitary confinement suggests a substantial equivalence between normal confinement and solitary confinement. Such equivalence derives from the fact that either type of confinement can be challenged under the Eighth Amendment only when specific accompanying material conditions of either type of confinement do not meet constitutional standards. Thus, the distinguishing element of solitary confinement, ie extreme isolation or socio-environmental deprivation, is not a sufficient condition to qualify as an Eighth Amendment violation. In other words, socio-environmental deprivation *per se* is not cruel and unusual punishment. As such, it is completely constitutional.

Recently, another avenue has been undertaken to challenge solitary confinement under the Eighth Amendment. Such avenue has built on insights from social neuroscience regarding brain plasticity, social interaction, and environmental stimulation, as well as on the effects of social and environmental deprivation on brain function and health.¹³⁵ These findings have already entered courtrooms in several lawsuits to provide a holistic analysis of the impact of solitary confinement, and they provide additional “foundational evidence”¹³⁶ of the harms of extreme isolation. The overall lesson from social neuroscience is that the psychological deteriorations following social and environmental deprivation are linked to alterations that occur in the brain. These brain alterations “have implications beyond the immediately visible behaviors”,¹³⁷ and can lead to a wide range of adverse psychological effects, many of which may be long-lasting or even permanent.

Although neuroscientific evidence has already been utilized on a few occasions, it may offer new support for challenges to solitary confinement under current constitutional standards. In the following discussion, I explore this claim in more depth. The vehicle is a succinct review of relevant scientific insights and data—many of which have also been introduced in court cases—to highlight three main neuroscience-

harm to their personality that such a practice should be held to violate contemporary standards of human decency.”).

135 See Ashker et al. v. Governor of the State of California et al., 4:09-cv-05796-CW (N.D.Cal. 2014), Expert Report of Matthew Lieberman, <https://ccrjustice.org/sites/default/files/attach/2015/07/Lieberman%20Expert%20Report.pdf>; Ziglar v. Abbasi, No. 15–1358 (S.U. 2016), *Brief of Medical and Other Scientific and Health-Related Professionals as Amici Curiae in Support of Respondents and Affirmance* (Dec. 22, 2016), https://www.americanbar.org/content/dam/aba/publications/supreme_court_preview/briefs_2016_2017/15-1358_15-1359_15-1363_amicus_resp_medical_professionals.pdf; Reynolds v. Arnone et al., U.S. Dist. Ct., Connecticut, 13CV1564 (SRU), Expert Report of Stuart Grassian, *Psychiatric Effects of Solitary Confinement at Northern Correctional Institution on Death Row and in Special Circumstances Under CGS 18-10b* (Mar. 30, 2018). See also Jules Lobel, *The Use of Neuroscience to Fight Solitary Confinement in Court and in Print*, Society for Neuroscience 2018 Conference, Social Issues Roundtable-Solitary Confinement: Psychological and Neurobiological Insights into Isolation (San Diego, Nov. 3–7 2018), <https://www.youtube.com/watch?v=3BoAvifez2s>; Jules Lobel & Huda Akil, *Law and Neuroscience: The Case of Solitary Confinement*, 147 DAEDALUS. 61 (2018).

136 Lobel & Akil, *id.*, at 63 (defining foundational or framework evidence as “scientific testimony bearing on how other evidence should be used based on general theories or hypotheses.”).

137 Bennion *supra* note 55, at 763.

based challenges to solitary confinement: first, that social interaction is as much of a basic physical human need as food or water; second, that social and environmental deprivation entails traumatic changes in brain, which underpin potentially permanent psychological consequences; third, social pain that is induced by isolation has an organic basis in the brain, so it is ultimately physical.

NECESSITY OF SOCIAL INTERACTION AND ENVIRONMENTAL STIMULATION FOR PHYSIOLOGICAL BRAIN FUNCTION

In *Politics*, Aristotle famously wrote that “[m]an is by nature a political animal”¹³⁸ and “[a] social instinct is implanted in all men by nature.”¹³⁹ Therefore, “men, even when they do not require one another’s help, desire to live together.”¹⁴⁰ More than 2000 years later, behavioral and neuroscientific disciplines have furnished compelling and converging empirical data confirming that human beings are evolutionarily constructed to be connected. There is presently a general consensus among psychological, anthropological, sociological, and neuroscientific disciplines that social connection, interaction, and belongingness are innate and universal survival needs among humans to the same degree as food or water.

In their seminal and widely cited work,¹⁴¹ Baumeister and Leary have suggested that people are programmed to form and maintain interpersonal bonds because they are motivated by their innate need to belong.¹⁴² Accordingly, the need to belong is an innate and universal motivation for human behavior. The authors have characterized this need as the need to form and maintain strong, stable interpersonal relationships. They have crucially argued that this need is satisfied by frequent human contacts and genuine bonds of caring between individuals.¹⁴³

Baumeister and Leary have proposed nine criteria to assess whether a given human need is a fundamental motivation for human behavior. Specifically, the relevant need should achieve the following:

(a) produce effects readily under all but adverse conditions, (b) have affective consequences, (c) direct cognitive processing, (d) lead to ill effects (such as on health or adjustment) when thwarted, (e) elicit goal-oriented behavior designed to satisfy it (subject to motivational patterns such as object substitutability and satiation), (f) be universal in the sense of applying to all people, (g) not be derivative of other motives, (h) affect a broad variety of behaviors, and (i) have implications that go beyond immediate psychological functioning.¹⁴⁴

Hence, the authors reviewed a large body of evidence that demonstrates that belonging and social connection meet all of these criteria. On this basis, they have concluded that the need to belong is indeed a fundamental human need.¹⁴⁵

138 ARISTOTLE, *POLITICS* 5 (Benjamin Jowett trans., 1999).

139 *Id.*, at 6.

140 *Id.*, at 59.

141 Roy Baumeister & Mark Leary, *The Need to Belong: Desire for Interpersonal Attachments as a Fundamental Human Motivation*, 117 *PSYCHOL. BULL.* 497 (1995). See also Expert Report of Matthew Lieberman, *supra* note 135.

142 Baumeister & Leary *id.*

143 *Id.*

144 *Id.*, at 498.

145 *Id.*, at 520.

Different perspectives in scientific research support Baumeister's and Leary's conclusion. For instance, several studies have suggested an influence of social interaction on the development and the expression of executive functions.¹⁴⁶ In addition, social engagement and participation in meaningful social activities have reportedly helped people sustain their thinking skills better and delay cognitive decline in mid-life and older adulthood.¹⁴⁷ Epidemiological studies have associated social connection and meaningful interactions with superior physical and mental health as well as decreased levels of morbidity and mortality.¹⁴⁸ Other studies have also indicated that consistent meaningful social connections and bonds aid individuals in their development and maintenance of socio-emotional skills, such as empathy and emotion regulation, which are significant mediating factors for prosocial attitudes and behavior.¹⁴⁹ Importantly, these insights align with findings from studies on crime desistance.¹⁵⁰

Brain function offers one vehicle to explain the vital importance of social connection and interaction for human beings. In adhering to Dunbar's "social brain hypothesis,"¹⁵¹ Matthew Lieberman has posited that the brain size of different species—and, specifically, the size of their neocortex—corresponds to the size of their respective social environments.¹⁵² Following this hypothesis, humans have large brains—and the largest neocortex of all species—to meet their most complex needs of socialization. Specifically, the human brain is organized to perform social thinking¹⁵³ in order to navigate their complex social interactions and environmental surroundings.

In the same vein, Daniel Siegel has suggested that the brain is "a social organ."¹⁵⁴ On the one hand, the brain prompts our cerebral processes and bodily experiences when presented with social stimuli, thereby informing our behavioral responses toward other individuals and contributing to our social skills and relationships.¹⁵⁵ Essentially, the brain is the organ that enables social interactions, as it maintains our connections

146 Charlie Lewis & Jeremy Carpendale, *Introduction: Links Between Social Interaction and Executive Function*, 123 NEW DIR. CHILD & ADOLESC. DEV. 1 (2009).

147 Daniela Weber, *Social Engagement to Prevent Cognitive Ageing?*, 45 AGE & AGEING 441 (2016); Michelle Kelly et al., *The Impact of Social Activities, Social Networks, Social Support and Social Relationships on the Cognitive Functioning of Healthy Older Adults: A Systematic Review*, 6 SYST. REV. 259 (2017).

148 See eg, Daniel Umberson & Jennifer Karas Montez, *Social Relationships and Health: A Flashpoint for Health Policy*, 51 J. HEALTH SOCI. BEHAV. S54 (2010) (indicating that social relationships are important for physical health. Relative to socially isolated individuals, socially connected individuals live longer and show increased resistance to a variety of somatic diseases ranging from heart disease to cancer).

149 Jamil Zaki & W. Craig Williams, *Interpersonal Emotion Regulation*, 13 EMOTION 803 (2013); Emma Seppala et al., *Social Connection and Compassion: Important Predictors of Health and Well-Being*, 80 SOC. RES. 411 (2013)

150 See, eg Peggy Giordano et al., *Emotions and Crime Over the Life Course: A Neo-meadian Perspective on Criminal Continuity and Change*, 112 AM. J. SOCIOLOGY 1603 (2007); BETH WEAVER, OFFENDING AND DESISTANCE: THE IMPORTANCE OF SOCIAL RELATIONS (2016).

151 The social brain hypothesis posits that the demands of living in social groups have driven the evolution of the large human brain. The complexity of social relationships and the group size are considered decisive for the development of the human brain. See Robin Dunbar, *The Social Brain Hypothesis*, 6 EVOL. ANTHROPOL., 178 (1998).

152 MATTHEW LIEBERMAN, SOCIAL: WHY OUR BRAINS ARE WIRED TO CONNECT 31–33 (2013).

153 *Id.*

154 DANIEL SIEGEL, THE DEVELOPING MIND: HOW RELATIONSHIPS AND THE BRAIN INTERACT TO SHAPE WHO WE ARE 27 (2012).

155 DANIEL GOLEMAN, SOCIAL INTELLIGENCE: THE NEW SCIENCE OF HUMAN RELATIONSHIPS 4 (2006) (observing that "[n]euroscience has discovered that our brain's very design makes it *sociable*,

with other individuals. On the other hand, physiological and neurological reactions are directly and profoundly shaped by social interactions. Such interactions, which range from face-to-face conversations to feeling another person's touch,¹⁵⁶ operate as modulators, which are comparable with interpersonal “thermostats” that continually shape our brain function.

Consistent with these insights, key research on brain plasticity has indicated that positive social engagement induces positive changes to the neural circuits that underlie cognitive functions, socio-affective skills (eg empathy), and social behavior throughout the entire lifespan.¹⁵⁷ These changes have been associated with higher cognitive performance, psychological well-being, and prosocial behavior.

Studies on social interaction and brain plasticity interrelate with those on the continuous influence of environmental stimulation on the brain. These studies have mostly employed animal models.¹⁵⁸ For instance, studies with rodents have evidenced that rodents that are reared in “enriched environments”¹⁵⁹ and are surrounded by their peers exhibited normal developmental pathways in the structure and function of several brain areas, including those that support a variety of functions ranging from prototypically cognitive to emotion-related functions like learning, memory, and emotion regulation. Importantly, these animal samples also exhibited normal sociable tendencies.¹⁶⁰

Several studies have hypothesized that some of these morphological and functional characteristics can be explained in terms of neurogenesis, which refers to the growth of new cells in brain regions.¹⁶¹ Evidence implies that enriched environments “enhance cell proliferation and neurogenesis in the brain, notably in the regions critical for social interaction, memory, and communication,”¹⁶² including the hippocampus. As discussed shortly, socio-environmental deprivation appears to stunt neurogenesis in the very same brain regions and pose negative repercussions at the psychological and behavioral level.

In summary, there is an ineradicable bidirectional relationship between the brain and the social environment. On the one hand, the complex organization of the human brain permits humans to serve their biological need to connect and interact with their

inexorably drawn into an intimate brain-to-brain linkup whenever we engage with another person. That neural bridge lets us affect the brain—and so the body—of everyone we interact with, just as they do us.”)

156 See Riitta Hari & Miiamaaria Kujala, *Brain Basis of Human Social Interaction: From Concepts to Brain Imaging*, 89 *PHYSIOL. REV.* 453 (2009).

157 Riitta Hari et al., *Centrality of Social Interaction in Human Brain Function*, 88 *NEURON* 181 (2015); Sophie Valk et al., *Structural Plasticity of the Social Brain: Differential Change After Socio-Affective and Cognitive Mental Training*, 3 *SCI. ADVANCES* e1700489 (2017); see also Richard Davidson & Bruce McEwen, *Social Influences on Neuroplasticity: Stress and Interventions to Promote Well-being*, 15(5) *NATURE NEUROSCI.* 689 (2012).

158 There is a general consensus among the scientific community that the brain and social developmental pathways are similar in human and non-human primates.

159 In laboratory animal studies, the “enriched environment” usually corresponds to larger living spaces, a variety of “toys” that animals can interact with like running wheels, as well as other novel environmental changes. Animals live in group with the opportunity for more complex social interaction. See, eg Andrew Slater & Lei Cao, *A Protocol for Housing Mice in Enriched Environments*, 100 *J. VIS. EXP.* 52874 (2015).

160 Mark R. Rosenzweig & Edward L. Bennett, *Cerebral Changes in Rats Exposed Individually to an Enriched Environment*, 80 *J. COMP. & PHYSIOLOGICAL PSYCHOL.* 304 (1972); Steven Neil et al. (2018), *Enriched Environment Exposure Enhances Social Interactions and Oxytocin Responsiveness in Male Long-Evans Rats*, *FRONT. BEHAV. NEUROSCI.* (2018) DOI: 10.3389/fnbeh.2018.00198.

161 Stephanie Cacioppo et al., *Toward a Neurology of Loneliness*, 140(6) *PSYCHOL. BULL.* 1464 (2014).

162 *Id.*

social world. On the other hand, the social world enables, fuels, and shapes the brain mechanisms that support the cognitive, affective, and socially relevant abilities that allow humans to be individually and socially functional. Thus, social connection or interaction in enriched environments is key to protecting brain function and health. According to Lieberman, “[n]o one will die from lack of social contact over a few days, but people will show evidence of being in a deprived state within a short period and a lack of social connection will likely produce a wide array of negative outcomes for an individual’s mental and physical well-being before long.”¹⁶³ Therefore, when a socio-environmental connection is lacking, the brain—and the person as a consequence—will likely undergo profound traumatic consequences in the long term.

THE NEUROBIOLOGICAL EFFECTS OF SOCIAL AND ENVIRONMENTAL DEPRIVATION

A voluminous body of clinical and experimental literature has reported the effects of solitary confinement for healthy and unhealthy incarcerated populations. This literature converges on the same, dramatic conclusion: solitary confinement can cause potentially permanent cognitive, emotional, and physiological damage.

For instance, in his clinical observational studies,¹⁶⁴ Stuart Grassian reported three main “typical features” of the generalized psychopathological effects of solitary confinement: (1) perceptual distortions, illusions, and hallucinations in several spheres; (2) affective disturbances including anxiety and panic attacks; and (3) obsessive, intrusive thoughts that are sometimes accompanied by compulsive behavior. According to Grassian, most-affected people may even develop states of psychotic disturbances of a dissociative character; while those who are less affected still experience substantial psychiatric harm including intense anxiety, obsessional thinking, agitation, paranoia, and irritability.¹⁶⁵

Grassian’s findings complement those of other studies in psychology¹⁶⁶ that have associated life in solitary confinement with a wide range of adverse psychological effects including rage, irrational anger; fears of persecution; lack of impulse control; severe and chronic depression; appetite loss; heart palpitations; withdrawal; apathy—just to name a few.¹⁶⁷ Also, this body of literature has documented the dehumanizing effects of being socially isolated, which include but are not limited to a lack or loss of sense of belonging, self-esteem, meaningfulness, and self-identity.¹⁶⁸ The dehumanizing effects of social isolation have been associated with a higher risk of engaging in maladaptive, antisocial, and destructive behavior.

163 Expert Report of Matthew Lieberman, *supra* note 135.

164 Stuart Grassian, *Psychopathological Effects of Solitary Confinement*, 140 AM. J. PSYCHIATRY 1450 (1983); Stuart Grassian, *Psychiatric Effects of Solitary Confinement*, 22 WASH. U. J. L. & POLICY 325 (2006).

165 Grassian *id.* (2006), at 332.

166 See, e.g. Peter Scharff Smith, *The Effects of Solitary Confinement on Prison Inmates: A Brief History and Review of the Literature*, 34 CRIME & J. 441 (2006); Craig Haney, *Mental Health Issues in Long-Term Solitary and “Supermax” Confinement*, 49 CRIME DELINQ. 124 (2003); Craig Haney, *The Psychological Effects of Solitary Confinement: A Systematic Critique*, 47 (1) CRIME & J. 365 (2018).

167 See Craig Haney, *Restricting the Use of Solitary Confinement*, 1 ANNU. REV. CRIMINOLOGY 285 (2018).

168 Brock Bastian & Nick Haslam, *Excluded from Humanity: The Dehumanizing Effects of Social Ostracism*, 46 J. EXPERIM. SOC. PSYCHOL. 107, 112 (2010) (implying that “the extent to which we experience ourselves and others as having essentially human qualities may be dependent upon human interconnection.”).

Notably, the literature suggests that the psychological impairments that are precipitated by solitary confinement continue even after the release of the individual from prison and his or her reintroduction into the social environment.¹⁶⁹ Specifically, people who are released back into the community after serving time in solitary confinement are “incapable of accommodating to life”¹⁷⁰ due to a hyperresponsivity to sensory stimulations that entails intolerance to the typical noises of daily life, such as the chaos of a restaurant, and social stimulations, including an incapacity to partake in family moments, such as eating meals together.¹⁷¹

Scientific research has begun to identify the brain alterations that appear to correlate with the psychopathological effects of socio-environmental deprivation (or extreme isolation). For instance, electroencephalography (EEG) studies have reflected that *a few days* in solitary confinement may provoke brain injury-like waves alterations.¹⁷² Such alterations have been linked with hyperresponsivity to external stimuli,¹⁷³ inadequate attention and alertness to the environment¹⁷⁴ as well as “a complete breakdown or disintegration of the identity of the isolated individual.”¹⁷⁵

Clinical and experimental studies that have documented the effects of solitary confinement on the brain find support in a robust body of experimental animal research,¹⁷⁶ which is informing an understanding of the various brain mechanisms that underlie the observed psychological and psychiatric symptoms among incarcerated people who have been isolated for protracted periods. These studies have collectively revealed that social and environmental deprivation has negative repercussions for both brain structure and function, including reduced cortical volume, diminished neuronal connections in cortical areas and the hippocampus,¹⁷⁷ decreased myelin production,¹⁷⁸

169 Grassian (2006), *supra* note 164, at 354 (“[T]he harm caused by [solitary] confinement may result in prolonged or permanent psychiatric disability, including impairments which may seriously reduce the inmate’s capacity to reintegrate into the broader community upon release from prison.”).

170 Expert report of Stuart Grassian, *supra* note 135.

171 *Id.* See also *supra* note 164 (2006), at 331.

172 The interest in exploring the effects of solitary confinement on the brain is not new to neuroscientific research. In the 1970s, EEG studies were already showing that a lack of social interaction for a week or more can cause harm to the human brain equivalent to that of traumatic injury. See Paul Gendreau et al., *Changes in EEG Alpha Frequency and Evoked Response Latency During Solitary Confinement*, 79 J. ABNORMAL PSYCHOL. 54 (1972) (reporting that a week of voluntary solitary confinement resulted in decreased EEG activity, which is indicative of increased theta activity. In its turn, theta activity is related to stress, tension, and anxiety.).

173 *Id.*

174 *Supra* note 164 (2006), at 330–31 (reporting that “even a few days of solitary confinement will predictably shift the [EEG] pattern toward an abnormal pattern characteristic of stupor and delirium.”).

175 Scharff Smith, *supra* note 166, at 492.

176 Following the social brain hypothesis, the human brain is far more “social” than other non-human primates’ brain. Thus, it is very likely that the adverse effects of isolation on the human brain are even more significant than on non-human primates’ brain.

177 See, eg Jelena Djordjevic et al., *Effects of Chronic Social Isolation on Wistar Rat Behavior and Brain Plasticity Markers*, 66 NEUROPSYCHOBIOL. 112 (2012); Kevin Fone & M. Veronica Porkess, Behavioural and Neurochemical Effects of Post-weaning Social Isolation in Rodents—Relevance to Developmental Neuropsychiatric Disorders, 32 NEUROSCI. & BIOBEHAV. REV., 1087 (2008).

178 See, eg Jia Liu et al., Impaired Adult Myelination in the Prefrontal Cortex of Socially Isolated Mice, 15 NATURE NEUROSCI. 1621 (2012).

and altered activity in the reward system¹⁷⁹ and the amygdala.¹⁸⁰ These cerebral alterations have been connected to detachment from the environment, hostility towards others, high levels of aggression, as well as an increased risk of susceptibility to several behavioral conditions that emulate psychiatric diseases and disorders in humans, including neurodegenerative disorders and schizophrenia.¹⁸¹ Importantly, morphological and functional changes in the brain may occur even after a short period of time and appear to continue after the reintroduction of the subject into the social environment.¹⁸²

A robust body of studies has examined the neurobiological effects of chronic stress due to social and environmental deprivation.¹⁸³ For instance, studies with rodents have revealed that rodents that are housed alone, in contrast to those housed in enriched environments,¹⁸⁴ develop a smaller cerebral cortex and shorter synapses in brain areas that are involved in spatial information processing, memory, social information, and emotion regulation, including the hippocampus.¹⁸⁵ In addition, some studies have associated morphological and functional diminutions of the hippocampus with decreased hippocampal neurogenesis.¹⁸⁶ These damages have been linked with the experience of long-term mental health conditions in humans, such as memory loss, cognitive decline, depression, and post-traumatic stress disorder.¹⁸⁷

Other than the hippocampus, another limbic region that appears to be impacted by social and environmental deprivation is the amygdala, which mediates emotional arousal in response to perceived stimuli. The amygdala is also involved in the experience and the processing of fear and anxiety. Studies with rodents have indicated that high stress increases cortisol levels, which in turn alter neurons proliferation in the amygdala and produce adverse psychological and behavioral effects like anxiety, deficits in social interaction, and poor regulation of social behavior.¹⁸⁸

At the cortical level, studies with isolated rodents in poor environments observed reduced levels of myelination in the prefrontal cortex.¹⁸⁹ Impaired myelination in

179 See, eg Fone & Porkess supra note 177.

180 See, eg Esther Castillo-Gómez et al., Early Social Isolation Stress and Perinatal NMDA Receptor Antagonist Treatment Induce Changes in the Structure and Neurochemistry of Inhibitory Neurons of the Adult Amygdala and Prefrontal Cortex, 4 *ENEURO*. 0034 (2017); Javier Gilbert-Juan et al., Post-weaning Social Isolation Rearing Influences Expression of Molecules Related to Inhibitory Transmission and Structural Plasticity in the Amygdala of Adult Rats, 1148 *BRAIN RES.* 129 (2012).

181 See, eg Fone & Porkess supra note 177.

182 See, eg Manabu Makinoban, *A Critical Period for Social Experience-Dependent Oligodendrocyte Maturation and Myelination*, 337 *SCIENCE* 1357 (2012).

183 See, eg Djordjevic et al. supra note 177; Faiza Mumtaz et al. *Neurobiology and Consequences of Social Isolation Stress in Animal Model—A Comprehensive Review*, 105 *BIOMED. & PHARMACOTHER.* 1205 (2018); Alessandro Ieraci et al., Social Isolation Stress Induces Anxious-Depressive-Like Behavior and Alterations of Neuroplasticity-Related Genes in Adult Male Mice, *NEUR. PLASTICITY* (2016) DOI: [10.1155/2016/6212983](https://doi.org/10.1155/2016/6212983).

184 See supra note 159.

185 See supra notes 177, 183.

186 For a review of these studies, see supra note 161.

187 See supra note 183; see also J. Douglas Bremner, *Traumatic Stress: Effects on the Brain*, 8 *DIALOGUES CLIN. NEUROSCI.* 445 (2006); Bruce McEwen et al., Stress Effects on Neuronal Structure: Hippocampus, Amygdala, and Prefrontal Cortex, 41 *NEUROPSYCHOPHARM.* 3 (2016).

188 Fone & Porkess supra note 177.

189 See, eg supra note 178.

this brain area has been reported for a number of psychiatric illnesses, including anxiety, autism, schizophrenia and depression. Other studies with rats have evidenced that isolation-reared rats exhibited reduced medial prefrontal cortex (mPFC) volume compared with group-reared rats.¹⁹⁰ Among humans, reduced mPFC volume has been associated with several core symptoms of schizophrenia, such as neophobia, impaired memory, and sensorimotor gating.

Studies on social isolation correlate and complement research on loneliness, ie the subjective perception of isolation.¹⁹¹ Although loneliness is not always or necessarily linked with physical and objective isolation, on the other hand such isolation may contribute to a feeling of loneliness. Behavioral research on loneliness has qualified perceived social isolation as a risk factor for “poorer overall cognitive performance, faster cognitive decline, poorer executive functioning, more negativity and depressive cognition, heightened sensitivity to social threats”¹⁹² as well as “an increased implicit vigilance for social threats along with increased anxiety, hostility, and social withdrawal; . . . decreased impulse control in favor of responses highest in the response hierarchy (ie prepotent responding); increased negativity and depressive symptomatology”¹⁹³ Furthermore, several studies have highlighted links between the symptomatology of loneliness and the neurobiological alterations that are apparent following objective social isolation.¹⁹⁴

Altogether, there is suggestive evidence of the damaging and long-lasting neurobiological effects of social isolation and environmental deprivation. This evidence suggests that many of these effects can hardly be reversed, even upon reintroduction of the individual into the social environment. Admittedly, many questions about the exact implications of social and environmental deprivation for the human brain and behavior remain unanswered, including the amount of time that a person can be isolated without entailing the risk of irreversible damage or how variables, such as age, gender, or personal background affect the severity of social and environmental isolation for the brain and behavior. As observed, many of these questions are difficult to examine in human samples.¹⁹⁵

While answering these questions is fundamental to exploring the exact effects of solitary confinement for the brain and behavior, current evidence is reliable and converging enough to support that “increased social isolation and diminished physical contact contribute to and reinforce problematic neurobiological patterns.”¹⁹⁶ Hence, the depriving conditions of solitary confinement will most likely “generate or exacerbate

190 Mirjam Schubert et al., *Does Social Isolation Rearing Induce Prefrontal Cortex Volume Loss—A MR Volumetry Study in Rats at 7 T*, 15 PROC. INTL. SOC. MAG. RESON. MED. 3070 (2007); K.M. Day-Wilson et al., *Medial Prefrontal Cortex Volume Loss in Rats with Isolation Rearing-induced Deficits in Prepulse Inhibition of Acoustic Startle*, 141 NEUROSCI. 1113 (2006).

191 ROBERT WEISS, *LONELINESS: THE EXPERIENCE OF EMOTIONAL AND SOCIAL ISOLATION* (1973).

192 John Cacioppo et al., *Perceived Social Isolation and Cognition*, 13 TRENDS COGN. SCI. 447, 447 (2009).

193 John Cacioppo et al., *The Neuroendocrinology of Social Isolation*, 66 ANNU. REV. PSYCHOL. 733, 735 (2015)

194 *Id.* See also *supra* note 161.

195 See Richard Smeyne, *The Impact of Isolation on the Neuroanatomy and Neurobiology of the Brain*, Society for Neuroscience Annual Meeting (San Diego, Nov. 5, 2018), <https://www.youtube.com/watch?v=i3Do1Oc3KhY>.

196 Arielle Baskin-Sommers & Karelle Fonteneau, *Correctional Change Through Neuroscience*, 85 FORDH. L. REV. 423, 428 (2016).

neurobiological deficits and maladaptive behaviors...[t]his becomes a significant issue, especially for individuals who are chronic offenders, where existing neurobiological vulnerabilities are intensified in settings of confinement and segregation, thereby reinforcing maladaptive patterns of behavior.”¹⁹⁷ All in all, neuroscience research indicates that the essential features of solitary confinement, ie social and environmental deprivation, can alone induce significant damages in the brain, all of which risk precipitating long-lasting or even permanent traumatic psychological and physiological consequences.¹⁹⁸ Thus far, these consequences have been mostly overlooked in courtrooms.

SOCIAL PAIN IS PHYSICAL

A key insight from social neuroscience regarding the impact of socio-environmental deprivation on the brain concerns social pain.¹⁹⁹ As noted, lay views of pain and the law itself²⁰⁰ are founded on the assumption that physical pain and social (mental) pain differ in their characteristics and substance. Physical pain is generally understood as pain from a bodily injury or the deprivation of a physical need; as such, it is objective, measurable, and tangible. Meanwhile, social pain is viewed as purely mental, subjective, and almost “non-existent.” Therefore, it is largely overlooked as an inner experience of the individual with no tangible effects. As noted, this dichotomy of pain pervades the law and also manifests in conditions jurisprudence regarding solitary confinement. To impugn these folk intuitions, a growing body of research in social neuroscience has suggested that social pain is profoundly embodied in the brain. As such, social pain is fundamentally physical.

The most influential theory of adverse social experience, namely the shared representation theory, suggests that physical pain and social pain “rely on shared neural circuitry.”²⁰¹ According to this account, the experience of social pain follows the natural and universal human need for social connection and belongingness. From an evolutionary standpoint, such natural need likely originates from the lengthy period of critical need for maternal attachment, care and nurturance among mammalian infants in order to survive.²⁰² The lack of these fundamental needs generates a feeling of rejection, which the individual perceives as painful and distressful. Based on this survival need, it is possible that “the social attachment system—which ensures social connection—may have piggybacked directly onto the physical pain system, borrowing the pain signal itself to indicate when social relationships are threatened.”²⁰³ Thus, the experience of social

197 *Id.*

198 ACLU, *Briefing Paper: The Dangerous Overuse of Solitary Confinement in the United States* 6 (2014), <https://www.aclu.org/report/dangerous-overuse-solitary-confinement-united-states> (reporting a part of neuroscientist Huda Akil’s speech at the annual conference of the American Association for the Advancement of Science in 2014, who affirmed that each feature of solitary confinement [lack of interaction with natural world, lack of touch and visual stimulation, and lack of social interaction] is “sufficient to dramatically change the brain” and “to have permanent physiological effects”).

199 See *supra* Part III.

200 See *supra* Part III.

201 Naomi Eisenberger, *The Pain of Social Disconnection: Examining the Shared Neural Underpinnings of Physical and Social Pain*, 13 NATURE REV. NEUROSCI. 421, 423 (2012).

202 Naomi Eisenberger, *Why Rejection Hurts: What Social Neuroscience Has Revealed About the Brain’s Response to Social Rejection*, In Jean Decety and John Cacioppo Eds. THE OXFORD HANDBOOK OF SOCIAL NEUROSCIENCE 586, 587 (2011).

203 *Id.*

pain may be understood as an adaptive way to prevent and survive the threat of social rejection and exclusion.²⁰⁴ As Lieberman and Eisenberger put it, “[j]ust as evolution has wired us to feel pain when we lack food (eg hunger), water (eg thirst), or shelter (eg freezing, sunburn), perhaps evolution has wired us to feel pain when we lack. . . social connection.”²⁰⁵

Building on this perspective, neuroimaging research, which was conducted by Lieberman and Eisenberger, has reported a substantial overlap between physical pain and social pain in the brain. Specifically, their studies have indicated that the experience of physical pain involves two dissociable components: a sensory component, which is supported by the primary and secondary somatosensory cortex and the posterior insula; and an affective component, namely the distressing experience of pain, which is supported by the dorsal anterior cingulate cortex (dACC) and the anterior insula (AI).²⁰⁶ Neuroimaging studies from this line of research have suggested that the experience of social pain activates neural pathways that are typically implicated in the affective component of physical pain processing—ie the dACC and the AI.²⁰⁷ These studies have also evidenced that people who exhibit higher sensitivity to physical pain will also be more vulnerable to experiencing social pain. Interventions aimed at healing physical pain also appear to be effective in healing social pain.²⁰⁸

Social pain has been associated with both physical and objective isolation (ie the objective lack of social connection) as well as perceived isolation (ie loneliness).²⁰⁹ Several laboratory studies belonging to the above reported line of research have explored the link between the experience of social pain and social disconnection (caused by social isolation) via neural activity in the brain regions that support the experience of this form of pain. These findings can likely explain why individuals at higher levels of objective or subjective isolation are at a higher risk of developing physical and mental health problems and even a higher risk of mortality. As Eisenberger has explained, “given that the dACC and AI are involved in responding to social disconnection, these regions may have a role in translating experiences of social disconnection into downstream physiological responses—such as heightened inflammatory activity, the immune system’s first line of defense against foreign agents and infection”²¹⁰ Increased inflammatory activity has been found to relate to negative physical and mental health outcomes, including heart diseases and depression.²¹¹

204 *Id.*

205 Matthew Lieberman & Naomi Eisenberger, *The Pains and Pleasures of Social Life: A Social Cognitive Neuroscience Approach*, *NEUROLEADERSHIP J* (2008), [http://www.scn.ucla.edu/pdf/Pains&Pleasures\(2008\).pdf](http://www.scn.ucla.edu/pdf/Pains&Pleasures(2008).pdf).

206 *Supra* note 81.

207 *Id.* See also *supra* note 202; Expert Report of Matthew Lieberman *supra* note 135; *supra* note 152, at 50–54.

208 *Supra* note 81.

209 See *supra* note 201; John Cacioppo et al., *Social Isolation*, 1231 *ANN. N.Y. ACAD. SCI.* 17 (2011).

210 *Supra* note 201, at 431.

211 These findings lend support to other studies that have measured the impact of social isolation on physical health via pain perception. For instance, through a longitudinal study, Karyannis et al. have tested the impact of social isolation on pain perception and levels of physical health among individuals with persistent musculoskeletal pain. They have found that individuals experiencing levels of higher social isolation also experienced higher pain and exhibited lower physical health. This finding led the researchers to conclude a causal relationship between social isolation and physical health among individuals with this condition. See

Last, this line of functional magnetic resonance (fMRI) studies has also started to investigate the effects of social pain on aggression via activation in the dACC and the AI.²¹² Preliminary results reflect a positive correlation between increased activity in these two brain regions (associated with the experience of social pain) as well as increased levels of aggression in socially rejected individuals who exhibit less executive functioning (regulatory capability). These results suggest that social pain is a contributing factor to aggressive reactions among socially rejected individuals.²¹³

In partial contrast with Eisenberger's and Lieberman's works, another fMRI study, which was led by Tor Wager,²¹⁴ used a more fine-grained analysis and identified distinct neural representations of physical pain and social pain within core pain-processing brain regions and across other brain regions. Notably, this work indicates that physical pain and social pain entail independent neural representations despite common fMRI activity at the gross anatomical level (eg in the DACC and AI).²¹⁵ Thus, rather than recruiting physical pain circuitry, social pain appears to encompass different affective representations in the brain. Based on these findings, these researchers have proposed that physical pain and social pain are ultimately distinct types of affect that may yield unique consequences at the psychological level; thus, they require different types of interventions. Still, the authors have highlighted that physical pain and social pain may still be functionally related and mutually influential.²¹⁶ For instance, evidence indicates that individuals who suffered emotional trauma are at a higher risk of developing pain disorders.²¹⁷

Despite the empirical disagreement over whether social pain is neurologically akin to physical pain, neuroscientific findings on the nature of social pain collectively inform two critical insights for the purposes of this article. First, the deprivation of social connection—ie social isolation—entails a range of negative emotional states, adverse psychological effects, and maladaptive behavioral patterns that link with the pain of being socially excluded or rejected. Second, this social pain has physical reality in the brain. As such, it should be qualified as “real pain”, rather than as a kind of “metaphorical pain.”²¹⁸ Importantly, the experience of social pain is not less serious or less deleterious than that of physical pain. Rather, its consequences for an individual may well be more distressful and harmful than those following forms of physical pain. Thus, perpetuating the hierarchy of physical versus social pain by privileging the former over the latter is problematic. Most importantly, it severely overlooks the kind of suffering that social pain due to isolation may entail, which can be equally acute and equally (or even more)

Nicholas V. Karyannis et al., *The Impact of Social Isolation on Pain Interference: A Longitudinal Study*, 53 ANN. BEHAV. MED. 65 (2019).

212 David Chester et al., *The Interactive Effect of Social Pain and Executive Functioning on Aggression: An fMRI Experiment*, 9 SCAN 699 (2014).

213 *Id.*

214 Choong-Wan Woo et al., *Separate Neural Representations for Physical Pain and Social Rejection*, 5 NAT. COMMUNICATIONS (2014). DOI: 10.1038/ncomms6380; see also Tor Wager et al., *Pain in the ACC?*, 113(18) PNAS E2474 (2016).

215 Woo et al., *id.*

216 *Id.*

217 *Id.*

218 *Supra* note 81.

traumatic and long-lasting compared with the physical pain that one may experience as a consequence of lacking a tangible, physical need.

SOLITARY CONFINEMENT IS *PER SE* CRUEL AND UNUSUAL PUNISHMENT

The body of neuroscientific research on the vital importance of social interaction for brain morphology and function in combination with the insights into the damaging effects of social isolation and environmental deprivation for the brain, mind, and behavior could reinvent challenges to solitary confinement.²¹⁹

While more precise empirical answers are needed to fully comprehend the variety and extent of the implications of solitary confinement for the brain and behavior, yet existing evidence can provide additional empirical support to challenge the crux of solitary confinement: extreme isolation. As noted, the insights regarding the traumatic consequences of extreme isolation from the neurosciences align with those from various international bodies who have stressed that “all forms of solitary confinement without appropriate mental or physical stimulation are likely, in the long term, to have damaging effects.”²²⁰

Based on these insights, the remainder of this article sets forth three main points for the argument that solitary confinement, as it currently stands in many jurisdictions, violates *per se* the Eighth Amendment ban on cruel and unusual punishments. First, the core feature of solitary confinement—extreme isolation or social and environmental deprivation—fails to meet the current conditions standard. Second, there is a manifest imbalance between the generalized traumatic and potentially permanent implications of social and environmental deprivation and the penological purposes of prison that solitary confinement is intended to serve. Furthermore, and more broadly, solitary confinement is antithetical to all justifications for punishment. Acknowledging that solitary confinement fails to meet any relevant Eighth Amendment requirement implies that solitary confinement is innately unconstitutional.

FAILURE TO MEET CURRENT CONDITIONS STANDARD

The body of neuroscientific research on the effects of socio-environmental deprivation on the brain presents a strong empirical premise for the normative argument that socio-environmental deprivation (or extreme isolation)—the crux of solitary confinement—

219 See Lobel & Akil *supra* note 135. The use of neuroscience to challenge solitary confinement has also received wide attention in science communication media accounts. See eg Dana Smith, *Neuroscientists Make A Case Against Solitary Confinement*, *Scientific American* (Nov. 9, 2018), <https://www.scientificamerican.com/article/neuroscientists-make-a-case-against-solitary-confinement/> (last visited March 4, 2019); Elena Blanco-Suarez, *The Effects of Solitary Confinement on the Brain*, *Psychology Today* (Feb. 27, 2019), <https://www.psychologytoday.com/us/blog/brain-chemistry/201902/the-effects-solitary-confinement-the-brain> (last visited March 4, 2019); Liz Tung, *How Extreme Isolation Affects the Brain*, *WHYY* (Feb. 21, 2019) <https://whyy.org/segments/how-extreme-isolation-affects-the-brain/> (last visited March 4, 2019); Moheb Costandi, *Using Neuroscience Evidence to Argue Against Solitary Confinement*, *The Dana Foundation News* (Jan. 3, 2019), https://www.dana.org/News/Using_Neuroscience_Evidence_to_Argue_Against_Solitary_Confinement/ (last visited March 4, 2019).

220 See, eg European Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment, *Report to the Finnish Government on the Visit to Finland*, Par. 73 CTP/Inf (93) 8, at 27 (Apr. 1, 1993), <https://rm.coe.int/1680695792>.

qualifies as an Eighth Amendment violation under all prongs of the current conditions standard.²²¹ This section discusses them in turn.

Social interaction and environmental stimulation as basic human needs

Consistent with evolutionary perspectives, neuroscientific research has provided a compelling argument for qualifying social interaction as a basic human survival need on par with other identifiable physical needs, such as water, or food, or shelter. As discussed, social interaction is just inherent to the nature of humans, who are fundamentally social beings. Such inherence emerges from the mutual and ineradicable relationship between the brain and the social environment.²²² Furthermore, the neurobiological need for social interaction encompasses and is complemented by the need for environmental stimulation. As discussed, environmental stimulation significantly contributes to brain development and behavior, and the human brain must constantly receive a variety of sensory inputs from the external environment in order to function properly. Overall, the evidence above discussed indicates that social interaction and environmental stimulation are “but for” conditions for physiological brain function. As such, depriving human beings of social contact and environmental stimulation is equivalent to depriving them of their very own nature.

Acknowledging the vital importance of social interaction in enriched environments implies that forcing individuals into isolation in tiny, environmentally poor cells is sufficient *per se* to deprive them of basic human needs. Accordingly, single material conditions of solitary confinement (eg the lack of heating, proper bedding, or winter clothing) should be viewed as circumstances that aggravate and are therefore *parasitic* to an underlying condition—extreme isolation—that is alone sufficient to constitute a serious deprivation of basic human needs.

Importantly, including social interaction and environmental stimulation in the range of basic human needs also impugns the substantial equivalence by the Courts between normal confinement and solitary confinement. As reported, Courts have endorsed the view that solitary confinement is legitimate as long as its conditions, such as the provision of nutrition and shelter, are not materially different from those that affect the general prison population.²²³ Thus, solitary confinement is not cruel and unusual as long as it guarantees the same basic human needs that are ensured to the general prison population. However, such equivalence fails to consider that extreme isolation is the condition that renders the two types of confinement materially different. This difference emerges precisely from the fact that solitary confinement deprives individuals of a survival need that normal confinement guarantees. Considering this fundamental distinguishing aspect and the consequences that it entails, normal and solitary confinement cannot at all be placed on the same level. Rather, the evaluation of solitary confinement should be based upon its own criteria, which should systematically recognize social interaction as a fundamental need rather than a mere privilege.²²⁴

221 See generally *supra* Part I.

222 See *supra* 156, at 454 (claiming that “humans and their brains and minds are shaped, and normally function, in continuous interaction with other people.”).

223 See *supra* note 102 and accompanying text.

224 See also *supra* note 43, at 297–98 (suggesting that courts should follow Wilkerson’s lead and recognize social interaction as a basic human need). See also *Young v Quinlan*, 960 F.2d 351, 364 (3d Cir.1992) (noting that

*Socio-environmental deprivation (extreme isolation) entails
an objectively serious risk of physical harm*

If the vital role of social interaction and environmental stimulation for human brain and behavior is not sufficient to establish them as basic physical needs, evidence of risks that socio-environmental deprivation imposes on the brain add ample weight and encourage a reconsideration of the “substantial risk of serious harm” requirement in relation to solitary confinement.

As discussed, the brain changes or deteriorations that follow socio-environmental deprivation appear to underpin a number of adverse cognitive, affective, and behavioral patterns, and they have also been reported in major psychiatric disorders, including depression and schizophrenia.²²⁵ These findings support and corroborate the existing robust body of psychological studies that have documented the dramatic psychological and psychiatric effects of solitary confinement.²²⁶ Moreover, the brain and psychological damages due to socio-environmental deprivation have been found to contribute to physical health problems and even increase the risk of mortality.²²⁷ From this perspective, the disfiguring damage that solitary confinement could impose on prisoners can be long-lasting or even permanent.

Of equal importance are insights into the nature and the implication of the social pain that is caused by social isolation.²²⁸ Besides indicating that social pain has physical reality, neuroscientific research has crucially suggested that the experience of social pain can be far worse than that of physical pain in many respects. Social pain has been linked to a series of psychological symptoms, including humiliation, low self-esteem, maladaptive action tendencies, including aggression, and lower levels of physical and mental health, especially in the long term. Thus, even if the traumatic effects of social pain are not immediately visible, they may manifest and grow over time.

By translating neuroscientific insights into the language of conditions jurisprudence, one may make the following observations. First, socio-environmental deprivation does entail an objectively serious risk of physical harm that is on par of food or sleep deprivation. Even if the harm that solitary confinement imposes on the brain translates into mental deterioration, and is therefore mental, it is also undeniable that “the type of severe psychological deterioration observed in solitary confinement is due to physical harms imposed on the brain.”²²⁹ As such, it is ultimately physical.

Second, the harm that solitary confinement imposes on the brain underpins a number of long-lasting or potentially permanent mental, physical, and physiological conditions.²³⁰ Therefore, the possible harms of solitary confinement are not only disfiguring but also potentially permanent. Last, and perhaps most importantly, the

“there is a fundamental difference between depriving a prisoner of privileges he may enjoy and depriving him of the basic necessities of human existence. Isolation may differ from normal confinement only in the loss of freedom and privileges permitted to other prisoners.”)

225 See Part IV.B.

226 *Id.*

227 *Id.*

228 See Part IV.C.

229 Bennion *supra* note 55, at 776.

230 Nadia Ramlagan, *Solitary Confinement Fundamentally Alters the Brain*, AAAS (Feb. 15, 2014) (quoting Dr Huda Akil: “[t]he separation of the mental and physical is highly artificial, because there are definitely physical consequences of these experiences.”).

risk of such physical harms may manifest even after a short period of extreme isolation. As mentioned, (neuro) science has not yet determined with sufficient precision how long an individual can spend in isolation without undergoing irreversible brain damage. However, there is a consensus across scientific disciplines (including neuroscience) that the amount of time that an individual spends in socio-environmentally deprived conditions positively correlates to the degree of risk that he or she will deteriorate neurologically, physiologically, psychologically, and physically.

Admittedly, not all individuals will necessarily and inevitably suffer irreversible damages, and not everybody will contend the same kinds of traumas after the same amount of time. However, as Bennion has correctly noted, “[t]he fact that serious risks may never materialize in serious harm (or that harm may not be imminent) is not dispositive for . . . the test.”²³¹ Furthermore, the risk of undergoing serious brain and mental deterioration following solitary confinement is universal: any person is vulnerable to such risk,²³² regardless of his or her history of mental illness.²³³

In view of the above insights, solitary confinement alone also meets the “substantial risk of serious (physical) harm” requirement of the objective prong of the conditions standard. By depriving individuals of a minimal life necessity, solitary confinement *per se* risks inflicting an unnecessary suffering that is characterized by disfiguring and potentially permanent consequences. As the Court has repeatedly stated, the Eighth Amendment interpretation changes in tandem with the knowledge and standards of decency of an evolving society.²³⁴ A punishment that risks inflicting disfiguring and potentially permanent damages upon individuals exceeds contemporary standards of decency, and no civilized society should tolerate the infliction of such a toll upon human beings.

Deliberate indifference follows from extreme isolation

As noted above, the subjective prong of the conditions standard has been subject to scholarly criticism, especially in solitary confinement cases.²³⁵ It can be extremely difficult to prove that prison personnel or administrators were deliberately indifferent to the harms that were inflicted upon prisoners by a serious deprivation of basic human needs. Such challenging proof may be an obstacle to the success of legitimate Eighth Amendment claims that are based on deleterious conditions of solitary confinement.

Courts have admitted that when the risk of serious harm that is endured from a confinement condition is objective and generally known, such objective proof is also sufficient to infer the culpable state of mind of prison personnel. Regarding solitary confinement, several Courts opinions have called into questions the necessity of an explicit proof of deliberate indifference on the grounds that placing prisoners in solitary confinement poses a substantial risk of serious harm. For instance, the court in *Wilker-*

231 *Supra* note 55, at 776.

232 *Helling*, 509 U.S. 25, at 36.

233 National Committee on Correctional Health Care, *Position Statement: Solitary Confinement (Isolation)*, 22(3) J. CORRECT. HEALTH CARE 257, 258 (2016) (“The inherent restriction in meaningful social interaction and environmental stimulation and the lack of control adversely impact the health and welfare of all who are held in solitary confinement.”).

234 *Supra* Part I.

235 *Supra* notes 55–60 and accompanying text.

son noticed that “basic common sense indicates that ‘lack of exercise, social isolation, and/or stress are associated with [deleterious] conditions’... [Therefore, a] court ‘may infer the existence of this subjective state of mind [ie deliberate indifference] from the fact that the risk of harm is obvious.’”²³⁶ Likewise, opinions in Supreme Court cases have stressed the growing awareness of the damages of solitary confinement in modern American penal systems. Such damages have been documented at length and acknowledged by scientific, legal, and international sources.²³⁷

Furthermore, several authors have supported a presumption of culpability of prison officials in injunctive cases.²³⁸ For instance, it has been suggested that “prisoners could certainly show by the time of trial that authorities were aware of either the actual harm or risk of harm caused by solitary confinement.”²³⁹ Thus, when harmful conditions are allowed to persist, Courts may infer the culpable mindset of prison officials from the conditions themselves without also requiring an explicit proof of mindset.

The thesis of this article further integrates and reinforces these claims. When acknowledging that the core condition of solitary confinement, namely extreme isolation, amounts *per se* to a wanton and unnecessary infliction of pain and constitutes cruel and unusual punishment, the subjective prong of the test loses its *raison d’être* and becomes superfluous. Given the growing general awareness of the objective damages linked with solitary confinement, proof of socio-environmental deprivation is sufficient to infer that prison officials acted with deliberate indifference, as extremely isolating a prisoner is essentially depriving him or her of a basic human need and entails an objectively serious and well-known risk of harm. Therefore, a fact finder could conclude that by keeping a prisoner in solitary confinement in spite of the obvious health risks, both physical and psychological, the prison staff acted with deliberate indifference to the substantial risk of consequent harm.²⁴⁰

FAILURE TO MEET THE INTENDED PENOLOGICAL AIMS

The above evidence of the generalized consequences of solitary confinement also upsets the alleged balance between the “pains” of solitary confinement and the legitimate penological prison interests of discipline, security, and safety.²⁴¹ This “newly”

236 *Wilkerson* 639 F. Supp. 2d 654, at 670, 679 (citing *Hope v. Pelzer*, 536 U.S. 730, 738 [2002]). See also *Hadix v. Johnson* 367 F.3d 513,526 (“If... conditions are found to be objectively unconstitutional, then that finding would also satisfy the subjective prong because the same information that would lead to the court’s conclusion was available to the prison officials.”).

237 See *Glossip v. Gross*, 576 U.S. (2015) (Breyer, J, dissenting) (“[I]t is well documented that... prolonged solitary confinement produces numerous deleterious harms); *Davis*, 576 U.S. (Kennedy, J, concurring); *Apodaka*, 586 U.S. (Sotomayor, J, dissenting).

238 See, eg *Brittany Glidden, Necessary Suffering?: Weighing Government and Prisoner Interests in Determining What is Cruel and Unusual*, 49 AM. CRIM. L. REV. 1815, 1817 (2012) (claiming that the inference of the deliberate indifference requirement from the objective prong of the conditions test “should be made explicit in all injunctive cases.”).

239 *Bennion supra* note 55, at 777.

240 *Helling* 509 U.S. 25, at 33 (explaining that prison officials cannot “ignore a condition of confinement that is sure or very likely to cause serious illness and needless suffering the next week or month or year.”).

241 See also *Jacob Zoghlin, Punishments in Penal Institutions: (Dis)proportionality in Isolation*, 21 HUMAN RIGHTS BRIEF 24, 25 (2014) (reporting that prison officials tend to use solitary confinement in lieu of less severe measure also to punish a variety of minor infractions and stressing the excessiveness of solitary confinement in such cases).

emerging imbalance derives from the fact that socio-environmental deprivation, especially when prolonged, risks precipitating severe brain deteriorations, even in individuals without a history of mental illness.²⁴² Such deteriorations may not be limited to the stay in isolation, but given the long-lasting psychological consequences that they entail, the effects of such deteriorations risk continuing upon the reintroduction of an individual into a social environment, whether it is the prison or the general community.²⁴³ The risk of undergoing brain damage due to extreme isolation is an excessive—and, therefore, extremely unbalanced—cost for any legitimate penological interest to allegedly justify it.²⁴⁴

These claims mutually reinforce the robust body of evidence documenting that neither short-term nor long-term stays in solitary confinement achieve specific deterrent effects by reducing subsequent disciplinary infractions or prison incidents.²⁴⁵ Rather, evidence shows that stays in solitary confinement appear to produce the opposite effect.²⁴⁶ Moreover, jurisdictions that have restricted the use of solitary confinement have witnessed a decrease in prison violence.²⁴⁷ Thus, limiting the use of solitary confinement does not undermine the capacity of prison administrators to control the prison population or maintain safety and may actually increase it.

Acknowledging these claims may prompt the Courts to reconsider their (often excessive) attitude of deference to prison administrations in regard to the management and the application of solitary confinement regimes. Specifically, it may prompt the Courts to carefully scrutinize the “legitimate penological justifications” that prison administrations cite to defend their application of solitary confinement. Thereby, it could give full breath to the constitutional protection of people in custody that lies at the core of the Eighth Amendment.²⁴⁸

From a broader perspective, the evaluation of the penological justifications for a given prison condition or correctional practice under the Eighth Amendment needs to consider the progress of knowledge as it marks the evolution of society and of its standards of decency. Presently, there is a general consensus among domestic and international bodies that disfavors solitary confinement, which suggests that standards of decency have evolved away from the use of solitary confinement to serve the intended

242 See also *supra* note 233, at 258 (Even those without a prior history of mental illness may experience a deterioration in mental health . . .”).

243 Terry Kupers, *What to Do with the Survivors? Coping with Long-Term Effects of Isolated Confinement*, 35 CRIM. J. BEHAV. 1005 (2008).

244 See also *supra* note 241, at 29 (pointing out that prison administrators are not mental health professionals. Therefore, they “are not in the position to weigh the penological interests against the inevitable physical, social, and psychological damages associated with solitary confinement . . .” and lack knowledge “to determine whether a penalty that helps maintain discipline is proportionate to the violation it punishes.”).

245 Robert Morris, *Exploring the Effects of Exposure to Short-Term Solitary Confinement Among Violent Prison Inmates*, 32 J. QUANT. CRIMINOL. 1 (2015); Joseph Lucas & Matthew Jones, *An Analysis of the Deterrent Effects of Disciplinary Segregation on Institutional Rule Violation Rates*, CRIM. J. POL. REV. 1 (2017).

246 Chad Briggs et al., *The Effects of Supermax Security Prisons on Aggregate Levels of Institutional Violence*, 41 CRIMINOLOGY 1341 (2003).

247 See ASCA-Liman, *Working to Limit Restrictive Housing: Efforts in Four Jurisdictions to Make Changes* (Oct. 2018), https://law.yale.edu/sites/default/files/documents/pdf/Liman/asca_liman_2018_workingtolimit.pdf.

248 See *supra* notes 77–78 and accompanying text.

penological purposes.²⁴⁹ Increased knowledge also reflects (the reasons for) the higher effectiveness of less restrictive and less painful methods to serve identical penological purposes. Thus, no penological interest may justify the systematic and indiscriminate use of solitary confinement. Moreover, no penological interest can counterbalance the damages that solitary confinement risks imposing on incarcerated people. Admittedly, solitary confinement may still be warranted in those instances that require an individual's temporary protection or for the most serious, violent offenses or infractions,²⁵⁰ though only when other measures have been tried without satisfactory results.²⁵¹ Even in such instances, the separation of an individual from the rest of the prison community can still be handled in a more humane and less restrictive way.

VI. THE ANTITHESIS BETWEEN SOLITARY CONFINEMENT AND THE GOALS OF PUNISHMENT

Solitary confinement and its effects are also incompatible with the retributive, incapacitative, deterrent, and rehabilitative goals of punishment. As such, it lacks any penological significance. Although this broader penological perspective is uncommon in Eighth Amendment analyses in (solitary) confinement cases,²⁵² an elaboration of why solitary confinement is antithetical to each dominant justification for punishment can still offer scholarly value.

Beginning with retribution, retribution-based analyses generally encompass two components. The first, which is objective, evaluates a punishment on the basis of the

249 For an analysis, see CHARLIE EASTAUGH, UNCONSTITUTIONAL SOLITUDE: SOLITARY CONFINEMENT AND THE US CONSTITUTION'S EVOLVING STANDARDS OF DECENCY (2017).

250 Granted, the general prison environment is not a typical social environment. On the contrary, it can be rife with gangs, violence, sexual assault, intimidation, and coercion—which is not necessarily a superior alternative to living in solitary confinement. Still, the risks that are intrinsic to the general prison environment cannot justify the holding of a person in extreme isolation, in precarious living conditions, and for a potentially indefinite period of time. Although it may sound utopic, the most effective method to avoid such risks could be the implementation of profoundly reformed prison regimes that truly support the social rehabilitation of incarcerated people, and embrace values of mutual respect, dialogue, cooperation, sense of belongingness, and accountability. Such a radical change may be the key to resolving the violence that occurs too frequently in prisons and, ultimately, eradicating *ab origine* the option of isolating a prisoner to preserve his or her safety. For an argument about transforming prison environments, see Federica Coppola, *Valuing Emotions in Punishment: An Argument for Social Rehabilitation with the Aid of Social and Affective Neuroscience*, NEUROETHICS (2018). DOI: <https://doi.org/10.1007/s12152-018-9393-4> s. See also *infra* Part VI.

251 See *supra* note 233, at 260 (recommending that “[s]olitary confinement as an administrative method of maintaining security should be used only as an exceptional measure when other, less restrictive options are not available, and then for the shortest time possible”); see also American Public Health Association, *Solitary Confinement as a Public Health Issue* (2013), <https://apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2014/07/14/13/30/solitary-confinement-as-a-public-health-issue> (urging that “[c]orrectional authorities should implement policies that eliminate solitary confinement for security purposes unless no other less restrictive option is available to manage a current, serious, and ongoing threat to the safety of others.”).

252 See, however, *Rhodes* 452 U.S. 337, at 364 (Brennan, J, concurring) (citing *Laaman v. Helgemoe*, 437 F.Supp., 269, 323[1977]) (if “the cumulative impact of the conditions of incarceration . . . creates a probability of recidivism and future incarceration,” the court must conclude that the conditions violate the Constitution.”); *Brown*, 563 U.S. 493, at 510 (“Courts must be sensitive to the State’s interest in punishment, deterrence, and rehabilitation, as well as the need for deference to experienced and expert prison administrators faced with the difficult and dangerous task of housing large numbers of convicted criminals.”).

seriousness of the crime that was committed, whereas the second, which is subjective, evaluates a punishment in view of the degree of blameworthiness of the perpetrator. Blameworthiness evaluations also encompass the individual characteristics of a perpetrator, including his or her age or mental capabilities. Therefore, from a retributive perspective, a punishment is disproportionate when it is excessively severe relative to the crime and the perpetrator's overall degree of blameworthiness and, hence, culpability.

For the aims of this article, I measure solitary confinement against another critical aspect of retributive theory: the preservation and respect for the moral rationality of perpetrators.²⁵³ The premise of moral rationality is undeniably central to any retributive punishment.²⁵⁴ Retribution presupposes that the perpetrator is a rational moral agent who is capable of understanding the meaning and the consequences of his or her actions and freely chooses to act unlawfully. Based on this presupposition, retributive punishment aims to ensure that perpetrators are “capable of understanding the wrongs they have committed and the fairness of the penal sanctions imposed on them by the state in response to those wrong.”²⁵⁵ Accordingly, retributivism insists on structuring legal punishment, so that it is, at minimum, consistent with treating offenders as rational moral beings.

Retributivism requires that incarceration deprives perpetrators of their freedoms by drastically diminishing their privileges to live autonomous lives.²⁵⁶ However, retribution does not require that incarceration also erodes the capacities that constitute moral personhood, such as “physical and psychological health, work and interaction with others.”²⁵⁷ From a retributive perspective, these capacities and dispositions need to be regularly exercised to preserve the ability of prisoners “to comprehend and respond constructively to the reasons for which they are being punished.”²⁵⁸

From this line of reasoning, solitary confinement does not comport with this fundamental aspect of retributive punishment. Solitary confinement risks imposing traumatic brain and mental damages on prisoners, all of which compromise the cognitive and affective abilities that support practical reasoning skills,²⁵⁹ and “cause further atrophy of what may have already been weak capacities to identify with and feel for others.”²⁶⁰ Furthermore, the long-lasting or even permanent physiological, mental, and physical damages that solitary confinement may comport can protract even after a prisoner has served his or her sentence. Therefore, solitary confinement, which can inflict long-lasting or even permanent losses on perpetrators, renders a prison sentence

253 GEORG W.F. HEGEL, *ELEMENTS OF THE PHILOSOPHY OF RIGHT*, ABSTRACT RIGHT 126 ([1821] Allen Wood ed., 1991) (arguing that the criminal is a rational being who must therefore be treated as a rational being and that the criminal is a person, and must be the subject and not the object of the free will).

254 MICHAEL MOORE, *LAW AND PSYCHIATRY* 244 (1984).

255 Richard Lippke, *Retribution and Incarceration*, 17 PUBL. AFF. QUART. 29, 43 (2003).

256 *Id.*, at 32.

257 *Id.*, at 33.

258 *Id.*

259 See also WILLIAM HEIRSTEIN ET AL., *RESPONSIBLE BRAINS: NEUROSCIENCE, LAW, AND HUMAN CULPABILITY* 222–24 (2018).

260 *Supra* note 255, at 44.

just disproportional with the seriousness of the crimes that were committed.²⁶¹ Such an outcome is simply antithetical to any mainstream retributive perspective.

Solitary confinement also fails to meet consequentialist purposes of punishment, ie incapacitation, deterrence, and rehabilitation. Incapacitation refers to the ways in which punishment, and especially incarceration, neutralizes the likelihood that perpetrators may commit further offences by physically removing them from society. Solitary confinement, especially in supermax facilities, serves precisely this purpose during the period of confinement. However, the benefit of this incapacitation argument for public safety requires an additional analysis of the specific deterrent effects of solitary confinement.

Theories concerning the use of solitary confinement emphasize its potential to deter future crime.²⁶² However, empirical evidence disavows the effectiveness of solitary confinement as a tool to deter recidivism or change the behavior of prisoners. There is evidence that prisoners in solitary confinement at supermax prisons fare even worse than prisoners in the general population once they are released. For instance, an epidemiological study by Maers and Bales compared the rates of recidivism among individuals who had been in solitary confinement with those of individuals who had been normally confined. They found that solitary confinement was associated with a higher risk that formerly incarcerated individuals would commit a violent crime after being released. Other epidemiological studies have replicated this finding.²⁶³ The reasons for the increased risk of recidivism also originate largely from the brain alterations due to solitary confinement, which have been associated with adverse psychological symptoms and mental health issues that are known risk factors for socially dysfunctional behaviors, including antisocial conduct.²⁶⁴

Last but not least, solitary confinement does not serve the rehabilitative ideal of punishment. (Social) rehabilitation clearly aims to reintegrate convicted persons into society upon their release so that they can lead a law-abiding and self-supporting life. Thus, it seeks to reestablish positive relationships between perpetrators and the rest of society by facilitating (self-)reform and change that is based on relational processes.

261 See Laura Rovner, “Everything is at Stake if Norway is Sentenced. In that Case, We Have Failed”: Solitary Confinement and the “Hard” Cases in the United States and Norway, 1(1) UCLA CRIM. JUSTICE L. REV. 77, 93 (2017) (concluding that “the Supreme Court held that the punishment at issue in *Trop v. Dulles*—loss of citizenship for the crime of wartime desertion—was too severe a punishment to fit any crime because it destroyed a person’s identity and his place in the community. So too with solitary confinement, which inflicts a profound assault on what makes us human, depriving those subjected to it of what we ordinarily think of as a life.”).

262 Daniel Mears & William Bales, *Supermax Incarceration and Recidivism*, 47 CRIMINOLOGY 1131, 1155 (2009) (concluding that “[s]uch housing essentially prevents inmates from sustaining or creating a social bond It fulfills the requirements that general strain theory puts forth, including the failure to achieve positively valued goals, removal of positive stimuli, imposition of negative stimuli, and introduction of barriers to achieving goals. . . . [S]upermax confinement does little to assist inmates in developing effective, non-violent strategies to achieve goals or to manage interpersonal conflict At the same time, if applied in a way that feels unfair or demeaning, it might create feelings of anger and hostility as well as defiance.”).

263 See, eg Daniel Lovell et al., *Recidivism of Supermax Prisoners in Washington State*, 53 CRIME DELINQ. 633 (2007) (similarly finding that prisoners released directly from a super-max prison committed new crimes sooner than prisoners who were transferred from segregation to the general population for several months before being released).

264 See *supra* Part IV.B.

Rehabilitation crucially promotes as much as inclusiveness and positive social engagement as possible while perpetrators serve their sentence, as this can facilitate their social reintegration into the community.²⁶⁵

In addition to opposing the underlying values and aims of rehabilitation theory, the possible harms of solitary confinement, including a greater predisposition to aggression and other maladaptive psychological and behavioral patterns, may seriously compromise an individual's social functioning. Therefore, these harms seriously compromise the rehabilitation and resocialization process and render it more difficult, if not nearly impossible in some cases.²⁶⁶

To conclude, the type and the extent of harm that solitary confinement can inflict on individuals do not meet and are therefore disproportionate with any penological justification. In view of this, solitary confinement constitutes an unnecessary and wanton infliction of pain because it not only deprives individuals of their basic socio-environmental biological needs but also lacks any kind of penological justification. The suffering that solitary confinement imposes is unnecessary and runs afoul of any relevant perspective under the Eighth Amendment. No penological interest or aim can justify its infliction; solitary confinement is in and of itself cruel and unusual punishment.

A PATH FORWARD: ABOLISHING SOLITUDE IN PRISON

The arguments illustrated within this article ultimately lend support to the conclusion that solitary confinement, as it is still administered in a number of facilities or penal systems, should be dismissed altogether. Such conclusion is in line with the wide array of domestic and international organizations, movements, and associations that have called for abolishing solitary confinement or at least restricting its use to exceptional and strictly regulated circumstances.²⁶⁷

The separation of a prisoner from the rest of the prison population should always be a last resort intervention to manage extreme instances—which must be duly recorded by the prison personnel and possibly oversought by specialized committees—only when is absolutely necessary to achieve legitimate penological goals. In such cases, the separation of an individual from the rest of the prison community should be subject to strict temporal, social, and environmental standards.²⁶⁸ These (possibly uniform) standards are needed to contrast most arbitrarily employed forms of solitary confinement as well as a constitutional infirmity that permits prison administrations to use solitary confinement with scarce judicial oversight.

265 See Coppola, *supra* note 250.

266 See also *supra* note 233, at 258 (“the very nature of prolonged social isolation is antithetical to the goals of rehabilitation and social integration”).

267 See *supra* note 167, at 304 (observing that “[r]ecognition of the significant risk of serious harm that solitary confinement imposes has led to newly implemented standards and policies mandating that solitary confinement be used only as an absolute last resort [if at all] and for the shortest amount of time that is absolutely necessary to achieve legitimate penological goals.”).

268 See American Bar Association, *Standards for Criminal Justice on the Treatment of Prisoners* 50 (2011) (mandating that “[s]egregated housing should be for the briefest term and under the least restrictive conditions practicable . . .”).

Regarding time limits, the 2018 ASCA-Liman survey reported time intervals ranging from between 15 and 30 days to more than six years over 36 jurisdictions.²⁶⁹ Although fewer number of people were kept in solitary for 15–30 days, higher percentages were reported for periods in solitary of at least one month to over six years.²⁷⁰

More empirical research is needed to assess the exact maximum time limit for depriving an individual of constant social contact without undergoing irreversible damage; nonetheless, acknowledging that such deprivation risks precipitating or aggravating physical, physiological, and psychological adverse effects even after just a few days constitutes sufficient grounds for the adoption of uniform maximum time limits that match existing empirical knowledge as well as domestic and international guidelines.²⁷¹ Given the current paucity of jurisprudence on duration limits for solitary confinement, the strength of international and domestic guidelines mandating a maximum of 15 days²⁷² of solitary confinement should be used as a benchmark to set uniform time standards in all jurisdictions. All states should abide to these standards, any violation constituting an Eighth Amendment violation.

In addition to setting uniform time limits on solitary confinement, uniform sociability standards are also warranted. The ASCA-Liman 2018 survey has further reported positive data from a number of jurisdictions that have enacted specific policies in recent years to restrict the use of solitary confinement to the most objectively serious cases in order to improve the “social” conditions of people who are housed in solitary cells.²⁷³ Several jurisdictions have implemented policies that allow for more time out of the cell, outdoor recreation activities, classes, job training, rehabilitation, and re-entry programs for restricted individuals. However, only a few of them have increased time for visitors. Some policies even offer training for correctional officers to learn alternative responses to prison violence that hinge on dialogue, accountability, and cooperation.²⁷⁴ Notably, statistics reflect that prison incidents and the overall rate of recidivism upon re-entry to the community have both decreased.²⁷⁵ These sparse changes are encouraging and illustrate a growing acknowledgment that solitary confinement is counterproductive and can be extremely damaging. Ensuring that all correctional facilities adopt and apply sociability standards—including recreation, education, rehabilitation programs, and visiting hours with significant others—for prisoners who are temporarily separated from the rest of the community is critical to counteract the side effects of isolation as well as aid in their social rehabilitation and re-entry process.

269 *Supra* note 3, at 14 (“More than a fifth (9345 or 22.8 per cent) of those prisoners were in restrictive housing for 15 days to one month. Almost 32 per cent (12,968 people or 31.6 per cent) were in restrictive housing for one to three months. About a quarter (11,055 or 26.9 per cent) were in restrictive housing for three months to a year. Almost 10 per cent (3972 or 9.7 per cent) were held for one to three years. The responses identified 3721 people (9.1 per cent of 41,061 people) were held for more than three years. Of that number, 1950 were reported to have been in restrictive housing for more than six years.”). See also *id.*, at 15, Table 2.

270 *Id.*, at 6 (“The amount of time spent in restrictive housing is of increasing concern.”).

271 See *supra* note 167, at 301–302.

272 See, eg United Nations Standard Minimum Rules for the Treatment of Prisoners (Mandela Rules) (2015).

273 See *supra* note 3, at 61–62.

274 *Id.* See also The Crime Report, *Can Prisons Find Alternatives to Solitary Confinement?* (Dec. 24, 2018), <https://thecrimereport.org/2018/12/24/can-prisons-find-alternatives-to-solitary/> (last visited March 23, 2019).

275 See Ariel A. Simms, *Solitary Confinement in America: Time for Change and A Proposed Model for Reform*, 19 U. PA. J. L. SOC. CHANGE 239, 245 (2016).

Finally, although this suggestion applies to correctional facilities in general, the design of separation cells should follow strict environmental standards. On several occasions, the Court stressed that “the Constitution does not mandate comfortable prisons.”²⁷⁶ However, it also stated that the Constitution “neither does. . . permit inhumane ones.”²⁷⁷ The empirical studies reported above indicate that environmental surroundings—whether enriched or deprived—significantly influence brain structure and function as well as psychological well-being and social behavior. Tiny and environmentally scarce cells risk exacerbating the negative effects of a lack of social interaction.

Several authors have called for making correctional facilities as humanized and home-like as possible.²⁷⁸ Positive international examples²⁷⁹ indicate that home-like cells with natural light, even in maximum security facilities, where prisoners are afforded amenities such as proper bedding, furniture, or reading materials, contribute to prisoners’ physical and psychosocial well-being. Such generalized well-being has been found to positively contribute to reduced institutional misconduct and overall recidivism.

It is admittedly difficult to expect such a dramatic change in U.S. facilities in the immediate future. Nevertheless, it is imperative to acknowledge that such realities exist and are effective. Most importantly, those realities convey an important lesson of “dignity and humanity that is the birthright of every person, and . . . respect [for] the collective dignity and humanity of society.”²⁸⁰ These are the values and rights that animate the Eighth Amendment,²⁸¹ and should accordingly animate the abolition of solitary confinement.

CONCLUSION

In the opening paragraph of her dissenting opinion in *Apodaka*, Justice Sotomayor wrote, “A punishment need not leave physical scars to be cruel and unusual.”²⁸² However, socio-environmental deprivation can apparently leave too many scars, which may be visible and tangible. Solitary confinement is a disfiguring and dehumanizing punishment, as it deprives people of their biological needs, it drastically changes their physiology, and causes severe psychological and physical harm. It is increasingly an appropriate time to resolve the many, potentially incurable scars that solitary confinement may inflict on incarcerated people. Continuing to ignore these scars can only render them even more profound.

276 *Eg Rhodes*, 452 U.S. 337, at 349.

277 *Farmer*, 511 U.S. 825, at 832.

278 See, eg James Gilligan & Bandy Lee, *Beyond the Prison Paradigm: From Provoking Violence to Preventing it by Creating Anti-prisons (Residential Colleges and Therapeutic Communities)*, 1036 ANN. N.Y. ACAD. SCI. 300 (2004).

279 See, eg, Chris Weller, *Photos of Maximum-Security Prisons in Norway and the US Reveal the Extremes of Prison Life*, Business Insider (Nov. 28, 2017), <https://www.businessinsider.com/norway-and-american-prisons-reveal-how-each-country-sees-punishment-2017-1> (last visited Aug 24, 2019).

280 *Supra* note 261, at 93.

281 *Estelle*, 429 U.S. 97, at 102 (citing *Jackson v Bishop*, 404 F.2d 571, 579 [CA8 1968]) (“The [Eighth] Amendment embodies ‘broad and idealistic concepts of dignity, civilized standards, humanity, and decency . . .’”).

282 *Apodaka*, 586 U.S. (Sotomayor, J., dissenting).