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Analyzing the Biological & Psychological Effects of Prolonged Lockdowns on Children & Adolescents

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ANALYZING THE BIOLOGICAL & PSYCHOLOGICAL EFFECTS OF  
PROLONGED LOCKDOWNS ON CHILDREN & ADOLESCENTS

By

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A capstone project submitted for Graduation with University Honors

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## ABSTRACT

Due to the current pandemic, the extended lockdowns have caused a steep decline in the mental and physical health of many individuals, specifically children and adolescents. Some of the most prominent issues surfacing include increased depression, failing grades, self-harm, and suicide attempts. There is significant scientific evidence to back the idea that prolonged periods of isolation, and lack of outdoor time, cause increased depression, drops in mood, and health decline. This study examined how human biology's chemical and biological aspects are affected by prolonged lockdowns and isolation to understand further why the lockdowns have been so detrimental to younger individuals. Interviews with affected adolescents were also incorporated into the study to get immediate insight into how they view the impact of the lockdowns. It is believed that one reason why adolescents are so greatly affected may be because of their still-developing bodies and brains. Hopefully, by conducting these studies and further analyzing the fundamental needs of humans as social creatures, some better understanding into the effects of prolonged lockdowns on adolescents can be gained. The continuation of this research may also be beneficial in figuring out if a solution exists to ease these issues and hopefully get mental health back up and thriving.

## ACKNOWLEDGEMENTS

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## CAPSTONE

For weeks, Ikaezia Brannies spent her nights in a hospital, sleeping next to the hospital bed that holds her 13-year-old son, Tayvin. Tayvin attempted to take his life but was lucky enough to have survived. Being an athletic, social, and intelligent young man, it doesn't seem very easy to rationalize why Tayvin would attempt to take his life. However, his father, Nik, has his theory, "...we know our son, and we know that when you have an extrovert that loves people and loves socializing, and you take that person and basically lock them in a prison, and with no warning, everything's gone. [...] I told other people, what did you expect to happen? What did you think was going to happen?" The world was flipped upside down at the end of 2019 when the COVID-19 virus began spreading rapidly across the entire globe. Eventually, almost the entire world went into lockdown in efforts to minimize the spread. Although good intentions may have initially backed the lockdowns, they also caused significant damages economically, mentally, and physically. Among the most affected individuals were kids and young adults, with drastic spikes in self-harm, reduced grades, depression, and suicides. The importance of this research lies in bringing awareness to the issues that adolescents are facing and understanding why lockdowns are so detrimental and should end as well as finding alternatives to a healthy lifestyle that don't include prolonged and dangerous lockdowns.

Before focusing on the specific adverse effects of lockdowns on adolescents, it is also essential to understand the extent of lockdown's negative outcomes. When the lockdowns first began in early 2020, 2 weeks were proposed to help slow the spread of COVID-19. Initially, it was rare to find anyone that disagreed with this premise since not much was known about COVID-19 and how deadly it was. However, the 2-week period came and went, but the lockdowns remained in place. Weeks went by, then months, and eventually, certain states and

countries reached an entire year of being locked down. According to the Pew Research Center, unemployment rose to 14.4% in April of 2020, higher than any other unemployment rate since it reached 25% during the Great Depression of the 1930s (Kochhar, 2020). Another negative factor that stemmed from the lockdowns was an increase in diseases responsible for excessive death tolls every year. Unfortunately, the intense, worldwide focus on COVID-19 removed necessary attention from these other deadly diseases. In the journal *Nature*, Leslie Roberts wrote that "campaigns to battle tuberculosis, measles, and polio have all been set back" as the fight against COVID-19 focused almost all medical attention on just one disease. Roberts states that in India, after lockdowns began in March 2020, cases of tuberculosis detected dropped by 70%. This seemed far too convenient for a disease that kills 1.4 million every year. The number of people receiving tuberculosis treatment dropped by more than one million. An estimated 500,000 more individuals are believed to have died due to tuberculosis last year, "setting the fight against the disease back by a decade or more" (Roberts, 2021). Third, COVID-19 lockdowns directly impacted and worsened obesity rates. According to Christoffer Clemmensen's study in *Nature Reviews Endocrinology*, the lockdowns triggered "a series of psychobiological mechanisms that accelerate obesity occurrence and increase the risk of developing obesity-linked comorbidities." Aside from the increase in obesity, he goes on to explain that "the combination of imposed isolation and subsequent socioeconomic hardship and deterioration of psychosocial health might result in long-lasting effects on metabolic health." Clemmensen mentions that combining all the factors causes chronic stress that alters eating behaviors and perturbs energy homeostasis (Clemmensen et al., 2020). Finally, mental health has been steeply declining worldwide since the lockdowns were implemented. Humans are by nature social creatures that require exercise, fresh air, and time outdoors in the sun. Depriving humans of these internal needs can be detrimental to

mental health. According to James Piereson, based on a survey conducted in June 2020, it was found that suicidal ideation elevated with about twice as many respondents reporting severe consideration of suicide, then did adults in the United States in 2018, a notable spike to 10.7% from 4.3% (Piereson, 2021).

Furthermore, when examining how catastrophic lockdowns have been, it's important to note that some of the same adverse effects have been recorded worldwide. In reviewing the pattern of results in multiple countries, further insight can be gained into why these specific effects are so persistent and drastic. Various countries also focused on extensive research on their youth, since this age group had rates of declining mental health that were much steeper, with females being more affected than males. Certain countries noted significant findings through their studies; focus will be placed on these studies to highlight notable factors of adverse lockdown effects.

Italy was one of the countries that were hit the hardest by COVID-19 due to its large percentage of older citizens, the most vulnerable group for COVID-19. One study from Italy showed that mental health decline was due to interruptions in sleep patterns caused by the lockdowns. Internet use was one of the most dominant factors that affected sleep, followed by anxiety due to economic struggles and solitude or lack of socialization (Gualano, 2020). Interruptions in sleep can affect every function of the human body, from immune tasks to an individual's mood. In fact, according to a study in *The Journal of Neuroscience*, with increased periods of wakefulness, glycogen levels in the brain drastically decreased in both white and gray matter. Once recovery sleep was introduced, the depleted levels of glycogen were restored. (Kong, 2002). Glycogen is the principal storage of energy or glucose for the brain, and during

sleep, the brain can replenish Glycogen levels. Sleep also serves as a way for the body to return to homeostasis.

Furthermore, extended time on electronics prevents sleep and prolongs restlessness due to their exposure to blue light which can suppress the secretion of melatonin. Melatonin is the hormone that controls the sleep-wake cycle. Hence, it makes sense that the extended lockdowns in Italy caused an increase in computer and electronic usage, which affected sleep and consequently led to increased depression, anxiety, and overall mental disorder. Additionally, married individuals with a pet or kid were less affected because they could socialize and limit blue light exposure and interrupted sleep (Gualano, 2020) (Table 1). A second Italian study from a university in Milan focused on how housing affected mental health. They found an increase in depressive symptoms with students that had smaller apartments, poor views, and scarce indoor qualities (Table 2). Students living in these conditions also had 4x the decrease in work performance. New student housing designs have been suggested to reverse the harmful effects of inadequate housing conditions during lockdowns. The new housing designs include larger space, with open windows facing green areas (Amerio, 2020).

**Table 1:** An overview of factors that affected an individual’s depression, anxiety and sleep. The percentages indicate the individuals that did suffer from the listed ailments. It was found that the most susceptible were females, individuals that were single or divorced, and those that avoided being active. This data was from an Italian study, led by Maria Rosaria Gualano.

	DEPRESSION (YES):	p	ANXIETY (YES):	p	SLEEP DISTURBANCE (YES):	p
<b>GENDER:</b>		<b>0.132</b>		<b>&lt;0.001</b>		<b>&lt;0.001</b>
Male	22.4%		16.3%		34.5%	
Female	25.9%		26.8%		46.4%	
<b>MARITAL STATUS:</b>		<b>&lt;0.001</b>		<b>&lt;0.001</b>		<b>0.164</b>
Single/Divorced	30.5%		28.2%		44.7%	
Married/Cohabitant	20.9%		20.2%		41%	
<b>ACTIVITY AVOIDANCE:</b>		<b>&lt;0.001</b>		<b>&lt;0.001</b>		<b>&lt;0.001</b>
No	20.4%		19.4%		38.7%	
Yes	37.3%		35.1%		52.9%	

**Table 2:** Comparisons of architectural parameters according to the presence of moderate or severe depressive symptomatology in students. This table shows how a lack of open space or room, caused increased depression and mental decline in students; there was also increased depression when no greenery was visible.

**PHQ-9: 9-item Patient Health Questionnaire** – Used to assess depressive symptoms.  
 Scores of **0-14** were considered to mean **normal to moderate depressive symptoms**.  
 Scores of **15-27** were considered to mean **moderate-severe to severe depressive symptoms**.

	PHQ-9 ≥ 15 (Moderate to Severe)	PHQ-9 < 15 (Moderate-Severe to Severe)	P
<b>APARTMENT:</b>			<b>&lt;0.001</b>
<b>&lt; 120 m<sup>2</sup></b>	<b>67.3%</b>	<b>58.6%</b>	
<b>&gt; 120 m<sup>2</sup></b>	<b>32.7%</b>	<b>41.4%</b>	
<b>VIEW FROM APARTMENT:</b>			<b>&lt;0.001</b>
<b>Green</b>	<b>34.9%</b>	<b>41.2%</b>	
<b>Buildings</b>	<b>65.1%</b>	<b>58.8%</b>	
<b>QUALITY OF INDOOR AREA:</b>			<b>&lt;0.001</b>
<b>Poor</b>	<b>34.3%</b>	<b>12.9%</b>	
<b>Medium</b>	<b>42.5%</b>	<b>43.7%</b>	
<b>High</b>	<b>23.2%</b>	<b>43.4%</b>	

A study conducted focused on the effects of age, gender, income, work, and physical activity on mental health during lockdowns in Austria. This study, by Christoph Pieh, was consistent in showing that there was a higher rate of mental health issues during the pandemic lockdowns, which included depression, anxiety, and a decrease in quality of life. This study found that the individuals with the most negatively affected mental health were women, individuals under 35, people with no work, those with low incomes, and individuals lacking in physical activity (Pieh, 2020) (Table 3). The increased mental disorders noted in women were consistent and significant, and this trend is also found in dozens of other studies. Mental illness disparities between the sexes have been so prominent that studies have been conducted to examine why women are so much more vulnerable. An article by Matia B. Solomon, published in the journal *Physiology & Behavior*, discusses how hormonal fluctuations and gonadal steroids

are the most prevalent causes for the difference in mental health between the two sexes. The study begins by discussing how "depression and anxiety are both associated with aberrant secretion of glucocorticoids, which also show marked fluctuations across the reproductive cycle and in response to gonadal steroids. [...] Women are more likely to suffer from depression and anxiety during periods of marked hormonal fluctuations including the premenstrual, postpartum and perimenopausal periods" (Solomon, 2009). In this study, estrogens are referred to as hormones that include estriol, 17- $\beta$  estradiol (E2), and estrone. It explains how the presence of E2 can be beneficial to one's mood, and tests were done on rats to simulate how hormones can affect mental health. Some of the significant findings included "depression-like behaviors decreased during pregnancy and increased upon withdrawal of hormones, analogous to the postpartum increases in depression observed in women. [...] Total deficiency of estrogens and progestins with ovariectomy increases behavioral despair in an E2 reversible manner], suggesting that the E2 is necessary for appropriate regulation of mood" (Solomon, 2009). Estrogen acts as an anti-depressant; however, too much estrogen can also lead to feelings of anxiety. On the other hand, progesterone was found to help regulate and decrease stress. These shifts in hormones can be noted in women's moods and are consistent with the menstrual cycle, "Symptoms of premenstrual syndrome (PMS) or premenstrual dysphoric disorder (PMDD) occur during the late luteal phase of the menstrual cycle when (E2) and progesterone levels are low" (Solomon, 2009). Due to the constant shifts in hormone levels and cycles that female bodies go through, it's clear why they would be much more susceptible to changes in mental health. Mental health can significantly be affected during periods of prolonged isolation, with a lack of outdoor time.

**Table 3:** Summary of PHQ-9 (Patient Health Questionnaire) for depression symptoms, GAD-7 (Generalized Anxiety Disorder 7 scale) for anxiety, and ISI (Insomnia Severity Index) scores of males, females & of varying age groups. For all the tests, females had more severe symptoms. For the PHQ-9 & the GAD-7 tests, age group 25-34 had the worst symptoms, followed by 18-24. For the ISI test, age group 45-54 was most affected, followed by 18-24 and 25-34.

	PHQ-9 <10 (Normal to Moderate)	PHQ-9 ≥ 10 (Moderate-Severe to Severe)	GAD-7 <10 (Normal to Moderate)	GAD-7 ≥ 10 (Moderate-Severe to Severe)	ISI <10 (Normal to Moderate)	ISI ≥ 10 (Moderate-Severe to Severe)
<b>Male</b>	<b>83.6%</b>	<b>16.4%</b>	<b>85.9%</b>	<b>14.1%</b>	<b>85.7%</b>	<b>14.3%</b>
<b>Female</b>	<b>74.9%</b>	<b>25.1%</b>	<b>76.6%</b>	<b>23.4%</b>	<b>83.0%</b>	<b>17.0%</b>
<b>18-24</b>	<b>67.8%</b>	<b>32.2%</b>	<b>78.0%</b>	<b>22.0%</b>	<b>81.4%</b>	<b>18.6%</b>
<b>25-34</b>	<b>66.3%</b>	<b>33.7%</b>	<b>72.9%</b>	<b>27.1%</b>	<b>81.9%</b>	<b>18.1%</b>
<b>35-44</b>	<b>80.0%</b>	<b>20.0%</b>	<b>80.0%</b>	<b>20.0%</b>	<b>85.9%</b>	<b>14.1%</b>
<b>45-54</b>	<b>80.2%</b>	<b>19.8%</b>	<b>80.2%</b>	<b>19.8%</b>	<b>79.7%</b>	<b>20.3%</b>
<b>55-64</b>	<b>84.0%</b>	<b>16.0%</b>	<b>83.4%</b>	<b>16.6%</b>	<b>84.0%</b>	<b>16.0%</b>
<b>65+</b>	<b>94.7%</b>	<b>5.3%</b>	<b>93.2%</b>	<b>6.8%</b>	<b>95.5%</b>	<b>4.5%</b>

In a broader study that looked at Europe as a whole, it was found that although the lockdowns and lack of human interaction are a great way to protect the most vulnerable, the elderly, the lockdowns have proven to be just as detrimental to adolescents and especially school-aged kids. They explained how learning from home has dramatically decreased grades and simultaneously increased anxiety and depression in younger individuals. As previously discussed, the hormonal changes that adolescents undergo during puberty and even during pre-pubescence are also a large contributing factor to this age group's drastic negative mental decline. Another contributing factor is that children are no longer with trained teachers. Instead, their parents are expected to teach them subjects that they may not even know themselves, not to mention that many parents have to work and rely on the child care that schools provide.

Furthermore, concerns rose about children that use school as a refuge from unsafe and abusive homes. These children were no longer able to safely and discretely relay their issues to individuals that could remove them from dangerous situations. Due to the pandemic, there is also

a decrease in professional services for abused children or mental health services (Clemens, 2020). The lockdowns have created dangerous and unhealthy circumstances for many people. They have also limited the number of individuals allowed to work, which increases the detriment of lives in unsafe living conditions. These extended isolations have proven to be more harmful than helpful. This study states, "on the spectrum from healthy–coping–struggling to unwell, many children can expect to suffer" from the lockdowns, adding that there should be more reflection on the effects of the lockdowns on mental health since "so-called 'social distancing' and measures of hygiene have proven to be effective reactions to the threat of increasing numbers of COVID-19 cases and fatalities" (Clemens, 2020). It has been much more detrimental to the world's overall population entering and continuing these lockdowns. With predominantly negative consequences for younger individuals, these effects may have grave implications for future generations and their world.

Studies about the effects of lockdowns were also conducted in China. One specific study from *The Lancet Child & Adolescent Health Journal* discussed how the lockdowns would have extensively negative ramifications on the social abilities of children and adolescents. These issues arise from the lack of companionship for extended periods; this is especially true for kids with working parents, who would typically be in social environments in schools. Socialization and camaraderie are necessary for the well-being and psychological development of children and adolescents. The younger children are left without proper guidance and nurturing from their parents, the more susceptible and prevalent these issues become. As the study noted, "separation from caregivers pushes children into a state of crisis and might increase the risk of psychiatric disorders... children who were isolated or quarantined during pandemic diseases were more

likely to develop acute stress disorder, adjustment disorder, and grief. 30% of the children who were isolated or quarantined met the clinical criteria for post-traumatic stress disorder.

Furthermore, separation from parents or parental loss during childhood also has long-term adverse effects on mental health, including a higher risk of developing mood disorders and psychosis and death by suicide in adulthood. The age of the initial separation is known to be relevant to psychological development. The parent-child separation initiated in the first few years after birth might disrupt the ongoing attachment processes, which might be associated with poorer mental health outcomes" (Liu, J.J., 2020). The study also found an increase in fear, difficulty sleeping, and lack of eating properly. A very famous 1958 experiment by Harry Harlow demonstrated how newborns are born with an innate need to form bonds and to feel comforted. Harlow began by separating infant monkeys from their mothers and then placed them in cages with two surrogate mothers. One of the mothers was made of wire and had an attached baby bottle to provide food; the second mother could not provide food but was covered in a soft cloth. Many believed that the baby monkey would find preference in the mother that promoted its survival by offering food, but this was not the case. Instead, the baby monkey only sought out the wire mother when it was hungry and spent most of its time with the cloth mother (McLeod, S. A.). Like the present-day study on China's lockdowns, Harlow's studies also found that lack of maternal involvement led to emotional damage, which was more detrimental in younger children. This emotional damage can only be corrected during a small window of time, known as the "critical period." The permanent psychological and physical strains that the lockdowns are causing in the world's youth, raising another set of fears and questions about the future. A constant echo from experts conducting these studies is whether or not the child subjected to the psychological turmoil of lockdowns will adequately function as adults.

The U.S. conducted a study that gathered worldwide information on the effects of lockdowns and specifically focused on how "the impacts of lockdown (such as social disconnection, reduced exercise, and fewer physiotherapy treatments) may be amplified for people with neurological conditions with subsequent increases in frailty" (Pelicioni, 2020). The study notes that in certain countries, like Brazil and New Zealand, caregivers are not considered essential workers, so they must no longer work to help people; this may seem like an insignificant change, especially for children who have a two-parent household. However, it is essential to remember that many parents in two-parent homes are both continuing to work; this is even more likely for homes that have an individual with neurological issues and extensive medical needs. Hence, many neurologically-impaired individuals are being left without care or anyone to watch over them because of the lockdowns. The study also stated the increased detriment for those "who need extensive care, physiotherapy, and regular activity to maintain their well-being and health" (Pelicioni, 2020). Not only is the lack of socialization and critical caregivers issues caused by lockdowns, but the lack of necessary exercise and physiotherapy are as well. Physical activity and the simple act of going outside to catch the sunlight have been known to help decrease mental disorders such as depression and anxiety. These illnesses are heightened, but now there is a steep rise in individuals who are not receiving proper physical therapy who need it. The solution to the pandemic can not be worse than the pandemic itself. And yet, as lockdowns are prolonged for a virus, with a very high survival rate, the world has spiraled into a plethora of new and worsening issues.

A common theme in all the studies that have so far been discussed is that prolonged solitude is highly detrimental. An excellent way to analyze the repercussions of isolation is by examining why prisons use solitary confinement as a punishment and what it does to prisoners.

Peter Scharff Smith conducted a study on the effects of solitary confinement and found that "solitary confinement can have serious psychological, psychiatric, and sometimes physiological effects on many prison inmates. A long list of possible symptoms from insomnia and confusion to hallucinations and outright insanity has been documented. Research suggests that between one-third and more than 90 percent experience adverse symptoms in solitary confinement and a significant amount of this suffering is caused or worsened by solitary confinement" (Smith, 2006). First, it should be noted that individuals that commit crimes, especially ones as heinous as rape or murder, are more than likely suffering from a mental disorder or neurological chemical imbalance. Second, the point of the prison system is supposed to be to rehabilitate individuals, even those sentenced to life or death. The U.S. Constitution even goes as far as to state that no individual will be subjected to any cruel or unusual punishment. Now, because solitary confinement does not physically cause mutilations or wounds, it is not considered to be an especially cruel punishment. However, Smith goes on to say that "whether and how isolation damages people depend on duration and circumstances and is mediated by prisoners' characteristics; but for many prisoners, the adverse effects are substantial" (Smith, 2006). It seems reasonable to state that any punishment that causes permanent and substantially adverse effects should be considered cruel. Still, it has become increasingly evident that psychological issues typically go ignored because they are not explicitly visible issues. The ignoring of psychological problems also seems to be a significant reason why lockdowns are going on in many parts of the world, regardless of the extensive damage they cause. One of the character changes noted in prisoners included "...more feelings of [...] aggression than the general prison population" (Smith, 2006). This illustrates the complete failure that solitary confinement provides in terms of rehabilitation and its tendency to increase violence in prisons. Previously

mentioned were the adverse effects of lack of sleep, which Smith noted in his research. Smith added that "...insomnia with and without anxiety, hallucinations, suspiciousness, [and] despondency" (Smith, 2006). Once again, it is apparent that solitude promotes a wandering and restless mind, which causes insomnia and other side effects correlated with lack of sleep. Solitary confinement doesn't only cause mental ailments, but it also perpetuates physical conditions. The increased unstable sanity that solitude creates, obesity, and illnesses that are already present, can severely worsen in prisoners. A second study highlights that "As early as the 1830s statistical evidence began to indicate an increased incidence of physical morbidity and mortality, as well as of insanity among prisoners exposed to especially rigid forms of solitary confinement" (Grassian, 1983).

As helpful as studies worldwide are in gaining understanding about the negativity of prolonged lockdowns, the personal testimonies from adolescents are some of the most eye-opening and heart-breaking looks into the lockdowns. Jorge Ventura of the Daily Caller set out to interview and hear the stories of individuals who were significantly affected by the COVID-19 lockdowns. One of the testimonies came from Vancouver, Washington, middle schooler Melanie Gabriel. Although young, Melanie showed tenacity and dedication when organizing protests for parents and students who want schools to reopen. When asked why she decided to spark this movement in her town, Melanie responded with, "the whole reason I started my Facebook page, and I got into like opening schools because so many of my friends have become even more suicidal more have attempted. I have a friend who's in the hospital right now because he shot himself. [...] The lockdown is not good for anybody who is going to school because it has such a horrible effect on our mental health". According to a TIME article on teen mental health during lockdowns, "in a study by the nonprofit FAIR Health, investigators combed through a database

of 32 billion U.S. health insurance claims – focusing on the two billion or so from 2019 to 2020 – to calculate the numbers filed for health services in the pediatric age group, which they defined as ages 0 to 22. The researchers focused particularly on the emotionally turbulent years from 13 to 18, and [...] on those claims filed by those ages 19 to 22" (Kluger, 2021). The compiled data showed that compared to pre-pandemic times, there was a significant increase in various psychological conditions, with some numbers showing terrifying indications of mental decline. For example, there was a "334% spike in intentional self-harm among 13- to 18-year-olds in the Northeast in August of 2020 compared to the same month the year before [...] In the 13- to 18-year-old group, claims for drug overdoses increased 95% in March and 119% in April." (Kluger, 2021). The U.S. Center for Disease Control and Prevention confirmed the findings on overdoses, which reportedly had their highest annual number of overdose deaths ever recorded. "The big three conditions affecting the 13 to 22 group in both years were anxiety, depression and adjustment disorders—and they all exploded in the spring of 2020, increasing 80% to 90% year over year for the 13-18 group, and 45% to 65% for the 19-22 cohort". (Kluger, 2020).

Individuals of all ages saw increases in mental illnesses due to the lockdowns. Still, the report notes that the increase was so drastic that it stood out from all other age groups, specifically for adolescents. Aside from the previously mentioned fact that this age group experiences drastic changes in hormones, it is also believed that the uncertainty of the future due to the ramifications of the pandemic may be an essential factor. For example, many students looking forward to going to college are now unable because their parents may have been laid off or suffered decreased work hours due to the pandemic and lockdowns. Like high school graduation, prom, and socialization with others their own age, monumental life events have now been canceled or wholly prohibited, exacerbating the mental angst in this specific age group.

La Sierra High School student Dylan Long from California also gave a heartfelt testimony on how gravely the lockdowns and lack of in-person teaching have affected him and his classmates. Dylan stated that "it's been challenging. I was someone who, for the first few months of it, I was trying to stay real positive [...], don't let it affect me. But I'm not going to lie, these last couple months, especially into the fall [...] when you get on those Friday nights in September, October, November, when you should be playing football, and you're just at home. That's hard mentally. It's tough for me; it's tough for my peers. I know it's tough for my teammates. [...] Knowing that nothing has changed, and knowing nothing ahead for these last couple months, it has been really mentally draining on me". Through Dylan's palpable desperation, it's clear that removing such defining years and activities from adolescents is having very damaging effects on both their physical and mental health. Not only are milestone moments being taken away, but the physical activities and sports that kept many healthy and provided an outlet for their stress are also being stripped. Dylan went on to write a letter to California governor Gavin Newsom. He stressed the need for schools to reopen and students to get back to regular socialization and activities, focusing on high school sports. In the letter, he emphasized that he's "never been in a lower spot than I am now. I think I speak for my peers as well when I say that distance learning has created such a sadness in all of us. [...] Sports are essential to who we are as young men and women, across the state". Unfortunately, three months have passed, and Dylan has not heard back from the governor, and there have been no notable advances in reopening his school. In his interview, Dylan also had a message for other individuals in positions of power, "for people who are in charge or for people who are making some of these decisions, let's put some focus on the mental health of kids. I see it with all my siblings. We're doing online school. [...] It's so tough. I'm watching my sister, who is in first grade, learn

through a computer, and it's just simple things that I got to do in class that maybe you take for granted. [...] It really sucks, and I think that the mental health of these kids needs to be prioritized more. It needs to be talked about more. All of us are hurting”.

High school sports are not only physically beneficial for students; they can also provide help for mental illnesses. Jason Nelson is an autistic high school student who is also on the wrestling team at his school. For Jason, Wrestling is not just a sport; it is an outlet for the stress that autism causes in his life and healthy, therapeutic activity. Jason told the Daily Caller, “I miss competing in wrestling because when I compete, when I meet someone new in wrestling, from like a different school, I would just make friends with them. When I win in wrestling or try my very best in the match I’m in; I earn respect from my teammates, which feels good. [...] I really miss that a lot. [...] It makes me feel more confident in myself, and I noticed that for a fact when the COVID-19 pandemic started, I started to lose self-confidence about myself. Like not only in sports but also in real life as well”. Jason isn’t the only one that is completely shattered by his inability to participate in wrestling, his father had this to add, “after he joined the team, bringing him to school I’ve never seen so much absolute pure joy in his face. [...] Part of the COVID to, is home learning, over the internet. Where he had become much more independent on his schoolwork, he has ended up needing a lot more help from us. Depression, I mean he’s not around his friends”. Caring for a child with a disability is no easy task, and where Jason’s parents had found a healthy activity to help with his autism, it has now been taken away, and the setbacks are noticeable. By being open about his declining mental status, Jason hopes to help others see how necessary it is to allow students to return to schools and in-person learning and activities.

In The first interview introduced with Melanie Gabriel, she mentioned that one of her personal friends was in the hospital after attempting to take his life. The name of this 13-year old is Tayvin Brannies, and the interview that his parents, Nik and Ikaezia Brannies, gave to the Daily Caller was what drove much of this research. Tayvin's father, Nik, explains why he felt it was so important to share his son's story, "the reason why we shared our story [...] is to bring awareness, that this wasn't just our family; this is happening across the country, around the world. Suicide rates are increasing [...]. I've told other people, what did you expect to happen? [...] You took away what made somebody's life so valuable and so important. The main reason that we are doing this is to bring awareness. To make sure that parents are paying attention to their children". Tayvin's mental decline began with the abrupt closing of his school, which his parents said worried him because he could not get the numbers of classmates. The isolation and lack of social stimulation soon left Tayvin uninterested in schoolwork. He went from being an exceptional student to receiving Ds and Fs, and eventually, he began completely missing assignments altogether. When his parents would ask him why he neglected his schoolwork, Tayvin would say that there was no point; it was all online, and it just did not feel natural. School no longer felt important because there was no substance to it in early January. Nik received a phone call stating that his son had just shot himself in the head. Nik recalls the entire situation as a chaotic blur, with one of the only notable moments being when he went into shock upon seeing his son with a self-inflicted gunshot wound in his head. Emergency services were called, and upon arriving at the hospital, Ikaezia recalls her son being rushed into surgery and remaining in the ICU for 13 days. She mentions how risky her son's surgery and recovery were, with part of the skull removed to allow the brain to swell without being damaged. Overall, Nik and Ikaezia Brannies say that what their son went through was nothing short of a miracle. Initially, being

only given a less than 5% chance of survival, Tayvin can understand a conversation, has some speaking ability, and most of his ability to move has also remained intact, with some limitations on his right side. “He is recovering. It feels like an eternity to us. The hours of the day are just so long, but when looking at the grand scheme of things, he is recovering. Really quickly,” Ikaezia said as her interview came to an end. Nik added, “the awareness is the biggest part about this. Not just the suicide, but the increasing amount of suicides that are happening because of the distance that is put between these children and not being able to go to school, not being able to socialize”. Through their lack of sleep and stressed-filled days, his parents are optimistic that their son will make a close to full recovery. With as heart-breaking as Tayvin’s story is, one line from his father echoes hope and the love of a parent, “We are just happy to have our son, that’s the biggest thing.”

There is no doubt that the lockdowns have resulted in more harm than good, especially as they continue to drag on. One of the most important things to remember about this virus is that for individuals in the age groups of 0-19, there is a 99.997% survival rate, with only a slight decrease for ages 20-49 to 99.98%, according to the CDC. The CDC further states that the individuals most in danger, aged 70 and up, still have a reasonably high survival rate of 94.6%, given that no other illnesses are present. It seems completely illogical and irresponsible to sacrifice the mental and physical health of the world’s youth for a disease that has such a low death rate, especially when no other comorbidities are involved. Some of the most fundamental and critical years that help shape young individuals into the adults they will be are being taken away. The lack of necessary socialization, exercise, and time outdoors, has proven to be much more detrimental than positive, with economies tanking, unemployment skyrocketing, but most importantly, by damaging the lives of the future leaders and individuals of our work. As some of

this damage could turn out to be permanently engraved into kids and adolescents, lockdowns must be ended around the world. Humanity may never contain any virus fully, but more focus on overall health, along with other measures, can help keep individuals' mental and physical health prospering.

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