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The Impacts of the COVID-19 Pandemic on Various Aspects of Child and Adolescent Lives: A Literature Review

Alissa Carpenter

The Impacts of the COVID-19 Pandemic on Various Aspects of Child and Adolescent Lives: A Literature Review

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Alissa Carpenter

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Dr. Meredith Rowe, Thesis Advisor	Dr. Wilson Hawkins, Director of Univ. Honors
Dr. Robert Bass, Honors Committee	Dr. Elizabeth Amato, Honors Committee
Dr. Angelina Smith, Honors Committee	Dr. Abby Garlock, Honors Committee

Abstract

Coronavirus 19 or COVID-19 is a spherical, enveloped virus that causes a lower respiratory tract infection with symptoms including pneumonia, fever, and difficulty breathing (Ochani et al., 2021). This virus caused a global pandemic that infected millions of people and killed over a million people. The aim of this literature review is to examine how the social-distance mandates and quarantines affected various aspects of child and adolescent life and development. This review examines language and speech impairment, behavioral changes/challenges, academic performance, mental health (specifically depression and anxiety), child abuse and neglect, and student-athlete experiences. The results found that language and speech impairment, behavioral changes, mental health, and student-athlete experiences all got worse during the social-distancing and quarantine mandates that came out of the COVID-19 pandemic. However, the data showed that academic performance and child abuse/neglect got better during the pandemic. Improvement in academic performance could be since all assignments were online, it was easier to cheat and look up the answers. Improvement in child abuse/neglect was not because there was less abuse/neglect but rather the cases were going unreported due to lack of contact with professionals (educators or healthcare workers). Support services like increased access to therapist and school/academic support can help to correct the negative impacts caused by the pandemic. A limitation of this review is that all the research was short-term data since the COVID-19 pandemic and its effects are so new. Future research on this topic would be long-term studies looking at the long-term effects of the social-distancing and quarantine mandates.

Table of Contents

Chapter 1: Introduction

The virus responsible for the novel COVID-19 pandemic belongs to a family of viruses that can cause a variety of symptoms such as pneumonia, fever, breathing difficulty, and lung infection (Adhikari et al., 2020). The World Health Organization (WHO) used the term to refer to the 2019 coronavirus that affects the lower respiratory tract of patients with pneumonia (Adhikari et al., 2020). The official name then becomes coronavirus disease (COVID-19) and the reference name is severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (Adhikari et al., 2020). The first cluster of cases occurred in Wuhan, China in December 2019 and were all linked to a local Human South China Seafood Market (Adhikari et al., 2020). Within a month, the virus spread quickly throughout China (Adhikari et al., 2020), and on March 11th, 2020, it was declared as a pandemic (Ochani et al., 2021). Figure 1 illustrates the top countries affected by the COVID-19 virus by October 18, 2020, whereas Figure 2 illustrates the death tolls in those countries (Ochani et al., 2021).

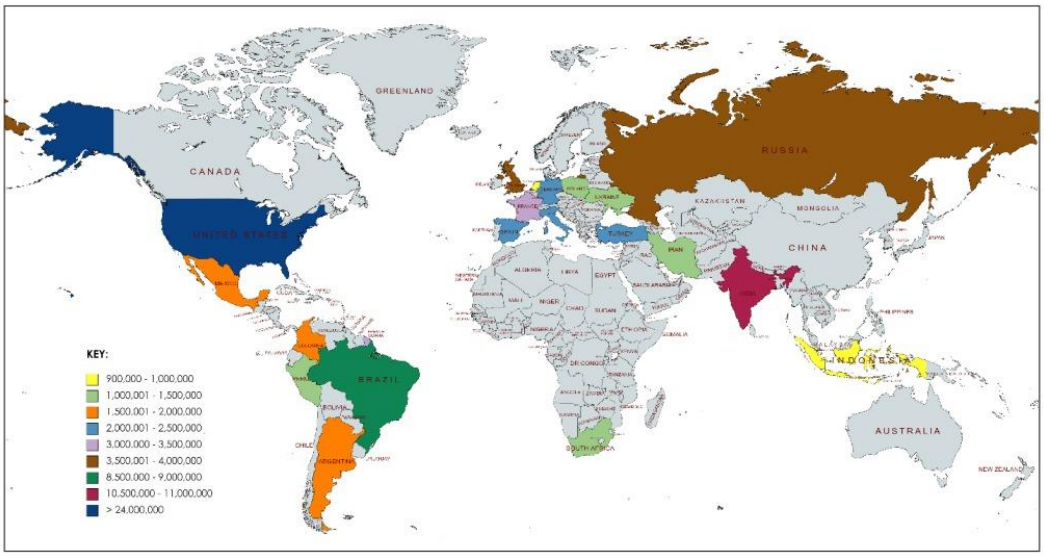

Figure 1. Top 20 countries affected by COVID-19 by October 18, 2020 (Ochani et al., 2021)

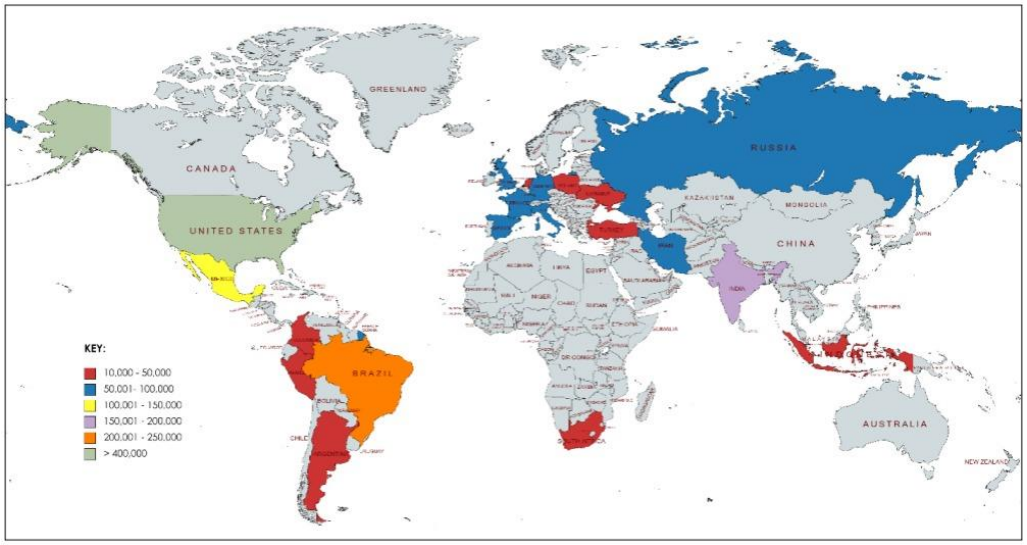

Figure 2. Deaths in the top 20 countries affect by COVID-19 by October 18, 2020 (Ochani et al., 2021)

CoV is an enormous group of enveloped, spherical viruses (Ochani et al., 2021). The most noticeable characteristic is the club-shaped spike projections protruding from its surface (Ochani et al., 2021). The RNA genome is packed inside a helical capsid formed by the nucleocapsid (N) protein and then further surrounded by an envelope (Ochani et al., 2021). The spikes are an imperative determinant of viral host range and tissue tropism and a distinguished inducer of the host immune response (Ochani et al., 2021). The virus is made up of four structural proteins (S, N, M, and E) that gain the virus access to the host cell (Ochani et al., 2021). Once in the host cell cytoplasm, the replication, transcription, and translation of the viral structural proteins – M, E, and N – occur and are assembled into the virus which is then released via exocytosis (Ochani et al., 2021). The S protein does not get assembled and functions in directing cell-to-cell fusion between infected cells leading to the formation of large multinucleated cells that go undetected by virus-specific antibodies (Ochani et al., 2021). This S protein function is what allows the virus to spread within the infected host.

After successfully infecting a human host, further transmission of the SARS-CoV-2 occurs through human-to-human contact, either directly through respiratory droplets or indirectly by touching a contaminated surface (Ochani et al., 2021). Further increasing the risk of infection, the COVID-19 virus can stay airborne for up to 3 hours (Ochani et al., 2021). In response to this brand-new highly contagious virus, the entire world went into lockdown. This included the closure of many businesses, schools, grocery stores, and any other public place. When this lockdown lifted, there was still 6-feet social distancing and mandatory mask-wearing – as well as other restrictions put into place (Ochani et al., 2021). The present literature review aims to explore how these shutdowns and social-distancing mandates affected various aspects of child and adolescent life and development.

Chapter 2: Language and Speech Impairment

The COVID-19 pandemic brought with it many mandates to slow the spread of the disease. One of these restrictions was the wearing of a mask in any type of public space. This included classrooms, grocery stores, public transportation, etc. A problem that arises from wearing face masks comes from the effect of verbal communication between two people (Ford Baldner et al., 2015). Wearing masks can be detrimental to both ends of speech communication (Ford Baldner et al., 2015). The listener will probably experience a decrease in intelligibility and the speakers will experience an increase in vocal effort (Ford Baldner et al., 2015). Vocal effort is the apparent exertion of voicing (Ford Baldner et al., 2015). Vocal effort typically increases in response to external influences, such as overcoming loud noises, projecting across a long distance, or by temporary intrusion of acute illness (Ford Baldner et al., 2015).

There were three types of masks that the World Health Organization (WHO) recommended for public use during the pandemic: medical/surgical masks, N95 masks or non-medical masks

(fabric/cloth) to comply with the safety standards. Fabric masks were recommended to contain the following three layers: (1) inner layer made of absorbent material, such as cotton, (2) middle layer made of non-woven non-absorbent material, such as polypropylene, and (3) outer layer of non-absorbent material, such as polyester or a polyester blend (WHO, 2022). Medical masks are composed of 3 layers of synthetic nonwoven materials, configured to have filtration layers sandwiched in the middle, and have various levels of fluid-resistance and filtration (WHO, 2022). Respirator masks (N95) have a tighter fit around the wearers' face but like the filtration of the medical masks (WHO, 2022). They provided a tighter seal around the wearers face helping to contain the COVID-19 virus from escaping the mask barrier (WHO, 2022).

The fabrics used to make face masks are often used for sound absorption due to their porous structure (Bottalico et al., 2020). Porous material absorbs sound energy as it dampens the fluctuation of the air particles through friction (Bottalico et al., 2020). Any kind of porous absorber is most affected in the high-frequency range (Bottalico et al., 2020). Because of this, face masks act as a low-pass filter that decreases speech intensity, mainly at the mid-to-high frequencies that are fundamental for comprehension of speech (Bottalico et al., 2020).

Truong & Weber investigated how face masks influence intelligibility and recall of sentences spoken by a child talker in comparison to that of an adult talker. Speech intelligibility is simply how clearly a person speaks so that their speech can be comprehended by the listener (Coppens-Hofman et al., 2016). Having reduced speech intelligibility tends to lead to misunderstanding, frustration, and loss of interest by the people involved in the conversation (Coppens-Hofman et al., 2016). To measure speech intelligibility, Truong & Weber measured keyword recognition. They found that listeners recognized considerably fewer keywords accurately when the talker was wearing a mask (37% correct) compared to when the talkers were not wearing a mask (72%

correct) (Truong & Weber, 2021). These results suggest that intelligibility was considerably hampered when talkers were wearing a mask (Figure 3).

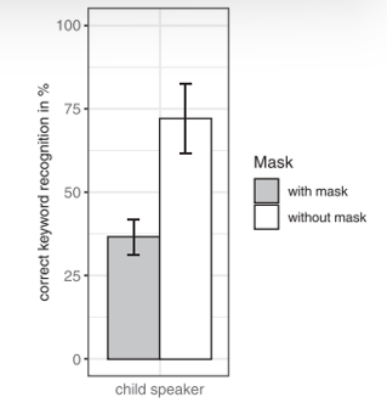

Figure 3. Average intelligibility scores for child talkers in conditions with and without a face mask. (Truong & Weber, 2021)

Recall is how well the listener remembers what was previously told (Truong & Weber, 2021). Truong & Weber found listeners recalled significantly fewer words when the talkers were wearing a mask (55.4%) compared to when the talkers were not wearing a mask (59.3%, p=0.0003). These results suggest word processing was easier when visual articulatory cues were available compared to when visual cues were not available (Figure 4) (Truong & Weber, 2021). For both intelligibility and recall, Truong & Weber found performance was worse when the talkers were wearing a face mask.

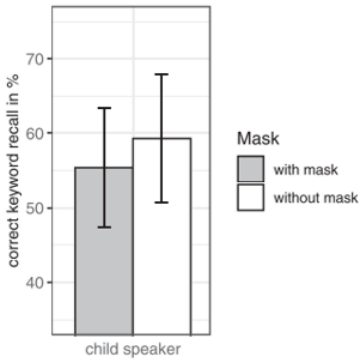

Figure 4. Average keyword recall scores in child speaker in conditions with and without a face mask. (Truong & Weber, 2021)

A secondary effect of having to wear a mask if the loss of lip reading and visual speech cues from facial expressions (Moon et al., 2022). This effect can be particularly detrimental to children and adults with hearing loss or other forms of hearing impairment (Moon et al., 2022). Moon et al., studied how face masks affect speech perception in groups with and without hearing loss. This study found visual cues were in fact beneficial for speech understanding with both groups showing significant improvements when the speaker did not wear a mask (Moon et al., 2022). When no visual cues were available, wearing a mask had a significant impact on speech understanding (Moon et al., 2022). Moon et al., showed that having visual cues is beneficial for speech perceptions for people with and without hearing impairments.

Bottalico et al., explored the effects of face masks on classroom communication by evaluating which of the three main mask types (fabric, medical, or N95) yielded the highest level of speech intelligibility (SI) and lowest level of listening effort (LE). Each of the mask types were found to have a negative impact on SI with SI being the highest in the unmasked condition (Bottalico et al., 2020). When compared to the unmasked condition, the speech was 12% less intelligible with the surgical/medical mask, 13% less intelligible with the N95 mask, and 16% less intelligible with the fabric mask (Bottalico et al., 2020). When looking at the reported LE without a mask, speech produced with the surgical mask was 11% more difficult to listen to, followed by the fabric mask (12%), and finally the N95 mask (13%) (Bottalico et al., 2020). This study showed the use of surgical masks or N95 masks, rather than fabric masks was overall more beneficial for teaching environments (Bottalico et al., 2020). The use of surgical or N95 masks can minimize the negative effects of SI and students' LE while still protecting the instructors and student's alike (Bottalico et al., 2020).

Several things can be done to mitigate the effects of mask wearing due to the COVID-19 pandemic on speech intelligibility, recall, and listening effort. This includes looking into transparent masks which allow for visual cues in settings where masks need to still be worn. If learning is moved online, educators need to ensure optimization of the visual and auditory environment using adequate equipment, video chat capabilities, as well as supplementing captioning, recording, and transcribing services for all students (Charney et al., 2020). Overall raising awareness amongst educators and parents and creating inventive methods to promote communication and language learning is vital in combating the issues that arose out of the COVID-19 pandemic.

Chapter 3: Behavioral Challenges

A result of the restrictive measures taken by governments to control the COVID-19 pandemic caused children to become less physically active and bored alongside of having limited amounts of social interactions (Oliveira et al., 2021). These lifestyle changes and psychosocial stresses seemed to contribute to the emergence of behavior problems (Oliveira et al., 2021). Behavior problems are defined as “a pattern of disruptive behavior that generally falls within social norms and does not seriously impair a person's functioning” (Oliveira et al., 2021). Research studying behavior problems during the pandemic has shown an increase in behavioral complaints (Oliveira et al., 2021). Researchers have focused on how parenting styles, sleep disturbance, and gaming behavior have all affected overall behavior in that child (Oliveira et al., 2021).

3.1: Parenting Styles

The COVID-19 pandemic increased the stress experienced by families all over the world. Parents were directly hit with stress inducers including the need to oversee the education of their children, uncertainties of unemployment, and financial strain (Oliveira et al., 2021). Children and adolescents were also directly hit with stressors because of the change of their learning environment but also responded emotionally and mentally to the stressors felt by their parents (Oliveira et al., 2021). Parental stress is therefore a risk factor for more hostile and less supportive parenting (Oliveira et al., 2021). Parenting styles "are a set of attitudes, feelings and behaviors related to parenting that modulate the child's psychosocial functioning and might impact the adaptability to a stressful time" (Oliveira et al., 2021). How parents parented during this stressful time has been found to impact their child's behavior (Oliveira et al., 2021). For the purpose of this research the two main parenting styles are: Authoritarian Parenting Style and Authoritative Parenting Style (Oliveira et al., 2021). Authoritarian Parenting is "characterized by high parental control and low warmth, leading to the use of punishment, threats, verbal hostility, and physical coercion" (Oliveira et al., 2021). These types of parents tend to shape their child's behavior according to high standards of conduct, tend to value obedience and respect for authority, and not taking the child's opinion into account (Oliveira et al., 2021). On the other hand, authoritative parents exert authority and establish limits but take their child's opinion into account (Oliveira et al., 2021). This parenting style can be "characterized by high parental warmth and high control, resulting in the encouragement of autonomy, high responsiveness to the child's emotional needs, and use of support and regulation as behavior control strategies" (Oliveira et al., 2021).

Vargas Rubilar et al., found that a decrease in the child's behavior has a higher mean range if the mother perceived a high level of parental stress (Table 1). High parental stress is related to the Authoritarian Parenting Style whereas low parental stress is related to the Authoritative Parenting Style (Vargas Rubilar et al. 2022). They also found that positive behaviors were linked to high levels of parental school support, and behaviors such as frustration with completing school assignments was high in mothers with lower parental school support (Table 2) (Vargas Rubilar et al. 2022). High support was related to Authoritative Parenting Style whereas low support was related to Authoritarian Parenting Style (Vargas Rubilar et al. 2022).

Table 1. Change in Children's Behavior According to the Level of Parenting Stress (Vargas Rubilar et al. 2022)

Variable	**Low Stress**	**High Stress**	**Statistics**
	Mean Range	**Mean Range**	**p**
Is Sad	186.94	261.49	0.000
Disobeys	184.14	263.84	0.000
Fights with Siblings	192.42	256.90	0.000
Is anxious/nervous	178.50	268.56	0.000
Screams	178.49	268.57	0.000
Wants to sleep in my/our bed	196.54	253.45	0.000
Shows dependent behavior	193.44	256.04	0.000
Shows defiant behavior	176.43	270.30	0.000
Once asleep, he/she wakes up confused in the middle of the night	207.01	244.67	0.001
Has nightmares	206.18	245.37	0.001

Table 2. Change in Children's Behavior According to the Level of Parental School Support (Vargas Rubilar et al. 2022)

Variable	**Low Support**	**High Support**	**Statistics**
	Mean Range	**Mean Range**	**p**
Logs in to take online classes	174.11	259.29	0.000
Does the homework	161.72	273.70	0.000
Enjoys online classes	185.29	246.29	0.000
Gets easily frustrated when doing school assignments	228.09	196.54	0.006

When comparing mothers with high and low parenting stress, it was found that those who were more stressed perceived more negative behaviors from their children. The findings from this study highlight the relationship between parental daily functioning and stress and the perception of their child's daily functioning and levels of stress. The findings also showed the importance of parental support as a predictor for the child's school performance.

A way to combat these issues is to create psychosocial intervention strategies to support parents during and after the pandemic. These strategies should be formulated towards positive parenting practices and teaching ways to properly manage stress. Supporting the parents in the proper way bleeds over into changes in the children's behavior.

3.2: Sleep Disturbance

One of the big changes noted in the daily life of children and adolescents was in their sleep. The increased stress and huge routine changes caused children and adolescents to experience an increase in sleep time (Oliveira et al., 2021). This did not mean an increase in their sleep quality because most children and adolescents reported unscheduled sleep (outside of their normal routine), trouble falling and staying asleep during the pandemic (Oliveira et al., 2021). Sleep is crucial for the health and well-being of children and adolescent (Oliveira et al., 2021). Getting adequate sleep is "necessary for the consolidation of memory and creation of long-term memory circuit and is indispensable for maintaining brain plasticity throughout life" (Oliveira et al., 2021).

Sleep disturbance is measured using the Sleep Disturbance Scale for Children (SDSC). SDSC consists of 26 items and 6 subscales: disorders of initiating and maintaining sleep, sleep-disordered breathing, disorders of arousal, sleep-wake transition disorders, disorders of excessive

somnolence, and sleep hyperhidrosis (Oliveira et al., 2021). Oliveira et al., used this scale in their study to measure the sleep disturbance of children of three hundred twenty-nine parents. The parents were split into Authoritative parents, Authoritarian parents, and a control group (Oliveira et al., 2021). The results from this test are shown in Table 3. Table 3 also measures how the SDSC value changed between each parenting group.

Table 3. Sleep Disturbance of children of 329 parents (Oliveira et al., 2021).

Variable	**Authoritative (n=109)**	**Authoritarian (n=107)**	**Control (n=113)**	**p**
Disorders of initiating and maintaining sleep	15.01	18.26	15.46	<0.000
Sleep breathing disorders	4.14	5.20	4.48	<0.000
Disorders of arousal/nightmares	4.08	4.51	4.02	0.0037
Sleep wake transition disorders	10.21	12.95	10.26	<0.000
Disorders of excessive somnolence	6.94	8.17	7.86	0.018
Sleep hyperhidrosis	3.42	4.63	3.36	<0.000

Based on the results from Table 3, the children with authoritarian parents had significantly more sleep problems than both the children with authoritative parents and the children in the control group in almost all dimensions. The exception to this is seen in the excessive somnolence subscale where the difference appeared only in the children with authoritative parents.

This research is important because it allows for the creation of prevention strategies. Parents can now pay attention to sleep difficulties and nightmares in their children (Jiao et al., 2020). They can also prevent increased daytime sleeping and suggest sleep hygiene and relations methods (Jiao et al., 2020). Also, by modeling a positive psychological attitude, they can reduce stress and divert attention to more productive and positive directions for themselves and for their children (Jiao et al., 2020).

3.3: Gaming Behavior

Similar to the sleep disturbance, changes in daily routine in response to pandemic shutdowns have been shown to have an impact on gaming behavior (Oliveira et al., 2021). The highest rates of gaming and game downloads were observed at the time of the strictest lockdown implications (Oliveira et al., 2021). Although the use of technology devices was highly encouraged during the pandemic for school and social performances, some researchers stress the importance of parental control over the uses of said technology (Oliveira et al., 2021). It has been found that problematic gaming is linked to poorer parent-child relationships (Oliveira et al., 2021).

Oliveira et al., used the Game Addiction Scale (GAS) to measure gaming addiction. GAS has seven DSM (Diagnostic and Statistical Manual of Mental Disorders) criteria for game addiction: Salience, Tolerance, Mood modification, Withdrawal, Relapse, Conflict, and Problems. Three hundred twenty-nine parents were split into Authoritative parents, Authoritarian parents, and a control group for data analysis (Oliveira et al., 2021). The parents then had to rate the gaming behavior of their child(ren) on a scale from 1 (never) to 5 (very often) (Oliveira et al., 2021). Results from this are displayed in Table 4.

Table 4. Gaming Addiction Scale (Oliveira et al., 2021).

Variable	Authoritative (n=109)	Authoritarian (n=107)	Control (n=113)	p
Salience	2.88	3.16	2.55	0.006
Tolerance	2.58	2.97	2.35	0.004
Mood modification	1.91	2.18	1.91	0.323
Relapse	1.89	2.27	1.80	0.006
Withdrawal	2.08	2.50	1.84	0.002
Conflict	1.88	2.32	1.65	0.001
Problems	1.54	1.86	1.54	0.021

Using the results shown in Table 4, it can be concluded children with authoritarian parents had significantly higher scores on relapse (p=0.006), withdrawal (p=0.002), conflict

(p=0.001), salience (p=0.006), and tolerance (p=0.004) than the authoritative and control groups (Oliveira et al., 2021). The authoritarian group also showed significantly more problems caused by excessive game play than the authoritative group (p=0.021) (Oliveira et al., 2021).

Children and adolescents with authoritarian parents had overall higher scores when it came to gaming addiction (Oliveira et al., 2021). This can further lead to social and academic problems. Other studies have investigated the extent of parental restrictions on gaming addiction and found that the stricter the restrictions and punishment, the higher the gaming addiction score (Oliveira et al., 2021). These parental restriction rules seem to be the important factor in the relationship between parenting and game usage (Oliveira et al., 2021).

3.4: Conclusion

The drastic routine changes that occurred in children and adolescents in response to COVID-19 pandemic caused a shift in their behavior. These behavioral changes can be attributed to the type of parenting style their parents, changes in sleep, and gaming addictions (Oliveira et al., 2021). All of these are important because behavioral changes can significantly affect how the pandemic impacted the child. Now that the COVID mandates are over there is still a need for productive interventions to help combat these behavioral issues in children and adolescents (Oliveira et al., 2021). Educating parents, can help to prevent these behavioral issues from arising again if another global pandemic were to happen (Oliveira et al., 2021).

Chapter 4: Academic Performance

The COVID-19 pandemic “created the largest disruption of education systems in human history, affecting 1.6 billion learners in more than 200 countries” (Pokhrel & Chhetri, 2021). Not only did it force over “94% of the world’s student population” (Pokhrel & Chhetri, 2021) to

move to online learning platforms, but it also brought along the challenges of reopening schools with new standard procedures in place (Pokhrel & Chhetri, 2021). One of the many challenges faced at all grade levels was the lack of knowledge concerning online learning platforms (Pokhrel & Chhetri, 2021). Training for these platforms was not done in advance causing some students to learn months of information while their teachers learned how to use the platforms (Pokhrel & Chhetri, 2021).

Three of the challenges that were faced with online learning were: 1) a lack of student motivation, 2) too many distractions at home, and 3) it being more difficult to learn via online platforms compared to face-to-face learning (Li et al., 2021). A lack of support from teachers, increased homework/schoolwork loads, feeling lonely, and slow or no internet were also noted by students and/or parents (Li et al., 2021). Li et al. (2021) found that two in three adolescents (62.6%) felt that the pandemic negatively impacted their learning, 22% indicated no change and 14.9% reporting a positive impact. Online learning requires a greater level of independence, motivation, and discipline than classroom learning, which are skills that may not be fully developed in young people (Li et al., 2021). The rest of this section explores the impact of online learning across each of the different educational levels: elementary school, middle school, and high school.

4.1: Elementary Students

Attending school on a regular basis is typically associated with positive outcomes for the student. School closures related to the COVID-19 pandemic made parental involvement in supporting the child to engage with the curriculum that much more important (McMahon et al., 2021). In normal settings, the parent/caregiver is important in building a home-school partnership (McMahon et al., 2021). However, with the pandemic closures, parents became

teachers and/or coaches, forcing them to take on the role of primary importance in their child's education and managing communication between school and the child (McMahon et al., 2021). This new role was typically harder on parents of elementary students than the other groups because the child was not mature and independent enough to manage their schooling by themselves (McMahon et al., 2021). Another impact on education was the household family income (McMahon et al., 2021). It has been shown in multiple studies that children in low economic circumstances were at a greater disadvantage than those of higher economy families (McMahon et al., 2021).

When looking at different aspects of online education across the three general economic groups (poverty, median, wealthy), there were very apparent gaps (Andrew et al., 2020). At the elementary (primary) level, children from better-off families spent an average of 7 ½ hours per week more on educational activities (Figure 5) (Andrew et al., 2020). If children are spending that much more time on educational activities, it can be inferred that they are likely learning more than their peers from less well-off families (Andrew et al., 2020). Figure 5 gives a general view. Figure 6 examines the differences in time spent between the different educational activities – online class with the student's usual teacher, doing the online assignments, with a private tutor, and other education like generic YouTube videos (Andrew et al., 2020). This comparison again shows that children from better-off families are spending more time on nearly every educational activity than their peers (Andrew et al., 2020).

Figure 7 examines the differences in students' home learning set-up. Three times as many of the poorest students must use a phone or have no device to access their schoolwork when compared to the richest students (Andrew et al., 2020). However, since computer use is lower in primary students in general and they are less likely to use online resources, these gaps might not

have as big of an impact than they do in the higher-grade groups (Andrew et al., 2020). The bigger inequalities of elementary school students come with access to study space with almost 60% of the students from less well-off families not having access to their own dedicated study space (Andrew et al., 2020). With the responsibility of supporting school learning being transferred to the parents, almost 60% of the parents of elementary school children report that they found it difficult or very difficult to support their child's learning at home (Figure 8) (Andrew et al., 2020). To measure how able children are to fulfil their school's demands the researchers examined whether they were turning in their assignments (Andrew et al., 2020). On a more encouraging note, ¾ of elementary students were still managing to submit all or most of their schoolwork (Figure 9) (Andrew et al., 2020). The inequalities that do emerge likely reflect the challenging conditions faced in Tables 5-9 (Andrew et al., 2020).

One way to mitigate these educational differences is to make sure parents are supported adequately in managing their child's education and thereby their child's well-being (McMahon et al., 2021). Also making sure parents and students are provided with relevant and accessible resources and materials on what their child is learning and how to best help teach it (McMahon et al., 2021). Lastly, making sure that close cooperation between schools and parents is still in place even when they return to face-to-face learning is important (McMahon et al., 2021).

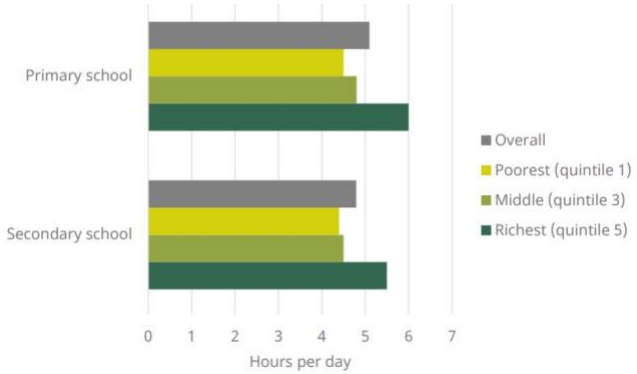

Figure 5. Children's daily learning time during lockdown: by household income (Andrew et al., 2020)

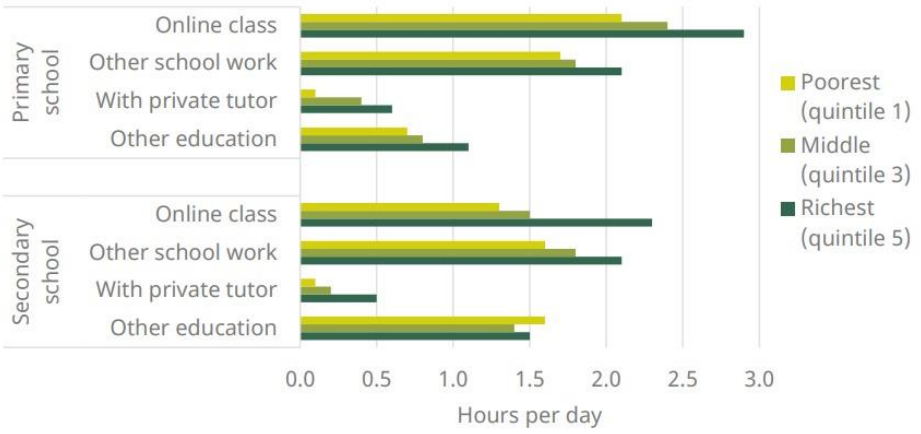

Figure 6. Children's daily learning time during lockdown: gaps in educational activities (Andrew et al., 2020)

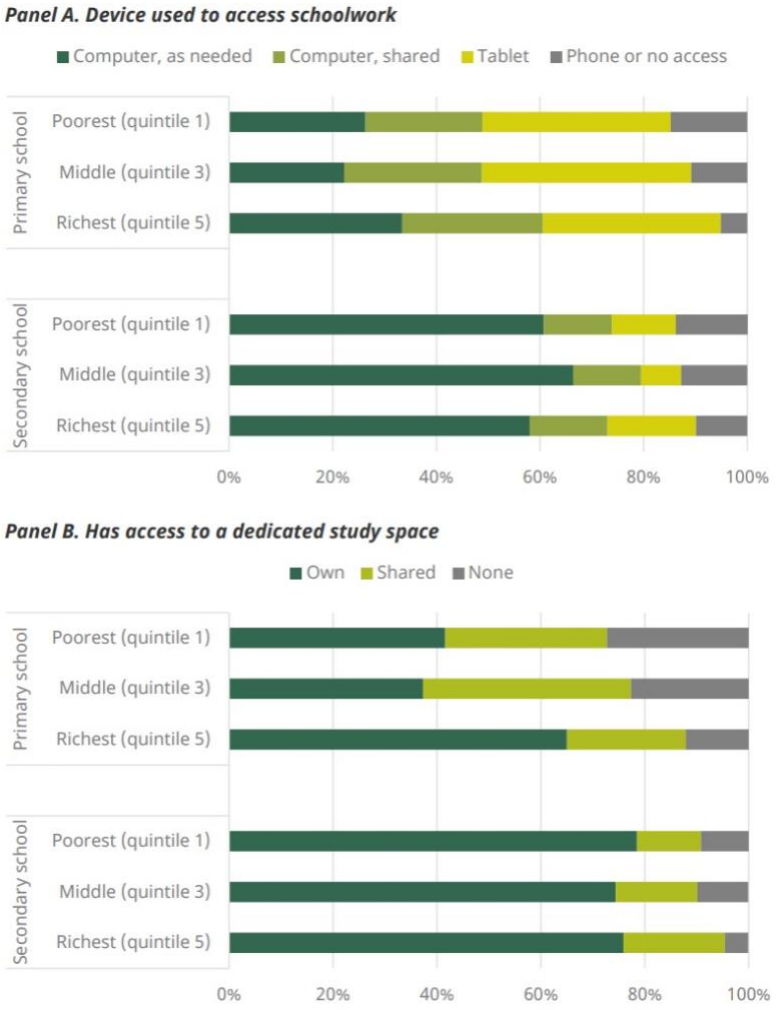

Figure 7. Gaps in educational resources by household income (Andrew et al., 2020)

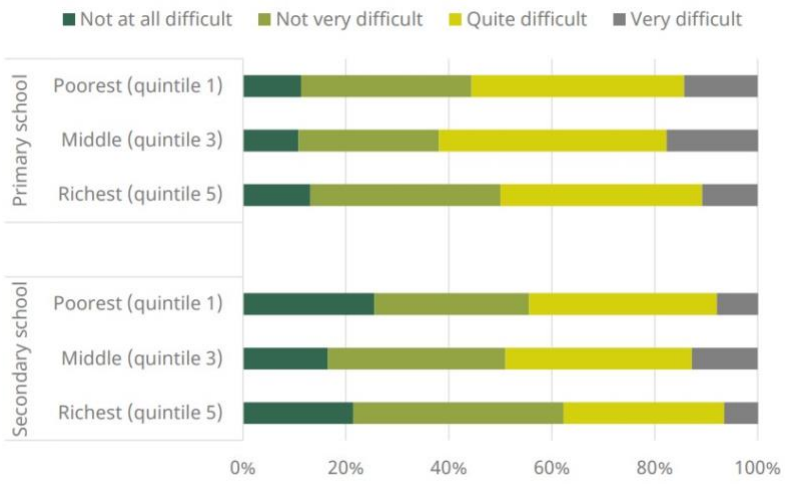

Figure 8. How difficult are parents finding supporting their child's home learning? (Andrew et al., 2020)

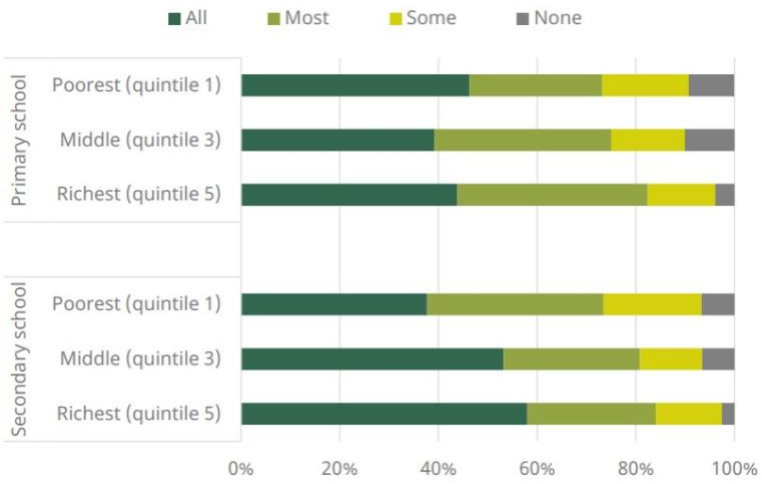

Figure 9. How much of their assigned schoolwork are children submitting? (Andrew et al., 2020)

4.2: Middle School Students

Jæger and Blaabæk (2020) used daily library checkout of digital children's books to measure inequalities in learning opportunities during the COVID-19 pandemic. They found that during the pre-lock down phase (February 1st – March 12th, 2020), college-educated families took out more digital children's books on average than non-college educated families (Jæger & Blaabæk, 2020). In the first phase of the lockdown (March 13th – April 3rd, 2020), checkouts

increased dramatically in both college and non-college educated families (Jæger & Blaabæk, 2020). This increase shows that parents – no matter education level or income level – were turning to libraries as a source of teaching materials when schools closed (Jæger & Blaabæk, 2020). The second phase of the lockdown had the same increased trend that the first phase of the lockdown had (Jæger & Blaabæk, 2020). So even though there were increases in checkouts of digital material, there is still a noticeable difference between the checkout from high income families and low-income families (Jæger & Blaabæk, 2020).

Andrew et al. (2020) found that middle school children from better off families spend five-point-five hours a day, on average, on educational activities (Figure 5). This is over an hour more than children from low-income families (Andrew et al., 2020). Twelve percent of middle school students from the richest families received an hour or more of tutoring each day (Figure 6) (Andrew et al., 2020). Children that have increased access to tutoring and online classes are not only doing a higher quantity of home learning but also have access to higher quality home learning (Andrew et al., 2020). Fourteen percent of students from low-income families reported having to use a phone or have no device to access schoolwork (Figure 7) (Andrew et al., 2020). This is an area where the inequalities are not as noticeable because 10% of students from high-income families also reported having no access to a computer or tablet to complete their work (Andrew et al., 2020). With 88% of total students reporting that their school used some kind of online learning platform, students without the appropriate technology faced a real risk of being left behind academically (Andrew et al., 2020).

Half of the parents of middle school students reported that they found it difficult to very difficult to support their child's online learning (Figure 8) (Andrew et al., 2020). These difficulties could result from the parent's own skills or confidence, the type or amount of support

provided by the school itself, or other commitments that parent is having to balance (Andrew et al., 2020). Fifty-eight percent of children from high-income families were submitting all their schoolwork (Figure 9) whereas only thirty-eight percent of children from low-income families were submitting most to all their work (Andrew et al., 2020). This most likely reflects the more challenging conditions that children from poorer families face in trying to find the resources and support to assist their learning activities while at home (Andrew et al., 2020).

4.3: High School Students

While most studies have focused primarily on elementary and middle school students, the impact the pandemic has had on high school students learning is just as important as they are also about to transition into either college/university or into the work force. The sudden lockdown meant that schools and teachers had little to no time to prepare for the switch to fully online and, in many cases, this led to shortened lesson hours and more emphasis on the digital components of the curriculum (van der Velde et al., 2021). van der Velde et al. (2021) measured how academic performance and study activity was affected by online learning using an online retrieval practice tool used for language learning in Dutch secondary education (comparative to high school in the United States). Figure 10 shows French-language study during both school years (2018/2019 and 2019/2020) in terms of the total number of practice trails completed per week, stratified by year group (year 1 = grade 7; year 2 = grade 8; year 3 = grade 9; and year 4 = grade 10) and educational track (pre-vocational, general, and pre-university). Figure 11 shows students' progress through the textbook chapters of the French course over the school year.

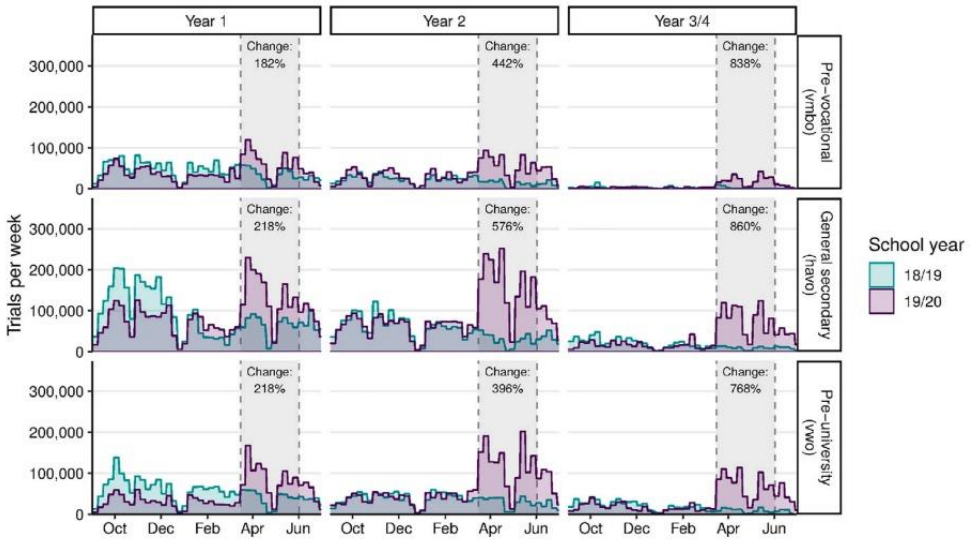

Figure 10. Comparison of French-language study activity during a regular school year (18/19) and the school year affect by COVID-19 (19/20) (van der Velde et al., 2021)

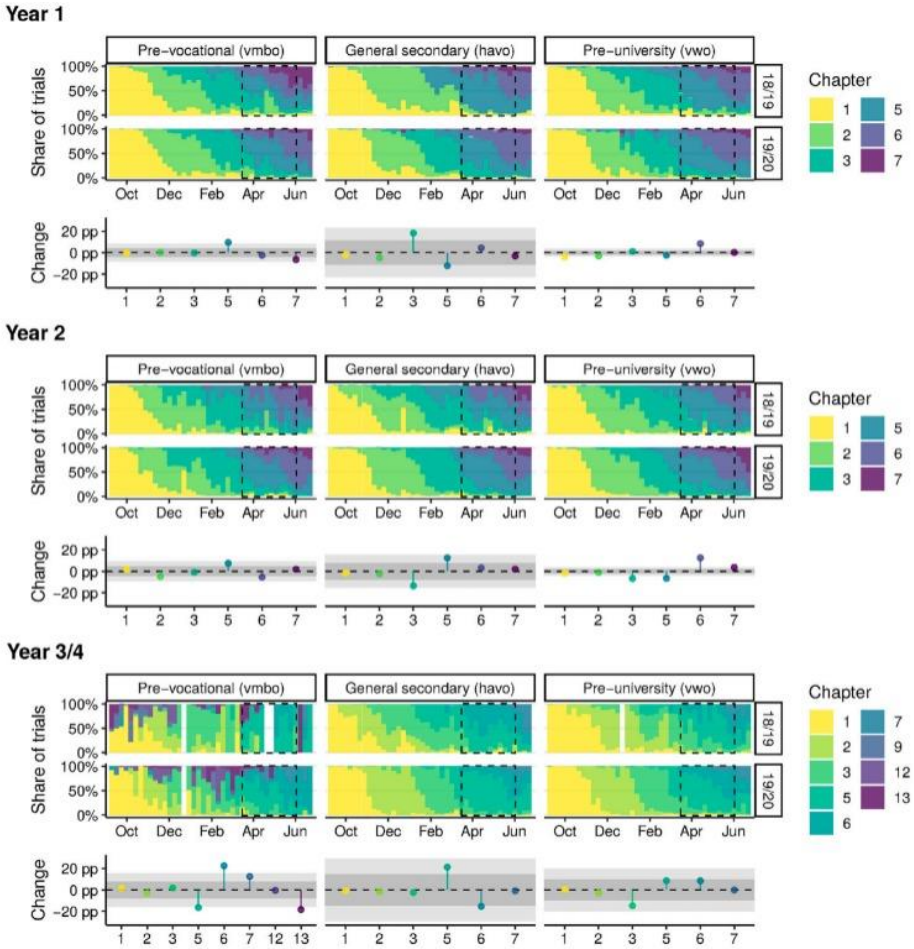

Figure 11. Progress through the French materials over the school year. The school closure period in the 19/20 school year and the corresponding period in the previous year are marked by the dashed border (van der Velde et al., 2021)

The results from Figures 10 and 11 show the shift to distance learning during the lockdown coincided with an increase in usage of the online retrieval practice tool by students (van der Velde et al., 2021). They found little evidence pointed to major study delays because of the lockdown and found students in the highest educational track were likely to be ahead on or even ahead of the previous year's schedule, and students in lower tracks were also roughly on schedule (van der Velde et al., 2021).

These data are very different from the results found when studying elementary and middle school students and could reflect increased levels of maturity, independence, and responsibility in high school students (van der Velde et al., 2021). Overall, this information is important in understanding how complete online learning affects academic performance at all grade levels. Having this complete understanding of the effects, teachers and school support staff can better help the students once they are back to face-to-face to make up for the potential information loss (van der Velde et al., 2021). Also, the creation of some short after school programs to help struggling students can help lessen the educational gap. In the wake of future lockdowns or natural disasters where online learning is needed, ensuring students are given adequate lecture explanations from their teacher and better access to the teacher to ask question will help keep the gap from increasing.

Chapter 5: Mental Health (Depression and Anxiety)

Childhood and adolescence are a time of rapid change and development. During this time, children/adolescents are starting to gain independence from their parents, exploring and figuring out their identity, and coping with the difficulties of everyday life and school (Ravens-Sieberer et al., 2021). Adolescence specifically is a sensitive time for social development that leads to an increased need for social interaction (Ravens-Sieberer et al., 2021). Even prior to the COVID-19

pandemic, the national prevalence of at least one mental health disorder for those under 18 years old was 16.5% (Temple et al., 2022). Major depressive disorder is one of the most common mental health disorders in adolescents, with an occurrence of 4-5% by mid-to-late adolescence (Lee et al., 2022). The rates of children and adolescents experiencing anxiety or depression have been shown to increase over time by a factor of 1.6 for anxiety and 3.6 for depression (Temple et al., 2022). The mandatory lockdowns and quarantines put in place due to the pandemic meant children and adolescents did not have access to informal (peers, teachers, coaches) and formal (school counselors or psychologists) forms of mental-health support (Temple et al., 2022). This can lead to an increase in adolescent depression, anxiety, and substance abuse during and after the pandemic and a significant decrease in school involvement and social connections (Lee et al., 2022). Substance abuse and suicide risk occurring in adolescents can also increase the risk of relapse once that individual reaches adulthood and often persists as adult depression (Lee et al., 2022).

Depression in adolescents is very difficult to diagnose and treat because it presents itself very differently than depression in adults. (Lee et al., 2022) Adolescents who are experiencing depression often maintain close relationships with friends, whereas adults tend to socially isolate (Lee et al., 2022). Adolescents experience frequent drowsiness while adults experience insomnia when depressed (Lee et al., 2022). Lastly, adolescents with depression express their moods/emotions through anger and irritability, whereas adults are usually sadder and more withdrawn (Lee et al., 2022).

There have been multiple studies done that found a link between BDNF (brain-derived neurotrophic factor) and its receptor TrkB (neurotrophic receptor tyrosine kinase 2) with mood disorders like depression (Castrén & Monteggia, 2021). Levels of the BDNF mRNA (messenger

RNA) have been found in reduced numbers in the hippocampus and amygdala in the brains of depressed patients (Castrén & Monteggia, 2021). The hippocampus is a small part of the brain whose function is vital to memory storage (Bruce & PhD, 2021). Researchers have found that this portion of the brain appears to be smaller in people with a history of depression (Bruce & PhD, 2021). A small hippocampus means there are fewer serotonin receptors (Bruce & PhD, 2021). Serotonin is a neurotransmitter that allows for connections between the areas of the brain involved in processing emotions (Bruce & PhD, 2021). Decreased serotonin means decreased levels of emotion processing (Bruce & PhD, 2021). Another neurotransmitter found to be overproduced in depressed patients is cortisol (Bruce & PhD, 2021). Cortisol is a stress hormone, and some researchers believe cortisol has a toxic or "shrinking" effects on hippocampus development (Bruce & PhD, 2021). Scientists do not fully understand why some people have a smaller hippocampus, but they do all agree there are other areas of the brain that contribute to depression and no single brain structure or pathway fully contributes to clinical depression (Bruce & PhD, 2021).

The emotional-processing portions of the brain are often referred to as the limbic system (Martin et al., 2009). The hippocampus is a part of the limbic system and exhibits some control over the hypothalamic stress-response system (Martin et al., 2009). Another evolutionarily ancient structure of the limbic system is the amygdala which is primarily responsible for how we process and express fear and fear-related memories (Martin et al., 2009). Children who suffer from generalized anxiety disorder exhibit increased amygdala volume (Martin et al., 2009). The pattern of brain activity in anxious patients correlates with laboratory animal studies showing how the amygdala plays an important role in fear response, because of the interconnectedness of the brain regions that process social behaviors (Martin et al., 2009). Anxiety disorders can be

caused by genetics (it can run in families), brain chemistry, environmental stress (child abuse or neglect or COVID-19 pandemic), or drug withdrawal or misuse (Martin et al., 2009). Each disorder – depression and anxiety – clearly shows the complex interactions between genetic influence and environmental influence (Martin et al., 2009).

5.1: Elementary Students

To test changes in depression and anxiety signs and symptoms in elementary aged children, the parents had to complete questionnaires based on their perceived changes in their child (Orgilés et al., 2020). Orgilés et al. (2020) found that 85.7% of parents reported changes in their child's emotional state during the COVID-19 quarantine (Table 5).

Table 5. Primary caregivers' perception of the emotional effects of quarantine on their children Orgilés et al. (2020).

Variable	Total responses (N)	%
My child is worried	344	30.1
My child is restless	443	38.8
My child is anxious	325	28.4
My child is sad	266	23.3
My child feels lonely	358	31.3
My child is very indecisive	131	11.5
My child is uneasy	347	30.4
My child is nervous	434	38
My child is very quiet	126	11
My child is angry	296	25.9
My child is irritable	446	39
My child has difficulty concentrating	875	76.6
My child is afraid of the COVID-19 infection	264	23.1

Being forced to stay at home without the chance to go outside and interact with others may increase responses to anxiety, depression, and loneliness (Orgilés et al., 2020). This is because humans are social beings (Naydenova, 2022). We thrive off social interactions and need them to survive (Naydenova, 2022). Abraham Maslow was an American psychologist who created the well-respected Maslow's Hierarchy of Needs – which is often presented as a pyramid

but shows how a person's basic needs must be met before self-actualization (a person's motivation to reach his or her full potential) can be achieved (Naydenova, 2022). The bottom is physiological needs – food, water, shelter – followed by safety, love/belonging (social needs), esteem, and lastly self-actualization (Figure 12) (Mcleod, 2023). Even though Maslow's theory has physiological needs being the most important, recent psychological research has argued social needs might be more important (Naydenova, 2022). Certain countries consider solitary confinement to be inhumane and do not allow it to be used to punish criminals (Naydenova, 2022). The importance of social interactions in daily life could be one reason why there is an increase in mental health following quarantine and isolation due to the COVID-19 pandemic.

Figure 12. Maslow's Hierarchy of Needs (Mcleod, 2023).

Interestingly, there was a gender-specific pattern of mental health problems found before and during the pandemic (Table 6) (Ravens-Sieberer et al., 2021). Ravens-Sieberer et al. (2021) used the Strengths and Difficulties Questionnaire to assess mental health problems with four problem scales: emotional symptoms, conduct problems, hyperactivity, and peer problems. Participants were asked to rate each problem with a response scale of 0 = "not true" to 2 =

"certainly true" (Ravens-Sieberer et al., 2021). Using the published cut-offs from that test, participants were characterized based on the sum of their scores (noticeable/abnormal, borderline, and normal) according to their mental health problems (Ravens-Sieberer et al., 2021). Boys seemed to have a bigger increase in total mental health problems (9.8% before to 19.7% after) before vs. after the pandemic than girls (9.9% before to 15.9% after) (Ravens-Sieberer et al., 2021).

Table 6. Mental health problems in children before vs. during the COVID-19 pandemic, stratified by gender (Ravens-Sieberer et al., 2021).

Variable	Mental Health Problems (total)	Emotional symptoms	Conduct Problems	Hyperactivity	Peer problems
Boys					
Before pandemic (n=793)					
Normal	81.3%	88.3%	84.5%	84.4%	88.9%
Borderline	8.8%	4.3%	8.1%	5.4%	3.5%
Noticeable/abnormal	9.8%	7.4%	7.4%	10.2%	7.6%
During pandemic (n=816)					
Normal	66.2%	80.6%	77.5%	70.3%	76.2%
Borderline	14.1%	8.0%	10.9%	11.3%	10.3%
Noticeable/abnormal	19.7%	11.4%	11.6%	18.4%	13.5%
	$p < 0.001$	$p = 0.007$	$p = 0.004$	$p < 0.001$	$p < 0.001$
Girls					
Before pandemic (n=760)					
Normal	83.4%	78.7%	89.5%	90.1%	88.3%
Borderline	6.7%	8.3%	4.9%	4.7%	4.3%
Noticeable/abnormal	9.9%	13.0%	5.7%	5.1%	7.4%
During pandemic (n=768)					
Normal	73.3%	77.2%	84.4%	82.8%	80.4%
Borderline	10.8%	7.4%	7.3%	6.4%	10.1%
Noticeable/abnormal	15.9%	15.3%	8.3%	10.8%	9.5%
	$p < 0.001$	$p = 0.198$	$p = 0.42$	$p < 0.001$	$p = 0.137$

5.2: Middle School Students

The daily routines given by school and extracurricular activities (e.g., sports, music, theater, etc.) are instrumental pieces in adolescent physical activity, regulating sleep cycles, and

providing social interactions (Cost et al., 2021). These are all key factors that help to prevent adolescent mental health disorders (Cost et al., 2021). The COVID-19 pandemic almost instantly stopped all daily routines. While some adolescents saw an improvement in their mental health during the quarantines and isolation – due to reduced school and social stress – most saw a deterioration (Cost et al., 2021). After participants completed the questionnaires measuring the change in mental health in adolescents, it was found that deterioration in depression, anxiety, irritability, attention, and hyperactivity was reported in 37.8%-53.5% of adolescents (Table 7). On the other hand, 8.3%-19.6% of adolescents saw an improvement in these domains during the pandemic (Table 7).

Table 7. Prevalence of mental health status change by informant (parent-reported or adolescent-reported) (Cost et al., 2021)

	Improved % (n)	**Unchanged % (n)**	**Deteriorated % (n)**
Parent-report of adolescents ages 13-18 years old			
Depression	15.7% (44)	38.1% (107)	46.3% (130)
Anxiety	8.3% (23)	49.1% (136)	42.6% (118)
Irritability	9.2% (25)	46.1% (125)	44.6% (121)
Attention	4.4% (12)	47.9% (128)	47.6% (127)
Hyperactivity	2.2% (8)	49.0% (180)	48.8% (179)
OCD symptoms	4.1% (11)	73.3% (198)	22.6% (61)
Adolescent-report ages 13-18 years old			
Depression	19.6% (37)	33.9% (64)	46.6% (88)
Anxiety	14.1% (26)	48.1% (89)	37.8% (70)
Irritability	10.9% (20)	40.8% (75)	48.4% (89)
Attention	11.0% (20)	35.7% (65)	53.3% (97)
Hyperactivity	8.2% (15)	58.8% (107)	33.0% (60)

Adolescent mental health is a major risk factor for adolescent substance use. Pre-COVID-19 pandemic, Temple et al. (2022) reported over 8% of 12–17-year-olds reported drug use in the 30 days before the survey was taken and 9.15% reported recent alcohol use. Adolescent psychologists like to describe the years of adolescence as a time of "storm and stress." This time is understandably difficult to navigate and contemporary challenges, like social media, are not making it any easier (Temple et al., 2022). Multiple studies coming out from the COVID-19

pandemic have all demonstrated that during the pandemic adolescent depression, anxiety, and substance abuse have significantly increased, whereas social support and connection have significantly decreased (Temple et al., 2022).

Table 8 shows the association between different measures that came out of the COVID-19 pandemic and their relationship to depression and anxiety in adolescents (Temple et al., 2022). For Table 8, if the Beta number is negative, that means the COVID measure was related to a reduction in the relative mental health symptom (Temple et al., 2022). If the Beta number is positive, that COVID measure is positively related or there was an increase in the mental health symptom (Temple et al., 2022). Table 9 shows how these COVID measures are related to substance abuse (Temple et al., 2022). For Table 9, a positive OR (odds ratio) shows a positive association/increase between that COVID measure and the amount of substance use (Temple et al., 2022). For both Tables 8 and 9, a p-value ≤ 0.05 means that the association is statistically significant – significant numbers are shaded in both tables (Temple et al., 2022).

Table 8. Multilevel linear regression models associated with COVID measures with mental health symptoms (Temple et al., 2022)

	Depression		**Anxiety**	
	Beta (SE)	**p-value**	**Beta (SE)**	**p-value**
Model 1: independent associations				
Physical Interaction during COVID	-0.036	0.03	0.007	0.66
Use of food bank during COVID	0.066	<0.001	0.003	0.87
Change in money situation	-0.022	0.46	-0.052	0.07
Job loss/reduced hours due to COVID	0.061	0.04	0.069	0.02
Loneliness during COVID	0.176	<0.001	0.125	<0.001
Increased difficulty with family	0.108	<0.001	0.078	<0.001
Stress during COVID	0.157	<0.001	0.118	<0.001

Table 9. Multilevel regression models associations of COVID measures to substance use (Temple et al., 2022)

	Alcohol use		Episodic heavy drinking		Marijuana use		Hard drug use		Rx misuse		E-cigarette use	
	OR	**p-value**	**OR**	**p-value**	**OR**	**p-value**	**OR**	**p-value**	**OR**	**p-value**	**OR**	**p-value**
Model 1: independent association (During COVID)												
Physical interaction	1.41	<0.001	1.81	0.001	1.39	0.003	1.37	0.04	1.57	0.01	1.39	0.005
Use of food bank	0.98	0.82	1.09	0.67	1.02	0.87	1.02	0.92	0.87	0.55	1.04	0.76
Change in money situation	0.70	0.04	0.90	0.76	0.84	0.40	0.54	0.03	1.71	0.13	1.12	0.62
Job loss/reduced hours	1.32	0.13	0.87	0.69	1.41	0.11	1.18	0.58	0.94	0.85	1.22	0.38
Loneliness	1.23	0.01	1.07	0.70	1.23	0.04	1.30	0.05	0.89	0.49	1.19	0.09
Increased difficulty with family	1.19	0.06	1.19	0.34	1.17	0.17	1.41	0.02	1.33	0.12	1.31	0.02
Stress	1.17	0.08	1.16	0.39	1.29	0.01	1.27	0.10	1.00	0.99	1.53	<0.001

These results show individual and household changes due to the COVID-19 pandemic had a direct impact on the mental health and substance use of adolescents. (Temple et al., 2022) As most people would suspect, experiencing feelings of stress or loneliness during quarantine and isolation is more positively associated with also experiencing anxiety and depression (Temple et al., 2022).

5.3: High School Students

Although deterioration in mental health due to the pandemic has been documented across all ages, some studies suggest it is especially detrimental in young adults (Li et al., 2021). During this time of high school, adolescents are beginning to demonstrate increased independence from their parents/families, to establish relationships with peers based on common interests, and become more sensitive to what their peers think about them – peer validation and peer rejection (Li et al., 2021). Because of this sensitive developmental time, it is very likely school closures

paired with social distancing measures can have some immediate and long-term impacts on the mental health of these individuals (Li et al., 2021).

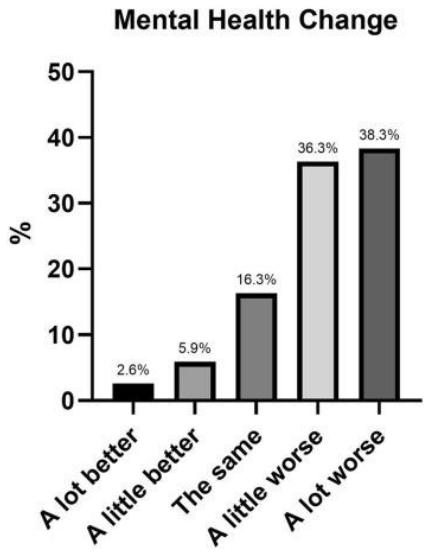

Figure 13. Mental health change since the pandemic began (Li et al., 2021)

Li et al. (2021) found that most (75%) of the total participants (760) indicated their mental health had been negatively impacted by the pandemic (Figure 13). Lee et al. (2020) found that there was a statistically significant increase in loneliness from January 2020 to April/May 2020 (Table 10). They also found a significant increase in depression symptoms (Table 10) and believed this increase was caused by increases in loneliness (Lee et al., 2020). Surprisingly, they did not find a statistically significant increase in anxiety symptoms (Lee et al., 2020).

Table 10. Mean level of loneliness, depression, and anxiety in January and April/May 2020 (Lee et al., 2020)

Outcome	**January**	**April/May**	**p-value**
	Mean (SD)	**Mean (SD)**	
Loneliness	2.26 (1.84)	2.53 (1.89)	<0.001
Depression	1.63 (1.67)	1.86 (1.59)	0.013
Anxiety	2.12 (1.77)	2.05 (1.76)	0.386

In contrast to Lee et al. (2020), Villanti et al. (2022) did find significantly higher levels of both depression ($p = 0.002$) and anxiety ($p < 0.001$) in adolescents and young adults in the fall of 2020 compared to the fall of 2019 (Figure 14).

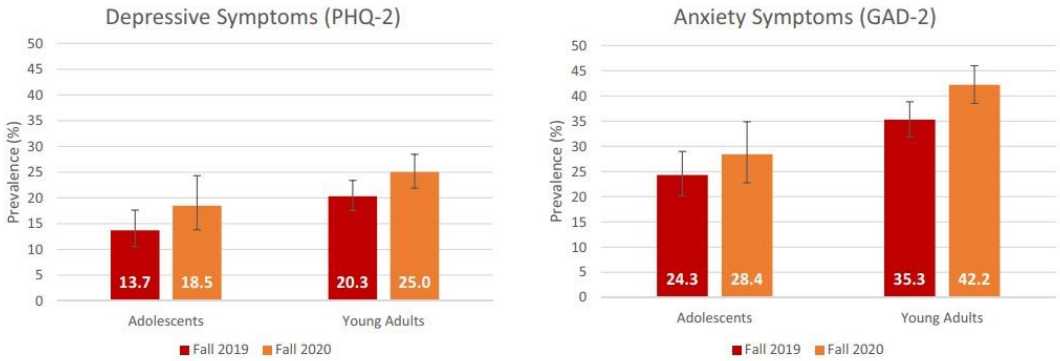

Figure 14. Percentage of adolescents and young adults reporting depressive or anxiety symptoms in Fall 2019 versus Fall 2020 (Villanti et al., 2022)

This data shows young adults experienced drastic COVID-19 distress and highlights that young adults might be near the top of the list of groups with the highest risk for mental health-related effects from the pandemic (Villanti et al., 2022). It also shows loneliness may be one of the major driving forces behind experiencing depressive symptoms (Lee et al., 2020). The research also places a huge emphasis on young adults with a previous history of depression and anxiety (pre-pandemic) who were at a greater risk for experiencing increased symptoms during and after the pandemic (Li et al., 2021).

5.4: Conclusion

Understanding how the COVID-19 pandemic has affected child and adolescent mental health is important to be able to treat those affected individuals properly. This research is also important because it can help us as a society better understand how to prevent these significant increases in mental health problems in future pandemics. To correct the problems that arose from the pandemic itself, the creation of more mental health services and making these services easily

accessible to all individuals is a place to start. Also increasing support for students in schools and for families outside of the classroom setting.

Chapter 6: Child Abuse and Neglect

Times of crisis and times of unrest have been linked to also an increase in violence against women and children (Peterman et al., 2020). Local and global pandemics are no exception to this trend (Peterman et al., 2020). For example, during the Ebola outbreak in West Africa, there was also an "epidemic of rape, sexual assault and violence against women and girls" (Peterman et al., 2020) that was reported to be largely undocumented. The National Domestic Violence hotline, in the United States, issued a "Staying Safe" statement that included circumstantial evidence on how abusers were using the virus as a scare tactic to further threaten or isolate victims and urging any of those who were at risk of abuse to make a safety plan, practice self-care and reach out for help (Peterman et al., 2020).

There are four main types of child maltreatment: (1) physical abuse, (2) sexual abuse, (3) emotional and psychological abuse, and (4) neglect. Physical abuse is defined as "the intentional use of physical force against a child that results in – or has a high likelihood of resulting in – harm for the child's health, survival, development, or dignity" (Norman et al., 2012). Physical abuse in the home is typically inflicted with punishment and can include hitting, beating, kicking, shaking, biting, strangling, scalding, burning, poisoning, and suffocating (Norman et al., 2012).

Sexual abuse is defined as "the involvement of a child in sexual activity that he or she does not fully comprehend, is unable to give informed consent to, or for which the child is not developmentally prepared, or else violates the laws or social taboos of society" (Norman et al.,

2012). Children can be sexually abused by an adult or by another child, who because of their age or stage of development, is in a position of responsibility, trust, or power over the victim (Norman et al., 2012).

The third type of abuse is emotional and psychological abuse and is defined as "both isolated incidents, as well as a pattern of failure over time on the part of a parent or caregiver to provide a developmentally appropriate and supportive environment" (Norman et al., 2012). This type of abuse has "a high probability of damaging the child's physical or mental health, or his/her physical, mental, spiritual, moral, or social development" (Norman et al., 2012). Examples of this type of abuse are restricting their movement; patterns of belittling, blaming, threatening, frightening, discriminating against, or ridiculing; and other non-physical forms of rejection or hostile treatment. (Norman et al., 2012).

The last type of abuse is neglect. Neglect can be defined as "both isolated incidents, as well as a pattern of failure over time on the part of a parent or other family member to provide for the development and well-being of the child – where the parent is in a position to do so – in one or more of the following areas: health, education, emotional development, nutrition, shelter, and safe living conditions" (Norman et al., 2012). Despite the stereotype, not all parents of neglected children are necessarily poor.

Most places within the United States experienced reductions in the number of child abuse/neglect cases reported during the COVID-19 pandemic (Peterman et al., 2020). However, these reductions do not reflect actual decreases in the number of incidents, but sadly the decrease in contact between these abused children and other adults (educational personnel or other community members) who could report the incidences (Peterman et al., 2020). There are three direct and indirect pathways that link pandemics to increased violence in children: (1) economic

insecurity and poverty-related stress, (2) quarantines and social isolation, (3) disaster and conflict-related unrest and instability (Peterman et al., 2020).

Economic insecurity and poverty-related stress have been linked to poor coping strategies, including substance abuse, taking on excessive amounts of debt, transactional sex, and other risky behaviors, which are in turn linked to various types of child abuse (Peterman et al., 2020). Economic insecurity and negative coping strategies can also result in acute and chronic stress, which can also trigger conflict and abuse (Peterman et al., 2020). Another link between economic insecurity and abuse is parental unemployment (Peterman et al., 2020). A 2016 study found that household unemployment during the Great Recession in the United States was positively related to abusive behaviors (Peterman et al., 2020). It has also been found that increases in female unemployment was related to decreases in abusive behaviors (Peterman et al., 2020). One hypothesis for why this is that male unemployment triggers "male backlash" due to feelings of being inadequate and emasculation as they feel like a failure in their ability to fulfill a traditional male breadwinner role (Peterman et al., 2020). A multitude of research has suggested in both high-income countries and especially low- and middle-income countries, unemployment and reduced levels of income can lead to large increases in both the likelihood of incidences and frequency of child abuse (Peterman et al., 2020).

In previous pandemics and health emergencies – including SARS, Swine Flu, and influenza – quarantines, social isolation, and isolation on freedom are possible contributing factors for problematic coping behaviors, anxiety, attempted suicides, and mental health disorders (Peterman et al., 2020). Quarantines can also be challenging and stressful for parenting with existing vulnerabilities and abuse magnified for children due to a convergence of school closures, stress, fear, and uncertainty (Peterman et al., 2020). Poor parental mental health, mental

disorders, and alcohol abuse have been shown to increase the risk of child abuse (Peterman et al., 2020). Quarantines can also increase the risk of abuse because the child has an increased amount of day-to-day exposure with their abuser (Peterman et al., 2020). Quarantines can also lead to an increase in food insecurity, linking this to pathways of risk via economic insecurity and exploitative relationships (Peterman et al., 2020).

Isolation is an established abuse tactic even outside of the context of a pandemic (Peterman et al., 2020). Abusers who have felt like they have lost control due to quarantine may display controlling behaviors and further acts of violence as coping mechanisms (Peterman et al., 2020). There are three different forms of isolation an abuser will use to have control (Peterman et al., 2020). The first type is social isolation which is isolation from friends and family members (Peterman et al., 2020). The second type is functional isolation which is "when peers or support systems appear to exist but are unreliable or have alliances with the abuser" (Peterman et al., 2020). The third type of isolation is physical or geographical isolation which is when there are no means for talking or communicating with others and the abuser has you living somewhere remote (Peterman et al., 2020). Abusers can also demonstrate victim surveillance and regulation of daily activities as a way to feel a sense of control (Peterman et al., 2020). Quarantine can increase existing behaviors of control as well as increase new behaviors of control by the abuser as they struggle and try to cope with a loss sense of control (Peterman et al., 2020).

Increases in childhood abuse have been found to increase in the wake of natural disasters, including earthquakes, hurricanes, wildfires, and volcanic eruptions (Peterman et al., 2020). Outbreaks of infectious diseases have also been linked to increases in child abuse, largely committed by men (Peterman et al., 2020). And while natural disasters are fundamentally different from disease pandemics, there are some lessons to be learned from them that can be

applied to pandemics (Peterman et al., 2020). Pandemics like the COVID-19 pandemic result in a breakdown of societal infrastructure, similar to when a natural disaster occurs (Peterman et al., 2020). This can lead to increased exposure of the child to the abuser and put into risky settings just to get basic survival needs like food, water, and firewood (Peterman et al., 2020). Another outcome of the breakdown of generalized services means certain forms of routine abuse detection and reports are also lost (Peterman et al., 2020). For example, a lot of child abuse cases are reported by educators and with school closures due to the pandemic, those children being abused are no longer detected (Peterman et al., 2020). This same thing is true with the shutdown of healthcare services which means that children are not experiencing routine checkups where abuse and neglect can be detected (Peterman et al., 2020).

Childhood abuse and neglect can lead to countless long-term health consequences (Thomas et al., 2020). These can include mental health disorders, sexually transmitted infections or diseases, unwanted pregnancies, and substance (alcohol or drug) abuse (Thomas et al., 2020). Gruhn and Compas (2020) found possible links between maltreatment and decreased emotion regulation, increased emotion dysregulation, and a greater tendency to suppress emotions, become avoidant, or express dysregulated or angry emotions. Norman et al. (2012), found children who were physically or emotionally abused or neglected were found to have a significantly higher risk of developing depressive disorders than non-abused individuals. They also found abused or neglected children were also at a significantly higher risk of being diagnosed with anxiety disorders (Norman et al., 2012). Suffering from physical and emotional abuse significantly increased the risk of alcohol problem drinking and non-problem drinking (Norman et al., 2012). Increased drug use and suicidal behavior was significantly associated with physical and emotional abuse (Norman et al., 2012). Physically and emotionally abused as well

as neglected children were all at a higher risk of having a sexually transmitted infection and to partake in sexually risky behavior (Norman et al., 2012).

Unfortunately, child abuse will continue to be a problem in society in and outside of the context of a pandemic (Thomas et al., 2020). In future emergency situations – pandemic or natural disaster – there are ways to ensure abuse incidents are still being detected and handled in the proper form (Thomas et al., 2020). Monitoring child welfare is an important aspect of education and health care and can be modified for instance where distance-learning or distance health care services (telehealth) are needed (Thomas et al., 2020). For educators, schools can adapt the current child welfare protocols and retrain teachers to make sure they are equipped to (1) identify at-risk individuals by spotting signs of abuse and neglect using distance-learning (Zoom meetings with at-risk students or students with previous abuse history), (2) how to use specific language and protocols to ask questions about home safety, and (3) to continue reporting suspected abuse to the appropriate school personnel (Thomas et al., 2020). This same basic model can be used for healthcare workers to ensure the safety of all patients (Thomas et al., 2020).

Chapter 7: Student-Athlete Experiences

Social identity is of huge importance especially in middle school and high school (Graupensperger et al., 2020). These are the years where social identity develops and roles in social/group aspects are figured out (Graupensperger et al., 2020). One thing identity theorist have contributed to finding social identity is involvement in team sports (Graupensperger et al., 2020). Athletics were completely stopped when the COVID-19 pandemic and shutdowns occurred, and some did not resume for months (Graupensperger et al., 2020). Even once they were able to start practices and compete again, they still had to follow the social distancing and

mask guidelines (Graupensperger et al., 2020). This leads to the question of how the pandemic affected the social identity of those middle school and high school student-athletes (Graupensperger et al., 2020). Diving even further, how the loss of social identity impacted mental health and overall well-being of those student-athletes (Graupensperger et al., 2020).

When students become a member of a team, they develop a social identity that represents the part of their self-concept derived from shared group membership and social connections with the members of their team (Graupensperger et al., 2020). Focusing on identity as a product of team membership influences the degree to which one develops pride and self-esteem from their team identity (Graupensperger et al., 2020). "Social identification differs from feelings of affiliation because it entails the degree to which a person perceives that a group positively informs their self-definition" (Graupensperger et al., 2020). Students are more likely to identify with a team because it is a potential source of belongingness, meaning, distinctiveness, continuity, self-esteem, and efficacy (Graupensperger et al., 2020). A student's sense of self can elicit well-being because identification provides a sense of direction, purpose, meaning in life, belongingness, and self-esteem (Graupensperger et al., 2020). Simply belonging to a group can support well-being, but those relationships if more beneficial if the student strongly identifies with their team (Graupensperger et al., 2020). It is less the quantity of team memberships but rather the quality of those memberships in relation to identification that strongly influences well-being (Graupensperger et al., 2020).

Graupensperger et al. (2020) set out to test this idea of social identity supporting/impacting overall student well-being by having student-athletes from different teams answer questionnaires at different time intervals throughout the year: mid-fall semester (T1), early spring semester (T2), and late spring semester near the end of the school year (T3). They found steep upward-

trajectories in social identification were related to enhanced well-being, while the opposite was true for steeper downward trajectories (Graupensperger et al., 2020). Students who identify strongly with their team scored higher on self-reported indicators of well-being (Graupensperger et al., 2020). These results show overall well-being can be predicted by the extent to which students increase or decrease in their identification strength over time (Graupensperger et al., 2020).

In another study Graupensperger, Benson, et al. (2020), set out to look directly at the impact on the pandemic on teammate interactions, athletic identity, and mental health of student athletes. They found teammate social support had a direct positive association with psychological and social well-being and with residual change in athletic identity (Table 11) (Graupensperger, Benson, et al., 2020). Changes in athletic identity were positively associated with psychological and social well-being and negatively associated with depression symptoms (Table 11) (Graupensperger, Benson, et al., 2020). This indicates student-athletes who experienced greater identity loss reported lower psychological and social well-being and more symptoms of depression (Graupensperger, Benson, et al., 2020).

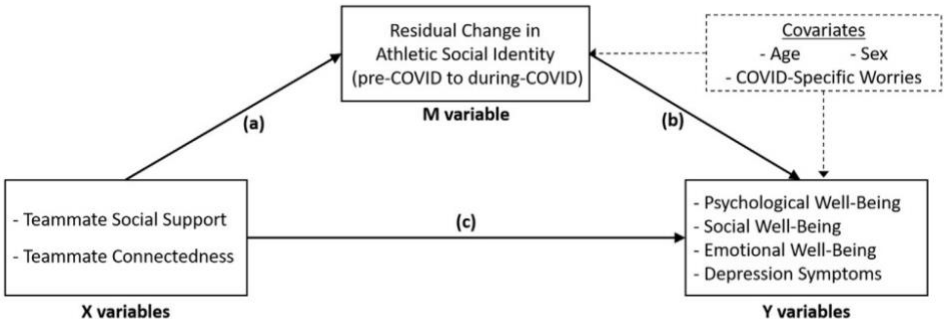

Figure 15. Direct and indirect paths to be assessed in Table 11 (Graupensperger, Benson, et al., 2020)

Table 11. Direct and indirect effects of teammate social support, teammate connectedness, and change in athletic identity on well-being and depression symptoms (Graupensperger, Benson, et al., 2020)

	Y = psychological well-being		**Y = social well-being**		**Y = emotional well-being**		**Y= depression symptoms**	
X = teammate social support	**SE (*B*)**	***p***	**SE (*B*)**	***p***	**SE (*B*)**	***p***	**SE (*B*)**	***p***
X on M (a)	.04	<.001	.04	<.001	.04	<.001	.04	<.001
M on Y (b)	.15	.008	.19	.042	.17	.106	1.37	.002
Direct effect of X on Y (c)	.08	.015	.10	.005	.09	.091	.72	.755
Total effect of X on Y	.08	<.001	.10	<.001	.09	.026	.72	.554
Indirect mediation effect	.03	.035	.03	.078	.03	.143	.28	.020
X = teammate connectedness	**SE (*B*)**	***p***	**SE (*B*)**	***p***	**SE (*B*)**	***p***	**SE (*B*)**	***p***
X on M (a)	.06	.028	.06	.028	.06	.028	.06	.028
M on Y (b)	.15	.004	.18	.019	.17	.094	1.33	.004
Direct effect of X on Y (c)	.10	<.001	.12	<.001	.11	.006	.88	.178
Total effect of X on Y	.10	<.001	.12	<.001	.11	.002	.89	.063
Indirect mediation effect	.03	.080	.03	.109	.03	.182	.27	.080

Shepherd et al. (2021) did a similar study on student-athletes' experiences with physical activity, mental health, and social connections during the pandemic (Figure 16). They found most participants reported a worsening of their mental health at the onset of the pandemic and specifically expressed feelings of anxiousness, fear, and shock (Shepherd et al., 2021). The participants stated prior to the shutdowns, physical activity helped them manage stress and emotions and supported their physical and mental health (Shepherd et al., 2021). There was a decline in both physical activity and mental health at the onset of the pandemic restrictions and online school in most participants (Shepherd et al., 2021). The closure of school and stoppage of sports decreased opportunities for social connection and led to feelings of disconnection and loneliness (Shepherd et al., 2021). The participants enrolled in physical activity classes online stated they did not even really do any kind of physical activity during the class itself (Shepherd

et al., 2021). When schools did resume online, participants reported increased stress, unclear expectations, frustration, lack of support from teachers, and challenges with self-directed learning (Shepherd et al., 2021).

For some, they no longer had access to the equipment, personnel, and knowledge of training plans, at the onset of the restrictions which hampered their physical activity and sport-specific training (Shepherd et al., 2021). Many participants saw a benefit of training at home with family as a way of connecting as a family (Shepherd et al., 2021). Some found working out with friends and/or teammates was beneficial for support and others shared connecting with friends, teammates, and family was helpful for them overall (Shepherd et al., 2021). However, others did say social media, video messaging, etc., were not adequate forms of communication (Shepherd et al., 2021).

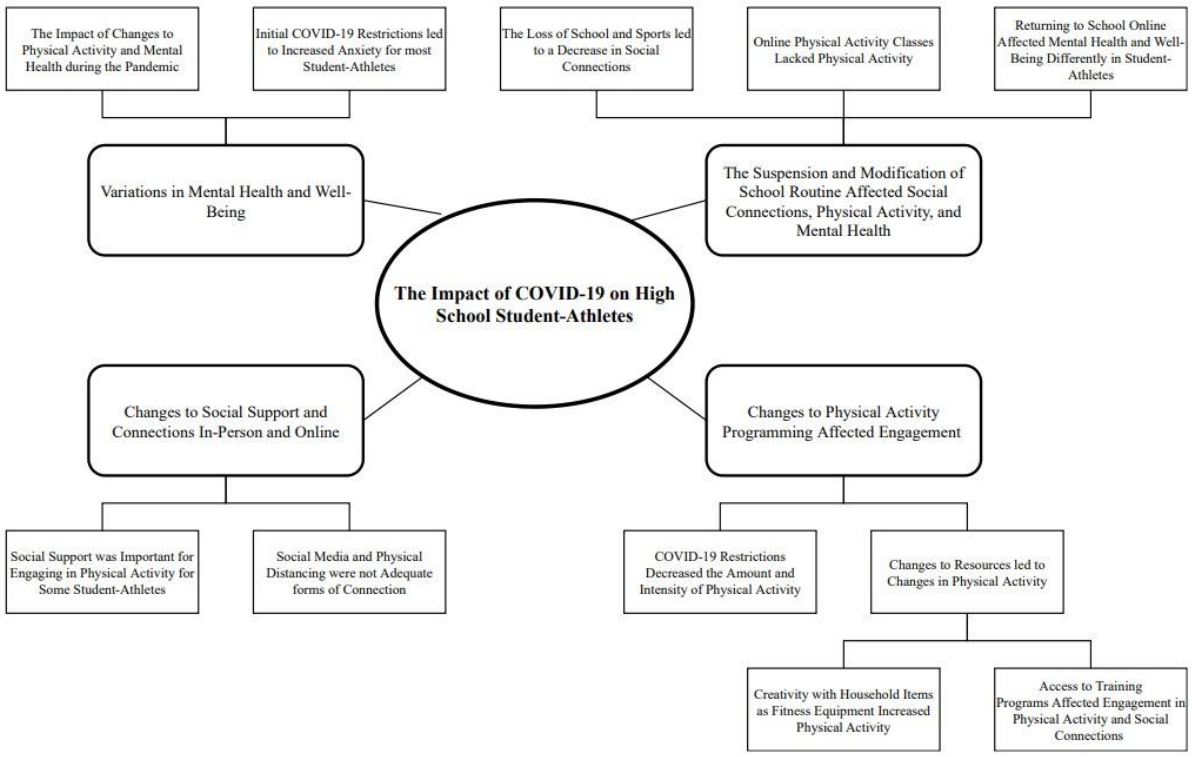

Figure 16. The impact of the COVID-19 pandemic on high school athlete's experiences with physical activity, social connections, and mental health (Shepherd et al., 2021)

Benson and Bruner (2018) used a daily diary approach to give insight into how daily prosocial and antisocial behaviors are linked to within-personal differences in student-athletes' personal moral behaviors toward teammates and social identity strength. Prosocial behaviors are acts intended to help or benefit others (e.g., encouragement) whereas antisocial behaviors are harmful or put others at a disadvantage (e.g., verbal abuse) (Benson & Bruner, 2018). They found that the frequency with which the student-athletes experience prosocial and antisocial behaviors towards teammates differentially predicts (a) the self-reported frequency with which athletes engage in prosocial and antisocial behaviors when interaction with teammates, (b) the psychological ties athletes have toward their teammates (i.e., ingroup ties), (c) the value places on sport team membership, and (d) the positive feelings athletes derive from sport team membership (Benson & Bruner, 2018). This can affect overall student-athlete experiences in the wake of the pandemic by educating coaches on how to correctly encourage and motivate their athletes to get the best results (Benson & Bruner, 2018). By doing they set an example of how individuals talk to and interact with their other teammates (Benson & Bruner, 2018). If a coach hears a student talking antisocially towards another teammate, they can also step in there and diffuse the situation (Benson & Bruner, 2018).

All of this taken together is important because how these student-athletes coped during the pandemic had a significant impact on their mental health, overall well-being, physical activity levels, and how they interacted and connected with other teammates and socially in general. It also played into how their social identity was formed. By learning this now, we can explore implications in case of another global pandemic or even just small epidemics or natural disasters.

Chapter 8: Conclusion

The coronavirus or COVID-19 is a spherical enveloped RNA virus that was responsible for the global pandemic that turned into a global shutdown (Ochani et al., 2021). Almost every country had cases of the coronavirus with some being more mild cases and some being fatal. The most distinguishing feature of the COVID-19 virus is its club-shaped projections off the surface of the virus envelope (Ochani et al., 2021). These projections allow the virus to enter the human host cells and replicate (Ochani et al., 2021). The common symptoms associated with the COVID-19 virus are pneumonia, fever, difficulty breathing and lung infection (Adhikari et al., 2020). The aim of this literature review is to examine how the social-distance mandates and quarantines affected various aspects of child and adolescent life and development. This review examines language and speech impairment, behavioral changes/challenges, academic performance, mental health (specifically depression and anxiety), child abuse and neglect, and student-athlete experiences.

Each study presented and examined here looks at how its respective ideas influenced children in age groups 2-18. The results were interesting. When looking at speech and language impairment, masks were found to have a significantly negative impact on both speech intelligibility (Coppens-Hofman et al., 2016) and recall (Truong & Weber, 2021). Parents reported increases in sleep disturbance patterns and gaming behaviors which have been linked to having authoritarian parents (Oliveira et al., 2021). Academic performance was shown to have an overall improvement, but those improvements were seen to be more drastic in children from higher income families over lower income families (Andrew et al., 2020). Mental health seemed to be particularly detrimental for the high school aged adolescents (Villanti et al., 2022), negative but with some individuals seeing improvement in the middle school age group (Cost et al.,

2021), and negative in elementary ages students (Orgilés et al., 2020). Child abuse and neglect cases being reported decreased during the pandemic, but the sad truth to this is that it was not because abuse and neglect decreased but rather the social distancing led to decreased contact with professionals (educators and healthcare professionals) that can spot the signs and report (Peterman et al., 2020). Lastly, decreases in student-athlete experiences lead to decreases in the athlete's mental health, overall well-being, physical activity levels, and connections with teammates and other members of society (Shepherd et al., 2021).

In conclusion, the research presented in this thesis shows that while there were some positive benefits – academic performance and mental health – to the shutdowns, there were more negative impacts – mental health, speech development, academic performance, student-athlete experiences, and child abuse/neglect. To prevent these negative impacts, more support services and support programs need to be put into place. Also making sure that the parents have access to the support they need – which indirectly also improves the life of their child(ren). Lastly, making sure that there are measures already ready in case of another global shutdown to stop these issues before they even start. Limitations to this paper include data from the year of and only up to two years following the start of the pandemic (short-term results). For future research, study the long-term (5+ years) effects that lockdown and isolation have on the topics discussed.

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