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Stress and Isolation: The Effects of a Remote Learning Environment on Adolescent Emotional Development

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Abstract

With approximately 1.6 billion of the world's student population having their norm completely altered and lives uprooted as a result of the COVID-19 pandemic, their emotional health should be of the utmost importance. Emotional health was often disregarded in the past but in our modern times, the immense stress caused by an abrupt shift toward a remote environment can greatly affect the emotional development of adolescents and have long-term effects on their emotional wellbeing well through adulthood. The stress, anxiety, and changes in environment and personal habits can greatly influence the way an adolescent lives their lives, from emotions they experience, to their social interactions. The result is that the stressors caused by a remote environment decrease social interaction and increase negative emotions and psychological disorders, leading to an impairment in the emotional development in adolescents that can have long-lasting effects.

Keywords: Remote Learning, Remote Environment, Adolescents, Emotional Development, Social Isolation

Introduction

In early 2020, 1.6 billion students shifted to remote learning as a result of the COVID-19 pandemic in order to continue learning (Bonnel et al., 2021). While this new virtual environment allowed normal education to continue relatively normally, the emotional wellbeing of students was not made a priority. Schools are a familiar environment to students, similar to a home, and with traditional schools no longer in session, students were forced to stay home, placing them in a new environment with new factors, risks, and challenges, some of which could affect their emotional wellbeing and development (Mohammed). While COVID-19 itself is not at the forefront of concerns for children, the social-emotional influences and changes in their environment can cause hardships (Buheji et al., 2020). Adolescents are especially prone to some of the indirect risks that stem from the virtual environment as a result of the pandemic, and challenges due to disruption of normal companionship and human interaction can greatly alter the mindsets of children and adolescents, leading to stress, disorders, and even suicide attempts (Buheji et al., 2020). Research specifically regarding the impact of a remote environment on adolescent emotional development has not been done to the extent of our knowledge.

Methods

COVID-19 is a novel concern, with research about it and its effects being relatively recent. A search through online databases such as Google Scholar, PubMed, NCBI, and ProQuest showed that some surveys about the effects of the COVID-19 pandemic and research about the effect the pandemic has had on children and adolescents have been done. An analysis of how remote environments have affected the emotional

development of adolescents was conducted by searching through online databases with variations of "remote learning", "remote environment", "emotional development" and "adolescents". Articles containing research on young children and adults were excluded.

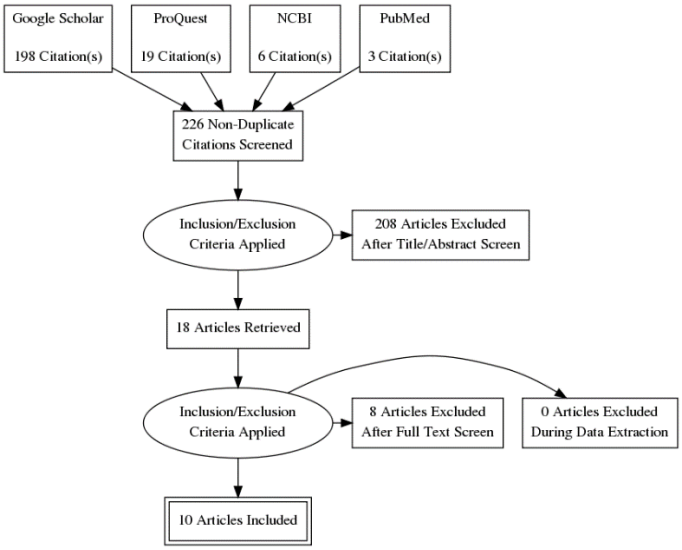

FIGURE 1: PRISMA Flow Diagram illustrating the systematic review of 226 articles reviewed in this study

Results

Family Relations

In a remote environment, children are much more likely to interact with their family daily and be closer to family issues and conflicts. If family issues are present in a household, the stress a child may feel can be exacerbated. Surveys conducted in Spain and Italy of parents' perception of their children's emotions indicated that 76.6% of parents reported difficulty concentrating, 52% reported boredom, 39% reported irritability, and 38% reported nervousness. Teenagers feeling lonely or secluded may experience consistent unhealthy thoughts and additional conflict with family (Buheji et al., 2020). The pandemic has resulted in more stress for parents and adults as well, which may affect instances of domestic violence (Buheji et al., 2020). Parental stress can cause parents to be less likely to notice their children's struggles and a lack of emotion-oriented conversations can cause doubts and anxiety to develop (Panicker & Nedungottil, 2021). Familial relationships within a household greatly impact children, especially in a remote environment. Parents are the role models of their children, and in a remote environment, the effect their actions have are magnified. Improved interactions between parent and child can lead to a greater sense of self-sufficiency (Panicker & Nedungottil, 2021).

Lack of Social Interaction

With schools closed and a new remote environment, the opportunities adolescents have to socialize and interact with friends and other people have been greatly diminished. Loss of support during this critical period of development can lead to "lockdown loneliness", a risk factor of mental health during the pandemic (Glasper, 2021), and loneliness can be attributed to elevated levels of anxiety during the pandemic (Zhao et al., 2021). An Australian Report found that missing important school milestones and a reduction in social interaction have caused high levels of psychological distress (Glasper, 2021). Social activities and interactions with friends provide an outlet for emotions. Without these, adolescents can be susceptible to frequent outbursts of anger, anxiousness, and feelings of isolation. Under extreme stress, they are prone to impulsive decisions and impaired judgment (Panicker & Nedungottil, 2021). The suppression of emotions is associated with negative effects, higher dropout rates, and higher levels of anxiety (Zhao et al., 2021). With less social interaction, and consequently fewer outlets for adolescents to express emotion, they can be released in unhealthy ways or suppressed, leading to more negative emotions and detrimental effects.

Remote Learning

The emotional wellbeing of students was once thought to be inhibiting to the education of students, but studies have found the contrary to be true. The educational experience and emotions of students are very much intertwined

with one another (Zhao et al., 2021). In a remote learning environment, students may sometimes struggle academically, with some students falling up to a full year behind (Glasper, 2021). While many parents supported the closure of schools, a study in the UK found that they also expressed concerns regarding the loss of education and the wellbeing of their children (Bonell, 2021). The fear of academic failure has been associated with increased anxiety in students (Zhao et al., 2021), and remote learning has had a profound effect on the mindsets of adolescents as well, with a research report by Prince's Trust revealing that 44% of 16–25-year-olds now have lower goals and ambitions for the future. With up to 41% of people now believing their goals are unattainable, the self-esteem of students has decreased (Glasper, 2021). Schools are not only sites of education; they also provide support to their students through counseling. However, school closures have led to a shift from physical counseling to tele-health or eMental Health Services. A study found that students were less likely to reach out for support during this time of remote learning, but those who did received help for longer and spoke about more personal issues (O'Conner, 2020). Matters including adjustment, grief, self-esteem, and identity were spoken about much more frequently during this period of remote learning compared to previous data from 2019 and 2020 (O'Conner, 2020). With more stress and anxiety and less conventional ways of reaching out for help, many of the feelings and concerns that students already had were intensified.

Personal Habits

With new environments and norms, changes to the lifestyles of adolescents are to be expected. A Polish study found that physical activity after school closures decreased significantly and a report by Statista found that screen-time increased in the United States, with children of all ages spending on average an additional 4 hours on electronic devices. Results from this report were found to be consistent with studies on children and adolescents performed in Spain and China (Luszczki et al., 2021). The study also found that sleep in adolescents decreased by 0.28 hours on average on weekdays, and 0.59 hours on average on weekends (Luszczki et al., 2021). A survey of 7958 Italian parents (only 6210 were included in the results listed) uncovered that 69.3% of families reported that children had a more difficult time falling asleep, with 30.2% of families reporting that children had a harder time remaining asleep, and 18.7% of families reporting an increase in the number of nightmares and night terrors their children had (Dondi et al., 2021). Surveys and studies performed across multiple different countries all came to the same conclusion: the sleep of adolescents was harmed.

Relation to Emotional Development of Adolescents

Schools are an essential part of student socio-emotional health and closures have resulted in parental concerns over their children's mental and emotional wellbeing (Garbe et al., 2020). As a result of this pandemic and new remote environment, parental influence over their children has dramatically increased. Studies that have spanned multiple generations have found that the specific style of parenting used in a household impacts the development of emotional function over time and generations alike (Stack et al., 2010). Parental relationships impact the way that their children express and regulate their emotions, especially during adolescence. A study of adolescents showed that positive parental relationships and the perception of family cohesion were related to more efficacious and successful emotional regulation. Maternal support was found to decrease the emotional symptoms of children such as internalizing of emotions, depression, anxiety, etc. (Morris et al., 2017). The development of the ability for children to regulate their emotions is an important part of their emotional development. As a child develops, increased regulation of their emotions leads to more social interactions, further affecting their behavioral processes (Thompson, 1991).

With a new remote environment, adolescents have been exposed to more stressors than normal. One of the most prominent issues caused by a remote environment is anxiety, stemming from the fear of falling behind in school, loneliness and isolation, or parental relationships and home environments. Science has shown that exposure to situations that cause consistent fear and anxiety can disrupt the development of the adolescent brain, leading to lifelong consequences on learning, behavior, and health (National Scientific Council on the Developing Child, 2010). Sleep is shown to be a fundamental part of metabolic, immune, cardiovascular, and respiratory functions, as well as cognitive and psychological processes. It affects learning, memory, creativity, emotional memory, stress-coping mechanisms, and cognitive abilities and processes (Brand & Kirov, 2011). As a result of this pandemic, adolescents have been shown to receive less sleep compared to before. Sleep is a vital process, especially during adolescence, a time of growth and development. Factors such as stress and anxiety have been shown to affect sleep (Brand & Kirov, 2011). A study of adolescent rats exposed to stressors revealed that stress can significantly affect the structure and function of the brain, causing problems that can still be experienced during adulthood. It was found that during adolescence, stressors of both the physical and emotional varieties could notably impact the mossy fiber system of the brain, a system that contributes to the pathophysiology of depression, increasing the susceptibility of developing depression (Eiland & Romeo, 2013). The effects of changes in social environments are exacerbated during periods of development, when social interaction is crucial to regular emotional development, and stressors have been found to severely impact social behaviors (Eiland & Romeo, 2013).

Social interaction is also an integral part of the emotional development of a child, especially during adolescence. A study of mice who were isolated during their period of adolescence found that a deficiency in social interaction affected their brain and behavior, especially during stages of development (Orben et al., 2020). The importance of social interaction and the effects of deficiency were shown in as little as 24 hours, with mice who were isolated showing increased amounts of anxiety and excess activity. A prolonged period of isolation analogous to the quarantining and remote environment students faced resulted in an increase in the aggression and reactivity to stress of the mice (Orben et al., 2020). Isolation during the period of adolescence can result in impaired cognitive flexibility and typical learning behaviors such as reward learning and reversal learning with similar effects and behavioral changes observed in mice who were not isolated as extremely (Orben et al., 2020). Complete social isolation of mice specifically during the period of adolescence resulted in structural and functional changes in their brains, affecting dopamine and serotonin systems and influencing motivation and reward systems (Orben et al., 2020). Dopamine systems have been shown to develop in humans during adolescence and are especially active during this period (Galvan, 2010). Rewards are rarely, if ever, seen during isolation, and a deficiency in social interaction that would cause the development of this system could severely impact the way adolescents experience life as they grow older, as reward systems are responsible for our behavior, motivation, and interactions (Bhanji & Delgado, 2013). Studies in adolescent primates have also been done, revealing that isolation for as little as 1-3 weeks can cause a decrease in the growth of the hippocampus, the part of the brain that is responsible for memory and learning. Studies among other animals of all ages have shown that social interaction is a universal necessity (Orben et al., 2020). While adolescents in solitary confinement have shown similar symptoms, it is important to note that the social worlds of animals differ greatly from the complexity of human society (Orben et al., 2020). This is not to discount the validity of mice experiments

however, as mice and rats are and have been crucial in human biomedical and behavioral research due to their anatomical, physiological, and genetic similarity to humans (Bryda, 2013). While the circumstances may not be as extreme as those of solitary confinement, with most students in the world shifting to an all-remote environment, it is still important to note that a lack of social interaction can take a toll on adolescents and affect them emotionally and mentally in profound ways.

Discussion

These results show that a remote learning environment can have damaging repercussions on the lives of adolescents. With a combination of familial, social, and personal issues brought on by confinement and school closures, it is important to prevent long-lasting socio-emotional damage that may result from the effects of remote environments on adolescent emotional development. One of the main problems of a remote environment is the feeling of isolation and disconnection. While there are no ways to prevent this, possible strategies to reduce or combat these feelings include maintaining social networks and allowing adolescents to experience social rewards. The sense of belonging both in a family and a community are essential as well as the knowledge that there are people who understand and can provide support. Even so, it is not enough to simply increase the frequency of social interactions. In a period of solitude, it is vital to find a sense of purpose and to discuss negative thoughts (Loades et al., 2020). With social distancing still in effect due to the COVID-19 pandemic, socialization with other people may not always be an available option. Digital programs based on cognitive-behavioral therapy (CBT) have been developed and have been shown to be effective at alleviating symptoms of trauma such as anxiety. Programs such as BRAVE-TA, MoodGym, and SPARX, have all been shown to have positive effects on emotional health (Loades et al., 2020).

Limitations to this study include the world's unfamiliarity with remote learning environments, as schools are conventionally held in person. While research has shown that isolation can have harmful effects on humans, the situation that we find ourselves in now is unlike any other the world has seen before. The data that has already been revealed has shown that a remote learning environment can cause detriments in the emotional development of adolescents. For that reason, more research should be done about the implications of such a long-term quarantine to better help the future generation of the world.

Conclusion

To conclude, the onset of a new remote environment as a result of the COVID-19 pandemic has severely impacted the emotional health of adolescents, causing changes and impairments to normal emotional development. With new environments and influences in their lives such as parental stress, social isolation, and online learning, adolescents faced higher levels of stress and anxiety overall, affecting sleep and social interaction, two essential components in development. The circumstances brought on by a remote environment can cause changes in brain structure, function, and development, increasing negative emotions, negative coping mechanisms, and psychological disorders, all of which can have a long-lasting effect on the wellbeing of the adolescent as they progress through adulthood.

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