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STUDENT MENTAL HEALTH DURING AND AFTER THE CORONAVIRUS PANDEMIC

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ABSTRACT

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The educational setting serves as an influential force when considering the impacts that school can have on student mental health. Following the onset of the coronavirus pandemic, research revealed negative effects on mental health for a variety of populations across the globe; however, comprehensive reviews about the effect that the pandemic had on the mental health of American K-12 students are limited. Consequently, the purpose of this specialist project is to evaluate the effects of the coronavirus pandemic on the mental health of American students in grades K-12 through a review of literature. Utilizing PRISMA procedures, 19 articles were selected for inclusion. Research indicated that K-12 American students experienced worsening mental health following the onset of the pandemic, with increases in anxiety and depression found across demographic populations. Female students, minority students, and students from lower socioeconomic status households were found to be at an increased risk of experiencing these adverse mental health effects. Increased feelings of connectedness to family or school served as a protective factor against developing severe anxious or depressive symptoms. These findings will allow school psychologists a more intricate understanding of the effects that the pandemic had on student mental health, which can allow them to better prepare to meet the psychological needs of their students in the wake of the pandemic.

Keywords: coronavirus, students, mental health, anxiety, depression

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Introduction

The coronavirus outbreak of 2019 served as an unexpected trigger for changing the way individuals, businesses, and nations function in the modern world. Originating in China in 2019, the highly transmissible virus rapidly migrated across the world. When the virus reached the United States in the early months of 2020, it was not long before the functioning of the nation was drastically altered. The rapidity of the virus' resulting spread in early 2020 caused a nationwide public shutdown in March (Centers for Disease Control and Prevention [CDC], 2023a). This shutdown involved mandated quarantine when ill and encouraged Americans nationwide to quarantine at their homes to reduce the risks of exposure to or spreading of the coronavirus. Citizens were prompted to remain in their homes unless they needed essentials for daily survival, such as items like food or cleaning supplies, or if they needed to obtain medical care. Essential businesses - those that catered to food, medical, or transportation needs - remained open, while nearly all other businesses were forced to close to mitigate the spread of the virus (United Nations [UN], 2020). These closures remained in place for months, with cities and states gradually re-opening and resuming business with strict guidelines and stipulations in place to aid in the prevention of additional virus breakouts (CDC, 2023). Even now, four years after the initial start of the pandemic, the impacts of the virus and resulting shutdown are apparent in nearly every public setting.

Education systems in the United States were not immune to the effects of the pandemic and subsequent business closures. The presence of students and school staff packed within the confines of school buildings posed a significant risk for rapid transmission of the airborne virus. In late February of 2020, CDC officials encouraged families to ask their school systems about procedures for online learning (Lieberman, 2020). As a matter of precaution, and further

encouraged by recommendations and mandates from local, state, and federal levels, school systems closed their buildings. By late March of 2020, all public schools in the United States were closed (Decker et al., 2020). Teachers, students, and other school staff were suddenly hurled into the challenge of learning how to do their jobs in the confines of their own homes (Katella, 2021). With no in-person contact or communication permitted during the initial stages of quarantine, students and teachers were forced to adapt to the new needs of learning.

The shift in education from in-person to distance formats did not happen immediately. Initially, roughly 100,000 K-12 schools throughout the United States were closed, with some closures lasting 8 weeks or more (Zviedrite et al., 2021) Gradually, public school systems in the United States developed alternate methods to delivering education to their students. While some students attended classes and completed assignments entirely online, others did not have that opportunity. Limited internet access for some student populations led school districts to pursue other avenues of delivering education, including setting up Wi-Fi hotspot points and delivering packets of schoolwork to students at their homes (Mansfield & Conlon, 2020). In-person contact and communication between students and school staff was not permitted during the initial stages of quarantine. Many students were forced into extended periods of isolation from peer interactions, only allowed to directly communicate with those within the walls of their immediate household and having to rely on technology to communicate with others outside of their household. The pandemic triggered an extended period of fear and loneliness across the entirety of America, and America's youth experienced these intense and prolonged feelings at critical development points in their lives, in settings where they may not have had the same levels of support from their teachers or student peers that would have existed in a traditional education setting (Naff et al., 2022). The sudden, rapid, and extended period of time in which students were

shifted into isolation and online learning may have had significant impacts on the ways students formed and maintained their personal and peer relationships, which may have had further impacts on their mental health.

Mental Health

Before one can understand the effects of the coronavirus on the mental health of American students, a general understanding of the concept of mental health is needed. The term "mental health" has a variety of definitions. The World Health Organization (WHO) defines mental health as "… a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community" (WHO, 2022). The Center for Disease Control and Prevention (CDC) defines mental health more simply, stating that "Mental health includes our emotional, psychological, and social well-being," and that "It affects how we think, feel, and act" (CDC, 2021). The CDC further elaborates, explaining that mental health "… also helps determine how we handle stress, relate to others, and make healthy choices" (CDC, 2022). These definitions, however, have a common basic thread. The basic theme of these definitions is that mental health concerns the mental well-being of people, and how that well-being allows them to cope with stressors and function in their daily lives. For the purposes of this systematic review, the term "mental health" will be used to refer to this mental well-being of students, the ways students' mental well-being is manifested, and the overall effects of their mental well-being on their social-emotional functioning throughout the course of their daily lives.

The School Environment and Student Mental Health

The significant impacts of social isolation for students resulting from the coronavirus pandemic can only be understood once the impacts of the school environment on a student's

mental health are understood. Oftentimes, schools are the primary place where students' significant social relationships are formed, and these social relationships often play key roles in the development of mentally healthy young adults.

Anxiety and depression are some of the most prevalent mental health disorders affecting American children between the ages of 3 and 17 years old (CDC, 2023b). The CDC estimates that, when considering children ages 3-17 years old, 4.4% will be diagnosed with depression, while 9.4% will be diagnosed with anxiety, at some point in throughout their lives (CDC, 2023b). Despite these prevalence rates, previous research in this area demonstrates a clear link between positive student mental health and strong connections in their academic environment. Long and her colleagues (2021) published a study that examined different characteristics of school environments and their impacts on student mental health. They reviewed data from 22 Scottish schools that had been gathered in 2006 from students ages 15-16. Data was gathered using scores from the General Health Questionnaire (GHQ-12), a tool that indicated "worse mental health" with higher scores, and "better mental health" with lower scores. Using this data, Long and her colleagues were able to establish correlations between the mental health of students in relation to their academic environment. Most notable, the GHQ-12 scores indicated better mental health for students who felt they were "included" and "belonged" in their academic environment, as well as for students who reported stronger relationships with their instructors. Even after adjustment for potential influence of background variables, Long and colleagues found that lower GHQ-12 scores were associated with students who reported having a teacher "they could talk to," with their reported scores indicating stronger mental health. A similar result was found in students who felt like they "belonged" in their environment as well, as these students also had lower GHQ-12 scores, indicating better mental health (Long et al., 2021). The

findings by Long and her colleagues reveal a clear connection between a student's academic environment and their mental health. These results specifically highlight the importance of social connectedness in the strength of a student's mental health, as students who felt more connected to their school environment often had lower GHQ-12 scores, indicating minimal presence of mental health problems.

A 2019 study focusing on students in the United States yielded similar findings. Levels of emotional distress (which included feelings of sadness or irritability) were found to be lower when students had higher levels of school connectedness (Steiner et al., 2019). The same study found a correlation between school connectedness and suicidal ideation, indicating that school connectedness could be a protective factor against thoughts of suicidal ideation (Steiner et al., 2019). The findings by Steiner and colleagues demonstrate that a student's connectedness to their school can be an important factor in the strength of their mental health.

Taking a narrower approach to examining the effects of school climate on student mental health, multiple studies have shown that the school environment can serve as a significant protective factor against feelings of depression in the student body. Singla and colleagues (2021) examined the ways in which various aspects of school climate mediated select outcomes, one of which was depressive symptoms, in students grades 9-12 from schools in Bihar, India. These researchers found that school climate directly mediated depressive symptoms by over 15%, indicating that the school environment can have significant effects on the depressive symptoms of their students. Additionally, they reported "Improved relationships at school accounted for 51.4% of the total mediating (indirect) effect of school climate on depressive symptoms," (Singla et al., 2021, p. 95), indicating that students' relationships with others at school can affect their beliefs about their school climate, further affecting their reported feelings of depression. Singla

and colleagues were not the only ones to study how depressive symptoms are affected by a student's school environment. A study published by Clark and colleagues (2022) sought to determine the association between depressive symptoms and three types of victimization, and further examine how these feelings were affected by the students' beliefs about their school climate. After gathering data from students in the Midwestern United States, researchers found that, in the studied population of middle schoolers, levels of depression and suicidality were lower when the students reported more positive perceptions of their school environment (Clark et al., 2022), revealing that student mental health can be dramatically altered by their school environment.

Anxiety is another area of student mental health that is significantly affected by a student's school environment. Just as the school environment can serve as a protective factor against a student's depressive feelings, it can also protect students against feelings of anxiety. A recent study conducted with students in Connecticut found that students aged 6 – 18 who felt more connected to their schools were less likely to exhibit symptoms of anxiety while in school (Pikulski et al., 2020). Additionally, researchers found that parents who also reported higher feelings of connectedness to their child's school reported that their children showed less internalized anxiety symptoms, when compared to parent reports from parents who reported lower feelings of school connectedness (Pikulski et al., 2020). This finding was supported by other researchers, who reviewed literature published from 2011-2021 regarding the relationship between school connectedness and anxiety and/or depression experiences in students (Raniti et al., 2022). After analyzing 36 studies, with 69.4% of those studies being conducted in the United States, these researchers found that students who felt more connected to their schools exhibited

fewer symptoms of depression and anxiety (Raniti et al., 2022), further supporting the idea that schools play an essential role in supporting their students' mental health.

These studies are not the only ones of their kind that demonstrate links between student mental health or wellbeing and their school environment. Additional research has demonstrated that the way students relate to their school environment, as well as the relationships they form within that environment, can have significant positive impacts on their mental health. One multinational study revealed that there was a common finding of increased rates of mental health issues in areas when students did not perceive themselves as well-connected to their school environment (La Salle et al., 2021). Research regarding mental wellbeing and student relationships demonstrated that support from peers, adults at home, and adults at school were all relationships that protected against low mental wellbeing, with peer support and school support being especially important for students with little family support (Butler et al., 2022). Student resilience seems stronger when students feel connected to their school, their social environment, their peers, and their teachers (Riekie et al., 2017). These studies reveal the significance of the school environment on the mental health and resiliency of students within those environments, specifically highlighting the connections between school-based adult and peer relationships, as well as student sense of belonging, as protective factors against the development of mental health problems. With the significance of school-based relationships being a clear factor in promotion of strong mental health within students, and the pandemic-induced lockdowns removing students from their typical school and social environment, the way relationships were formed and maintained may have been significantly altered with online schooling, thus affecting the strength of these relationships. Consequently, one must wonder how student mental health would be affected by the shifting of these environments in response to the coronavirus pandemic.

Worldwide Studies of Coronavirus Effects

The COVID-19 virus spared no country as it swept across the globe. Populations throughout the world were forced to cope with the imminent threats of the virus and the effects the virus' presence had on society (Kantis et al., 2023). Research conducted from the onset of the pandemic indicates that the virus' effects had significant impacts on the mental health of people worldwide. One group of researchers conducted a literature search on February 6th, 2021, to examine the effects of the pandemic on the mental health of different population groups in Eastern Europe. These researchers subsequently found that 31% of Eastern Europe's adult students suffered from with anxiety-related systems, while 32% of adult students struggled with depression-related symptoms (Zhang et al., 2022). These rates were higher than the rates of anxiety and depressive symptoms in the general population, which researchers found to be 22% and 20%, respectively (Zhang et al., 2022), indicating that the life circumstances of adult students could have potentially been more stressful than those who were not in school during the time of the pandemic. Adult students aged 18-25 in India experienced significant worry and anxiety in response to the coronavirus lockdown, with nearly 70% of participants anxious about catching the virus, and 85% concerned about members of their family contracting the virus (Singh & Chitranshi, 2022). Adult students were not the only students to experience a change in their mental health following the onset of the pandemic.

One group of researchers sought to examine the mental health effects of the coronavirus pandemic on both junior high and high school students in China (Zhang et al., 2020). These researchers found depression symptoms in 20.9% of junior high school students, as well as anxiety rates of 25.4% in the same student population (Zhang et al., 2020). Those researchers found higher rates of symptoms in their surveyed high school student population, with 29.7%

experiencing depressive symptoms and 28.4% experiencing anxiety symptoms (Zhang et al., 2020). Zhang and colleagues noted that the results of their study found much higher rates of anxiety and depressive symptoms among Chinese students during the pandemic than pre-pandemic rates, citing an earlier study that had previously found that 16.4% of students were experiencing anxious symptoms and 17.2% of students were experiencing depressive symptoms (Zhang et al., 2020). Younger students experienced mental health effects as well. One study in Wales found that 10-11-year-old students showed a 10% increase in rates of "emotional difficulties" between the years of 2019 and 2021, as indicated by their responses to questions such as "I feel lonely" or "I cry a lot" on the "Me and My School Questionnaire" (Moore et al., 2022), clearly showing that these young students were negatively affected by the coronavirus pandemic.

Other studies, however, have found opposite effects in their younger students. For example, a study conducted with Japanese elementary and junior high students revealed that no overall change in mental health was found following the course of the pandemic when looking specifically at student populations who were suspected to have mental health problems prior to the pandemic's onset (Saito et al., 2021). A study surveying Canadian students aged 9-12 found that while 44% of girls and 31% of boys surveyed reported feeling negative mental health effects resulting from lockdown, most of the students surveyed reported the opposite, saying that they felt their mental health was better throughout the course of the lockdown (Maximova et al., 2022). These variations between countries in their populations mental health symptoms could be due to a variety of reasons. Perhaps each country focused on mental health to different degrees or with different intensities at the onset of the pandemic. Perhaps the school systems within these countries were better prepared for mental health crises before the pandemic and had pre-existing

plans in place to deal with a crisis once the pandemic began. Regardless, it is clear that while the pandemic did have some common effects in student mental health across the globe, the differences that did occur between countries in their student's mental health symptoms demonstrate that the pandemic's effects cannot be generalized across the globe, and individual populations must be studied on their own to better understand the pandemic's effects in that region of the world.

These studies allow readers to understand the various ways in which the coronavirus pandemic affected the mental health of different student populations across the world. The effects reported reveal the differences that can be present in student populations and highlight the importance of understanding the consequences of the pandemic on mental health for specific populations of students. The variability in reported effects indicates that effects reported by other countries should not be generalized to other populations of students. Consequently, it is important that the effects of the coronavirus pandemic on the mental health of American K-12 students be explored.

Purpose and Research Questions

In the United States, school psychologists will inevitably work with students who are struggling with mental health issues. The National Association of School Psychologists (NASP) has developed a Practice Model with 10 Domains intended to guide school psychologists in their work with students and families within the school systems (NASP, n.d.), with one section that specifically addresses the school psychologist's role in promoting student mental health. Domain 4 of this model, titled Mental and Behavioral Health Services and Interventions, explains both the expected capabilities and ethical responsibilities of school psychologists in providing and promoting positive behavioral and mental health services utilizing evidence-based services

(NASP, n.d.). It is therefore the responsibility of school psychologists to educate themselves and prepare as best as possible to address potential problems they may encounter within their school district, which would include preparation to aid in the treatment of student mental health. The requirements involved in the publication process often cause research data to lag by years. Consequently, it may take years before the short-term impacts of the coronavirus pandemic are fully understood and may take many more years after that before long-term effects of the pandemic are documented. With the coronavirus pandemic being an incredibly recent and educationally disruptive event, it is essential that school psychologists understand the effects and implications of the pandemic and online schooling so that they are prepared to fulfill their job responsibilities considering any lingering effects of the lockdown.

The purpose of this specialist project is to conduct a literature review to evaluate the effects of the coronavirus pandemic on the mental health of American students in grades K-12. The specific research questions are as follows:

1. What overall effects or trends were seen in general mental health of K-12 students in the United States resulting from the coronavirus pandemic?
2. What effects did the coronavirus pandemic have on the depressive and/or anxious symptoms of K-12 students in the United States?

A systematic review of the literature will allow for a more in-depth understanding of how the mental health of students was affected during the height of the COVID-19 pandemic. Specifically, it will help to determine if there were any significant increases in mental health disorders among students during the pandemic. The information provided by this review allows school psychologists to ensure they are aware of the potential problem areas in student mental health they may encounter in the upcoming years. This knowledge will allow school

psychologists to ensure they have the training and resources necessary to aid in improving the mental health of their students, should they encounter students who are struggling with pandemic-induced mental health problems. Armed with this knowledge, present and future school psychologists can better prepare themselves to interact with these students whose mental health suffered from the pandemic.

Method

To understand the effects that the coronavirus pandemic and consequent lockdowns had on student mental health, a systematic review of the literature was conducted. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA, Page et al., 2021) was utilized for this literature search. The following databases were searched: *Academic Search Complete*, *APA PsycArticles*, *APA PsycInfo*, and the *Psychology and Behavioral Sciences Collection*. For articles to be eligible for inclusion, they must have (a) examined mental health (diagnoses, symptoms, or prevalence) of students in the United States during and/or after the Coronavirus pandemic, and (b) studied a student population within the K-12 grades. Additionally, articles must have been peer reviewed. Search terms were divided into three categories, all three of which were utilized in tandem to specify results. The following search phrases were used: "covid or covid-19 or coronavirus or pandemic," "k-12 or elementary school or middle school or high school," and "mental." Excluded articles consisted of studies not relevant to the research questions (e.g., discussing exclusively physical health symptoms of COVID, teacher views of the coronavirus, examining the mental health of healthcare workers, etc.), studies conducted on students not within the United States, articles written in a language other than English, article styles that were not appropriate to include within a systematic review (e.g., other systematic reviews, meta analyses, commentary pieces, editorial pieces, opinion pieces), or duplicate articles not removed by the search engine.

The final articles were organized in an Excel table to reveal shared characteristics in the in data. Organization of articles included for review began with citations for each article. The sample size from each study was included. Additional study information was recorded as applicable, including geographic location of participants, student age ranges, and student grade

ranges included in each study. Research data were categorized according to the aspect of mental health studied. These aspects included anxiety (coded as A), depression (coded as D), or other aspects (coded as X). Data source was coded as S, indicating data gathered directly from students, O, indicating data gathered from others, or R, indicating data gathered through review of records. Data collection tools were coded as P, indicating data gathered using pre-established tools, M, indicating data gathered using modified versions of pre-established tools, or C, indicating data gathered using custom tools developed specifically for the purpose of that research study. After organization of articles into an Excel spreadsheet, articles were summarized according to aspect of mental health studied to reveal common characteristics regarding specific impacts the pandemic had on the anxious and depressive symptoms of American K-12 students.

Results

PRISMA procedures and results are displayed in Figure 1. Initial search following PRISMA procedures yielded 696 potential articles. Of these articles, 192 total duplicate articles were removed. Twenty-one articles published in non-English languages were removed. A total of 483 records were screened and sought for retrieval. Of these 483 records sought for retrieval, 50 were unavailable, yielding 433 articles assessed for eligibility. Of the 433 articles assessed for eligibility, 219 were removed due to being irrelevant to the research question, 181 were excluded due to studying the wrong population, 13 were excluded due to being inappropriate article styles to include in a systematic review, and one was removed due to not being peer reviewed. Overall, PRISMA procedures yielded 19 articles that were eligible and included for review. Articles included for review are displayed in Table 1.

Overall, four studies gathered data from nationwide sources, while the other 15 gathered data from different states across the country. States included Michigan, Massachusetts (2), Georgia, North Carolina, California (2), West Virginia, Wisconsin, Florida, Colorado, Illinois, Maine, Texas, and New York. Student age ranges were not often specified in the research studies; however, ages assessed based on available data ranged from 6 years old to 19 years old. Other studies did include younger populations, as two research studies examined the mental health of K-12 students. High school students were well-represented by research, with 13 out of 19 studies including some or all high school grades. All but one study reviewed multiple aspects of student mental health, as opposed to a singular aspect such as “anxiety” or “depression.” Tools that had been created to measure mental health symptoms prior to the pandemic’s onset were used frequently by researchers; however, some researchers did need to adapt those tools, or create new tools entirely, to fully answer their research questions. All studies but one utilized

Figure 1

The PRISMA Flow Diagram (Page et al., 2021)

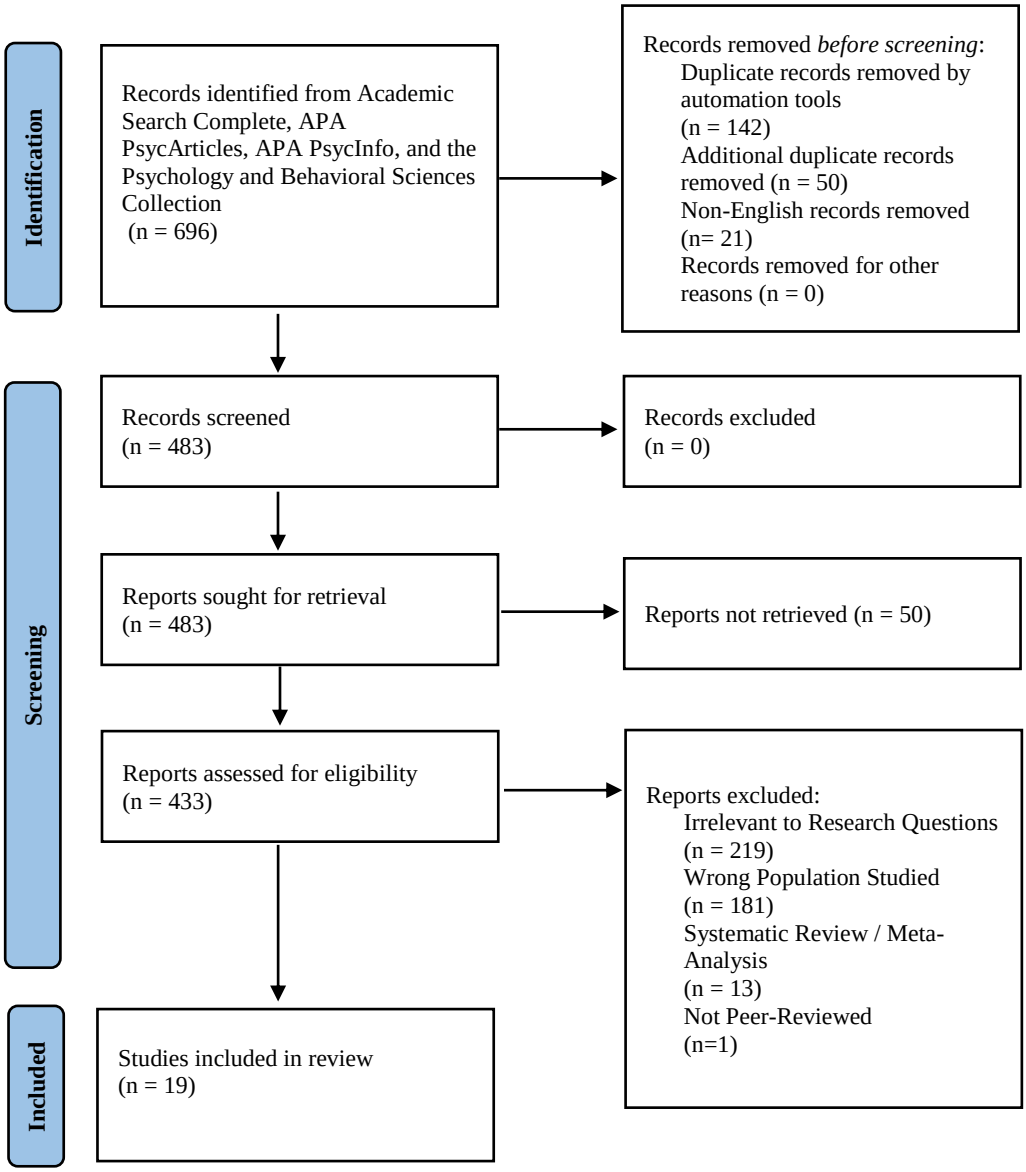

Table 1

Organization of Article Variables

CITATION	LOCATION	n	AGE	GRADE	ASPECT	TOOL	SOURCE
Bhogal et al., 2021	Michigan	64	7-10	2nd-4th	X	M	S, O
Doyle et al., 2022	Massachusetts	171	6-17	n/a	X	P, C	O
Duckworth et al., 2021	nationwide	6,576	--	9th-12th	X	P	S, R
Ermis-Demirtas et al., 2022	nationwide	114	--	9th-12th	X	P, M, C	S
Gazmararian et al., 2021	Georgia	761	--	9th-12th	X	C	S
Hussong et al., 2021	North Carolina	105	6-16	n/a	X	P, M	S, O, R
Jones et al., 2023	nationwide	7,379	--	9th-12th	X	C	S, R
Kwaning et al., 2023	California	372	--	9th-12th	X	P, C	S
Layman et al., 2023	West Virginia	1,349	--	6th-8th	X	P, C	S
McDougal et al., 2023	California	684	--	K-12	X	C	O
McGuine et al., 2021a	Wisconsin	3,243	13-19	9th-12th	X	P	S, R
McGuine et al., 2021b	nationwide	13,002	12-19	9th-12th	X	P	S
McKune et al., 2021	Florida	280	--	K-12	X	C	S
Mulitauopele et al., 2023	Colorado	4,564	--	9th-12th	X	P	S
Perkins et al., 2021	Massachusetts	320	--	6th - 11th	X	P	S
Polo et al., 2023	Illinois	1,220	--	5th-8th	X	M	S
Schwartz-Mette et al., 2023	Maine	362	--	middle - high	X	P, M	S
Temple et al., 2022	Texas	1,188	--	middle school	X	P, C	S
Yin et al., 2021	New York	546	--	9th-12th	A	P, C	S

Note. n=Sample Size, A=Anxiety, D=Depression, X=Other Aspects, P=Pre-established Tool, M=Modified Tool, C=Custom Tool, S=Students, O=Other, and R=Records

some data gathered from students directly. Some studies utilized data gathered from research conducted before the pandemic's onset as a "control" group, while other studies compared data from two time points gathered during the pandemic.

Research data was categorized according to common characteristics revealed in the articles. These characteristics included: articles that reviewed overall mental health, articles that reviewed anxiety, articles that reviewed depression, and articles that reviewed other aspects of mental health. Many articles fell into multiple categories. Articles were grouped and summarized by characteristics to discuss similarities and differences in findings.

Mental Health

The mental health of K-12 students was undoubtedly affected following the onset of the coronavirus pandemic. Hussong et al. (2021) sought to determine the overall changes in student mental health symptoms following the onset of the coronavirus pandemic. Utilizing previous data from a study started in 2013 as a baseline, researchers compared new data gathered using the Pediatric Symptom Checklist (PSC), which was collected during the coronavirus pandemic. Researchers found that, during the pandemic, students aged 12-13 exhibited higher "problematic symptoms" on the PSC than students aged 12-13 who completed the survey before the pandemic. Additionally, researchers found that, following the onset of the pandemic, students who had greater reported self-efficacy demonstrated lower symptomology on the PSC than students who had lower reported self-efficacy.

Like Hussong et al. (2021), McDougal et al. (2023) sought to examine parent reported changes in their children's mental health during the height of the omicron outbreak of the coronavirus pandemic. Researchers gathered data from parents of K-12 students in California to measure parent-reported child mental health (PRCMH). McDougal et al. (2023) found that

parents reported significantly worse PRCMH scores (indicating worse student mental health) for older students than younger students. Parents also reported significantly worse PRCMH scores for students who had most recently experienced COVID-related challenges, such as troubles with family income or access to healthcare. Interestingly, parents reported some increases in PRCMH scores (indicating better student mental health) when COVID-19 was occurring more frequently in their community.

Despite the negative impacts found by Hussong et al. (2021) and McDougal et al. (2023), other researchers did determine that there were factors that protected students from having more severe negative mental health effects caused by the pandemic. Kwaning et al. (2023) sought to determine associations between students' mental health and social-emotional wellbeing with their perceived level of support during distance learning. Students were split into three groups for study. Within-group and between-group analyses revealed that better mental health, higher levels of grit, higher levels of self-efficacy, and lower feelings of stress were correlated with higher perceptions of support during distance learning. Additionally, between-group analysis revealed that higher perceptions of distance learning support were associated with decreased feelings of hopelessness. Related to these findings, Duckworth et al. (2021) determined that students in grades 10, 11, and 12 reported significantly worse social and emotional well-being while attending school remotely. These findings by Kwaning et al. (2023) and Duckworth et al. (2021) serve to highlight the dramatic ways in which the distance created by the coronavirus pandemic negatively affected the mental health of students, and the important role of social support in such situations.

Anxiety

Research shows that the coronavirus pandemic had significant impacts on student experiences of anxiety. Gazmararian et al. (2021) examined various aspects of student mental health of high school students in Georgia after the onset of the pandemic. Overall, nearly a quarter of students indicated feelings of worry about the pandemic, with approximately one third of students indicating worry about the pandemic's financial impact. Nearly one-third of students reported feelings of anxiety, depression, or nervousness. Just over two-fifths of students indicated feelings of isolation or loneliness during the pandemic, while nearly half of students reported feeling stressed. Similar findings to Gazmararian et al. (2021) are reported by other researchers. Bhogal et al. (2021) found that students displayed significant increases in their reported fears of illness, and these increases were not different between socioeconomic groups or racial groups. Comparisons of parent ratings from before the onset of the pandemic and during the pandemic revealed that students experienced clinically significant worsening in severity in their feelings of worry or anxiety (Doyle et al., 2022). Yin et al. (2021) sought to determine the intensity with which the coronavirus pandemic affected the anxiety levels of high school students in New York. Using the Generalized Anxiety Disorder-7 (GAD-7) scale to measure student levels of anxiety, researchers found that over one third of students reported GAD-7 scores that fell within the moderate range or greater, indicating high levels of anxiety symptoms (Yin et al., 2021).

Experiences of anxiety seemed to differ significantly by student age, although research is contradictory in this area. According to Gazmararian et al. (2021), younger high-school students were more likely to report increased feelings of stress and anxiety than their older high-school student counterparts. However, McGuine et al. (2021b) found higher rates of anxiety reported by

12th-grade student athletes than by all other high-school student athletes. McKune et al. (2021) found that older students reported less anxiety than their younger counterparts when surveying Florida K-12 students, which supports the findings by reported by McGuine et al. (2021b).

Gazmararian et al. (2021), McGuine et al. (2021b), and McKune et al. (2021) did find one aspect of coronavirus-related anxiety rates in common, though. Overall, these studies found that female students were more likely to have greater feelings of anxiety than male students. Specifically, McGuine et al. (2021b) found that the anxiety rates of female student athletes were higher than their male student athlete counterparts. These findings are thoroughly supported by other research, with Ying et al. (2021) finding that female students often reported more fears about becoming ill or anxiety about interacting with others than male students. After gathering data from students in grades 6 through 12 in Massachusetts, Perkins et al. (2021) found that male students reported lower feelings of anxiety than female students. Layman et al. (2023) also found that girls were more likely to report increased feelings of anxiety across both time points in their study than male participants.

Student reported feelings of pandemic-correlated anxiety seemed to differ significantly by minority status. Ermis-Demirtas et al. (2022) found that Asian-American students reported higher rates of anxiety when they experienced higher rates of COVID-19-associated discrimination (CAD). Interestingly, these researchers determined that anxiety rates that were predicted by student CAD experiences were significantly higher than anxiety rates predicted by previous trauma or lifetime discrimination experiences (Ermis-Demirtas et al., 2022). Polo et al. (2023) sought to determine whether Latinx students reported higher levels of anxiety and depression when compared to their non-Latinx counterparts, both during and after the pandemic. They studied students in 5th, 6th, 7th, and 8th grades that were referred for services at various

points, before and after the start of the pandemic. Across all three time points assessed (Pre-Covid, Year 1 Covid, and Year 2 Covid), a higher percentage of Latinx students reported scores within the clinical range in the areas of depression, social anxiety, and generalized anxiety when compared to their non-Latinx student counterparts. During the second year of the pandemic, data analysis revealed a statistically significant higher percentage of Latinx students who endorsed social anxiety scores within the clinical range when compared to their non-Latinx counterparts. When looking at the percentage of students reporting scores in the clinical range on the measurement of generalized anxiety, a higher percentage of Latinx students reported scores in this range when compared to their non-Latinx counterparts at a difference that was found to have statistical significance. These findings suggest that students from minority backgrounds had more severe and frequent anxiety feelings than other non-minority counterparts, emphasizing the influence that minority status can have on a student's life experiences, especially during a time of crisis like the coronavirus pandemic.

Minority status is not the only factor that affected student anxiety during the pandemic. Multiple researchers found that socio-economic status played a significant role in student experiences of anxiety during the coronavirus pandemic. Student-athletes from high-poverty backgrounds often endorsed higher feelings of anxiety and depression, as well as lower health-related quality of life scores, than their student-athlete counterparts that came from low or middle poverty backgrounds McGuine et al. (2021b). Additionally, students who were eligible for free and reduced-price eligibility indicated higher feelings of worry about the pandemic and more feelings of fear about themselves or their families getting sick (Gazmararian et al., 2021). When reviewing fear levels related to social distancing, students from lower socio-economic status (SES) backgrounds also displayed greater fears than their higher SES counterparts (Bhogal et al.,

2021). Layman et al. (2023) found that students with lower family income were more likely to report increased feelings of anxiety at their second point of data collection, which occurred during the middle of the pandemic. Temple et al. (2022) reported that students who relied more frequently on food banks for food reported higher rates of depressive feelings than students who did not utilize food banks as frequently. Interestingly, even though Bhogal et al. (2021) reported that students from lower SES backgrounds displayed higher fears during the pandemic, they also reported that students from lower SES backgrounds displayed decreases in their internalizing behaviors when compared to baseline levels from before the start of the pandemic.

Connectedness to others seems to have had a significant impact on the experiences of anxiety reported by students nationwide. McGuine and colleagues (2021b) found that student athletes who played individual sports often reported lower rates of anxiety and higher health-related quality of life than their student counterparts who played team sports, suggesting that the loss of social interactions within a team environment had a significant effect on a student athlete's emotional experiences during the pandemic. Temple et al. (2022) found that feelings of stress and loneliness were positively correlated with student reported feelings of anxiety, potentially indicating that perceptions of isolation had significant impacts on students' mental health. Perkins et al. (2021) sought to determine whether student levels of anxiety were correlated with their feelings of school connectedness while completing classes online during the pandemic. Overall, students who reported higher levels of social and school connectedness also reported lower levels of anxiety (Perkins et al., 2021). Layman et al. (2023) found that feelings of anxiety were lower for students who reported increased feelings of social connectedness with their parents and with their school environment, across both time points of their study. Overall,

these findings indicate that social connectedness could have been a significant protective factor against negative experiences of anxiety during the pandemic.

Depression

Much like the pandemic had significant effects on student experiences of anxiety, the coronavirus pandemic also dramatically affected student feelings of depression. Parents reported that their children felt significantly more sad or depressed, expressed more despair or hopelessness, seemed gloomy, and lacked interest in social interactions (Doyle et al., 2022). Parents also reported that their children seemed to want social interactions, but felt isolated from others instead (Doyle et al., 2022). Gazmararian et al. (2021) found that just over two-fifths of students indicated feelings of isolation or loneliness during the pandemic, while nearly one third of students reported feeling depressed. Student-athletes reported worse levels of psychosocial health during the pandemic than they did before the start of the pandemic, as revealed by McGuine et al. (2021a). Student-athletes also reported worse levels of depression during the pandemic than student-athletes before the pandemic's onset (McGuine et al., 2021a). Layman et al. (2023) found that, across both time points in their study, students who reported a greater emotional impact of the pandemic were also found to have higher scores of depression. Interestingly, Mulitauopele et al. (2023) found that a student's learning environment (in-person, hybrid, or remote) did not affect their rates of depression, indicating that there may have been other factors at play that more significantly affected student depression during the pandemic. Schwartz-Mette et al. (2023) found that high levels of depression were correlated with high levels of loneliness, with stronger rates of depression found amongst students who reported higher pre-pandemic levels of loneliness. Jones et al. (2023) also found that just over 1/3 of participants in their study reported "experiencing poor mental health" during the pandemic,

while just over 40% of respondents experienced “persistent feelings of sadness or hopelessness,” indicating that depressive symptoms affected a significant portion of the student population.

The coronavirus pandemic also had significant effects on student rates of non-suicidal self-injury (NSSI), thoughts of suicide, and suicide attempts. Concerningly, Jones et al. (2023) found that, out of all the students who participated in their research survey, nearly 20% of students reported considering suicide, while just under 10% of students reported attempting suicide at least once (within the past year, from date of survey). Schwartz-Mette et al. (2023) reported that students with lower levels of NSSI before the pandemic reported higher levels of NSSI after the pandemic’s onset, as predicted by levels of student reported loneliness. However, the opposite was found for students with higher levels of NSSI before the pandemic; students who initially had higher levels of NSSI before the pandemic exhibited a drop in NSSI behaviors following the onset of the pandemic, which was predicted by higher levels of loneliness. Students who more frequently engaged in NSSI behaviors before the pandemic exhibited higher instances of NSSI following pandemic onset, as predicted by levels of health anxiety. Suicide risk increased, as predicted by loneliness, for students who had high initial levels of suicide risk before the beginning of the pandemic. However, the opposite was found by Mulitauopele et al. (2023) when they sought to review the effects that learning environment (in-person, hybrid, or remote) had on various aspects of student life. Between all learning environment groups, researchers found no differences in reported levels of depression or reported suicide attempts (Mulitauopele et al., 2023).

Interestingly, contradictory results were reported regarding student age and feelings of depression. Gazmararian et al. (2021) found that younger students more often reported feelings

of depression and loneliness than older students. In contrast, however, McGuine et al. (2021b) found higher rates of depression reported in student-athletes in 12th grade than in all other grades.

Depression rates were significantly affected by student gender, as male students reported fewer depressive symptoms than female students, a finding which was supported by Gazmararian et al. (2021), McKune et al. (2021), and Layman et al. (2023). Gazmararian et al. (2021) also found increased rates of loneliness reported by female students. Perkins et al. (2021) found that male students yielded lower scores on the Patient Health Questionnaire (PHQ-2), indicating fewer feelings of depression, than female students, a finding that was also reported by McGuine et al. (2021b) in their study regarding mental health of student athletes during the pandemic.

Minority status also had significant impact on student experiences of depression during the pandemic. Gazmararian et al. (2021) reported that minority students were more likely to feel depressed than students who were not part of a minority population. Much like how Ermis-Demirtas et al. (2022) found that Asian-American students reported higher rates of anxiety when they experienced higher rates of coronavirus-associated discrimination (CAD), these researchers also found that Asian-American students reported higher feelings of depression when they experienced higher rates of CAD. These depression levels were predicted more by the experiences of CAD than by past experiences of discrimination or trauma (Ermis-Demirtas et al., 2022). When Polo et al. (2023) gathered data from students at three different points during the pandemic, they found that a higher percentage of Latinx students reported scores within the clinical range in the areas of depression than non-Latinx students. When comparing the frequency of depression scores that fell within the clinical range, researchers found clinically significant differences in scores between Latinx and non-Latinx students in the pre-covid time

frame, a difference that was found again during Year 2 of the pandemic (Polo et al., 2023), indicating that students from Latinx backgrounds were much more likely to experience negative depressive symptoms during the pandemic.

There also seemed to be significant relationships between SES and depression throughout the course of the pandemic. McGuine et al. (2021b) found higher rates of depression reported by student-athletes from high-poverty backgrounds when compared to student-athletes from low- or middle- poverty backgrounds. Layman et al. (2023) found that students with lower family income were more likely to indicate higher feelings of depression across multiple points of data collection, indicating a longitudinal relationship between depression and SES. Jones et al. (2023) found that students who attended school in low-poverty or mid-poverty locations, who also experienced at least one parent losing a job, more often reported negative mental health, feelings of sadness, feelings of hopelessness, suicidal contemplation, or attempts of suicide, than did their student counterparts who did not experience parental job loss. Jones et al. (2023) also found significant differences in feelings of sadness, feelings of hopelessness, and suicidal contemplation between low-, mid-, and high-poverty groups of students who went hungry during the pandemic, specifically when compared to their non-hungry counterparts. Higher levels of poor mental health were reported in the mid- and high-poverty groups who experienced hunger during the pandemic. Increased reports of suicide attempts were found in populations of low-poverty and mid-poverty students who reported going hungry when compared to their not hungry counterparts. Related to this idea, Temple et al. (2022) found higher depressive feelings reported by students that more frequently relied on food banks as a source of food.

Jones et al. (2023) found interesting interactions between race, parental job status, and hunger experiences with student mental health status during the pandemic. They found that, for

both white and Hispanic students, significant increases in negative mental health, feelings of sadness, feelings of hopelessness, suicidal contemplation, or attempts of suicide, were reported more frequently by students who had experienced parent job loss during the pandemic, when compared to their counterparts who did not experience parental job loss. Students who identified as Black only reported statistically significant differences in levels of poor mental health if they had experienced their parent's loss of job. Students who identified as Asian had similar results, only reporting statistically significant differences in feelings of sadness and hopelessness if they had experienced their parent's loss of job. White and Hispanic students who reported going hungry during pandemic times reported statistically significant differences in their levels of poor mental health, feelings of sadness and hopelessness, suicidal contemplation, and attempts of suicide, than did their counterparts who did not experience going hungry. Black students who reported going hungry during pandemic times reported statistically significant differences in their levels of poor mental health, feelings of sadness and hopelessness, and suicidal contemplation, than did their counterparts who did not experience going hungry.

Student access to or perceptions of relationships with others seemed to have a significant positive effect on their experiences of depression throughout the course of the coronavirus pandemic. For example, Temple et al. (2022) found that students reported lower depressive symptoms when they had increased physical interactions with others. Similarly, Perkins et al. (2021) found that, overall, students who reported higher levels of social and school connectedness also reported lower levels of depression. Layman et al. (2023) explained that students who indicated greater feelings of connectedness to parents and their school environment ultimately reported less drastic feelings of depression, a trend that was found across multiple points of data collection. McGuine et al. (2021b) found that student-athletes that played

individual sports often reported lower rates of depression than student-athletes who played team sports, suggesting that perhaps playing a sport that involved a more individual-based performance encouraged the development of skills to counter the limited interactions with others.

Other Aspects of Mental Health

Anxious and depressive symptoms were not the only aspects of student mental health affected by the pandemic. McKune et al. (2021) found that higher rates of obsessive-compulsive disorder symptoms were reported by female students, younger students, and students who experienced loss of family income as a result of the pandemic. Layman et al. (2023) assessed data gathered at two specific time points; once in the fall of 2020, and again in the fall of 2021. They found that, across both time points assessed, students who felt stronger emotional impact as a result of the pandemic reported more feelings of anger. At the second time point, higher anger scores were reported by male students, students with lower family income, and students who personally knew someone who was ill. Across both time points, decreased anger scores were found when students reported increased feelings of social connectedness with their school and parents. A similar effect of social connectedness was found by Mulitauopele et al. (2023) when looking at student feelings of stress. Mulitauopele et al. (2023) reported that students who attended school in-person reported less feelings of daily stress, and indicated that their daily stress levels felt more manageable, than their hybrid or remote student counterparts.

Discussion

Undoubtedly, the coronavirus pandemic had significant negative effects on the mental health of many K-12 students. A summary of the studies indicated that students experienced a decrease in their overall levels of mental health and well-being, with a consistent finding indicating worsening of anxiety and depression across nearly all demographic populations. Some populations also experienced worsened stress levels (Gazmararian et al., 2021; Kwaning et al., 2023; Mulitauopele et al., 2023; Temple et al., 2022), feelings of anger (Layman et al., 2023), OCD-related symptoms (McKune et al., 2021), and suicidal thoughts or actions (Jones et al., 2023; Mulitauopele et al., 2023). Female students, minority students, and students from lower SES families often reported more severe worsening of their mental health than other students (Bhogal et al., 2021; Ermis-Demirtas et al., 2022; Gazmararian et al., 2021; Layman et al., 2023; McGuine et al., 2021b; McKune et al., 2021; Perkins et al., 2021; Polo et al., 2023; Temple et al., 2022; Yin et al., 2021). Severity of mental health symptoms in relation to student age yielded mixed results, with some studies reporting worse mental health among younger students (Gazmararian et al., 2021; Hussong et al., 2021; McDougal et al., 2023;), and other studies reporting better mental health among younger students (McGuine et al., 2021b), suggesting that more research may be needed in this area. Despite the immense worsening in student mental health reported, several protective factors were also revealed by research. Students who felt more connected to their school and home environments often had less severe worsening of their mental health (Layman et al., 2023; McGuine et al., 2021b; Mulitauopele et al., 2023; Temple et al., 2022), highlighting and emphasizing the importance of human connectedness.

The similarities between the increases of anxiety and depression experiences of students across age, gender, minority status, and SES suggest that these two emotional experiences may

be indescribably interconnected; a feeling which could be heightened by the seriousness and gravity of a global pandemic. Due to the potential seriousness of this relationship between these emotional experiences, school psychologists should be prepared to address aspects of both anxiety and depression as the world continues to heal from the worldwide effects of the pandemic. In the event of another global crisis, school psychologists should remember that all students will be impacted in some way, and care should be taken to be aware of and meet the needs of *all* students. Additionally, the long-term effects of the pandemic have yet to be discovered, meaning that school psychologists must be constantly aware of the changing needs of their students. However, school psychologists should also remember that students who are female, part of a minority group, or part of a lower SES may be more significantly and negatively impacted by such an intense global event. In their future practice, school psychologists should remember these impacts that the coronavirus pandemic had on student mental health and ensure that they have the skills and tools necessary to address the possible boom in need for mental health support that students may exhibit.

Utilization of the PRIMSA procedure (Page et al., 2021) is a strength of this review, as it allowed for a structured approach for gathering data and understanding research associated with student mental health during the pandemic. A significant strength of the findings of this review is the inclusion of mental health rates for minority students, as well as the inclusion of mental health by socioeconomic status. The inclusion of this information may allow for better generalization of research findings, and thus a better understanding of students nationwide. Additionally, data were reviewed from multiple locations nationwide, which may also allow for more appropriate generalization to students across the country. A significant limitation, however, is the possible underrepresentation of younger students, as many of the studies included had a

primary focus on older students. An additional limitation involves the ways in which statistics were reported, as some studies compared changes in student mental health from time points before and after the pandemic's onset, while other studies only looked at mental health after the start of the pandemic. Future areas for research could include re-examining the effects of the pandemic on students who were in younger grades when the pandemic occurred, which would allow for a deeper understanding of the long-term effects that the pandemic had on student mental health.

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