Parental Perception of the Impact of COVID-19 on Children's Psychosocial and Cognitive Development

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Declaration

A research project submitted in partial fulfilment of the requirements for the degree of MA by coursework and research report in the field of Psychology in the Faculty of Humanities, University of the Witwatersrand, Johannesburg, 15 March 2023.
I declare that this research project is my own, unaided work. It has not been submitted before for any other degree or examination at this or any other university.

Signed: H. Chopdat 

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ABSTRACT

COVID-19 caused a myriad of global problems. This study aimed to establish whether the COVID-19 pandemic and the preventative measures that occurred as a result thereof had an impact on the cognitive and psychosocial development of 6–13-year-old learners in South Africa as per parental perception (N=31). A mixed methods research design was used, and the data collection occurred through an electronic survey consisting of specifically designed Likert scale items to collect numerical data, along with open-ended questions which were posed to collect qualitative data. The data was analysed by means of t-tests and a one-way ANOVA for the quantitative data analysis, whilst a thematic analysis was used to analyse the qualitative data. The t-tests and one-way ANOVA showed that there were no statistically significant differences in the cognitive and psychosocial abilities of children across gender ($p > 0.05$), school type ($p > 0.05$), and the amount of school missed ($p > 0.05$). Certain themes emerged through the qualitative analysis including both positive and negative themes relating to the learning situation during the lockdown; behavioural changes were also evident in some of the sample; however, others did not report any differences compared to pre-COVID-19. Additionally, children were reported to have worries and concerns over the pandemic as well as the effects thereof. This study contributes to understanding the long-term effects that the measures associated with a global pandemic have on children. As per this study, it appeared that children's development amidst a pandemic was not impacted by their socioeconomic status however, due to certain limitations of this study, including the sample recruited not being an accurate representation of the socioeconomic divide in South Africa, further studies are required.

Keywords: COVID-19; pandemic; children; cognitive; psychosocial; virtual learning; lockdown; social distancing

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1. INTRODUCTION

The novel coronavirus that beset the world at the end of December 2019 has had multiple long-lasting effects globally. In an effort to curb the rise of infections, many governments imposed nationwide lockdowns and social-distancing measures thereby restricting the movement of people and encouraging citizens to stay at home. These lockdowns consisted of the closing of schools, businesses, shopping malls, day-care centres, and general public spaces. Aside from the physiological effects of COVID-19 and the deaths associated with it, there has been a multitude of economic implications, as well as numerous psychosocial effects on the human population as well (Dubey et al., 2020).

1.1. Aim of Study

The aim of this study was to investigate the impact of COVID-19, lockdown, and social distancing on the psychosocial and cognitive development of children between the ages of 6-13-years-old, according to the parental perception thereof.

1.2. Background and Rationale

Whilst lockdowns, social distancing, as well as quarantines and isolations affected the majority of people, children, in particular, had a unique experience. With the compulsory closure of schools, which affected approximately 17 million learners (Statistics South Africa, 2022), educational institutes resorted to remote learning options such as online classes or rotational learning, which had a plethora of effects on education during the COVID-19 pandemic (Hoofman & Secord, 2021; Jalongo, 2021). Within South Africa, only 11.7% of schools had the facilities to offer online learning during the level 5 lockdown, whilst most of the other schools had to cease schooling options. Post level 5 lockdown, and when schools were allowed to open again, most schools opted for rotational learning options instead; in large part due to the urban-rural divide which is prominent within the country (Statistics South Africa, 2022). Schools in urban areas had better resources available to aid learning

amidst the pandemic however, poorly funded rural schools with larger class sizes and limited facilities did not. Aside from the learning disadvantages that stemmed from online learning, which included but were not limited to, difficulty in upholding academic integrity (Mukhtar et al., 2020), children from a lower socioeconomic background with limited access to technology and unstable internet connections were unable to make this shift to online learning. Many learners who attended public schools at the beginning of the pandemic did not have the option of online schooling due to the limitation of resources. This in turn resulted in an incomplete school year with learners being approximately a year behind where they should be, according to data acquired by the United Nations Children's Fund (UNICEF, 2021).

In addition to the disruption to the educational system, a number of guidelines were imposed, and other preventative measures were rendered mandatory. This included the wearing of face masks, restricted access to recreational activities or social events, social distancing, as well as quarantines or isolations. These restrictions which were commonly referred to as the "new normal" could be considered the only normal children would know for a significant period of time. These factors along with the disturbance to the child's environment contribute to the need for the exploration of the impacts the restrictions imposed by COVID-19 had on the developmental trajectory of children in the South African context. The diversity of the many sectors within South Africa needed to be considered as the impact of COVID-19 was not unidimensional in nature. The pandemic affected people to varying degrees, with those from disadvantaged backgrounds suffering the brunt of the effects (Mbunge, 2020). This is not to say those from more advantageous backgrounds were immune to the impacts, but rather that the different sectors within South Africa were affected on different scales. Prior research (Dubey et al., 2020; Mbunge, 2020; Nicola et al., 2020) regarding the pandemic focuses on the psychosocial impacts of COVID-19 and the

restrictions thereof on adults in particular, with research relating to children being limited or being conducted in other countries. This study however, aimed to explore the impact of COVID-19 on the cognitive and psychosocial development of children between the ages of 6 and 13 years old in South Africa and compare and contrast the results in regard to the differing sociodemographic variables. Additionally, this paper focused on the effects of the level 5 and level 4 lockdowns implemented between the 26 March 2020-31 May 2020; and the staggered resumption of school attendance throughout 2020; and thereafter the lingering effects of the preventative measures of the pandemic. The exploration of the long-term implications the COVID-19 restrictions had on children's development is important for parents, teachers, and other professionals to be aware of in an effort to provide the relevant support to the children when needed.

1.3. Chapter Descriptions

Chapter 2 begins with a theoretical framework on which this study was based. It then goes on to discuss the literature surrounding the COVID-19 pandemic and the impacts it has had on all aspects of human life. The chapter closes with the questions that guided this research.

Chapter 3 is concerned with the methodology employed in this research. It describes the way in which the research was conceptualised by explaining the research design, the sampling methods, the procedure, the instruments used and the means of measure. It also describes the way in which the data analyses occurred. It then ends with the ethical considerations employed in conducting this research.

Chapter 4 contains the analyses conducted and the results of this research. It begins with the quantitative data and thereafter moves to the results of the qualitative analysis.

Chapter 5 concludes this study with a discussion of the findings in relation to the existing literature on the topic. The limitations of the study are also mentioned as are the directions for future research.

2. LITERATURE REVIEW

2.1 Introduction

This chapter aims to provide a detailed overview of the literature surrounding the COVID-19 pandemic, the preventative measures that occurred as a consequence thereof, including the lockdown and social distancing measures, as well as the impact these measures had on the general public with a particular focus on children and adolescents and their development. The chapter begins by introducing and discussing a theoretical framework which explores children's development and the factors that may influence it. It is followed by a section pertaining to children's development, and the factors which contribute to it. Subsequently, COVID-19 will be discussed followed by the impacts it had on various sectors. The chapter will conclude with the research aims and research hypotheses.

2.2. Bronfenbrenner's bioecological systems theory

According to Urie Bronfenbrenner's bioecological model, human development is defined as "the phenomenon of continuity and change in the biopsychological characteristics of human beings, both as individuals and as groups." (Bronfenbrenner & Morris, 2007, p. 793). This ecological theory places emphasis on the person-context interrelatedness (Tudge et al., 2009). There are four elements that simultaneously influence development, namely Person, Process, Context, and Time (PPCT). The first of these four principal components, Process, involves proximal processes which is a form of interaction between organism and environment that is primarily involved in human development. This ability to influence development changes as a function of the characteristics of the developing Person; of the environmental contexts both immediate and remote; and of the Time periods in that proximal processes occur (Bronfenbrenner & Morris, 2007).

As Process is the core of the bioecological model and constitutes the primary mechanism in development, proximal processes involve interaction in the immediate environment. Aside from the genetic and biological aspects of the Person, there are three characteristics which accompany an individual into any social situation. These are demand, resource, and force characteristics. Demand characteristics refer to those which are regarded as an immediate or personal stimulus to another person and may influence interactions that occur initially. These include aspects like physical appearance or age. Contrastingly, resource characteristics are those which are not initially evident but may be induced from the apparent demand characteristics. These include mental, emotional, social, and material resources. Force characteristics involve temperaments, persistence, and motivation. Context refers to the environment and consists of four interrelated systems. The microsystem involves the immediate environment of the child which includes family, friends, peers, and school which has a direct effect on the child. The mesosystem is the second layer, and it contains the interactions between the different influences within the microsystem such as the relationship between parents and teachers or siblings and friends. The exosystem is the third layer and does not contain the child directly, but rather consists of one of the microsystems and an external force, such as the relationship between a boss and the child's parent which would have an indirect impact on the child. The outermost layer is the macrosystem and it contains the outside existing forces which may impact the growth of a child, such as religion, culture, or socioeconomic status. The last element, Time is divided into three subfactors. Micro-time, which refers to what occurs during a specific interaction, meso-time which involves how interactions occur consistently in the developing individual's environment, and macro-time which represents changes in times or environment. (Bronfenbrenner & Morris, 2007; Tudge et al., 2009).

Tudge et al., (2016) suggests that when using the bioecological model in a study, certain basic elements are to be utilized. Initially, there should be a focus on the relevant proximal processes that are suggested to be associated with the developmental outcome of the study. In the current study, the outcome of interest relates to children's cognitive and psychosocial abilities, and as the COVID-19 pandemic imposed relatively drastic limitations to the proximal processes the child experienced, these were restricted to immediate family members; or were introduced virtually; or which were hampered by mask wearing. Thereafter, Person characteristics should have at least two levels of a single characteristic in order to determine how the Person characteristics influence proximal processes. Next, when considering how Context impacts proximal processes, there should be at least two or more groups included in a research design that are hypothesised to be pertinent to the proximal processes under consideration. This study will look at how the environments surrounding the child impacted their development, and the way in which the macrosystem imposed regulations which impacted the exosystem and in turn impacted the microsystem of a child. And lastly, with regard to Time, developmental studies should be longitudinal, however, due to the time constraints placed on this research report, a longitudinal study was not possible.

Regarding the COVID-19 pandemic, as a theoretical framework, Bronfenbrenner's theory explains the influences of people and the environment on the development of a child. All of the bioecological domains were impacted in some way by the pandemic and thus could have a direct or indirect impact on the development of children.

2.3. Child development in relation to the environment

Along with the initial outbreak of the virus being a highly stressful period of time due to the media sensationalism surrounding the pandemic, there was an increase in fearmongering which caused a direct rise in panic and stress in society (Freckelton, 2020). Alongside that, the COVID-19 preventative measures required people to remain at home for

extended periods of time and maintain social distancing from family, friends, and peers. The way society functioned was also altered by means of remote working and learning conditions which occurred simultaneously for parents or caregivers and children. This transfer to being at home full-time was unparalleled for many members of society. Depending on the home environment, all of these consequences which resulted from the lockdown could be considered as either positive environmental factors or it could be considered as multiple adverse conditions depending on the home environment. Bronfenbrenner's bioecological theory discusses the role of the environment in relation to the child's development by means of the Context element, therefore the home environment during the lockdown will be explored further in this review.

2.3.1. Cognitive and psychosocial development

Human development occurs as a result of interaction between certain congenital conditions and the developmental environment (Yang et al., 2021). During early childhood, development is associated with external factors such as environmental factors, socioeconomic factors, relationships with parents, and even nutrition (Yang et al., 2021). There are many facets to development, which include psychosocial, emotional, and cognitive. As described in the theoretical framework in section 2.2, the environment that a child is a part of, including their interactions with others, impacts their development.

Psychosocial development involves the way in which an individual's personality and social skills develop (Haddad, 2019). It includes the way in which an individual's needs are interconnected with the demands of society. Psychosocial development relates to overt behaviour as well as social cognition.

Cognitive development refers to the development of knowledge and skills necessary to allow children to think, reason, and problem solve. Research has suggested that there are

numerous factors that contribute to the cognitive development of children, some of which are biological, environmental, socioeconomic, and psychosocial in nature (Drago et al., 2020). The biological factors include a low birth weight or short gestational duration; environmental factors include home environment or access to healthcare; socioeconomic factors involve those relating to parental income or assets; and psychosocial factors include child stimulation and learning opportunities (Ranjitkar et al., 2019). These factors could either have a positive or negative effect on the development of a child.

Additionally, with reference to the theoretical framework mentioned in section 2.2, biological factors which impact intelligence or skills could contribute to the development of an individual. These factors mentioned could form a part of the Person element of the bioecological framework, along with other biological factors such as age, gender, or appearance.

2.3.2. Gender in relation to cognitive and psychosocial development

Differences in sex can be identified early on in development. These differences become more pronounced as development progresses and impact a vast spectrum of characteristics including physical, behavioural, cognitive, and psychological domains (Szadvári et al., 2023). Differences are also evident in the temperament and personality aspects of males and females (Szadvári et al., 2023). Cognitive attributes including memory, perception, attention, language, and video spatial processing are different between males and females. Studies have shown that males are advantageous in aspects of mathematical abilities, and spatial and working memory; while females perform better with regard to verbal fluency, fine motor skills, perceptual speed, and accuracy (Upadhayay & Guragain, 2014).

2.3.3. Environment and development

Additionally, environmental stress or adversity experienced in early childhood could impair cognitive development. Multiple adverse conditions experienced by an individual results in inferior cognitive outcomes compared to singular adversities (Guinosso et al., 2016). In the case of COVID-19, it was considered to be an infectious disease and infectious diseases are considered to be risk factors for poor cognitive development (MAL-ED Network Investigators, 2018).

Multiple studies have suggested that the home environment has an effect on children's health and development, and a positive home environment can improve children's cognitive development (Drago et al., 2020). Another study conducted by McCormick et al. (2019) found that a nurturing home has a strong influence on child cognitive development. Additionally, the home learning environment was found to be a protective factor for three aspects of social development, namely physical aggression, emotional self-regulation, and cooperative behaviour (Rose et al., 2017).

To illustrate the interaction of home environment and scholastic skill which in turn contributes to a child's cognition, the home literacy environment of a child is important in providing children with adequate support at home in developing literacy skills, and also in diagnosing any difficulties early on. A calm environment also has a positive effect on children's attentive abilities and language and reading acquisition. A study showed that preschool children with language difficulties and children with a familial risk of developing dyslexia experienced more environmental stressors and health risks than a control group (Dilnot et al., 2017).

2.4. COVID-19

Originating in the city of Wuhan, China, the outbreak of the coronavirus disease (2019), more commonly known as COVID-19, resulted in the World Health Organisation

(WHO) declaring a Public Health Emergency of International Concern which later resulted in the outbreak being declared a pandemic (Harapan et al., 2020; World Health Organisation, 2022). As of February 2023, there have been approximately just under seven million deaths which occurred as a result of this virus (World Health Organisation, 2023). The first recorded case of this virus was in December 2019 and within a month the virus spread exponentially on a global scale (Ciotti et al., 2020; Keni et al., 2020).

COVID-19 is a coronavirus disease which is an infectious disease resulting in respiratory illness caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (Harapen et al., 2020; Keni et al, 2020; Shereen et al., 2020; World Health Organization, 2022; Yang et al., 2020). The respiratory illness suffered by those infected ranges from mild to moderate and in extreme cases results in death. As it was estimated that the COVID-19 virus had a higher reproductive number than the 2003 SARS outbreak, a key factor in slowing the spread of the virus was disrupting the chain of transmission (Harapan et al., 2020). Thus, those infected or assumed to be infected with the virus were encouraged to remain in quarantine or isolation in order to interrupt the transmission of the virus (Harapan et al., 2020). This was also encouraged for those individuals who had been in contact with those who tested positive for COVID-19. As the virus continued to spread in over 210 countries and territories, countries like China and India began imposing a complete lockdown of the country in an effort to contain the rate of infection (Keni et al., 2020).

Due to the extremely high transmissibility of the virus, many other countries also began imposing a lockdown on their citizens which differed across countries but was essentially a “shut-down” of the country, in an effort to curb transmission through human contact (Onyeaka et al., 2021). This was essential due to the unknowns surrounding the virus in early 2020, along with no clinically approved vaccine or anti-viral available to combat the

virus (Shereen et al., 2020). A lockdown to this degree was unparalleled in the last century and was implemented on both domestic and international fronts (Onyeaka et al., 2021).

On an international front, countries and governments closed national borders thus placing a restriction on people and goods which hindered economic and human relations that were formally in effect between countries. Domestically, governments implemented stay-at-home orders thus confining people to their homes and restricting their movements, thereby limiting and in some cases ceasing daily human interaction.

In South Africa, in accordance with the Disaster Management Act (Act No. 57 of 2002), the country was placed in a National State of Disaster for approximately 750 days in an effort to reduce the risk of disaster. This allowed for the government to implement strategies which would reduce the rate of infections amongst citizens, as well as reduce the stress placed on the health care system and provide a monetary grant to those in need.

Amongst these preventions, within the first level 5 lockdown- which was the most intense lockdown- a stay-at-home order, along with social distancing, compulsory use of face masks, quarantines, isolations, the closure of schools, shopping malls, houses of worship etc. were implemented.

2.4.1 The physiological effects of COVID-19 on children.

Early medical literature suggests that children are less susceptible to contracting the COVID-19 virus; and in the event of contraction, the symptoms of the virus are far less severe than that of their adult counterparts (Ghosh et al., 2020; Lee et al., 2020; Zimmermann & Curtis, 2021). Research conducted in 2020 showed that children who were directly affected by the virus had milder symptoms and better immunity against it as opposed to adults who contracted COVID-19 (Dhochak et al., 2020). The exact reasoning behind why children tend to fare better than adults in the face of the virus has not yet been discovered. Reasoning varies with children thought to have lesser angiotensin converting enzyme-

2 (ACE-2) receptors, which are the receptors that the virus binds to, in the upper respiratory epithelium; as well as children having lower risk factors and better adaptive immunity against COVID-19 (Dhochak et al., 2020; Nikolopoulou & Maltezou, 2022). Another factor which was thought to contribute to children being less likely to get infected with the virus is due to the closure of schools, day-care centres, and other facilities frequented by children which resulted in less exposure to the virus (Dhochak et al., 2020). However, even when schools and day-care centres resumed operation, children still fared better in the event of contraction (Nikolopoulou & Maltezou, 2022).

Whilst in most cases children infected with the COVID-19 virus either had no symptoms or mild symptoms, some children are at risk of developing multisystem inflammatory syndrome (MIS-C) which is a life-threatening inflammatory condition (CDC, 2023). This condition causes inflammation of either internal or external body parts including vital organs such as the heart, kidneys, lungs, eyes, or skin (CDC, 2023). Due to the limited amount of information relating to the long-term effects of COVID-19 on children, the National Institutes of Health (NIH) Researching COVID to Enhance Recovery (RECOVER) Initiative will conduct longitudinal studies on both adults and children to determine the long-term effects of COVID-19 (NIH, 2021).

2.5. Prior Pandemics

The intermittent outbreak of infectious diseases has crippled nations and societies throughout history (Huremović, 2019). Aside from COVID-19, there have been five major pandemics which have occurred in this century. These were the 2009 H1N1 outbreak, the polio disease in 2014, the West African Ebola outbreak in 2014, Zika which occurred in 2016, and the 2019 Ebola outbreak in the Democratic Republic of Congo (Chakraborty & Maity, 2020). These pandemics or epidemics have affected all areas of human life, from social to

economic, and these effects are experienced long after the outbreak is contained (Huremović, 2019). All forms of human life are affected albeit to different extents. Previous pandemics have had negative effects on the psychology of people and society at large and it has also had negative sociological and economical effects (Akat & Karata, 2020).

Studies done during the 2003-2004 SARS outbreak have shown that hospital workers in Canada were subjected to substantial psychosocial, familial, and lifestyle effects (Nickell, 2004). Another study conducted in China during the same SARS pandemic revealed high post-traumatic stress levels correlated with fear of another SARS outbreak by participants (Wu et al., 2009).

Research conducted by Sprang and Silman (2013) reported on the levels of post-traumatic stress experienced after a pandemic by children as per parental perception suggests that children, as well as their parents, on a general scale suffer from post-traumatic stress. Additionally, children who were in quarantine or isolation have higher levels of post-traumatic stress prevalent, to the extent that it is comparable with children who suffer from post-traumatic stress disorder due to disasters or other major traumatic events. The study also found that high levels of post-traumatic stress in parents correlated strongly with high levels of post-traumatic stress in their children.

A systematic review by Meherali et al. (2021) found that elevated levels of depression and anxiety are prevalent in children and adolescents throughout the duration of and after a pandemic. Furthermore, a systematic review conducted by Araújo et al. (2021) of literature pertaining to the impacts of pandemics and social restrictions on the mental and developmental health of children and parents, found that epidemics can result in elevated stress levels in both parents and children, which begin with concerns over the child getting infected. The review also suggested that severe anxiety or depression may manifest in adults

as a result of epidemics, and in children, acute stress disorder, post-traumatic stress, depression and anxiety disorders may manifest. In addition, adverse childhood experiences may result in developmental delays and contribute to health problems in adulthood such as depression, substance abuse, cognitive impairments and other noncommunicable diseases.

These studies suggest the lasting psychosocial effects of pandemics, as well as large numbers of morbidities and fatalities. These outbreaks also cost billions in revenue as well as result in environmental changes (Chakraborty & Maity, 2020). As COVID-19 was declared to be the sixth international public health emergency, and due to the global severity of the virus as opposed to that of other outbreaks, the effects of the COVID-19 pandemic are expected to be more than that of previous outbreaks (Chakraborty & Maity, 2020; Keni et al., 2020). It is, therefore, necessary to take the impact of the virus on daily living, as well as the precautionary measures implemented into consideration when discussing the impact of COVID-19 on children's development.

2.6. The Global effects of COVID-19

The COVID-19 pandemic has caused a myriad of effects on a global scale. Multiple sectors were affected and are still recovering from the losses caused by the pandemic. A few of the sectors that were affected by the pandemic which in turn directly or indirectly affected human life will be discussed below.

2.6.1. COVID-19 and the economy.

The global economy was adversely affected and may suffer the greatest losses since the 2008-2009 recession (Bagchi et al., 2020). Historically, the disruptions caused by the COVID-19 pandemic on the economy were similar to those caused by previous infectious diseases such as the Black Death (1346-1353), the 2003-2004 SARS outbreak, and Influenza H1N1 however, on a greater scale (Shang et al., 2021). Due to the high transmissibility of the

virus, along with an increase in globalisation, more people and economies were affected by the COVID-19 pandemic than that of previous infections (Shang et al., 2021). In addition, because of the lockdown imposed, the supply chain was affected and the manufacture of essential goods was reduced (Guan et al., 2020; Shang et al., 2021). Additionally, international and most domestic flights, railway services, vehicle and business transports were also halted because of the imposed lockdown (Chakraborty & Maity, 2020)

COVID-19 has also had an impact on public finances with many governments facing fiscal deficits due to the measures implemented to provide an income to the unemployed or reduce tax revenues (Shang et al., 2021). Moreover, the economies of individual countries were also at risk of high inflation, as well as an increase in unemployment which resulted from the lack of productivity due to the lockdown (Chakraborty & Maity, 2020). The direct impact of COVID-19 also resulted in an increase in expenditure in order to provide treatment and offer rehabilitation for victims of the COVID-19 pandemic (Chakraborty & Maity, 2020).

Alongside the global economic implications of COVID-19, people suffered economically on an individual level. Many businesses were forced to shut down resulting in people losing their jobs and thus a loss in income. Many countries which rely on tourism as a primary source of income were also affected by the lockdown measures and travel bans (Chakraborty & Maity, 2020; Dubey et al., 2020). These countries also saw a rise in the closure of hotels, bed and breakfasts, restaurants, and other entertainment establishments which impacted individuals' incomes and job security (Sigala, 2020).

The financial implications of COVID-19 and the measures that resulted thereof are important to consider as the financial status of families during the pandemic indicated the type of school that children attended, as well as their living conditions. As discussed in section 2.7, the level of resources available to a child in an educational context is largely

dependent on the type of school attended by a child. Furthermore, the financial constraints that arose due to the pandemic contributed to violence against women and children during the lockdown (Mahlangu et al., 2022) as will be discussed in detail in section 2.8.4.

2.6.2 Effects of COVID-19 on the physical environment

Whilst the pandemic did have devastating impacts on society and individuals at large, the effects on the physical environment at large were positive. The restrictions implemented to impede the transmission of the virus had a unique effect on the physical environment. The imposed lockdown and stay-at-home order resulted in fewer vehicle transmissions and greenhouse gases being released into the atmosphere. Additionally, as many industries were non-functional during the lockdown, there was a decrease in industrial waste emissions (Chakraborty & Maity, 2020). Due to the lessening of pollution, ecosystems have recovered and there has also been a revival in the ozone layer in some places (Chakraborty & Maity, 2020). Moreover, air pollution has a direct impact on brain development and may impede children's cognitive development (Brockmeyer & D'Angiulli, 2016). These positive effects on the physical environment were largely unknown until well into the COVID-19 pandemic and is thus retrospective positives.

2.6.3. Other problems associated with COVID-19 and other pandemics

A review conducted by Jalongo in 2021 found that in pandemics, either previous or the current COVID-19 pandemic, numerous problems were identified, a few of which are mentioned and will be discussed hereunder: immense reorganization of familial life; limitations on children's lives result in disconnection from peers including interactions with peers at school, sports events or activities, or other informal settings; grief and mourning as a result of loss in the pandemic may not be resolved due to the overwhelming nature of the pandemic; loss of employment and economic difficulties may result in an increase in

displacement and cause family separations; an increase in poverty in children and food insecurity; the inability of families to provide adequate support, care, and education at home; an escalation in domestic abuse and child abuse; and a delay in intervention strategies in domestic or child abuse; an increase in fear, anxiety, stress, and post-traumatic stress disorder.

It is evident that pandemics not only impact the physical health of people but also has an effect on the mental health of individuals as will be discussed below in section 2.8.

2.7. Impact of COVID-19 on the educational sector within the South African context

Every part of the education sector was affected by the restrictions imposed to curb the rise of infections. From preschools to universities, these institutions were forced to close on a temporary basis globally (UNICEF, 2021).

The South African government imposed a compulsory closure of schools in March 2020 to curb the rise of COVID-19 related infections (Statistics South Africa, 2022). This led to remote learning for some children which began at the start of the level 5 lockdown, and rotational attendance learning options for other students when schools were able to reopen on the 01 June 2020. Other students did neither and were out of school for the majority of the school year (Statistics South Africa, 2022). This was because although the pandemic did appear to have a less severe impact on children (South African Medical Research Council, 2022), their primary caregivers were reluctant to expose the children to the virus and thus kept them at home; or because the educational institutions attended by the children closed permanently because of the pandemic (Statistics South Africa, 2022). Some schools also closed temporarily when an outbreak of the virus occurred, or when learners, students, or educators contracted the virus (Statistics South Africa, 2022).

The closure of schools which led to remote learning options included learning taking place by either a shift to online classes or by self-study for those from a more advantaged

background. For students who were able to shift to online learning, this style of education was unprecedented and was therefore accompanied by numerous obstacles. Because the response to the pandemic happened suddenly, adequate time to prepare for the shift to online learning was not an option. Some students also had internet connectivity issues or power outages and were thus unable to follow the school day along with their peers. This was a big adjustment for both learners and educators (Soudian et al., 2022).

Whilst in many societies, virtual learning and virtual school attendance became the norm (Hoofman & Secord, 2021), this was not the case in South Africa due to the major disparity in socioeconomic groups and the underfunded public education sector. Virtual, or online learning refers to the impartation of education or knowledge in a way that utilizes the internet and by use of digital devices conducted either synchronously or asynchronously (Hoofamn & Secord, 2021). However, the ability to access the fundamental hardware required for virtual learning to occur- a device to access the online classroom and a stable internet connection- was not accessible to everyone, even in developed and wealthier nations (Jalongo, 2021). According to Statistics SA, during the lockdown level 5, only 11.7% of South African schools had the facilities to offer online learning options (Statistics South Africa, 2022). This left the vast majority of the learners in South Africa without access to education during the highest level of lockdown. More than 70% of the students in South Africa living in poor households or in rural areas did not have access to remote learning (Statistics South Africa, 2022).

For those learners from a more disadvantaged background who were unable to gain access to online learning, either because they did not have the facilities for it (computers, tablets, or smartphones and a stable internet connection) or because their schools were not equipped for online learning, education was halted for the entire duration of the level 5

lockdown, as well as for most of level 4 and when education resumed it was a very staggering process (Soudian et al., 2022) which included rotational attendance options

The transition to online learning also impacted the ability of educators to impart knowledge. This included the performance of teachers and the quality of education they were able to provide (Rasmitadila et al., 2020). Teacher willingness to adapt to virtual learning options was varied as some educators, especially those who previously made use of technology in their practice, considered it to be an easier transition, whilst most educators considered it to be something they had to learn as they were teaching thus complicating matters further (Trust & Whalen, 2020).

Many educators had concerns over the closure of schools as well. A survey of educators conducted across 89 countries in March 2020 found that educators were concerned about ensuring learners had continued access to education; whilst simultaneously providing support to those learners who struggled with independent study, as well as in amending curricular priorities, and providing students in need with food and adequate social services (Reimers & Schleicher, 2020). Over the recent years researchers have suggested that educators were unprepared to switch to virtual modes of education, and a study conducted by Trust and Whalen (2020) confirmed that as the unpreparedness, lack of training, and difficulty in adapting material to an online format experienced by educators created additional stressors.

Additionally, whilst in a normal school setting, the schoolwork that occurs is generally between the educator and the students, in a school from home perspective, the parent is also involved in the education impartation process and thus requires a firm understanding of the subject matter in order to provide the learner with adequate support (Rasmitadila et al., 2020). This poses challenges as parents do not always have a firm grasp

on all subject matter and may not have the time or abilities to assist the child as parents were also working from home.

Aside from the learning aspects which were affected by online schooling options, there were additional drawbacks associated with virtual learning, some of which include educator's limitations in ensuring the children were present in class, in cases in which cameras were not on, or that children were not occupied with other activities whilst a lesson was ongoing; or hackers gaining access and disrupting lessons and the broadcast of inappropriate information or confidential matters (Jalongo, 2021).

The vast amount of school time lost due to the virus contributed to the loss of peer support in a social setting (Jalongo, 2021). Another of the challenges faced by individuals who switched to virtual learning options was that of not having a designated study space or area due to certain conditions at home which prevented this from occurring. By not having a designated study space, many learners were left distracted and unable to focus which poorly affected their studies (Jalongo, 2021). Furthermore, a survey of educators indicated a general decrease in student morale (Rasmitadila et al., 2020).

When the lockdown moved from level 4 to level 3, schools were given permission by the government to reopen on the basis of a risk-adjusted differentiated strategy. Only schools that were able to comply with the preventative measures of ensuring social distancing, and schools that were able to operate at 50% capacity were allowed to reopen; and had to conduct school on the basis of a rotational learning system in which attendance occurred in shifts with certain grades or classes attending schools on certain days (Statistics South Africa, 2022). This resulted in a vast loss of the academic year.

For most schools in lower socioeconomic areas and disadvantaged communities, there was insufficient classroom space available to accommodate learners while maintaining social

distancing measures by keeping one and a half metres between students (Maree, 2022). Additionally, schools in poorer areas with limited clean water supply were hindered in their ability to implement the advised hygiene measures and constant hand washing associated with reducing the spread of the virus (Maree, 2022; Pillay, 2021). Along with the losses incurred by those students who did not have access to remote learning options during the closures of schools, the learners from poorer communities were the most disadvantaged in education acquisition during the COVID-19 lockdowns and missed out on the most school.

The closure of schools not only resulted negatively in education acquisition and achievement, but it also disrupted the other functions provided by educational institutions. As schools provide more than education for a lot of individuals, the closing of schools affected those who rely on school for meals, shelter, and health. These individuals fall more under the lower to middle socioeconomic subset of people (Hoofman & Secord, 2021).

Female learners in South Africa were at an increased risk of school disengagement over their male counterparts due to the disruptions caused by the COVID-19 pandemic as females suffer the brunt of gender-related inequalities and vulnerabilities, including violence and abuse (Duby et al., 2022). A review conducted by Rafaeli and Hutchinson (2020) focusing on the secondary impacts of the COVID-19 pandemic on women and girls in Sub-Saharan Africa found evidence to suggest that women and girls in sub-Saharan Africa are at a greater risk of suffering negative secondary impacts of the pandemic. Among these negative impacts include increased poverty rates; loss of economic independence; unplanned pregnancies; reduced access to healthcare and sanitation; an increase in the rates of school dropouts and child labour in adolescent girls; and an increase in food insecurity and malnutrition (Rafaeli & Hutchinson, 2020). Furthermore, research suggests that a gender disparity exists in digital literacy skills in sub-Saharan Africa with female learners having experienced more learning losses due to social inequalities and technological constraints

which hindered their ability to access and benefit from online learning (Crompton et al., 2021).

2.7.1. Prolonged school absenteeism

School absenteeism negatively impacts the educational, emotional, and social development of children (Rasasingham, 2015). Prolonged school absenteeism in adolescence causes an individual to lose social and academic benefits associated with attendance at school. Some of these disadvantages continue into adulthood and may include mental disorders, financial constraints, and social and relationship difficulties (Hawkrigg & Payne, 2014).

Ceasing educational acquisition without having attained minimal academic certification is termed as school 'dropout' and comprises of a cumulative process of disengagement, with causal factors incurred at the individual, social, as well as the institutional level. School dropout is associated with school absenteeism and correlates with school quality and socioeconomic status (Duby et al., 2022). In South Africa, the risk factors associated with school dropout is being female, as well as low family socioeconomic status, inferior school facilities and infrastructures, poor quality of education, race, household responsibilities, and the educational attainment level of parents (Duby et al., 2022).

The abrupt closure of schools globally as a result of the pandemic resulted in many students missing out on school; and research has hypothesised that the extended period of time out of school may impact student achievement (Kuhfeld et al., 2020). The literature supporting these claims with regards to the effects of school nonattendance has been based off of the closure of schools for holiday periods or weather conditions. However, there is not sufficient research to date to suggest any lasting effects of school absenteeism as a result of the pandemic and therefore this requires more research (Nathwani et al., 2021).

Most of the previous research conducted was done in 2020 or 2021 whilst lockdown measures were still in place, albeit to varying degrees. Due to this, it was too early for researchers to find any long-term effects of the lockdowns. Whilst the pandemic is still not over, South Africa is no longer declared to be in a state of disaster which is why this study aimed to address the research questions in conditions that were considered to be the "new normal".

2.8. Mental effects of pandemics on people

Scientific research has shown that environmental influences may modify genetic predispositions, such as those that occur as a result of pandemics, and may affect learning capacities, adaptative behaviours and lifetime mental and physical health (Araújo et al., 2021). Child development is also thought to be impacted as a result of epidemics or pandemics in which social isolation, protective measures against the spread of infection and the increased level of stress in parents or caregivers are evident (Araújo et al., 2021). These factors may contribute to toxic stress which results in a potential loss of brain development, cognitive impairments, and mental and physical health (Araújo et al., 2021). The following section discusses the psychosocial impacts of COVID-19 on the general population. It is then followed by a section pertaining to the psychosocial effects experienced by children specifically and thereafter concludes with a section concerning domestic abuse and abuse that occurred as a result of the pandemic.

2.8.1. Psychosocial impacts of COVID-19

On an individual level, there are multiple psychosocial aspects pertaining to an outbreak of a pandemic. Fear of contracting the virus, lack of information pertaining to the virus and uncertainty thereof, as well as widespread fear around the virus due to technology and the media cause an increase in mass hysteria, fear, and anxiety (Ai et al., 2021; Dubey et

al., 2020; Su et al., 2021). Lockdowns and social distancing may also contribute to anxiety and depression for those individuals who were unable to observe the lockdown with a support system, and conversely for those who live in a toxic home environment (Dubey et al., 2020).

The lockdown that ensued as a result of the COVID-19 pandemic was implemented in order to protect people from contracting the virus. This measure that aimed to protect the physical health of individuals had negative consequences on the mental health of people (Atalan, 2020). Some of the psychological outcomes that occurred as a result of the lockdown were an increase in depression, anxiety, sleep disorders and post-traumatic stress disorders (Onyeaka et al., 2021). The reasons as to why psychological distress was on the rise differed, with reasons including fear of contracting the virus and fear of death as a result of it which led to feelings of anger, confusion, and anxiety (Onyeaka et al., 2021). A review by Brooks et al. (2020) on the psychological impact of quarantine found that most studies suggested negative psychological effects of quarantine including anger, confusion, and post-traumatic stress symptoms. Quarantine duration, fears of contraction, frustrations, financial loss, inadequate information pertaining to the virus, inadequate supplies, and stigma were found to be some of the stressors. Research regarding previous pandemics and quarantines has also shown that quality of life and wellness were negatively affected due to infectious illnesses and the result thereof (Jalongo, 2021). Thus, the effects of pandemics on the mental health of individuals occurs either directly or indirectly. A direct impact of a pandemic on an individual includes increased anxiety because of the prevalence of the pandemic while an indirect impact would involve the emotional stress incurred due to a direct outcome of the pandemic. To illustrate this point, as unemployment also increased due to the adverse effects of the lockdown on the economy, unemployed individuals were at risk of acquiring anxiety or affective disorders (Teo & Griffiths, 2020).

2.8.2. Psychosocial impact of COVID-19 on children and adolescents

As was found with adults, the stressors involved in the psychosocial impact of lockdowns and quarantines on children and adolescents include frustrations, fears of contraction of the virus, prolonged duration of lockdowns or quarantines, boredom, lack of in-person contact with peers, teachers, and friends, negative home environments including insufficient personal space at home, and economic stress of the family (Wang et al., 2020). Furthermore, as companionship is vital for development, quarantines or isolation would have negative impacts on children (Liu et al., 2020).

Children who were infected by the COVID-19 virus and needed isolation or quarantine to minimize the risk of spread to members of their household may require special attention to address fear, anxiety, or any other psychological effect which stemmed from the response to positive infection (Dubey et al., 2020). The social distancing measures also contributed to feelings of loneliness (Onyeaka et al., 2021). In relation to children's social-emotional development, the majority of children have lost approximately a year or more worth of peer interaction, especially in group settings (Jalongo, 2021).

2.8.2.1. Social baseline theory. Mental challenges faced by children and their behaviour may be explained by social baseline theory. This theory relies heavily on the social environment for optimal functioning. As peer and educator interaction was reduced as a result of the pandemic, social baseline was out of equilibrium for individuals which resulted in increased distress (Gross & Medina-DeVilliers, 2020).

Social baseline theory posits that the neural and cognitive processes that occur operate at a baseline. Gross and Medina-DeVilliers (2020) describe the theory as,

> "Social baseline theory suggests that, as a social species, our baseline assumptions in physiological, cognitive, and neuropsychological processes are situated in social contexts. In other words, in an economy of action framework our baseline defaults to expect social resources and social support." (p. 8)

As this theory maintains that human ecology is primarily a social ecology, it will be simpler and less energetically draining when humans regulate emotion and act when in vicinity to the familiar and predictable (Beckes & Sbarra, 2022). As this theory focuses on remaining in homeostasis, human action is guided by social relationships by which the amount of effort needed to reach goals is reduced by means of these social relationships. Coan and Sbarra (2016) state that according to the social baseline theory, the human brain adopts proximity to social resources. Social resources are those which encompass the inherently social environment to which it is adapted. Therefore, the human brain requires access to relationships that are characterised by joint attention, interdependence, and shared goals. When access is not granted, there is an increase in the cognitive and physiological effort employed as the brain sees less resources available and prepares the body to conserve energy or supply its own energy. This increase in the physiological and cognitive exertion results in distress and negatively affects health. It is therefore vital to maintain equilibrium.

2.8.3. Lifestyle of children in relation to the COVID-19 pandemic

A review conducted by Chawla et al. (2021) suggests that for children and adolescents, the fear surrounding the pandemic was two-fold. On one side, the fear was directly associated with COVID-19, and on the other, it was indirectly due to COVID-19 and what ensued thereof in response to the pandemic. Anxiety and depression were also shown to increase alongside an increase in screen time and a sedentary lifestyle (Chawla et al., 2021).

The mental and physical health of children is influenced by certain factors which occur as a result of pandemics, such as stress, social isolation, changes in routine and sleeping patterns, as well as excessive screen use either because of education or recreation, limited physical activity and overindulgence in bad eating habits (Araújo et al., 2021). Physical activity is known to improve mental health and clarity (Paluska & Schwenk, 2000), and thus mental health was affected as the COVID-19 related restrictions limited outdoor time and

physical activity; thereby increasing time spent indoors using mobile devices, computers, or watching television (Ai et al., 2021; Chawla et al., 2021).

Sedentary behaviour, such as the limited physical activity that resulted due to the lockdown in which people were prohibited from leaving their homes except in specific circumstances, has been shown to have adverse effects on the physical health of both adults and children (Teychenne et al., 2015). Additionally, emerging literature suggests that sedentary behaviours may have adverse effects on mental health such as depression and anxiety (Allen et al., 2019; Huang et al., 2020; Teychenne et al., 2015). A 2020 meta-analysis conducted by Huang et al. found that sedentary behaviours that are more passive in nature, such as watching television could increase the risk of depression, whilst a systematic review found that as sedentary behaviour increases, so does the risk of anxiety (Teychenne et al., 2015).

Research suggests that when children do not attend school, for example during weekends or over holiday periods, there is a decrease in their physical activity time, as well as an increase in the amount of screen time used, irregular sleeping patterns, and poor dietary choices which all contribute to weight gain and a loss of cardiorespiratory fitness levels (Brazendale et al., 2017). These negative health effects are also hypothesized to be worse when coupled with the fact that children are confined indoors during periods of lockdown, and do not have interactions with friends and peers due to the social distancing measures (Wang et al., 2020). This was supported by the findings of a study conducted by Xiang et al. (2020) which found that before the pandemic children spent 540 minutes per week engaged in physical activity, which decreased to 105 minutes per week during the pandemic. Screen time was also found to have increased during the pandemic to 30 hours per week. Aside from online schooling, this study also found that leisure screen time increased.

2.8.4 Child abuse and domestic violence amidst the pandemic

The disturbances caused by the response to the pandemic may be disruptive to the regular lifestyles of children and could potentially result in distress and confusion (Dubey et al., 2020). Children are also found to be more demanding, impatient, and hostile and this could result in emotional distress or make them the recipient of violent behaviour from parents who are overly pressured because of the pandemic (Dubey et al., 2020).

Far before the COVID-19 pandemic saw the world in disarray, another plague that besot the world was that of domestic abuse and violence towards women. During the pandemic and the implemented lockdown, violence against women increased (UN Women, 2020). The abuse experienced by women as a result of the lockdown had a significant effect on the mental health of those women during the pandemic (UN Women, 2020). Socioeconomic factors, specifically economic stressors played a major part in domestic abuse cases during the pandemic. Whilst the data acquired from UN Women cited above is specific to violence against women, the exposure of a child to domestic violence has negative consequences for that child (Evans et al., 2008). Studies found that children who experience adverse childhood experiences such as being abused or witnessing domestic violence are at risk of developing physical and mental health problems (Gilbert at al., 2010).

The implementation of the lockdown resulted in a rise in domestic violence and child abuse cases (Ghosh et al., 2020). During the COVID-19 pandemic, a paediatric trauma centre reported an increased proportion of physical child abuse injuries (Kovler et al., 2021). This leads to the inquiry as to how many cases there were of children who were the victims of child abuse during the pandemic, that were not reported or found out.

With the closure of schools, for some learners, the home environment was not a safe space. Children who were victims of abuse at home or faced adverse conditions did not have the social support provided by peers and were unable to seek help from teachers or

counsellors at school. Clemens et al. (2020) state that three patterns emerged as a result of the pandemic. Some children appeared to prosper in a quieter home environment and flourished with the support and structure provided by caregivers. Online school was a pleasant experience for these learners and they were safe from bullying and social exclusion. Another group of children appeared to be adversely affected but to a mild extent. There were few resources available to supplement their developmental opportunities and thus online education was not as accessible to them. Their social skills were also affected as they were unable to interact with peers and therefore unable to practice social and emotional treatment. The last group consisted of those individuals who belonged to families who had increasingly negative interactions with each other and they were therefore deprived of the safe and secure environment provided by educational institutions.

Additionally, the increased stress in the home environment with the concurrent occurrence of online school for children and remote working conditions for parents were suggested to negatively impact family functioning (Teo & Griffiths, 2020). As online learning requires more input from parents or caregivers this may add to the stress already being experienced in the home environment. Furthermore, financial difficulties have been associated with negative parenting behaviours (Teo & Griffiths, 2020), and as unemployment increased due to the effects of the pandemic on the global economy, child abuse and domestic abuse also increased.

Globally as more people were confined to their homes, depending on their living arrangements, being in close proximity to family or household members on a constant basis without the intermediary of school or work other activities that one could engage in outside the home resulted in toxic home environments for some (Mahlangu et al., 2022).

In South Africa, a study conducted by Mahlangu et al. (2022) found that the negative economic impacts of the COVID-19 pandemic increased the risk factors for violence against women and children. The study also found that women experienced both physical and emotional abuse and physical violence was mostly used against children. Socioeconomic disparities regarding violence in the home were also found, with men from higher socioeconomic families exhibiting violent behaviour due to the unfamiliar and challenging experience of home confinement with their spouses; while men from lower socioeconomic families perpetrated violence due to unemployment and earning reductions which caused economic difficulties and resulted in food insecurity.

2.9. Conclusion to literature review

COVID-19 was an incomparable historical event that occurred during the past century. As a society, we were not ready for a pandemic of such epic proportions. The effects of the virus were found in almost all facets of human life. As the was virus spreading at alarming rates throughout the world, societies and governments tried to keep up and lessen the rates of infection. In general, children are adaptable and are able to adjust to different situations. However due to the foreign nature of this global health crisis, and the preventative measures that occurred thereof, the ability of children to adapt was not as simple as mentioned in the literature cited above.

Much of the previous research relating to the effects of the COVID-19 pandemic was conducted very soon after the pandemic with multiple studies being published whilst lockdown measures were still in place, albeit to varying degrees. Due to this, it was too early for researchers to find any long-term effects of the lockdowns. Due to that, this study aims to determine whether the COVID-19 pandemic and the preventative measures that occurred thereof impacted children's cognitive and psychosocial development.

2.10. Research questions

There were two primary research questions which guided this research in relation to children 6-13 years old.

- Did COVID-19 and the preventative measures that occurred as a result thereof have an impact on children's cognitive development?
- Did COVID-19 and the preventative measures that occurred as a result thereof have an impact on children's psychosocial development?

  The study then further expanded on the above questions in order to ascertain the type of impact the pandemic may have had and to supplement the questions posed above.
- Were there differences in the cognitive and psychosocial development of children who attended school consistently and those who did not?
- What implications did online schooling have for the child?
- Were there any psychological or behavioural changes that occurred in the child that could have been due to COVID-19 or the lockdown that resulted thereof?

3. METHODOLOGY

The purpose of this chapter is to provide a comprehensive detailing of the methodology employed in the collection of data and the analyses thereof. This section begins by describing the research design and thereafter includes the sample and the sampling process, the procedure by which the research was conducted, the instruments employed in the data collection process, the methods of data analyses, and thereafter concludes with the ethical considerations undertaken in the pursuit of this research.

3.1. Research design

This study followed a cross-sectional mixed methods approach to the research design. Within the data set, qualitative data was embedded into the questionnaire to provide a supplementation to the interpretation of the results of the quantitative data.

This cross-sectional research design was non-experimental in nature, with the aims to examine the data and explore whether the preventative measures of COVID-19 had an impact on the cognitive and psychosocial development of younger school going children, as per parental perception. Cross-sectional research involves the comparisons of two or more groups of people that pre-exist within a population. It also provides information relating to the frequency of outcomes or exposures (Setia, 2016). As there was no manipulation of independent variables involved, and no random assignment of participants to groups, this study was non-experimental in nature. In the present study, data collection occurred at a single point in time thereby rendering it difficult to derive causal relationships from this analysis (Setia, 2016). The participants that partook in this study were selected based on the specific inclusion and exclusion criteria of the study. Cross-sectional research designs are observational, inexpensive, and can be performed amidst time constraints (Setia, 2016).

The mixed methods research approach utilized in this study provided for the integration of both quantitative and qualitative research methods. Mixed methods approaches are considered beneficial as it allows for the provision of a greater extent of information yielded as opposed to singular approaches (Almalki, 2016). Quantitative research involves attributing numerical values to the variables under consideration, whilst contrastingly, qualitative research includes the collection of data in non-numerical forms (Gelo et al., 2008).

The quantitative data was analysed by means of frequencies descriptive and inferential statistics and the qualitative data was analysed by thematic analysis and would thus supplement the quantitative data.

3.2. Sample and Sampling

The target sample of this study was the parents or primary caregivers of South African school-going children between the ages of 6 and 13 across various socioeconomic backgrounds. This was to allow for the inclusion of a wide diversity of possible scholastic access and circumstance as possible. The target sample size of this study was the parents or primary care givers of 60 children. This target sample size was chosen based on central limit theorem which states that sample sizes of more than 30 have a sample distribution similar to that of a normal distribution (Fields, 2009).

Respondents were recruited on the basis of convenience sampling due to time constraints. The questionnaires were distributed electronically to eligible respondents enrolled in Wits Plus courses and thereafter snowball sampling was employed. The eligibility of respondents depended on whether the respondent had a child or children that fall within the age range of the study. Wits Plus offered a broad range of diverse respondents that fit the criteria of the study. Respondents were asked to invite family, colleagues, or employees (such as their domestic help) to participate in order to garner a more diverse sample. An email was sent out from the Registrar's office with a link to complete the questionnaire completely

anonymously. Electronic methods of data collection were used due to the convenience associated with it for both research purposes and participant convenience (Rice et al., 2017; Wright, 2005). However, electronic modes of data collection do come with limitations such as attaining a truly random sample of participants which creates a bias (Rice et al., 2017). By employing an online data collection program, only respondents who have the means to access the internet were able to participate.

The age range of 6-13 was at the time of data collection, and not at the time of the COVID-19 lockdown. In this research report, the term ‘participants’ will hereon be used when referring to the children and not the parents or primary caregivers who answered the questionnaire, whilst the term ‘respondents’ will be used to refer to the parents or caregivers who answered the survey.

The email with the link to the questionnaire was distributed in August of 2022 and the link stayed active till December 2022. A total of 39 responses were received.

The demographic data provided by the completed responses was checked for any missing data or ineligible participants and it was found that of the 39 responses recorded, 8 participants did not meet the eligibility criteria for the age range of the study, or insufficient information was provided regarding the ages of the children. Therefore participants 5, 11, 12, 15, 17, 23, 32, and 36 were excluded from the study and a total of 31 responses were accepted.

The current ages of the participants at the time of data collection ranged from 6 to 13 years old, thereby implying the ages of the participants ranged from 4-11 during the lockdown period. Table 1 shows the ages of participants and the frequency that occurred thereof.

Table 1

Frequency and percentage of age of sample

Age	*n*	%
6	1	3.2
7	5	16.1
8	4	12.9
9	4	12.9
10	4	12.9
11	8	25.8
12	2	6.5
13	3	9.7

N = 31

Whilst this study did aim to include all demographics, based on the responses received, all of the participants fell within middle to higher socioeconomic brackets. None of the participants lived in a township area, and based on the responses received, all of the participants had internet access even if all did not have access to online learning. Of the five participants that did not have access to online learning during the lockdown, all of them attended private schools. The reasoning as to why school was not an option for these five participants differs, however the most common reason that arose from the comment section was due to the young age of the participants at the time of the lockdowns, emphasis was not on curriculum-based learning from either the parents or the school. Another reason by which we were able to assume that the participants were not from lower socioeconomic

backgrounds was that even the public schools that the participants attended were better funded than those public schools that did not have any option to facilitate online school.

Participants were divided into groups based on gender, school type, and the amount of school missed as result of the lockdown. Thus, data analysis was limited to comparisons of males versus females; those attending private school and those attending semi-private or public schools; and those that had not missed any school time, those who missed between 1-4 months, and those who missed more than four months.

3.3. Procedure

Prior to the research collection process, ethical clearance was obtained by the University of the Witwatersrand's Human Research Ethics committee (non-medical). Once ethical clearance had been obtained, a pilot study was issued to 5 respondents, who were informed about consent, in order to ascertain the functionality of the questionnaire. These respondents were selected by the researcher using social media and offered the chance to partake in the piloting of the questionnaire. During piloting, consideration was given to address any potential emotional reaction caused by the questions in order to ensure all attempts were made to minimise this prior to general distribution.

Before the official questionnaires were distributed, permission from the university registrar was sought to gain access to the Wits Plus students. Wits Plus offers part-time undergraduate degrees or postgraduate programmes. As it is offered on a part-time basis, it caters to mature, working students, many of whom have children. Once granted, and once the pilot program was complete and the functionality of the questionnaire was assessed, the research commenced by the distribution of the email inviting eligible Wits Plus students to partake in the study and providing a link to the questionnaire within the email invitation. The email also informed the students about the study, explained consent, and invited eligible participants to partake in the study by following the link found in the email which took the

participants to a Google Docs web page to complete the questionnaire at the most convenient time for the participant. An instructional guide explaining the questionnaire and how the questions were to be answered was loaded onto the site with the questionnaire. This ensured that the respondents had an adequate understanding of the questionnaire and the way in which it was to be answered. It also clarified that participation was voluntary and interested respondents had to confirm on the site that they had given their informed consent prior to submission of the questionnaire. The link to the questionnaire remained active for five months following the distribution of the questionnaire.

Additionally, even though consideration to minimize any emotional reaction evoked to the questionnaire was addressed during the pilot program, resources were made available if the questionnaire caused any distress to arise to the respondents regarding their child's development.

Once the questionnaires had been completed, the quantitative data obtained was entered into an Excel spreadsheet and cleaned, coded and exported to the IBM Statistical Package for Social Science (SPSS) version 28 for analysis. The qualitative data was then analysed by means of thematic analysis as elaborated below.

3.4. Instruments

The questionnaire was a self-developed questionnaire with questions which focused on certain psychosocial and cognitive aspects. Parents or primary caregivers were required to answer the questionnaire in relation to the child's behaviour and abilities from pre-covid till the time of answering the questionnaire. The first part of the questionnaire focused on the demographic aspects of the parent or primary giver and child whilst the next part was a Likert type scale which focused on the cognitive and psychosocial aspects.

The Likert type scale was scored with response anchors that ranged from 1-5, Strongly Agree to Strongly disagree accordingly. Thus, a higher score on the scale implied

less changes were experienced by the individual. Items 15, 24, 29, and 30 were reversed scored.

Both the cognitive and the psychosocial scales were also checked for reliability by means of Cronbach's alpha. Cronbach's alpha is used to measure the internal consistency of a test or scale. A value of .70 to .95 shows a high measure of internal consistency (Taber, 2018; Tavakol & Dennick, 2011)

After each section of questions, a qualitative question consisting of an open-ended survey question was posed for further elaboration. Responses to these questions provided data for the qualitative analysis.

3.5. Methods of data analysis

The demographic variables that were measured were age, gender, school type, access to education during lockdown, the amount of school missed, type of accommodation, and the amount of people in contact with during the lockdown. Taking Bronfenbrenner's Bioecological Systems Theory into consideration, the relationship between the child and their environments was explored in order to address the research questions.

The results yielded from the demographic questionnaire assisted in splitting the children into several demographic groups which are mentioned above, as follows:

Gender: Male and Female

School type: Private and Semiprivate/public

School Missed: No school missed; 1-4 months; 4 months+

Participants were also grouped according to type of accommodation to determine whether contact with community during the lockdown impacted their cognitive or psychosocial skills. Participants were placed into two groups, based on those who did not have contact with neighbours and those who did. Participants who lived in free-standing

houses with no contact with neighbours were grouped together, and participants who lived in free-standing homes but had contact with their neighbours, as well as those living in flats, estates, or complexes were grouped in another group.

Because private schools in South Africa were better equipped to facilitate the migration of school to online classes or to provide more social distancing measures once school resumed, participants who attended private schools were placed in one group, whilst participants who attended semi-private or public schools were placed in another group to account for the lack of funds and availability of resources to support online learning or social distancing measures caused by the pandemic (Statistics South Africa, 2022).

After the data had been cleaned, coded, and exported into SPSS, descriptive statistics were used to analyse the demographic data and thereafter participants were placed in groups based on the results of the demographic data analysis. Descriptive statistics are used to summarize a data set and consists of three main types, namely measures of frequency, central tendency, and dispersion (Mishra et al., 2019). The measures of frequency utilized in this report was frequencies and percentages, the measures of central tendency used was the mean and median and the measures of dispersion included the standard deviation.

Due to normality being a prerequisite for many of the statistical tests, data was checked to ensure it met the normality requirement for parametric statistics to be employed by means of skewness, kurtosis, as well as the Shapiro-Wilks test of normality. Skewness refers to a measure of asymmetry of a distribution and is considered to be within range when it falls between -1 and +1, and kurtosis refers to the sharpness of a peak of a distribution and is considered to be within range when it falls between -1 and +1 (Mishra et al., 2019). The Shapiro-Wilks test was also used in order to establish normality as it is a more appropriate test of normality for smaller sample sizes of less than 50 (Mishra et al., 2019). Once

normality of the data was established, independent samples *t*-tests and a one-way analysis of variance (ANOVA) was used to address the research questions.

t-Tests are a parametric method of data analysis and are used when certain conditions regarding the sample are met, namely normality, equal variance, and independence. Independent sample t-tests are an instrument used to evaluate the means of two populations using hypothesis testing, when the groups that are under comparison are independent of each other (Kim, 2015).

One-way ANOVA is used to compare the means of two or more independent variables for one dependent variable (Ross & Willson, 2017)

Because this study intended to determine the differential effects of COVID-19, the sample population was divided into different groups in order to test the hypothesis as to whether COVID-19 and the preventative measures that arose thereof had an effect on children's cognitive and psychosocial development.

The qualitative data obtained was then analysed by means of thematic analysis. which was developed by Braun and Clarke (2006). Thematic analysis involves the systematic identification, organisation, and interpretation of patterns in a data set (Braun & Clarke, 2006). There are six phases involved in a thematic analysis which was used in this report:

Phase 1: Familiarisation of the data

This phase includes immersion of the data and becoming intimately familiar with the contents of the data set.

Phase 2: Generating initial codes

Phase 2 is when the initial codes are produced. Codes are used to identify and give a label to a feature of the data set that may be relevant to answering the research question

Phase 3: Searching for themes

This phase moves from coding to establishing themes by means of reviewing the data that was coded in order to identify broad topics or issues. A theme "captures something important about the data in relation to the research question, and represents some level of patterned response or meaning within the data set" (Braun & Clarke, 2006, p. 82).

Phase 4: Reviewing potential themes

The phase included revising the identified themes and checking the quality thereof.

Phase 5: Defining and naming themes

This phase involves providing definitions for the themes that emerged which are clear, unique and specific.

Phase 6: Producing the report

The final stage of a thematic analysis is the production of a research report and includes the integration of the themes that were discovered in an effort to answer the research question.

3.6. Ethical Considerations

In order to protect the rights of participants whilst maintaining research integrity and enhancing the validity thereof, the following ethical considerations were adhered to: non-maleficence, integrity, justice, and respect for people's rights and dignity.

Respondents were informed of the voluntary nature of the study and informed consent was obtained prior to data collection. Respondents were also be informed that choosing not to participate in the study will bear no negative implications; and participation in the study would not benefit the respondents in any way.

The eligible respondents of the study were parents or primary caregivers of children and were thus not a vulnerable population. The nature of the study would not cause harm to participants involved, however if any distress were to arise due to the questionnaire, respondents from Wits were directed to the University of the Witwatersrand's Counselling

and Careers Development unit and all other respondents were directed to the South African Depression and Anxiety Group, the details of which were attached to the email that accompanied the questionnaire. Transparency and integrity were adhered to and participants were allowed to withdraw from the study at any stage. As the data was submitted electronically, and no identifiable contact details were required, respondents were designated unique system generated identity numbers and thus confidentiality and anonymity were ensured. Respondents were informed that their data would be stored on a password protected computer which only the researcher and supervisor would have access to.

Respondents were also informed that the data acquired in the study may be published as part of a peer-reviewed journal article or a chapter in a book. They were also informed that they may request a copy of the study or a summary thereof, once the research is complete, from the researcher.

Additionally, ethical clearance for the pursual of this research was granted by the University of the Witwatersrand's Human Research Ethics committee (non-medical) (Ethics Clearance Protocol number: MAPSYC-22-03-Appendix).

4. Results

The purpose of this chapter is to provide the results obtained by means of the statistical and thematic analyses that were carried out. As this was a mixed-methods survey design, both quantitative and qualitative data analyses techniques were used. This section begins by describing the sample as per the demographic data and descriptive statistics and thereafter providing the results of the inferential analyses and subsequently moves on to the results obtained from the qualitative analysis.

4.1. Demographic Data of the Sample

The demographic variables that were measured were age, gender, access to education during lockdown, type of school attended during the lockdown, the amount of school missed due to the lockdown, accommodation, and level of contact with people outside of living arrangements, and the amount of people within a shared living arrangement.

Of the 39 responses recorded, 8 participants were excluded due to the ages of the participants not aligning with the focus of the study or being within the age range of 6-13 years old. Thereafter, the demographic data obtained was analysed by means of descriptive statistics and frequencies as shown in table 2.

With regards to school type, 51.6% of the sample attended private schools, 16.1% attended semi-private schools, and 32.3% attended public schools. Participants were thus grouped into two categories, those who attended private school in one group and those who attended a semi-private or public school in another group. Taking access to education into account, along with accommodation type, we were able to assume that the participants came from middle to upper income households. No participants lived in township or rural areas as Statistics South Africa (2022) reported that the rural-urban divide was clearly evident as learners in urban areas were offered more remote learning options than those in rural areas.

Table 2

Sociodemographic Characteristics of Participants

Demographics	*n*	%
Gender		
Female	18	58.1
Male	13	41.9
Access to education		
Yes	26	86.7
No	4	13.3
School Type		
Private	16	51.6
Semiprivate/Public	15	48.4
Amount of school missed		
None	10	32.2
1-4 months	11	35.5
4 months+	10	32.3
Number of people in contact with		
1-3	3	9.7
4-6	24	77.4
7+	4	12.9
Type of accommodation		
A	9	30
B	7	23.3
C	14	46.7
D	0	

Note. $N = 31$ Participants were on average 9.68 years old ($SD = 2.01$)

Regarding accommodation, participants were given four options to choose from,

A: a free-standing house with no contact with neighbours.

B: a free-standing house with contact with neighbours;

C: estates, complexes, flats, or townhouses

D: township.

An independent samples t-test was run to determine whether there was a difference in the cognitive and psychosocial abilities of children who maintained social distancing and did not have contact with others, and those who did not as is discussed in section 4.3.1.

Upon frequency analysis, it was evident that there was homogeneity in the following independent variable which is why group comparisons were not possible: People in contact with.

4.2. Measuring instruments.

Before inferential statistics were conducted, the reliability of the instruments used were tested and thereafter normality checks on the sample were conducted, the results of which are tabulated along with the descriptive data for the sample in Table 3.

To test the reliability of the instruments, the Cronbach's alpha was used to test internal consistency. Cronbach's alpha requires a coefficient of .7 or higher to be considered acceptable. Two separate scales of measure (instruments) were utilised to test cognitive development and psychosocial skills respectively. The cognitive scale consisted of 8 items ($\alpha = .89$), and the psychosocial scale consisted of 12 items ($\alpha = .88$).

Normality checks on the cognitive scale showed skewness of -.26 and kurtosis of -.58. The Shapiro-Wilk test of normality also showed normal distribution of the sample $W(31) = .97$, $p = .43$.

Normality checks on the psychosocial scale showed skewness of -.68 and kurtosis of .47. The Shapiro Wilk test of normality also showed normal distribution of the sample $W(31) = .96$, $p = .29$.

Table 3

Descriptive statistics and reliability of cognitive and psychosocial scales of measure

	Cognitive Scale		Psychosocial Scale	
	Statistic	Std Error	Statistic	Std Error
Mean	3.45	.157	3.51	.128
95% Confidence Interval for Mean				
Lower Bound	3.13		3.24	
Upper Bound	3.77		3.77	
5% Trimmed Mean	3.46		3.53	
Median	3.50		3.75	
Variance	.762		.505	
Std. Deviation	.873		.710	
Minimum	1.63		1.58	
Maximum	4.88		4.83	
Range	3.25		3.25	
Interquartile Range	1.38		1.00	
Skewness	-.256	.421	-.676	.421
Kurtosis	-.583	.821	.468	.821
Shapiro Wilk	.97, p = .43		.96, p= .29	
Cronbach's alpha	.89		.88	

Note. $N = 31$ (Cognitive scale- $M = 3.45$, $SD = .87$; Psychosocial scale- $M = 3.51$, $SD = .71$)

4.3. Quantitative Analysis

4.3.1. Inferential statistics

In order to test the research hypothesis as to whether COVID-19 and the preventative measures that occurred thereof impacted children's cognitive and psychosocial development, independent samples *t*-tests and a one-way ANOVA were used to compare the means of different groups of individuals. An alpha level of .05 was used to denote statistical significance. Independent samples *t*-tests were used to compare the means of gender, school type, and whether children had contact with neighbours or others during the lockdown; while a one-way ANOVA was used to compare the amount of school missed.

Once it had been determined that the assumptions of a *t*-test had been met, the independent sample *t*-tests revealed that there was no significant gender differences in the cognitive development between males (M = 3.63, SD = .96) and females (M = 3.32, SD = .81) , $t(29) = .96$, $p = .35$; $d = .87$. The tests also revealed that there were no significant gender differences in the psychosocial development between males (M = 3.54, SD = .80) and females (M = 3.48, SD = .66), $t(29) = -.22$, $p = .83$; $d = .72$.

Independent sample *t*-tests also revealed that there was no significant differences in both the cognitive development of children who attended private schools (M = 3.34, SD = .90) and those who attended semi-private or public school (M = 3.56, SD = .86), $t(29) = -.68$, $p = .50$; $d = .88$. Additionally, there were no significant differences in the psychosocial development of those who attended private schools (M = 3.52, SD = .83), and those who attended semiprivate or public schools (M = 3.49, SD = .59), $t(29) = .12$, $p = .90$; $d = .72$.

Independent sample *t*-tests also revealed that there was no significant differences in both the cognitive development of children who did not have contact with their neighbours during the lockdown (M = 3.6 , SD = .40) and those who lived in communal living and had

contact with their neighbours (M = 3.34, SD = 1.04), t(26.92) = .99 p = .17; d = .30. Additionally, there were no significant differences in the psychosocial development of those did not have contact with neighbours (M = 3.74, SD = .43), and those who had contact with neighbours (M = 3.37, SD = .81, t(27.82) = 1.66, p = .054; d = .53.

The findings from the independent samples t-test pertaining to gender and school type are tabulated in Table 4.

As school missed was categorised into three groups to account for those who missed no school, those who missed between 1-4 months, and those who missed more than four months of school, a one-way ANOVA was used to compare the three groups against both the cognitive and psychosocial scales. After ensuring that the assumptions of a one-way ANOVA was met and ensuring that the data was normally distributed and there was homogeneity of variance, a one-way ANOVA was conducted.

With regards to the cognitive development of children, there was no statistically significant difference between those who missed no school (M = 3.60, SD = .91), those who missed between 1-4 months of school (M = 3.17, SD = .87), and those who missed more than four months of school (M = 3.60, SD = .85), as determined by one-way ANOVA (F(2,28) = .85, p = .44). As for the psychosocial development of children, there was no statistically significant difference between the means of those who missed no school (M = 3.73, SD = .64), those who missed between 1-4 months of school (M = 3.33, SD = .64), and those who missed more than four months of school (M = 3.48, SD = .85), as determined by one-way ANOVA (F(2, 28) = .799, p = .46).

Table 4 shows the results of the t-tests which showed no statistically significant difference in any of the groups tested.

Table 4

Results of COVID-19 impact on children's cognitive and psychosocial abilities

Scale	*M*	*SD*	*M*	*SD*	t(29)	p	Cohen's d
	Male		Female				
Cognitive	3.63	.96	3.32	.81	.96	.35	.87
Psychosocial	3.54	.80	3.48	.66	-.22	.83	.72
	Private School		Semiprivate/Public				
Cognitive	3.34	.90	3.56	.86	.68	.50	.88
Psychosocial	3.52	.83	3.49	.59	.12	.90	.72

4.4. Qualitative Data: Thematic Analysis

The qualitative data obtained was analysed thematically in order to identify common themes. The six phases mentioned in the methodology of this report were conducted in order to establish the relevant themes.

4.4.1 Learning during the lockdown:

Regarding the learning situation during the lockdown, Table 5 shows the themes that arose as a result of the measures implemented and the switch to online school:

Table 5

Overview of themes and sub-themes associated with the learning situation

Themes	**Sub-themes**
Theme 1: Positive	Sub-theme 1.1: Fast track computer literacy

	Sub-theme 1.2: Smooth adaption to online learning
	Sub-theme 1.3. Safe space
	Sub-theme 1.4. Sufficient support from educators and institution
Theme 2: Negative	Sub-theme 2.1. inadequate institutional and educator support
	Sub-theme 2.2: Excessive parental burden
	Sub-theme 2.3: Limited learner engagement

When the COVID-19 pandemic resulted the end of in-person contact learning, 86.7% of the present sample reported continued access to virtual learning and online schooling options.

Both positive and negative themes arose from the thematic analysis of the learning situation during the lockdown. These themes were prevalent across the sample in most cases, unless stated otherwise.

The positive themes that were identified were:

Fast track computer literacy as children's computer skills developed at a faster rate considering online learning required sufficient technological skill. A parent commented, "They (the children) became more astute handling their devices and managing their work on their devices." -*Participant 13*

Smooth adaption to online learning as some children were able to easily transition to virtual school.

Safe space as online school took place in a familiar environment in which children were comfortable and they were not at risk of being bullied as stated by one of the parents, "my daughter enjoyed virtually school as she was free from school bullies." -*Participant 14*

Sufficient support from educators and institution as parents and students who had access to educators and the support from the school were able to make the transition to online learning easier. "Well handled by the school." – *Participant 3*

The negative themes that were identified from the thematic analysis of the learning situation during the lockdown were:

Inadequate institutional and educator support negatively impacted both children and parents' experiences of online school. "Frustrating, school was not prepared." *Participant 10*

Excessive parental burden as parents were required to establish school routines and assist children with their learning and education. This was especially straining on the 65% of caregivers who were required to work from home during the lockdown as well as the 13% of caregivers who were essential workers and thus could not assist the child as much.

Limited learner engagement as caregivers reported the child showed no interest in school or in online learning, there were too many distractions, and the child was unable to concentrate which resulted in feelings of frustration. "Teachers that do not take into account the parents were still working full time during this phase." -*Participant 30*

"It was not an easy task as my son did not want to do school work at home. Although trying to work out some sort of routine for him it was still a challenge. His school had online classes which helped to a certain extend but being so young he was unable to concentrate for long periods of time infront of the laptop." -*Participant 24*

4.4.2 Psychosocial aspect of the lockdown:

The following table (Table 6) provides a summary of the themes that were identified when asked what the child has been worrying about the most since the pandemic began.

Table 6

Overview of themes and sub-themes associated with children's psychosocial development

Themes	Sub-themes
Theme 3: Contracting COVID-19	Sub-theme 3.1: Contracting the virus
	Sub-theme 3.2: Death by Covid
Theme 4: Life during the lockdown	Sub-theme 4.1: Mask wearing
	Sub-theme 4.2: Back to normal
	Sub-theme 4.3: Anxious and distressed

In order to determine which themes were prevalent regarding the psychosocial aspect of children during the lockdown, the following codes were generated: Covid, family, normality, and social distancing. These codes were then adapted into themes

Theme 3: Contracting COVID-19

Sub-theme 3.1: Contracting the virus.

One of the most recurring themes that arose in the analysis was children or their families contracting the virus. Individuals were worried about getting sick themselves as well as infecting others and causing family members to get ill. Participant 7 had this to say about what the child was worrying about the most with regards to the pandemic, “Contracting COVID-19 as the father was diagnosed with cancer and we were worried about contracting COVID-19 and infecting him.” Another participant, participant 31 expressed the sentiments shared by 61% of the sample as, “Being sick or others close to him being sick.”

Sub-theme 3.2: Death by COVID-19.

Many children were concerned about death caused by COVID-19 either for themselves or their family members. Some children were also worried about contracting the virus and passing it on to family members with chronic conditions and thereby causing their death. This was expressed by Participant 14 as “She also thought if we got Covid we would die.” Participant 22 said it as, “Uncertainty of life.”

Theme 4: Life during the lockdown.

Sub-theme 4.1: Mask wearing.

Children expressed distress at having to constantly wear a mask and it was a recurring worry to have a mask on them at all times when leaving their homes.

Participant 3 had this to say about the concerns of the child, “Her main complaint was having to wear a mask. She really didn't like it. It felt very invasive to her, and she couldn't really be herself with half her face covered all the time. This went on for a very long time.”

Sub-theme 4.2: Back to normal.

A number of children were concerned about whether life would return to normal and whether they would be able to see their friends or partake in sports or other extra-curricular

activities. This was expressed by Participant 10 as, ““When will it ever be back to normal and when can they go back and start with sport?” and by Participant 30 as,

“Her friends and not being able to play with them.”

Sub-theme 4.3: Anxious and distressed.

Some children had increased anxiety and preferred to stay at home. Social situations were also avoided. Participant 16 stated, “Approaching the teacher for help or with any issues. She would rather come home and tell me than tell the teacher if there is an issue.” Participant 19 stated it as, “He preferred not to go out at all loved being at home.”

The final open-ended questions pointed to any pandemic related personality changes experienced by the children. Two themes emerged from this analysis:

Theme 5 : Extroversion.

Regarding how outgoing the child was prior to lockdown, the majority of parents or caregivers answered that the child was very outgoing prior to the lockdown and continued to be so even once the pandemic stress had begun to settle. Additionally, some children were outgoing prior to the lockdown however it decreased during the lockdown. The children who were not outgoing prior to the lockdown remained consistent with how outgoing they were.

Theme 6: Behavioural changes.

When parents were asked whether any differences in children’s behaviours could be attributed to the pandemic, the responses were mixed. Half of the participants who answered this question felt as if the child in question did not experience any differences in their behaviour and the other half attributed it to the pandemic. There were no common demographic factors in the way participants answered this question. Some of the responses received are recorded below.

“My child's behaviour during and pre/post covid seems pretty much in line with her personality.” -*Participant 2*

“No. The lockdown and pandemic prevention measures hasn't changed my child's behavior. I would say that each child had a different lockdown experience which then affected them. I would also say the parents fears and anxiety were often projected onto the child which then affected their behaviour.” -*Participant 20*

“No. Lockdown didn’t affect my child, a loving home with security wouldn’t allow an external factor as lockdown affect them. Children thrive more at home so being at home and getting their parents attention had the opposite effect- made them more loved, more secured and thus better humans.” -*Participant 18*

“No. I don’t think Covid impacted behaviour significantly. Wide discussions were held at home to demystify Covid. My child enjoys company but is also happy with family company.”- *Participant 27*

“Not at all because that was just him loved being at home with his PlayStation and phone and YouTube.” -*Participant 29*

“Yes. So many changes were imposed on our society and the world and the repercussions of these restrictions on people, relationships, financial stability, educational impact, dramatic increase in poverty, impaired social skills etc., increased risk of mental health issues... are still being felt by all of us, our children included.”-*Participant 4*

“Yes. The change in the way we started behaving socially and the restrictions parents put on their children's movements and interactions with others I feel directly impacted the way my daughter interacts to her learning environment and social environments. -*Participant 8*

“Yes, they got so used to being around only family and neighbours immediately surrounding us that outside social settings became a strange encounter.”- *Participant 28*

“It was clear that he took longer to develop his social behaviour. He also struggled initially with maintaining friendships.”-*Participant 26*

The results found in this chapter will be discussed in further detail in the next chapter along with the relevant literature.

5. DISCUSSION

The aim of this chapter is to discuss the findings of this study in relation to existing literature on the topic, along with the research questions posed. This chapter will then go on to discuss the limitations that existed within this research and will thereafter mention suggested directions for future research.

This chapter aims to address the research questions as posed earlier on in this research study. Those questions, which pertain to children between 6-13 years of age, were:

Did COVID-19 and the preventative measures that occurred as a result thereof have an impact on children's cognitive development?

Did COVID-19 and the preventative measures that occurred as a result thereof have an impact on children's psychosocial development?

Were there differences in the cognitive and psychosocial development of children who attended school consistently and those who did not?

What implications did online schooling have for the child?

Were there any psychological or behavioural changes that occurred in the child that could have been due to COVID-19 or the lockdown that resulted thereof?

The first three research questions were analysed by means of quantitative inferential statistics in the form of *t*-tests whilst the last two questions were answered by means of a thematic analysis of the qualitative data obtained. This chapter will begin by addressing the first three research questions and thereafter will expand on the last two research questions.

5.1. Quantitative analysis

This study set out to ascertain whether there were any discernible differences in the cognitive and psychosocial development of 6–13-year-old children with access to different amenities, that occurred as a result of the COVID-19 lockdown and other social distancing measures. In order to address this, t-tests and a one-way ANOVA were conducted to compare the means of different groups of children. The findings of these tests suggest that there were no detectable differences in these population groups.

5.1.1. Gender

Whilst gender differences in cognitive abilities do exist (Upadhayay & Guragain, 2014), other studies suggest that these gender differences during cognitive development are minimal (Ardila et al., 2011). The results of the independent samples *t*-tests comparing the means of male and female participants are in support of this view as no statistically significant differences were found between the scores of the genders on the cognitive scale.

However, it is important to note that as this questionnaire required parental opinions based on their child, previous studies have found that parents attribute higher intelligence scores to their sons than they do their daughters (Furnham et al., 2002; Neto & Furnham, 2011).

Male and female brains do show anatomical, functional, and biochemical differences throughout life (Upadhayay & Guragain, 2014) however, Hyde's (2005) Gender Similarities Hypothesis suggests that males and females are similar on most psychological variables. This too aligns with the results found in this study as there was no statistical significance found with regards to the impact of COVID-19 on male and female psychosocial abilities as per the psychosocial scale used.

5.1.2. School type

Regarding children who attended private schools and those who attended semiprivate or public schools, the study did not find any statistical significance in the measured cognitive performance when comparing the means of these two groups. As both groups of children, those who attended private school and those who attended semiprivate or public school had access to education during the lockdown, as most of the schools attended by the sample population had online learning options, the experience of school attendance was not the same. Whilst most private schools in South Africa were able to offer either online, in-person, or hybrid classes when schools reopened, semi-private and government schools did not have these options and had to offer rotational or blended learning options (Maree, 2022).

Henderson et al. (2020) reported that in a developed nation, such as Britain, private schools have three times more resources per pupil than public schools. This disparity would be far more evident in a country with an acute economic divide such as South Africa (Languille, 2016), whose government subsidized education sector is severely underfunded (Maree, 2022).

Taking the large economic disparity in this country into consideration along with the statistic that only 11.7% of South African schools had access to online learning options during the pandemic (Statistics South Africa, 2022), and all of the participants who partook in this study did have access to education during the lockdown or other COVID-19 preventative measures, this sample was not representative of all students in South Africa. 51.6% of the sample attended private schools while private schools make up less than 10% of the schooling system in South Africa (Galal, 2022). The urban-rural divide in terms of education in South Africa has produced some of the nation's greatest inequalities in terms of education (Ndimande, 2016). Rural schools and urban township schools have inadequate resources (Ndimande, 2016), and thus the measures that were implemented in response to the pandemic

had the greatest impact on the most vulnerable members of society (Morales-Olivares et al., 2022).

The findings of this study also revealed that there were no statistically significant differences in the psychosocial aspect of children's development. This appears to conform to the findings of von Stumm and Plomin (2020) who concluded that access to private education adds a minimal positive value to the socio-emotional development of children.

Furthermore, the open-ended qualitative questions revealed that 20 of the parents or primary caregivers were in a working from home situation, while 13 were stay at home parents or caregivers, and only four were essential workers. Therefore, parents were required to be far more involved with their children and in assisting them with schoolwork. This is important to note because parental involvement has been seen to enhance student engagement (Yang et al., 2022). Additionally, the findings of a study conducted by Liu et al. (2022) suggested that all variables associated with parental involvement had a positive impact on one another, implying that parents who were more academically involved in children's education were more inclined to be involved in other aspects of parental involvement. This was corroborated by the findings that an increased level in children's perceptions of their parents' daily involvements was positively and moderately associated with an increased level of parent-child communication (Liu et al., 2022).

5.1.3 School absenteeism

Aside from the educational aspects that missing out on school has, remaining absent from school has a number of adverse effects. Prior research has shown that remaining absent from school for prolonged periods of time is negatively associated with the academic achievement of students (Aucejo & Romano, 2016; Gottfried & Kirksey, 2017). Furthermore, prolonged absenteeism or dropping out of school has an impact on multiple life-course

problems such as, teenage pregnancies, alcohol or narcotic abuse or psychiatric disorders (Gubbels et al., 2019). As the imposed lockdown called for an alcohol ban and due to social distancing, teenage pregnancies as a result of school absenteeism were unlikely. However, excessive absenteeism may lead to permanent dropout from school which could have lasting effects on an individual, such as economic deprivation or other problems in adulthood (Gubbels et al., 2019). As 67.8% of the sample missed over a month of in-person school, which is longer than most of the school holidays, the long-term impact of school absenteeism is important to take note of.

Additionally, a systematic review and meta-analysis also suggested that an association exists between school absenteeism with self-harm and suicidal ideation (Epstein et al., 2020). The current study, however, did not find any statistically significant difference in those students who missed up to four months of in-person school and those who missed more than four months of in-person school regarding both their cognitive as well as their psychosocial development. It is important to note, however, that the group sizes were not equal in this calculation but there was equal variance. Whilst missing school does have negative effects on an individual's education as well as their socioemotional growth (Emerson et al., 2016), because students did not choose to miss school, instead it was forced upon them due to the preventative measures associated with the spread of the virus, it could be attributed as to why the effects of school absenteeism on their cognitive and psychosocial development as per parental perception were not as pronounced. More research regarding the direct effects of the COVID-19 pandemic and the lockdown that ensued is necessary with regards to educational achievement. As the participants of this study did have access to online learning, further research relating to whether online learning can mitigate the effects of school absenteeism is needed.

This study found no significant differences in children's cognitive and psychosocial abilities due to the COVID-19 pandemic, the lockdown that resulted thereof, and the preventative measures that occurred in an attempt to stop the spread of the virus, as per the parental perception. Regarding the cognitive and psychosocial abilities of children, the results found in this study showed that there were no significant differences in the development of children based on gender, socioeconomic status, and the amount of school missed.

5.2. Qualitative analysis

A number of themes emerged from the qualitative data analysis which will be discussed below. As the thematic analyses was conducted regarding both the cognitive and psychosocial aspects, these were analysed separately according to the questions posed. The discussion regarding the themes that were found will begin with the cognitive aspect pertaining mainly to the way in which education was conducted during the lockdown, and thereafter the psychosocial aspect will be discussed.

At the end of the cognitive section of the questionnaire, an open-ended question was posed based on the learning situation during Covid. To this end, positive and negative themes were identified, which shall be elaborated upon below:

The positive themes included fast track computer literacy; smooth adaption; institutional and educator support; and safe space. These themes are all interconnected as it was due to the closure of schools that the transition to online education occurred. A seamless transition and adaptation to online learning with the support of educators or institutions resulted in improved computer literacy and gave students feelings of a 'safe space' being at home as opposed to being at school. The reason given as to why being at home was considered to be a "safe space" was because children did not have to interact with bullies.

Fast track computer literacy referred to the participants ability to adapt to online learning by familiarising themselves with digital technology faster than they would have during a regular time period. Growing up in the twenty first century, children are faced with technological advancements, especially in the digital field, more so than children were fifty years ago (Jetter et al., 2009). However because of the pandemic and the preventative measures thereof, as well as social distancing, children spent more time at home using digital technology in the forms of computers, video games, or other online avenues of entertainment (De' et al., 2020). This resulted in them having to gain proficiency in this field faster than they would have had life continued on as normal (De' et al., 2020; Pozo et al., 2021). In the qualitative questionnaire, a stay at home parent described their child's online learning experience as:

"We had the resources to do online learning with much ease such as multiple computers and smartphones in the house and stable internet connection. She was then able to adapt to blended learning when we sporadically returned to school. The learning situation during Covid helped her to develop her computer skills at a faster rate. She learnt how to log onto the computer with her own log in details, navigate the computer during online lessons for e.g. turning her microphone and camera on and off and even typing in the chat box during lessons. She loved not having to get dressed in her school uniform (especially during the winter months). The oral work was done through video recording and she absolutely loved us rehearsing for it and recording the content to send to her teacher" -*Participant 1*

The negative themes that were identified included inadequate support from institutions or educators, excessive parental burden, and limited learner engagement with the subthemes of lack of interest, environmental distractions, poor concentration, frustrations. Prior research suggest that the bulk of negative implications caused by online learning

occurred in predominantly middle to lower income households (Soudien et al., 2022). The thematic analysis found that aside from the theme concerning inadequate institutional or educator support, there were no distinctions between the participants demographically. Research suggested that a negative implication of online learning in lower income schools, or public schools, was the lack of educator or institutional support (Pozo et al., 2021; Soudien et al., 2022). The findings of this study contradict that of previous research. This could be because of the unprecedented nature of the lockdown measures for educators and learners alike.

Additionally, the analysis found that regardless of school type or demographic group that the participants belonged to excessive parental burden and limited learner engagement was prevalent across the sample to varying degrees. Even for those who regarded online learning to be a positive, establishing and maintaining routines were vital to ensure focus and concentration of the child. This aligns with findings by Alharthi (2023) in which parents revealed that they would prefer to keep their chosen role as opposed to fulfil that of educator imposed on them by COVID-19. Because parents were pushed into the role of educator as they had to assist their children with schoolwork, many parents were required to give more time and effort with their child's learning as opposed to a regular in person school day (Knopik et al., 2021; Shao et al., 2022). Limited learner engagement was found across educational stages, with learners experiencing inefficiency and difficulty in maintaining academic integrity (Mukhtar et al., 2020). Within the qualitative questionnaire a parent defined their lockdown education experience as, "Had constant supervision from the adults in the household. Was not able to manage multiple tasks but the administration from the school was poor. Got very distracted with technology hence I had to get a reminder to supervise." -*Participant 6*

The open-ended questions posed at the end of the psychosocial aspect of the questionnaire found a number of common themes emerge throughout the analysis. These themes were not specific to the participants which fell into any of the demographic groups that the inferential statistics were conducted upon but rather, these themes were found across all demographics. The questions related to the psychosocial aspects were based what the child was found worrying about the most throughout the lockdown, and whether there were any observed pandemic related personality or behavioural changes in the child.

Regarding the question pertaining to what was most worrisome to the child amidst the lockdown, the most common themes that emerged were the following:

Theme 1: Contracting COVID-19

There were three subthemes that were identified regarding the contraction of the COVID-19 virus. These were, children being at risk of contracting the virus themselves, having their family members contract it, and death due to the virus. These findings aligned with those found in a study conducted by Vasileva et al., (2021) which found that preschool children possessed negative thoughts and worries surrounding the COVID-19 pandemic along with increased threat and vulnerability because of it. Other studies also found that children and teenagers expressed worry over contracting the virus or having their family or friends become sick due to it (Götz et al., 2020; Haig-Ferguson et al., 2021). Onyeaka et al (2021) states that psychological distress was on a rise during the pandemic as people feared contracting the virus and dying as a result thereof.

Theme 2: Life during the lockdown

Three subthemes emerged within theme 2. These were, the wearing of masks, whether life would regain normality, and feelings of anxiety or distress. Prior research regarding the wearing of face masks or covers in an attempt to slow the spread of the virus was mainly

conducted in order to ascertain the impact of mask wearing on facial perception and emotional literacy (Giordano et al., 2022; Stajduhar et al., 2022) These studies found that the presence of face masks resulted in a significant deficit in facial perception abilities in children. Comparably, children were more adept at identifying emotions in unmasked models as opposed to masked models. Additionally, older children who were more accustomed to adults wearing masks were also more proficient at identifying emotions. Another study conducted on educators found that educators reported when wearing a mask there were changes in their own communicative behaviours along with decreases in language quantity but increases in language quality along with non-verbal cues. Changes in children's communicative behaviours were also prevalent and thus children's daily communicative environments were impacted by the compulsory implementation of mask wearing (Crimon et al., 2022). The emotions of children associated with mask wearing however, were not main focus points of the studies mentioned.

Regarding the two remaining subthemes as to whether life would regain normality and feelings of anxiety and distress, findings from studies conducted early on in the pandemic suggested that social distancing along with the lack of a supportive framework are what mainly affected children and adolescents (Hen et al., 2022). Research regarding anxiety in paediatric and adolescent populations have found that COVID-19 is a major contributor to anxiety with females being at an increased risk of developing an anxiety disorder amidst the pandemic (Kang et al., 2020; Rothe et al., 2021; Walsh et al., 2021). Contrastingly, a study conducted on children and adolescents with pre-existing mental heath related challenges found that there was an increase in all mental health symptoms aside from anxiety (Hen et al., 2022). This study (Hen et al., 2022) also indicated that there were gender differences in emotional regulation between girls and boys, with boys having more difficulty in emotional regulation and girls experiencing more emotional and behavioural problems. Additionally,

difficulty in emotional regulation was found as a predictor in mental health symptoms for both children and adolescents however, females and adolescents were most vulnerable (Hen et al., 2022). The current study however did not find any age or gender related differences in the anxiety or distress experienced by participants.

The question regarding pandemic related personality changes allowed for two main themes to emerge, namely extroversion prior to the lockdown and behavioural changes due to the lockdown.

Theme 1: Extroversion

Many of the responses regarding how outgoing the child was prior to the lockdown suggested that participants were very outgoing prior to the lockdown and continued to be so even after the lockdowns were lifted. Other participants reported being outgoing prior to the lockdown however the levels thereof decreased as a result of the lockdown. This could be attributed to the health related anxiety or distress that occurred as a result of the pandemic (Hen et al., 2022; Haig-Ferguson et al., 2021). A parent or caregiver describes the child as extroverted and stated, “Yes very she was an extroverted fun-loving, school loving, people loving, child. Many of these things are still there but have diminished significantly.” - *Participant 9*

Theme 2: Behavioural changes

Regarding whether parents or caregivers perceived any behavioural changes to have occurred as a result of the pandemic, the responses received were mixed. Amongst those that did not attribute any changes in the child’s behaviour to the pandemic, one parent responded as follows:

“She in general prefers one and one friendships as opposed to group dynamics and she's been like this since a toddler. Although she is quite social, she prefers making close

friendships. She has always been like this. Due to this preference in approach, she doesn't have an abundance of friends but usually 1 or 2 close friendships at a time. She has no problem interacting with her class and has good interactions in general with peers. Same goes for spending time at home or being more outgoing. She enjoys doing both and always has. She hasn't become less social due to the pandemic." -*Participant 25*

These findings do not support prior research which found the pandemic to result in behavioural changes in children and adolescents (Di Renzo et al., 2020; Francisco et al., 2020; Gupta & Jawanda, 2020). Taking the Bioecological theoretical framework, as mentioned in section 2.2, into consideration, this could be attributed to the Person element within the proximal processes. It refers to a person's own traits and characteristics. the differences in how the pandemic was experienced is dependent on each persons own characteristics and how they relate to the environment.

The other half of participants agreed that the pandemic caused some behavioural changes in the child under their care. One of the responses received to this question as to whether the pandemic could be attributed to any behavioural changes in the child, to which a parent responded:

"Yes. So many changes were imposed on our society and the world and the repercussions of these restrictions on people, relationships, financial stability, educational impact, dramatic increase in poverty, impaired social skills etc., increased risk of mental health issues... are still being felt by all of us, our children included." -*Participant 21*

Whilst the quantitative analysis conducted in this report did not show any statistically significant changes in children's general cognitive or psychosocial development amongst different demographic groups, the qualitative analyses supplemented the responses and provided for specific cognitive or psychosocial changes that were attributable to the

pandemic. The inherent qualities within the Person element interacts with the proximal processes differently depending on the traits of an individual.

5.3. Limitations

The demographic data indicated that the responses received were relatively homogenous in nature, reflecting an urban middle and upper cohort, while excluding lower socioeconomic and rural populations and did not include a diverse sample. Individuals from lower income groups who attended rural, or township schools were not included which posed a great limitation to this study as the impact of COVID-19 on these vulnerable groups were far more pronounced as evident in the literature. Additionally, as the questionnaire was distributed electronically, it was only available to those who had access to digital technology and an internet connection. The snowball sampling methods of data collection employed resulted in bias as it was not distributed to all facets of the broader South African society. Because of this, the study is not representative of the broader South African society and thus the results cannot be extrapolated to the broader South African societal context.

Another limitation of this study was the sample size which while sufficient, was not representative of the entire population range the study was targeting.

Additionally, as this study relied on the parental perceptions of children's development, children were compared from their pre-covid states to that of post lockdown. The limitations associated with this is that it was reliant on the parental perceptions of children's development for an approximate two-year period. The microsystem in the Bioecological model refers to the reciprocal relationship between parents and child, it is important to note that parents were also facing a changed world. Along with the timeframe and the unprecedented time we were living in during the pandemic, many parents could have forgotten aspects of how the child used to behave, or because of distress they may have been

experiencing their perceptive capacities of children's functioning could have been impaired. Because the children were not tested against standardized norms, this study was not an accurate representation of children's developmental trajectories.

Additionally, the study was cross-sectional in nature which does not allow for conclusions to be made based on causal effects.

5.4. Future directions for research

In order to fully comprehend the consequences caused by the stay-at-home order imposed by the government, longitudinal studies with diverse samples are needed. Future studies should also be conducted directly involving children as opposed to the reliance of parental perception. Additionally, because children go through different developmental stages at different ages, focus should be on the changes experienced in different age groups. Future studies should also explore other variables related to the home environment which could impact a child's experience during periods of lockdown. Whilst most of the COVID-19 related regulations are lifted, these studies are still important for future policy makers or education reform. As life right now does not speak to the implementation of another lockdown, this pandemic showed us the unprecedented nature of high transmissibility viruses and studies which explore the impact of this pandemic as well as previous pandemics may pave the way for future instances.

5.5. Conclusion

The purpose of this study was to determine whether there were any differences in the cognitive and psychosocial development of school going children, due to the COVID-19 pandemic, between the ages of 6 and 13 as per parental perception. The results obtained by means of quantitative analysis suggested that there were no differences in the cognitive and psychosocial development of children attributable to the COVID-19 pandemic or the

preventative measures that occurred as a result thereof. Different demographic groups were measured and no significant differences were found between any of them.

The qualitative data analysis provided more information as to the experiences of children during the lockdown. A number of themes arose detailing the experiences of the lockdown and the conduct of education during the lockdown. Positive and negative themes both emerged from the analysis pertaining to the educational aspect and personality and behavioural themes emerged from the psychosocial aspect of the analysis. Ultimately, the experience of lockdown was unique to this century and the way in which people experienced the pandemic and the lockdown depended on multiple factors including the sociocultural environment. Further research is necessary in this field for elaboration on the impacts of the COVID-19 pandemic, and also for future educational directions and policy.

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Appendix A

Demographic questionnaire

Please choose the option that pertains to the child in your care the most.

1. Gender of child

Male	Female

2. Age of child (years)

5-7	8-9	10-12

3. Type of school attended during covid

Government	Semi-private	Private

4. Access to online learning during lockdown

Yes	No

5. How many people in the household during the lockdown

1-3	4-6	7+

6. Accommodation during lockdown

Free-standing house/accommodation (gated, no contact with neighbours)	Free-standing house/accomodation (contact with neighbours)	Estate/Complex/Flat/Cluster home (contact with neighbours)	Township

7. Approximately how much of the school year was missed?

None-3 weeks	1-4 months	4-8 months	8 months +

8. Notes, comments or observations of the learning situation during Covid?
   -

_____
_____
_____
_____
_____
_____

Appendix B

Psychosocial and Cognitive questionnaire

Please choose the option to the questions in relation to the child in your care post lockdown compared to pre lockdown.

1. Ability to learn new concepts or skills has decreased

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

2. Understanding or processing instructions is a strenuous process

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

3. Academic growth has decreased or stilled

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

4. Difficultly in sustaining attention or concentration

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

5. Difficulty in remembering events or to-do tasks

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

6. Does not experience difficulty in formulating and expressing oneself

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

7. Unable to complete tasks without supervision

Strongly disagree	Disagree	Neutral		Agree	Strongly agree

8. Seldom thinks “outside the box”

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Why do you think the child in your care experienced changes in their cognitive and emotional abilities?

_____
_____
_____
_____
_____

How did you actively engage with the child during the lockdown and school closures?

_____
_____
_____
_____
_____

9. Often anxious or nervous when leaving home

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

10. Often experiences self doubt or low self esteem

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

11. Constantly worried or stressed about trivial situations

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

12. Experiences distress or anxiety when communicating with those in authority

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

13. Confident when initiating conversations with strangers

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

14. Difficulty in controlling temper

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

What has the child been worrying about the most since the pandemic began?

_____
_____
_____
_____

15. Anxious or nervous in social settings

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

16. Prefers being alone than being with friends

Strongly	Disagree	Neutral	Agree	Strongly

disagree				agree

17. Able to make friends easily

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

18. Confident when giving speeches or presenting in front of class

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

19. Unable to initiate or maintain conversations with children in the same age group

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

20. Difficulty with sharing

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Was the child outgoing prior to the lockdown?

_____
_____

Would you say the changes you noticed in the child's behaviour could be attributed to the lockdown and pandemic prevention measures? Why or why not?

_____
_____
_____

Appendix C

Dear Sir/Madam

My name is Habeebah Chopdat and I am Masters student in Research Psychology at the University of the Witwatersrand. I am currently conducting research on the impact of COVID-19 and the preventative measures that arose thereof, on the cognitive and psychosocial development of children between the ages of 6-13 years old in South Africa.

If you are the parent or primary caregiver of a child between the ages of 6-13 years old in South Africa, I would like to extend an invitation to you to participate in the study. Participation includes the completion of an online questionnaire which would take approximately 20 minutes of your time.

If you choose to participate in the study, please follow the link attached to this email which will take you to a GoogleDocs webpage and complete the questionnaire. There will be an option within the questionnaire to confirm that your informed consent is given for participation in this study.

Participation in this study is completely voluntary, and participants are welcome to withdraw from the study at any time. There are no benefits or harms in participating, not participating, or withdrawing in this study.

Anonymity and confidentiality will be ensued as it is an online questionnaire and we have no way to track the participants who partake in the study, however the raw data acquired from the study will only be available to myself and my supervisor, Ms Enid Schutte.

If you have any questions or concerns regarding this research please contact me at 2508281@students.wits.ac.za

Your consideration is much appreciated

Kind Regards

Habeebah Chopdat

Appendix D

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

SCHOOL OF HUMAN AND COMMUNITY DEVELOPMENT ETHICS COMMITTEE

CONSTITUTED UNDER THE UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)

CLEARANCE CERTIFICATE: **PROTOCOL NUMBER: MAPSYC-22-03**

PROJECT TITLE: Parental PerceptionoftheImpactofCOVID-19onChildren's Psychosocial andCognitiveDevelopment.

INVESTIGATOR Chopdat Habeebah (2508281)

SCHOOL/DEPARTMENT OF INVESTIGATOR SHCD/Psychology

DATE CONSIDERED 20 June 2022

DECISION OF THE COMMITTEE Approved unconditionally

RISK LEVEL No Risk

EXPIRY DATE 31 December 2024

ISSUE DATE OF CERTIFICATE 11 July 2022 **CHAIRPERSON** _____ (Dr Nkululeko Nkomo)

cc: Ms Enid Schutte (Supervisor)

DECLARATION OF INVESTIGATOR

To be completed in duplicate and **ONE COPY** returned to the Chairperson of the School/Department ethics committee.

I fully understand the conditions under which I am are authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee.

_____ _____/_____/_____

Signature **Date**

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES