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Elementary Children's Well-Being and The Effect of Siblings During the COVID-19 Pandemic: A Comparison of Four European Countries

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Preface

From very early on into the master's program, I knew I wanted my thesis to be about children as this is the area I want to work with in the future. I talked with my previous supervisor from my Bachelor thesis, and together we agreed that I could take a new look at a previous data collection she had already made. First, I would like to thank Sarah E. Martiny for saying yes to being my supervisor on my master thesis as well. You have made this experience pleasant and you have taught me so much. I am forever grateful for your insights and help. To the research group who made the survey that I am using for my study, thank you. Especially thanks to Kjærsti Thorsteinsen who have helped with data analysis.

Secondly, I would also like to thank my peers, those who I have had the pleasure of experiencing this "journey" with. There has been laughter, frustration, joy, and pure nonsense. To those who I have shared my office with, you have made coming to the university fun and enjoyable. Kristin, Nora and Samy, thank you for everything and simply just for being you.

Finally, a shoutout to my friends and family is needed. You have supported me throughout this whole process. You have motivated me to keep going and reminded me of the value of what I have been using these past five years doing. To my sisters and my brother, what would I do without you? My nieces and nephews: Anna, Mathias, Synne, Linnea, Niilas, Tilde and Mikkel, you are my whole heart. A special shoutout to my roommate and best friend, Kine, for being amazing, and an extra thank you to my dad who is my number one supporter.

Tilde Olea, this is for you.

K. van Ingen ..... S. Martiny .....

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Sammendrag

Sent i 2019 endret verden seg på grunn av spredningen av SARS-CoV-2 (COVID-19) viruset. Som en konsekvens av dette viruset, bestemte regjeringer seg for å implementere lockdown og skolestengninger, som et tiltak for å redusere spredningen av det dødelige viruset. I dette arbeidet, ønsket vi å undersøke hvilken innvirkning lockdown og skolestengning hadde på barns velvære. Vi brukte data fra fire Europeiske land (Tyskland, Norge, Sverige og Storbritannia), med retrospektive spørsmål fra lockdown perioden og nåværende spørsmål (etter lockdown). Vi spurte foreldre om å rapportere om barnas velvære under COVID pandemien (målgruppe alder 6-13). Vi forventet at barns velvære var lavere våren 2020 under skolestengningene enn på høsten 2020, når skoler hadde åpnet igjen. I tillegg, vil ikke dette være tilfelle for svenske barn, siden Sverige var ett av få land som ikke stengte ned barneskoler. Vi undersøkte også om det å ha søsken i samme husstand ville dempe den negative effekten av COVID restriksjonene. Som forventet, fant vi lavere velvære for barn under lockdown enn etter lockdown, samt lavere velvære i land som implementerte skolestengning, sammenlignet med deltakere fra Sverige. Vi fant imidlertid ikke støtte for vår hypotese om den positive effekten av søsken. De anvendte implikasjonene av de nåværende resultatene vil bli diskutert.

Nøkkelord: COVID-19, barns velvære, søsken, lockdown, skolestengning

Abstract

Late in 2019, the world changed due to the spreading of the SARS-CoV-2 (COVID-19) virus. As a consequence of this virus, governments decided to implement lockdowns and school closures, as a measure to reduce the spreading of the deadly virus. In the present work, we aimed to investigate the impact these lockdowns and school closures had on children's well-being. We used a cross-country approach with data from four European countries (Germany, Norway, Sweden and the UK), with retrospective questions from lockdown period and present questions (after lockdown). We asked parents to report their children's well-being during the COVID pandemic (target group age 6-13). We predicted that children's well-being was lower in spring 2020 during school closures than in fall 2020 when schools had opened again. In addition, this should not be the case for Swedish children, since Sweden was one of the few countries that did not close down elementary schools. We also investigated whether having siblings in the same household would buffer the negative effect of COVID restrictions. In line with our predictions, we found lower well-being for children during lockdown than after lockdown, as well as lower well-being in countries that implemented school closures, compared to the Sweden sample. However, we did not find support for our hypothesis about the positive effect of siblings. Applied implications of the present results will be discussed.

Keywords: COVID-19, child well-being, siblings, lockdown, school closures

Elementary Children's Well-Being and The Effect of Siblings During the COVID-19 Pandemic: A Comparison of Four European Countries

In the winter 2019 the SARS-CoV-2 (COVID-19) outbreak brought on severe health-related and social consequences all around the globe. The virus emerged from China, with the infection rates increasing rapidly after the virus first emerged. Soon thereafter the spread of the virus was declared a worldwide pandemic (Munir, 2021). Governments all over the world initiated restrictions in order to reduce the spread of the virus. These restrictions included, for example, lockdowns, wearing facial masks, social distancing, and the use of hand sanitizer. These restrictions had an impact on various aspect of everyday life such as family life, work, and schools (Freundl et al., 2021). Thus, the pandemic, and its related restrictions, affected nearly everyone in some way. Researchers have argued that some groups were more vulnerable to the restrictions implemented into society. One group that potentially suffered a lot due to the pandemic and the related restrictions were children and young people (Schmidt et al., 2021). For example, a meta-analysis by Panda and colleagues from 2020, found that 79.4% of children showed an increase in behavioral and psychological problems, such as anxiety, depression, boredom, and a general fear of the pandemic (2020). This gives an indication that children struggled significantly during this time. Even if children, generally, were at a low risk for being infected by the virus (Sinha et al., 2020), the pandemic and the implemented restrictions, such as lockdown and school closures, heavily affected the lives of children (Waite et al., 2020).

Research shows that a disruption in routines and familiarity can have negative effects on children's well-being (Prime et al., 2020). Thereby, making all the changes in society due to the pandemic, such as social isolation and closing of schools, a potential negative factor for the child's general well-being (Prime et al., 2020). The closure of schools has, in hindsight, been criticized by many for being a contributor to a worsening of overall well-being,

specifically for children. One that voiced their opinion was The German Federal Minister of Health, Karl Lauterbach. He tweeted in January 2023, "The level of knowledge was not good at that time. Nevertheless, in retrospect, long school closures were not correct. Now there is a lot to do for children, this is happening in the healthcare system. Children have priority: children's clinics, practices, medicines*"* (Lauterbach, 2023). By acknowledging this he indicated that poor decisions were made relating to how the COVID-19 pandemic was handled, where specifically children suffered more than expected by being kept from their schools and peers.

On the basis of these presented claims, in the present research, we investigated how the COVID-19 pandemic, and specifically the lockdown and school closures, affected children's well-being in four different European countries (Germany, Norway, Sweden and the UK). In addition, we examined factors that might have potentially buffered the negative effect of the lockdown on children's well-being such as having siblings in the same household during this period and restrictions.

Child Well-Being Amidst the Challenges of COVID-19, Lockdown, and School Closures

As outlined above, the COVID-19 pandemic negatively affected child well-being (see Panda et al., 2020). According to Minkkinen (2013), child well-being can be defined as "a dynamic process wherein a person's physical, mental, social and material situation is more commonly positive than negative, and as an outcome of intrapersonal, interpersonal, societal and cultural processes" (p. 549). Well-being is closely related to life satisfaction, feelings of happiness, and quality of life (Helseth & Haraldstad, 2014). In addition, fostering children's well-being is considered crucial as it establishes the foundations for adult functioning (McAuley & Rose, 2010, p. 21). It therefore becomes important to consider situations that can negatively impact children's well-being, since good child well-being is seen as an investment for good future well-being (McAuley & Rose, 2010, p. 21). When the COVID-19 pandemic

emerged, children's well-being was somewhat neglected and not taken into consideration, which led to negative strains on their well-being. According to findings published by Sharma et al., for UNICEF, based on a systematic review and studies from 22 countries with more than 130.000 children and adolescents, there is evidence indicating an increase in mental health issues for children. Before the pandemic, they claimed that one in eight children (13%) struggled with diagnoseable mental health conditions. However, during the pandemic, there was clear evidence for increased levels of depression, fear, anxiety, anger, negativity, alcohol- and substance use, compared to pre-pandemic rates. They explored several options for the reason of this increase, where experiencing lockdown was one crucial topic. The report claimed that experiencing social isolation and the loneliness that followed due to lockdown was a clear contribution to a range of mental health issues (Sharma et al., 2021). Similar findings come from a study by Duan and colleagues, conducted in China in 2020, which explored the effects of the pandemic (in 2020) on children and adolescent's mental health. The results indicated an increase from 13.2% (before COVID-19) to 22.3% (during COVID-19) in clinical depression symptoms. Additionally, 25-50% of the depressed youth had comorbid anxiety disorders and 29.6% reported increased use of internet and social media, which have been related to worsened well-being (Duan et al., 2020).

Considering the critical importance of child well-being, and how research has indicated an increase in mental health issues during the COVID-19 pandemic, we will further explore how external factors, such as school closures and having siblings, impacted children's well-being during the pandemic.

Consequences of School Closures on Children's Well-Being

During the COVID-19 pandemic, the closing of schools was a strongly debated issue for many countries and municipalities. This was due to its unknown effect on preventing the spread of the virus, and its following consequences (Mazrekaj & De Witte, 2023). On a global

level it has been estimated that due to the first COVID-19 pandemic wave, up to 1.5 billion (90%) children and adolescents younger than 20 years were out of school early in 2020 (Viner et al., 2022). Even a year into the pandemic, UNESCO estimated that 50% of the world's students were still impacted by school closures (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2021). Germany, Norway, and the UK chose to engage in multiple alternative restrictions throughout the pandemic. These consisted of a full lockdown of schools, an online alternative for digital learning (e.g., Zoom), and some students were offered a hybrid version with both online and physical attendance opportunities. However, Sweden did not engage in any specific restrictions, other than a recommendation to stay at home if you were experiencing symptoms of the virus.

On the one hand, researchers agree that school closures reduced the spreading of the SARS-CoV-2 virus (COVID-19) (Viner et al., 2022). However, a numerous amount of research exists demonstrate that school closures had a broad range of negative consequences for children and thereby neglecting the importance of school for the children (Viner et al., 2022). For example, a study by Gordon and Burgess from 2020, with almost 18000 responses from caregivers in 46 countries, found a positive correlation between the length of school closures and child distress, such as poor sleep and increased aggression (Gordon and Burgess, 2020 in Hughes et al., 2022). In other words, when length of school closures increased, child distress increased as well. The children lacked social contacts, social networks, social support, and access to services offered in school and from teachers (Viner et al., 2022). According to an analysis from National Survey on Drug Use and Health (NSDUH) in the US (from 2014), 13.2% of adolescents received mental health services provided by the school during the past year (2013), additionally, 57% of every adolescent that received mental health help was receiving this through their schools (Golberstein et al., 2020). This gives a clear indication that these provided services of support to a child's development, outside of the home, are

important and necessary. According to an extensive systematic review by Viner and colleagues from 2022 based on a total of 36 studies, found that almost all of the studies indicated worse well-being and mental health for children after restrictions compared to pre COVID-19 restrictions (2022).

Taken together, studies have shown that children's well-being was negatively impacted by the COVID-19 pandemic. Several studies showed increased mental issues during this period (see Hughes et al., 2022; Mazrekaj & De Witte, 2023; Prime et al., 2020; Sharma et al., 2021). In addition, when experiencing social isolation, the children experienced a loss of recourses from school and their confiding teachers and peers (Freundl et al., 2021). There are factors that could have made the situation potentially better, such as living in the same household with other children. As social isolation has been seen as a factor for increased loneliness (Loades et al., 2020), having someone to hang out, can be an important factor to reduce the feeling of loneliness. Therefore, in the following section, we will discuss the positive impact of having siblings in the same household during the pandemic might have had on children's well-being.

The Role of Siblings During a Pandemic

Sibling relationships are viewed as one of the most dependable and supportive relations a human has throughout life (van Volkum et al., 2011). However, sibling relationships can be ambivalent. Throughout history we have been fed with stories where siblings fight for their parent's attention, and thereby looking at each other as competitors, resulting in a possible overlooking of the positive effect siblings bring to each other (Hughes et al., 2022). Previous literature show that children are mostly positive to the arrival of a new baby. In preschool age the older child will often take on an active role in teaching and caring for the younger sibling, however, this often decreases into adolescence (Hughes et al., 2022). Research by Punch (2008) indicated that the length siblings spent together could let them

relax more, yet it could also lead to increased irritation (p. 341). When the COVID-19 pandemic led to a lockdown for many, families had to spend more time together. There was little opportunity to leave one's house, and face-to-face interactions with peers and others were reduced (Campione-Barr et al., 2021). The reduction in direct personal contact outside the household could lead to a change in children's interaction with their siblings with an increase in children confiding in their siblings, as well as engaging in shared activities (Cassinat et al., 2021). The presence of siblings is believed to work as a compensation for the lack of social contact with peers (Cassinat et al., 2021). Sun and colleagues (2021) did a study about the pandemic in 2021 with 6-12-year-old Latinx children in the US. They found an association between school closures and improved sibling relationships. Which was a trend supported by US poll data, suggesting heightened feelings of family connectedness among children during the pandemic (Common Sense Media, 2020, in Sun et al, 2021). These findings emphasize how siblings may serve to compensate for the absence of peer interactions.

Siblings can provide emotional support to each other (van Volkom et al., 2011), which might have been beneficial during the stressful times of lockdown and the pandemic in general. A study by Hughes and colleagues from 2020 supported this statement: 2516 caregivers with children aged 3-8 from six different countries did an online survey about child development and family adjustment in the COVID-19 pandemic. Their results indicated that children with older siblings had less problems related to peers, emotions, behavior and hyperactivity when being compared to children without siblings. However, children with younger siblings, revealed more emotional and behavioral problems. This indicates that older siblings, especially, contributed to beneficial behavior and acted as sources of reassurance and stability (Hughes et al., 2022). Because siblings, especially older siblings, can serve as companions (Voorpostel et al., 2007), they can help to alleviate feelings of loneliness and

boredom that some individuals experienced during the lockdown (Loades et al., 2020). There is evidence indicating that siblings can be good support for each other when going through adversity and significant life events (Hughes et al., 2022). The COVID-19 pandemic can be categorized as one of these significant life events, meaning that having siblings can be helpful and positive in this situation, according to Hughes (2022). It has been claimed that good relationships with one's sibling could be a beneficial buffer for negative influences on child well-being, as well as encourage skills needed to develop meaningful relations later in life (Feinberg et al., 2012; Soneson et al., 2023).

Based on the provided evidence, we argue that children who had siblings in the same household during the COVID-19 pandemic will report high well-being compared to children without siblings in the same household. In addition, the beneficial effect of siblings has been more evident in children with older siblings (see Hughes et al., 2022), thereby giving an indicator that sibling age compared to child age might be an important covariate to examine in our study. Having examined the complexities of sibling relationship, it is important to recognize the unique significance of the sibling within the family unit and how factors such as age gap and/or birth order influence the child.

The Cross-Country Approach

As mentioned previously, governments all over the world decided their own strategies and restrictions in order to prevent the spreading of the deadly virus. Due to these restriction differences, there is a good opportunity to indicate if different restriction approaches had different consequences on children's well-being during the pandemic. Therefore, we chose a cross-country study design aimed at investigating these differences. The present study included data from four European countries that differed in their restriction approaches, namely: Germany, Norway, Sweden and the UK (including England and Scotland). These four countries differed in both infection- and death rates, as well as the severity of the

restrictions (Mavragani, 2020). Nevertheless, the countries are similar enough to compare as they all are considered first-world countries (industrialized countries), meaning they all had available aids and opportunities to reduce the spreading better than developing countries (Dyer, 2020). When comparing experiences in these different countries, we can get a broader understanding and draw a more nuanced conclusion on which restriction approached that have brought on more harm than others to the well-being of children in the relevant countries during the COVID-19 pandemic (Cascini, et al., 2022; Hughes et al., 2022). Therefore, we believe comparing these four countries will be a meaningful and resourceful contribution to research. In the following, we will briefly present the specific situation within each of the four countries in 2020 and highlight similarities and differences between the countries.

COVID-19 in Germany

The first case of COVID-19 infection in Germany was reported in late January 2020, and the virus was quickly spreading (Petzold et al., 2020). This led the German government to take precautions and on March 13th, 2020, they decided to close down schools nationwide (Freundl et al., 2021). However, children of essential workers, such as health workers, were offered to attend emergency services in schools (Notbetreuung[1]) (Freundl et al., 2021). Around the time of May and June 2020, several grades were offered to go back to in-person teaching, however, with a reduced schedule and restrictions to the amount of people allowed at schools per day, as well as strict hygiene rules (Freundl et al., 2021).

German children were strongly affected by the school closure. According to Grewenig and colleagues (2021), during the first wave of COVID-19 in spring 2020, children spent an average of 3.6 hours per day on educational exercises, compared to 7.4 hours before the pandemic. The specific effects the closure had on children's knowledge and academic skills remains unknown. However, evidence suggests that the time children spent on beneficial

[1] See https://www.dwds.de/wb/Notbetreuung for further information about emergency services.

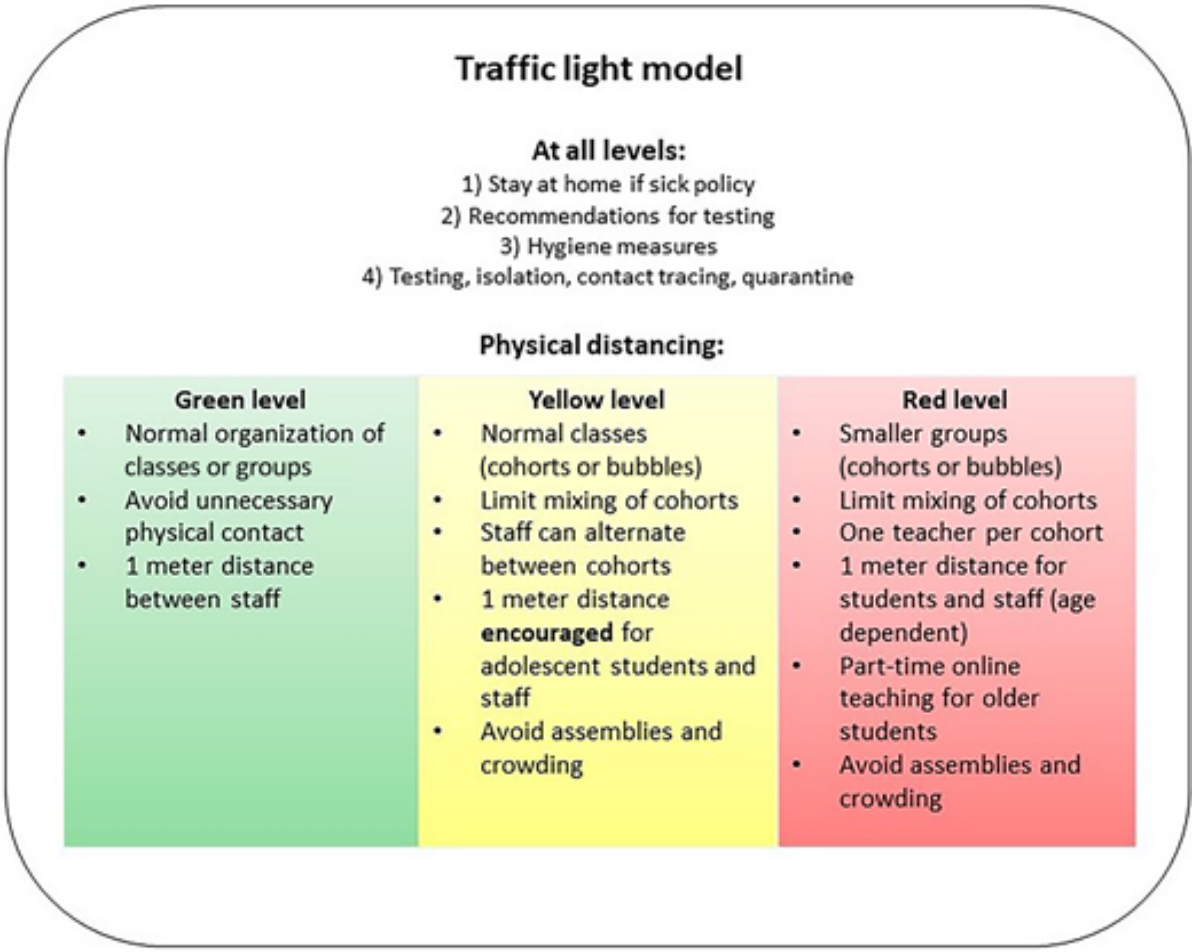
activities such as reading and creative work were low (2.9 h to 3.2 h per day) compared to the time spent on detrimental activities such as playing computer games and watching TV (4.0 h to 5.2 h per day) (Grewenig et al., 2021). In addition, teachers were also less involved and less active in teaching the children during this period (Freundl et al., 2021). For instance, Freundl and colleagues (2021) claimed that only 17% of school children had contact with their teacher more than once a week. For most students the main teaching method used during this time was hand-out exercise sheets which only 37% received feedback on more than once a week (Freundl et al., 2021). Indicating that not only did children experience a loss of social contact, they most likely experienced a decrease in academic input and learning (see Engzell et al., 2021). In general, COVID-19 hit Germany hard and several arenas were affected. During the first year, Germany had 145 864 confirmed cases of COVID-19, with 5831 deaths (numbers from the 4th of January 2021) (The World Health Organization [WHO], 2021a).

COVID-19 in Norway

Similar to Germany, the Norwegian government introduced a nationwide lockdown in March 2020, which affected several arenas, for instance, public healthcare, leisure activities and schools. In Norway schools were affected by the lockdown until the spring of 2021 with different regulations based on which grade you were in. Nationally, grade 1-4 (age 6-9) were closed for six weeks, and grade 5-7 (age 10-12) were closed for eight weeks. Norway used a "traffic light model" while trying to reopen the schools, and by fall 2020 this model was actively used (Nøkleby, 2021). The "traffic light model" included three levels of measures for degree of restriction severity. The three levels were represented as a traffic light with colors green, yellow, and red, indicating the severity of the situation. The primary distinction among the levels lay in the recommended distances and the sizes of allowed cohorts (Rotevatn et al., 2022). See Figure 1 for more detailed information about the criteria and differences within the levels.

Figure 1

The Traffic Light Model Implemented in Norwegian Schools



Note. Figure is taken from paper by Rotevatn et al., 2022, p. 2.

Nøkleby (2021) claims that several Nordic studies have shown that children have had divided opinions regarding how much they enjoyed homeschooling in the spring of 2020. There are said to be many contributing factors for this, for instance how well the teachers and the school facilitated homeschooling, and how well the home was appropriate to be a learning area with access to digital school (Nøkleby, 2021).

By the 4th of January 2021, Norway had 4694 confirmed cases, with only 42 deaths as following the COVID-19 pandemic (WHO, 2021b). These numbers indicate a relative low spread of the virus, meaning Norway was not hit particularly hard by the pandemic, however the society changed dramatically (Blix et al., 2021).

COVID-19 in Sweden

The Swedish government chose a more liberal approach than many other European countries to prevent the spreading of the virus (Ludvigsson, 2022). Sweden was one of the countries with the highest death rates due to the virus in spring 2020 in Europe (Ludvigsson, 2022), yet the country did not enforce a nationwide lockdown at any point during the pandemic. However, they recommended people to take precaution, follow guidelines, and stay at home if they were experiencing symptoms of the COVID-19 virus. Sweden differed from their neighboring countries and kept schools open for most children under the age of 16 during the whole pandemic, with only limited health measures (Ludvigsson, 2022). For example, these measures included a national ban to visit elderly people in nursing home. The government implemented some degree of distance learning for high school students, and a full mandatory distance learning for university students, however, elementary schools and kindergartens remained open throughout the whole pandemic (Ludvigsson, 2022). This indicates that the learning outcomes were seemingly better for the children in Sweden than in their neighboring countries. In 2022, the Swedish government appointed a Commission to examine how the country handled the pandemic (Ludvigsson, 2022). This Commission highlighted the maintenance of personal freedom for the inhabitants of Sweden, yet it also indicated a weakness in the governments approach to the pandemic. It stated that more extensive and early measures against the virus should have been undertaken, especially during the first wave of the pandemic in spring 2020 (Ludvigsson, 2022).

By the 4th of January 2021, Sweden, had 39 883 cases of COVID-19 with 635 confirmed deaths (WHO, 2021c). Despite the number of infected cases and death rates being among the highest in Europe, they did not engage in “strict measures” (i.e., school closure) to decrease the spreading.

COVID-19 in the UK

In the present research we collected data from the UK, consisting of participants from England and Scotland. Similar to Germany and Norway, the UK introduced a nationwide lockdown from the end of March 2020, which began to ease up in the beginning of June 2020 across the UK (Waite et al., 2020). The government decided to close down schools, with exceptions made for children of essential workers and vulnerable children (Christie et al., 2022). In May 2020 the cases of COVID-19 infections declined, and by the middle of June children in primary school (ages 4-11) and secondary school (ages 11-18) were returned to school. By the 1st of September 2020, all children were back at school, with various mild restrictions. These restrictions included teachers and students to be placed in different "bubbles" to prevent unnecessary spreading of the virus. If either a teacher or a student in a bubble tested positive for COVID-19, the whole bubble had to isolate for 14 days and test for COVID-19 if experiencing symptoms (Southall et al., 2021). The UK was one of the countries that were hit hardest by the pandemic in Europe, according to numbers of death per one million inhabitants in 2020 (Lawler, 2020). During the first year of the pandemic (by the 4th of January 2021), the UK (England, Scotland, Wales and Northern Ireland) had 422 673 confirmed cases of COVID-19, with 6625 deaths (WHO, 2021d).

Having explored the various country-level responses to the COVID-19 pandemic across Germany, Norway, Sweden, and the UK, we now shift our attention to our present research, which explore the effects of the lockdown measures implemented in these countries on child well-being, as well as other potential influencing effects (i.e., siblings).

The Present Research

In the present study, we investigated whether the restrictions of COVID-19 (i.e., lockdown and school closures) had an effect on children's (aged 6-13) well-being. We collected data from four European countries: Germany, Norway, Sweden and the UK. A research group at UiT The Arctic University of Norway (see Appendix A for information

about the research group) collected data in an online questionnaire late in 2020 during the COVID-19 pandemic. This questionnaire included questions regarding the lockdown (retrospective questions) and questions about after the lockdown (questions about the current situation). Using retrospective questions in a survey has been criticized, which we will acknowledge later on. However, there are advantages to using retrospective reporting, for instance, enabling us to get information about how the condition was during the pandemic, as this was an unforeseen situation and thereby almost solely had to rely on retrospective reporting. In addition, there has been argued that retrospective reporting is good as long as the measure used in the study is reliable and valid (Miller et al., 1997). The present research relies on parents reporting on behalf of their children. Using parental reports is common practice in developmental psychology and earlier research shows that parental report and children's own reporting strongly overlap (see Miller et al., 2017; Thorsteinsen et al., 2021).

Hypotheses and research questions of the present master thesis were preregistered at the Open Science Framework (https://osf.io/f2m7c). These hypotheses were made based on previous empirical evidence indicating a decrease in children's well-being during the COVID-19 pandemic. The present works aims to contribute to the knowledge on how COVID-19, specifically being in lockdown and experiencing school closure, negatively affected children's well-being. Additionally, in the present work we investigate the effect of having siblings in the same household, to see if siblings worked as a substitute for peer relationships during lockdown and school closure. More precisely, we first hypothesized that children's well-being was lower during the lockdown in spring 2020 than in fall 2020 (after the lockdown) (H1). The second hypothesis predicted that the difference between spring and fall 2020 in children's well-being was smaller in Sweden than in the other three countries since Sweden did not close elementary schools in spring 2020 (H2). The third hypothesis stated that across countries children in households with siblings report higher well-being than

children without siblings (at both timepoints) (H3a). We believe this effect should be particularly strong during schools' closures in spring 2020 (H3b). In addition, we further explore whether the effect of siblings depends on the age difference between the siblings (i.e., siblings closer in age might be particularly beneficial for child well-being). Finally, we aim to investigate the birth order of the children, where we hypothesized older siblings to have a greater positive impact on children's well-being than having younger siblings (exploratory analysis).

Method

Participants

The participants in the present study were parents of children from four European countries: Germany, Norway, Sweden and the UK. When the term "participant" is used it refers exclusively to the parent. Participants were collected via a panel provider called Toluna (https://de.toluna.com), however, in Norway, we got an additional 51 participants by recruiting several elementary schools as the panel provider could not provide the required sample size for Norway. In total, 134 participants from Germany, 149 from Norway, 150 from Sweden and 123 from the UK participated, making it a total sample size of 556. Our objective was to investigate the impact of the pandemic on children, however, obtaining direct responses from children were not possible through the panel provider, therefore, parents reported on their children's experiences. As mentioned earlier, parent-reports has been seen as a common practice with high correlations between parental reports and child reports.

Data were collected from November 27th to December 14th in 2020, and a total of 556 participants gave informed consent and completed the questionnaire (see Appendix B for Norwegian version of the consent form). The participants had to answer questions about themselves, their partner and their children and their child's (aged: 6-13 years) perceived feelings.

Exclusion Criteria

In the preregistration (https://osf.io/f2m7c), we specified exclusion criteria. Firstly, we adjusted the cut-off time for data collection to seven minutes, considering it as the estimated minimum required to complete the questionnaire. There were 46 participants that took less than seven minutes and were therefore excluded. Secondly, we excluded nine fathers and two mothers who reported being under the age of 13 years, and we excluded two mothers reporting being above the age of 50 at the time of birth to the child they referred to in the questionnaire. The decision to exclude these cases stems from the research group's agreement that the reported ages of giving birth are unlikely and therefore was used as a proxy for dishonest response behavior. Finally, we excluded 33 participants who reported on children outside of our targeted age group (i.e., children younger or older than the age of six and 13 years). Leaving us with a total of 419 parents reporting on their 229 male and 186 female children, with three parents not reporting on their child's gender, and one did not indicate their own gender (missing). After the exclusion, there were 95 participants from Germany, 124 from Norway, 96 from the UK and 104 from Sweden. The mean age of the children's sample was 9.66 years (SD = 2.32, range 6-13).

Descriptive analyses show that in our sample 18.1% of the children came from a single parent household, 41.3% had at least one parent being an essential worker, 6.9% of the participating children were considered in the risk group for COVID-19, and 20.3% had at least one parent with immigrant background. These variables might have affected the child's experience of lockdown and their well-being and therefore will be included in the descriptive analyses.

Design and Procedure

We used a cross-sectional study design. A cross-sectional design entails examining data collected from a population at a singular time point. Participants are selected from an

available population relevant to the study question, and there is no subsequent follow-up, either prospectively or retrospectively (Wang & Cheng, 2020). Ethical approval for the study was received by the department's internal board of research ethics at UiT The Arctic University of Norway, in addition, the study was approved by SIKT (Norwegian Agency for Shared Services in Education and Research).

The questionnaire took an average of 15 minutes to complete, and the participant had to give informed consent before participating. The items within each measure were presented in a randomized order. Child well-being scores were assessed at different time points, with retrospective questions from spring 2020, during lockdown, and questions from fall 2020 (present), after lockdown. In H1 and H2, child well-being scores will be used as dependent variables and country as independent variable, with child age and gender as a covariate. In H3 we will again use child well-being scores as dependent variable, and country as independent variable, and we will use siblings as a moderator, and child age and gender as covariates. In the exploratory analysis, child well-being scores are considered as dependent variable and age difference between sibling and child, and sibling age as independent variables.

Materials and Measurement

Every participant completed the questionnaire in the official language of their respective countries. Items lacking validated translations were translated by native speakers of the research team and then back-translated by collaborators who were native speakers. The relevant scales for the present research question are described in detail below.

We used the KIDSCREEN-10 to collect information about the children's perceived well-being. KIDSCREEN-10 is a scale designed for studying health related quality of life (HRQoL) in children and adolescents ages 8 to 18 (Ravens-Sieberer et al., 2006). The "KIDSCREEN-10" scale was used when testing for both the child's retrospective feelings from spring 2020 and the "present" feelings in fall 2020.

KIDSCREEN-10 Scale

The participant completed the global KIDSCREEN-10 scale which is a widely recognized tool for assessing child health quality (Ravens-Sieberer et al., 2006). The scale consists of 10 items to measure child well-being scores. To illustrate, three of the items used for measurement were[2]: "Has your child got on well at school?", "Has your child felt lonely?", and "Has your child had fun with his/her friends?" (Ravens-Sieberer et al., 2006, p. 132-136). The two first items of the scale were measured on a five-point Likert scale ranging from "not at all" to "extremely". The eight remaining items were measured according to a five-point Likert scale ranging from "never" to "always". See Table 1 for internal consistency values (Cronbach's alpha) for the scale below. We measured internal consistency for each country per time separately (spring and fall 2020) to evaluate whether the measurement is measuring the same constructs (Revicki, 2014), also across cultural contexts. As can be seen in Table 1, all scales showed good reliability in all countries at both time points.

Table 1
Cronbach's Alpha for KIDSCREEN-10 Measurement Scale Disaggregated by Countries and Time

	α	
Country	Spring 2020	Fall 2020
Germany	.79	.86
Norway	.76	.74
Sweden	.87	.86
The United Kingdom	.70	.73

Note. 0.9 > a > 0.8 – Good, 0.8 > a > 0.7 – Acceptable. Spring 2020 = during lockdown. Fall 2020 = after lockdown.

Main Demographic Variables: Sibling's Age and Children's Age (Demographic Scale)

At the end of the questionnaire several demographic questions were included, directed directly at the participant (the parent), their partner and their children. In one question we were interested in whether the child participating in the survey had siblings (0 = no, 1 = yes), and if so, how old and the gender (0 = girl, 1 = boy) of the child's siblings (possible to report

[2] Due to copy rights, we could not include all the KIDSCREEN-10 items in this thesis.

up to five siblings). If the participant reported that the child had more than one sibling, we used the sibling closest in age to the participating child further in our analysis.

In the present analyses we will use the "siblings" variable to look at how siblings affected the results (H3 and exploratory analysis). In addition, as outlined earlier, we argued that the age distance between the child and their siblings would be an interesting factor. Therefore, we transformed the age of siblings into a new variable based on whether the age distance between the child reported for and their siblings were large (i.e., more than three years = 0) or small (i.e., less than three years or the same age = 1). This was done based on the idea that siblings closer in age might benefit and rely more on each other, and actually work as a substitute for their peers (Voorpostel et al., 2007).

Furthermore, we wanted to investigate the effect of birth order. Therefore, we made a new variable concerning the distance between the siblings' age, in which we subtracted sibling age with child age, with positive values indicating the sibling to be older, and the child to be younger. This was later on transformed into a dummy variable with sibling being younger (0) or older (1). This dummy variable will be used to test whether older siblings were more beneficial than having younger siblings (see Hughes et al., 2022). Additionally, we tested whether the child's age and gender affected their well-being. As we are looking at children aged six till 13, we know they might experience well-being differently. Younger children are argued to be more dependent on their parents and older children to be more dependent on their peers (Eccles, 1999; Ladd, 1990; Waite et al., 2020). Furthermore, evidence indicates that older children reported higher and more severe rates of depressive symptoms and anxiety during the pandemic than younger children did (Sharma et al., 2021). Indicating a possible difference in well-being, dependent on age of the child. We also want to look at gender differences, as it is argued that females showed greater mental health issues, such as depressive symptoms, during the pandemic than males, and males had more problems

regarding behavioral issues, such as substance issues (Sharma et al., 2021; Waite et al., 2020). For this reason, child age and child gender were included as covariates in the following analyses.

Additional Demographic Variables

We collected a number of additional demographic variables that might be interesting regarding children's well-being during the pandemic. The impact of the pandemic might have differed according to several factors, including factors that generally increase risk for poor mental health (Waite et al., 2020). In our case, these variables included whether the child lived in a single parent household, if the parents were essential workers, if the child itself was considered being in the risk group, and finally the parent's immigration status. Correlations between these additional demographic variables and child well-being will be reported in the correlation table at the beginning of the results section (see Table 2).

Statistical Analysis

To test H1, we will use a repeated measures ANOVA as we are looking at answers from two different times, where we will compare retrospective answers on child well-being from spring 2020 (during lockdown), with answers from fall 2020 (after lockdown), this will be our within-subjects factor. Child age and gender will be investigated as covariates. We predict a main effect of time with levels of children's well-being scores being lower during spring and lockdown, when compared to fall 2020 (after lockdown), across countries.

To examine H2, we, again, intend to conduct a repeated measures ANOVA, incorporating "time" as the within-subjects factor and "Not Sweden" as the between-measures factor. Child age and gender will be included as covariates. "Not Sweden" is a dummy variable we made, used to single out Sweden (0) from the other three countries (1). This was done to be able to investigate sample from Sweden compared to the rest. Our prediction is that the variation in children's well-being between spring 2020 and fall 2020 will be more

evident in Germany, Norway, and the UK when compared to Sweden. We will explore this difference with an independent samples t-test. Finally, we will again run the same analysis as in H1, but we will split the data set by country. This is done to see if child well-being scores differentiate more in countries where they experienced lockdown, compared to not have experienced it (Sweden).

In order to test H3a, we will use a repeated measures ANOVA, and include both time points as within-subjects factor and siblings (yes/no) as a between-subject factor, controlling for child's age and gender as covariates, across all countries. We predict to see a difference in well-being scores for children with siblings (higher scores) than children without siblings (lower scores). To test H3b we will do the same analysis, but split by country to remove Sweden sample, as they did not participate in school closure during the COVID-19 pandemic. This is to investigate if sibling(s) mattered more during lockdown and school closures in spring 2020 than in fall 2020, after lockdown.

Finally, to test our exploratory analysis we will do a repeated measures ANOVA with well-being scores from spring and fall 2020 as repeated measures factor, age distance between child and sibling as between-measures factor, and child age and gender as covariates. We predict a main effect for siblings in the direction that children with siblings report higher well-being scores at both times. Here we will only analyze data from Germany, Norway and the UK, as we predicted sibling's to be a substitute for peers during school closures. Finally, we will explore whether having older siblings contributes more to higher well-being scores, than having younger siblings, this will be done with an independent samples t-test. To test this, we will use the new variable we made, where we recoded sibling age to younger (0) or older (1) than the participating child.

Results

Analysis of the data was done using IBM SPSS, version 28. Table 2 shows correlation values from the KIDSSCREEN-10 scale from spring 2020 and fall 2020, sibling variable, as well as demographic variables: single parent household, essential workers, children in risk group and immigrant status.

Table 2

Correlations for Study Variables Across Countries (N = 419)

Variable	1.	2.	3.	4.	5.	6.	7.
1. Child well-being in spring 2020	1.00						
2. Child well-being in fall 2020	.72***	1.00					
3. Siblings	-.06	-.07	1.00				
4. Single parent household	.02	-.03	-.10*	1.00			
5. Essential workers	.11*	.07	-.15**	.12*	1.00		
6. Children in risk group	-.01	-.04	-.09	-.04	.23**	1.00	
7. Immigrant background	.02	-.08	.10	-.05	.05	.25**	1.00

Note. ***Correlation is significant at the .001 level (2-tailed). ** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed).

(H1) The Impact of Lockdown on Children's Well-being Scores Across Four Countries in Spring and Fall 2020

First, we tested H1, namely that children's well-being scores across all countries were lower in spring 2020 (during lockdown) than in fall 2020 (after lockdown). In order to test this, we conducted a repeated measures ANOVA with child well-being scores from spring 2020 and child well-being scores from fall 2020 as within-subjects variables and we included child age and gender as covariates. In line with our hypothesis, a repeated measures ANOVA showed a main effect that well-being scores differed significantly from spring 2020 (lockdown) to fall 2020 (after lockdown), Wilks' Lambda = .98, $F(1, 415) = 6.98$, $p = .009$, $\eta_p^2 = .02$. Descriptive statistics indicates that during spring 2020 the mean well-being of children ($M_{lockdown} = 3.50$, $SD = .59$), was lower than the mean value in fall 2020 ($M_{current} = 3.68$, $SD = .57$). There was no significant main effect of child age nor gender ($p > .169$), and

there were no significant interaction effects between child age and gender with time ($p >$ .202).

(H2) Children's Well-being in Spring and Fall 2020: Differences Between Sweden and the Other Countries

As predicted, we saw lower levels of child well-being in spring 2020, during lockdown, than in fall 2020, after lockdown. Yet, as stated in H2, we predicted there to be a smaller difference between spring and fall 2020 in Sweden, being the only of our four countries that did not engage in a lockdown. We did a repeated measure ANOVA with child well-being scores from spring 2020 and fall 2020 as within-subject factors, and the "Not Sweden" variable was used as a between-subject factor. Again, we had child age and child gender as covariates.

The repeated measure ANOVA showed no main effect of child well-being scores at either times (spring and fall 2020) when adding countries as between-subject, Wilks' Lambda = .99, $F(1,414) = 3.59$, $p = .059$, $\eta_p^2 = .009$. There were not found significant main effects of covariates child age and gender ($p > .170$). However, in line with our prediction, the analysis indicated an interaction effect between Sweden and other countries and time in well-being, Wilks' Lambda = .95, $F(1, 414) = 21.86$, $p < .001$, $\eta_p^2 = .05$. There were no significant interactions with covariates child age or gender with time ($p > .301$) within any of the country groups. For descriptive statistics per country see Table 3 below.

Table 3

Descriptive Statistics from Sweden and Germany, Norway and the UK. Spring 2020 is Before the Slash (/) and Fall 2020 is After the Slash (/), (N = 419)

Variable	*n*	*M*	*SD*
Sweden	104/104	3.60/3.60	.58/.57
Others	315/315	3.47/3.70	.59/.58

Note. M = mean, *SD* = Standard deviation, *n* = sample per country. Others = Germany, Norway and the UK.

To further explore the significant interaction effect found in the repeated measures ANOVA, we used a two-tailed independent samples t-test to specifically compare the children's well-being scores in Sweden with the other countries (Germany, Norway, and the UK) during spring 2020. The results revealed a marginal significant trend, ($t(417) = 1.95$, two-sided $p = .052$) in the predicted direction (for the mean values see above (Table 3)).

Next, we ran additional analyses to investigate the differences between the countries with lockdown and not. This exploratory analysis was not preregistered. We did a repeated measures ANOVA, same as earlier, but now split by country using the "Not Sweden" variable (0 = Sweden, 1 = Others (Germany, Norway and the UK)), as Sweden did not engage in lockdown during the pandemic. In line with our hypothesis, for the three countries that had implemented a lockdown, we found a significant main effect of time and well-being scores, Wilks' Lambda = .97, $F(1, 312) = 8.28$, $p = .004$, $\eta_p^2 = .03$, see Table 3 for mean values. The covariates did not significantly affect child well-being, child age or child gender ($p > .200$), nor were there any interaction effects ($p > .184$). As predicted, for Sweden, there was no main effect of time and child well-being scores ($p = .756$, see Table 3 for mean values). There was found a significant main effect of covariate child gender at the .05 significance level ($p = .032$), but not on child age ($p = .534$). Additionally, there were no interaction effects of child age nor gender ($p > .658$).

(H3) Do Siblings Have a Positive Effect on Children's Well-Being in a Pandemic?

We predicted that children in households with siblings would show higher well-being scores at both times (spring and fall 2020) across countries (H3a), however, we believed that this effect would be particularly strong during school closures in spring 2020 (H3b). We did a repeated measures ANOVA with child well-being scores from spring and fall 2020 as within-subject factors, we had sibling (yes/no) variable as between-subject variable, with child age and gender as covariates. We found no significant main effect ($p = .192$) between children

with siblings ($M_{lockdown}$ = 3.52, $SD_{lockdown}$ = .58, $M_{current}$ = 3.70, $SD_{current}$ = .56) and children without siblings ($M_{lockdown}$ = 3.44, $SD_{lockdown}$ = .60, $M_{current}$ = 3.62, $SD_{current}$ = .62) in their well-being scores. There was no interaction effect between time and siblings (p = .856). Additionally, there were not found main effects of either child age or gender nor interactions (p > .195).

We believed the effect of siblings would be particularly strong during school closures in spring 2020. Therefore, we ran additional similar analysis, but we excluded participants from Sweden. The repeated measures ANOVA found a significant main effect of time on well-being, Wilks' Lambda = .97, $F(1,311) = 8.31$, p = .004, η_p^2 = .03. There was no significant main effect (p = .317) of siblings on well-being (siblings: $M_{lockdown}$ = 3.49, $SD_{lockdown}$ =.57, $M_{current}$ = 3.72, $SD_{current}$ =.54, no siblings: $M_{lockdown}$ = 3.41, $SD_{lockdown}$ = .63, $M_{current}$ = 3.66, $SD_{current}$ = .65). Nor did we find an interaction effect of siblings on well-being (p = .806). Moreover, the covariates child age or gender were not significant (p > .183).

Exploratory Analysis: Do the Age of Siblings Make a Difference for Child Well-Being?

Finally, we wanted to further explore if the effect of siblings was dependent on the age distance between the child reported on and their sibling(s), where we hypothesized a closer age gap to be better. This analysis only included children with reported siblings. We did a repeated measures ANOVA with child well-being scores at both times (spring and fall 2020) as within subject factors, the variable concerning the age differences in siblings as either small (< 4 years) or large (> 4 years) was included as a between-subject factor and child age and gender as covariates. Additionally, we removed participants from Sweden in this analysis. The exclusion was done because we argued there to be no difference due to no lockdown and school closures in Sweden. The repeated measures ANOVA indicated no main effect of age difference on child well-being scores (p = .975), and there was no interaction effect for time

and age difference (p = .969). There was no evidence of any main effects of covariates child age or gender nor interactions (p > .170).

Additionally, we believed children with older siblings to benefit more from their siblings. Based on the earlier discussed research, older siblings should have a more positive effect on child well-being than younger siblings. To test this, we did an independent samples t-test with older siblings (1) vs. younger siblings (0) as independent variable with child well-being scores from spring and fall 2020 as dependent variables, across countries. Contrary to our hypothesis, we saw higher mean well-being score for younger siblings at both time points when compared to older siblings, younger siblings (M_{lockdown} = 3.60, SD = .51, M_{current} = 3.80, SD = .49), older siblings (M_{lockdown} = 3.49, SD = .59, M_{current} = 3.64, SD = .56), across countries. This difference was also significant for fall 2020 (after lockdown): $t(255) = 2.44$, p = .016. However it was not significant for spring 2020 (lockdown), $t(255) = 1.59$, p = .112.

Discussion

This thesis aimed to investigate the impact that lockdown and school closures had on children's well-being, and whether or not having sibling(s) in the same household during this period had a positive influence. Our analysis contained data from four European countries, Germany, Norway, Sweden and the UK. Despite country-level differences, three of these countries handled the pandemic relatively similar in 2020 with nationwide lockdowns. However, Sweden differed and did not engage in a nationwide lockdown at any point during the pandemic. Therefore, in this thesis we aimed to investigate if the sample from Sweden differed from the other three countries, thus seeing if the lockdown negatively impacted the children more than just experiencing the pandemic. Also exploring the positive effect of siblings during COVID-19 restrictions. Our study had three hypotheses and one exploratory analysis. H1 investigated if well-being scores were lower during lockdown than after, across countries, which was confirmed. H2 investigated if the decrease in well-being during spring

2020 (lockdown period) was more evident in Germany, Norway and the UK, compared to Sweden due to no lockdown, this hypothesis was partly confirmed. H3 investigated if having siblings in the same household positively influenced child's well-being during the lockdown period, however, this was not confirmed. The exploratory analysis investigated whether age distance between child and sibling mattered, where we predicted closer age gap to be better, however, this was not confirmed. In addition, we predicted children who had older siblings to benefit more of having siblings in the same household during this period, than the effect of having younger siblings, but this was not confirmed.

The Impact of Lockdown on Children's Well-being Scores Across Four Countries in Spring and Fall 2020

The first hypothesis stated that there would be lower well-being scores during lockdown (spring 2020) compared to after lockdown (fall 2020), across countries. Indeed, we found that children had lower well-being scores during lockdown (spring 2020) than after the lockdown (fall 2020). However, the effect was small (.02), indicating that even if there is a difference, this effect is not necessarily of practical importance (Ferguson, 2009). The descriptive statistics showed a general lower mean well-being score for spring 2020 than for fall 2020. Previous research has shown that experiencing lockdown during COVID-19 negatively affected well-being (see Hughes et al., 2022; Prime et al., 2020; Sharma et al., 2021). Also, due to school closures, children experienced a lack of socialization, which is seen as a risk for increased loneliness. Following this, loneliness has been seen to be negative for the general mental health (Mazrekaj & De Witte, 2023). Therefore, our findings are in line with previous research, since a big part of our sample experienced lockdown and school closures we predicted this outcome.

Children's Well-being in Spring and Fall 2020: Differences Between Sweden and the Three Other Countries

The second hypothesis claimed that the difference in well-being scores between the two time points would be more visible in countries with lockdown compared to Sweden. However, we did not find this, and there could be several reasons as to why. Overall, there were no huge changes in well-being scores in either country groups, meaning that lockdown vs. after lockdown had similar well-being scores. Even if previous research, as well as our results from H1, has indicated a worsening of well-being during this period, there are some studies indicating the opposite. For instance, in a study by Soneson and colleagues from 2023, they found that children and youth in the UK actually reported improved well-being during lockdown. This indicates that the impact of lockdown was dependent on several factors, such as school connectedness, family situation and pre-pandemic mental health state. Additionally, they found that experiencing school closures were beneficial for some students, for example, those experiencing bullying or academic stress (Soneson et al., 2023).

Nevertheless, we did see a significant interaction effect between country and time in well-being scores, even if this effect was small (.05). Meaning, that we found an increase in well-being after lockdown in countries that experienced lockdown, compared to no change in well-being in Sweden when looking at time points. Generally, we saw higher mean scores for well-being in Sweden, which did not differ from spring to fall 2020. In the other three countries, we saw a higher increase in well-being scores between spring 2020 and fall 2020. Thus, we draw a conclusion that lockdown and school closures affected children's well-being scores as predicted in the present study. As previously mentioned, we saw relatively low well-being scores across all countries, even if it was better in Sweden compared to Germany, Norway and the UK. It is important to acknowledge that the sample from Sweden could still be experiencing stress, fear and worry around the pandemic and its consequences, even if they did not close schools (see Sarkadi et al., 2021).

When we did the same analysis as previously (H1) but split the sample by Sweden vs. the other countries, to single out countries with lockdown and without. We yet again found support for our hypothesis. As predicted, we did not see lower well-being in Sweden during and after lockdown. However, the countries that experienced lockdown and school closures (Germany, Norway and the UK) had lower well-being scores during lockdown compared to after, even if the effect was small (.03). This again was in line with previous research which suggested that lockdown had a negative effect on well-being, and we did not find a difference in well-being scores in the sample from Sweden. Due to no lockdown and school closures, the participants did not experience any severe changes in routines (Lindblad et al., 2021). Interestingly, in Sweden, we found an effect of child gender. Thus, indicating that well-being scores differed between genders in children from Sweden, however we did not investigate this effect further.

Do Siblings Have a Positive Effect on Children's Well-Being in a Pandemic?

The third hypothesis argued that children with siblings in the same household during COVID-19 showed higher well-being scores at both times than children without siblings, across countries. We believed that this was going to be especially prominent during lockdown (spring 2020), because previous literature indicates that siblings can be similar to peers (Cassinat et al., 2021). Through their peers can children develop a source of support, and research has indicated that the quality of peer relations during elementary school, has been a predictor for school avoidance, disruption and failure later in life (Ladd, 1990). Thus, when children had limited access to peers, the source of support was lacking, leaving a possible need for fulfilling this support from someone else. On the other side, some children do not get along with their peers, and therefore the need for a substitute is crucial for healthy development, for instance, through their siblings (Stocker, 1994). For instance, Feinberg and colleagues (2012) claimed that siblings work as a buffer for the possible negative impact from

peers, such as bullying. Meaning, that children who were bullied at school, might have had better relations to their siblings at home

However, after running our analysis, we did not find any support for this hypothesis. Meaning, we could not confirm H3; children's well-being scores were not positively affected by having siblings during the pandemic restrictions. These results could be explained by several factors. On one side, we know that children reported benefits from staying at home during the pandemic, where they enjoyed spending more time with their family members (Sharma et al., 2021). On the other side, there is research suggesting that changes due to the pandemic could be a trigger for increased sibling conflict. Kretschmer & Pike (2009) claimed that changes in sibling relations could be worsened by chaos within the household. Lower levels of household chaos are related to better sibling relationships, and higher levels of household chaos, associated with the uncertainty during the pandemic, is related to increased sibling conflicts. This was also supported by Perkins and colleagues (2021) who studied the prevalence of sibling violence during COVID-19 restrictions. They argued that the prevalence of sibling violence increased due to the social changes in the family and family stress. Sibling violence can be defined as "the intent to harm a sibling by using physical or emotional behaviors" (p. 746). Sibling violence can be associated with increased risk for worsened mental health and increased aggression. Nevertheless, this is a limited research field, and sibling violence during COVID-19 has been going under the radar (Perkins et al., 2021). Thus, indicating several reasons as to why we did not find evidence to confirm our hypothesis that having siblings in the same household during the COVID-19 pandemic with lockdown and school closures was a positive influence.

Do the Age of Siblings Make a Difference for Child Well-Being Scores?

We also wanted to investigate if the effect of siblings was dependent of age distance between the child and their sibling (exploratory analysis). We argued that a closer age gap and

having older siblings should be more positive for child well-being during the lockdown, based on previous literature (see Hughes et al., 2022; Voorpostel et al., 2007). Since Sweden did not participate in the lockdown, we did not include them here. Similar to H3, we did not find evidence to support this statement. There were not found any support that age difference between child and sibling mattered on their well-being, nor did the child's gender matter. However, we did find a difference between older and younger siblings when running additional analysis (t-test). Contrary to our hypothesis and previous literature, we found that having younger siblings showed higher well-being scores at both time points, during lockdown and after lockdown, compared to having older siblings.

The results for the exploratory analysis, could be explained by the lack of questions regarding the quality of the sibling relationship. Prime and colleagues, highlighted in 2017, that even if studies have shown a benefit of having older siblings, there are also studies showing no difference in benefits between older and younger siblings. They argued these countering results could be due to studies solely investigating birth order, rather than looking at the social climate in which the sibling relations are in (Prime et al., 2017). Thus, investigating the quality of the relationship between siblings are just as important as only relying on birth order.

Implications and Strengths of the Present Study

With this study, we have extended previous work on the effects of restrictions methods used to try and reduce the spreading of COVID-19. This study is important to highlight the negative effect for children to experience lockdown and being kept out of school, erupting their daily routines. The present study, in particular, contributes to the emerging findings that lockdown took a toll on children's well-being, from a cross-country perspective. Despite the small effect sizes and high Wilks' Lambda values in our analyses, we found significant p-values, which gives an indication that our results are noteworthy and should be validated. In

addition, our results provide increased insight into the role of siblings during the pandemic, even if our hypotheses were not confirmed. Finally, policy makers have expressed concern in their handling of the pandemic (see for example, Lauterbach 2023). Thus, there is a need for more studies investigating better options to handle another pandemic in the future.

There are several strengths to our study. We used a cross-country approach, which automatically gives a broader understanding to how the pandemic affected children on a world basis. Our study includes a sufficient sample size, with approximately the same sample size from all four of the presented countries. In addition, our sample consists of both girls (n = 186) and boys (n = 229), which makes the results more generalizable to the broader population. Also, we used a highly recognized scale (KIDSCREEN-10) when measuring children's well-being. Finally, as mentioned, the study as a whole, contributes to fill a gap in knowledge when it comes to the negative effect COVID-19 restrictions had on children's well-being.

Limitations with the Present Study

There are limitations to our study which needs to be acknowledged. Firstly, we used parents reporting on behalf of their children. Even if this has been a common practice in developmental research, it can also be considered as a weakness. Parents can exaggerate the situation, they can understate their child's experiences, and the reports can be influenced by the parents' own well-being and psychological state (Whaley & Pfefferbaum, 2023). Parents were also highly affected by the pandemic and its restrictions, which reflected on their children's experiences (see Martiny et al., 2021; Patrick et al., 2020). For example, parents experiencing high levels of stress may perceive their child's well-being more negatively. In addition, the concept of social desirability bias is highly known. This implies that you give answers which you believe the society will appreciate and favor, making the situation seem better than it necessarily is (Vesely & Klöckner, 2020).

Secondly, we asked retrospective questions in our questionnaire. The participant had to recall the well-being state of their child from spring 2020, in November-December 2020. On the one hand, using retrospective reporting in studies have been found to be reliable (see Miller et al., 1997). On the other side, studies have shown that when using retrospective questions regarding negative events, that respondents are likely to exaggerate the situation (Sato & Kawahara, 2011). This could be due to negative memory bias, which is the tendency to recall negative information better than positive or neutral information (Rozin & Royzman, 2001).

Finally, our study variable for siblings was somewhat limited. We based our hypothesis (H3) and the exploratory analysis on whether or not the child had siblings. Our study did not ask any further questions of whether the child played more with their siblings, and how their relationship was affected by the pandemic etc. To better investigate this hypothesis (H3), we should have had more focus on how the relationship and interaction between the child and their sibling was during the pandemic when making our survey.

Outlook

As the COVID-19 pandemic still is a relatively recent event, studies and research on said event have been limited, and more studies should be conducted. Schmidt and colleagues (2021) highlighted the consistency in how the COVID-19 pandemic negatively affected adults, however, the negative effect it had on children is still largely unknown, even with the knowledge that children were a group that suffered significantly during the pandemic. Gaining insight to which demographic groups that were most heavily impacted by the pandemic, along with the specific challenges they faced, is vital for directing sufficient support to those who need it the most (Waite et al., 2020).

Future studies should continue to focus on the consequences of how the pandemic affected children. Additionally, future studies should investigate the long-term effects of

COVID-19 and the following restrictions (i.e., lockdown, school closure, social isolation etc.). This can be done with conducting longitudinal studies, which would allow researchers to examine how these effects evolve over time. Finally, as previously mentioned, future studies should look further into the relations between the child at home and their family members, especially sibling relationships. As the pandemic led to complete social isolation for many and limited their time with peers and others outside of the family, it is important to investigate whether siblings can work as substitutes for these missing social relations.

Conclusion

In the time of COVID-19 pandemic, children experienced incredible stress due to unfamiliarity and uncertainty. The present study provides evidence in line with previous research, namely, that COVID-19 restrictions such as lockdown and school closures worsened children's general well-being. This became particularly evident when comparing Germany, Norway and the UK, countries that experienced these restrictions firsthand, to Sweden, a country that did not engage in these sort of social isolation restrictions at any point during the pandemic. However, we did not find support for the expected positive effect of having siblings in the same household during school closures and lockdown, neither across countries nor when exclusively looking at the countries where lockdown was implemented. In addition, we did not find support for the claim that having older siblings were significantly more beneficial during this time compared to having younger siblings. The effect of the COVID-19 pandemic is still a field with limited research, especially considering how it affected children. More studies are needed to be better equipped to handle a future pandemic. The governments and policy makers need to pay more attention to the effects their decisions are having on children's well-being, especially during significant life changing events, such as a worldwide pandemic.

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Appendix A

The Research Group

The research group consisted of four members of the psychological department at UiT The Arctic University of Norway: Professor Sarah E. Martiny, Post-Doctoral Researcher Kjærsti Thorsteinsen, Student Marte Olsen and Student Marie Kvalø. They made an online survey with several measurement scales and variables, beyond the scales used in the present study. The data collection took place from November 27th to December 14th 2020, during the COVID-19 pandemic.

Appendix B

Consent Form in Norwegian

LIVET I KORONATIDEN

Tusen takk for at du vil delta i vår undersøkelse. Formålet er å få kunnskap om hvordan koronatiltakene i skolen påvirker foreldre og barns hverdagsliv og livskvalitet, etterhvert som virusutbruddet har holdt på. Dette er en del av et prosjekt som også ser på ulike roller kvinner og menn har i samfunnet. Svarene du gir vil være av stor betydning for forskningen.

UiT Norges arktiske universitet er ansvarlig for prosjektet. Forskere i prosjektet er Professor Sarah E. Martiny, postdoktor Kjærsti Thorsteinsen og mastergrads- og forskerlinjestudentene Marie Kvalø, Marte Olsen og Marie Heijens og forskningsassistent Runar Selaas.

Vi ønsker foresatte til barneskolealder (1.-7. klasse) som deltakere i studien og du deltar ved å fylle ut spørreskjemaet som tar omtrent 15-20 minutter. Spørsmålene handler om endringer som gjøres i skolen til barnet ditt, ditt barns holdninger til skolen, følelser og hvordan dere har det i hverdagen under koronakrisen. Vi vil også spørre deg noen spørsmål om din partner dersom du har en partner du bor sammen med, samt be om noe bakgrunnsinformasjon om deg og eventuelt din partner.

Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke deg uten å oppgi noen grunn. Ettersom vi ikke lagrer personidentifiserbar informasjon har vi ikke mulighet til å slette svarene dine dersom du trekker deg.

Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket. Kun forskere i prosjektet vil ha tilgang til datamaterialet. Undersøkelsen benytter seg av programpakken Qualtrics, et skybasert program som lagrer sine data på en sikker server i Irland. I formidling av resultatene vil det ikke være mulig å identifisere noen av deltakerne i undersøkelsen og all informasjon vil være helt anonymisert.

Hvis du har spørsmål til studien ta kontakt med UiT Norges arktiske universitet ved:

xxx

Prosjektet er godkjent av Institutt for psykologis forskningsetiske komite ved UiT Norges arktiske universitet.

SAMTYKKEERKLÆRING

Jeg har mottatt og forstått informasjon om prosjektet Livet i koronatiden og samtykker til at mine opplysninger behandles frem til prosjektet avsluttes i 2022.