



FAMILY-RELATED FACTORS THAT DETERIORATE EDUCATIONAL INEQUALITIES: THE CASE OF EMERGENCY REMOTE TEACHING (ERT) DURING THE COVID-19 PANDEMIC IN GREECE

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Abstract:

The abrupt outbreak of the COVID-19 pandemic has led countries worldwide to adopt a series of safety measures to protect public health. This unprecedented health crisis has greatly impacted the educational sector, leading to the precipitous adoption of an emergency type of distance education called Emergency Remote Teaching (ERT). ERT was an urgent solution to provide teachers and students with an online environment to continue the educational process while interacting safely from home. The new normality formed by the COVID-19 pandemic has been brought to the surface and may have exacerbated already existing educational inequalities. In this paper, we explore family-related factors that may have led to the deterioration of educational inequalities during school closures. The research design followed a mixed method, collecting both quantitative and qualitative data, using questionnaires and semi-structured interviews, respectively. The participants in our quantitative research were 271 parents and in our qualitative research were 20 parents from various regions of Greece. The results indicate important family-related factors, such as Individual factors, Parental involvement, Parental support, Technical/technological factors, Infrastructure, Economic factors, and Geographical factors, which had a significant role in children's Participation in ERT and may have increased existing educational inequalities. Our findings show that the Language spoken at home, Parents' education, Digital skills, Employment status during ERT, Combination of work and supporting child(ren) during ERT, Ability to understand and explain the educational material for ERT, Ability to resolve technical/technological

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problems, Internet connectivity, Access to online educational platforms, Access and Adequacy of the technological equipment and Place of residence, played a significant role in students' participation in ERT. Our research provides useful information that can be used in the future to promote students' participation in ERT and tackle educational inequalities.

Keywords: family-related factors, parents, educational inequalities, Emergency Remote Teaching (ERT), COVID-19

1. Introduction

The sweeping advent of the COVID-19 pandemic has brought cataclysmic changes to every aspect of social life, including Education. The measures taken by governments worldwide to protect public health have severely affected the education sector. According to data collected by UNESCO (2020), the measure taken by most governments in more than 190 countries was to close schools, affecting more than 290 million students worldwide. The response to this surprising suspension of the educational process in situ was the transition to an online educational environment of homeschooling, called Emergency Remote Teaching (ERT), which emerged as the most viable solution. Distance education was not an unknown territory for many countries and had been used extensively in recent years, but ERT was a forced adoption of online education, a means of digital homeschooling, applied to every student, even from the youngest age. In this context, homes turned into classrooms overnight to meet the urgent need for educational continuance. The transition from face-to-face education to limited online education has disproportionately affected students from disadvantaged households with greater learning losses (Engzell et al., 2021). The new normality created by the COVID-19 pandemic brought to the surface and exacerbated pre-existing educational inequalities (Burke & Dempsey, 2020; Guzzo et al., 2022; Van Lancker & Parolin, 2020). As distance education may be the alternative in future emergencies, understanding its impact on students and identifying the factors that may affect or exacerbate educational inequalities is crucial for developing intervention strategies for families in need.

This paper aims to identify family-related factors that may have affected students' participation in ERT and may be connected to the deterioration of educational inequalities during the COVID-19 pandemic period. Evidence is provided by data collected by parents in Greek public elementary schools.

2. Literature Review

Inequalities refer to the different ways in which people from different gender, ethnic, and racial groups are treated. Inequalities operate vertically, regulating the distribution of resources, such as wealth, income, health care, and education, among different groups (Stewart, 2008). Inequalities in education have been linked to inequalities in society, such

as inequalities in socio-economic, ethnic, and racial backgrounds (Vukasović & Sarrico, 2010). The most recent health crisis, that of COVID-19, has provoked major political, economic, and social challenges and has brought to the surface pre-existing educational inequalities (Burke & Dempsey, 2020; Guzzo et al., 2022; Kakana et al., 2017; Van Lancker & Parolin, 2020). Historically, researchers have supported the idea that schools are engines that reproduce social and cultural inequalities, favoring middle-class students (Collins, 2009; Gillborn, 2005) over working-class, ethnic minority, and disadvantaged students (Bokhove & Hampden-Thompson, 2021). Researchers have identified an intergenerational transmission of socio-economic position through the educational opportunities available to students from more privileged families (Breen, 2010). Further implications from educational inequalities include differences in civic participation, health, and earnings (Marien et al., 2010; Melhuish, 2014). In the traditional state of face-to-face education, students from less privileged families have received lower qualifications at school, had limited access to high-profile universities, and have pursued less prosperous careers than their privileged peers (Sullivan et al., 2013). A link between the socio-economic status of a family and the educational attainment of students has been found in the past, with students from disadvantaged families having lower school attendance and progress (Li et al., 2020; Munir et al., 2023).

In the case of the COVID-19 pandemic and associated school closures, homes were instantly transformed into classrooms. In this new digital context, existing inequalities may have been exacerbated and new ones created. According to the World Bank (2020) report, learning losses due to the economic impact of COVID-19 are expected to increase. Access to ERT was not guaranteed for all students. Inequalities in access to the good of public education significantly affected students from marginalized or disadvantaged households (Belay, 2020; Bol, 2020; Engzell et al., 2020; Kuhfield & Tarasawa, 2020; Mabeya, 2020; UNESCO, 2020), from large families (Bol, 2020) or immigrant/refugee students (Polydoros & Alasona, 2021). Furthermore, children from families with parents with lower levels of education or limited digital skills are among those most affected by ERT (Engzell et al., 2021). Research has found that school closures have disproportionately affected students from disadvantaged families, who have been found to be less engaged in school activities (Easterbrook et al., 2023).

In an attempt to address these inequalities, many schools attempted to continue the educational process in various ways. A large number of schools provided technology equipment to disadvantaged families (Greenhow et al., 2021). Schools not only implemented online classroom sessions on a timetable, but also used offline activities in online educational platforms. To engage students who did not have the appropriate technological equipment or a stable internet connection, many schools sent educational materials and homework through social media groups/mail services (Koskella et al., 2020; Mabeya, 2020; Nayir & Sari, 2020). Some schools arranged for printed materials and homework to be delivered directly to students, either by leaving them in the school building to be collected or by delivering them directly to students (Günbaşı & Gözüküçük, 2020; Mabeya, 2020). Despite the variety of different approaches to delivering the

necessary materials to students, not all of them could benefit from digital schooling (Dimopoulos et al., 2021).

Since the closure of schools due to COVID-19 restrictions, the responsibility for learning has shifted to families, creating a troubling new reality. Parents had to fulfill several roles at once, including that of parent, teacher and worker (Schmidt et al., 2020). Families, like schools, tried to mitigate the problems caused by this shift. Many parents reported buying the necessary materials and equipment for students to participate in ERT, namely computers or laptops, printers, cameras, microphones, etc. (Gür & Filiz, 2022). Those who were more familiar with educational technologies were able to solve the various technological problems that occurred during ERT (Gür & Filiz, 2022). In terms of their digital skills, a large number of parents had to familiarize themselves with the educational technologies and applications used during ERT and improve their digital skills in order to help their children (Koskella et al., 2020). Other parents took on the role of teacher at home, explaining and revising difficult concepts or subjects to their children (Gür & Filiz, 2022). In particular, parents of younger children in the early years of primary school were not only present during ERT to help, but, in many cases, also participated in the process (Misirli & Ergulec, 2021). The ability to work remotely from home made it easier for parents to support their children's learning (Koskella et al., 2020). Many parents provided the considerable psychological support that students needed during this stressful period, lifting their spirits and keeping their motivation high (Gür & Filiz, 2022). On the other hand, there were also some parents who could not contribute to their children's participation in ERT, either because of work commitments, lack of pedagogical/content knowledge, or inability to impose discipline on their children (Gür & Filiz, 2022).

Access to ERT has highlighted pre-existing inequalities and a digital divide between students that may be affected by the resources available to each family (Ahmed et al., 2024; Bayrakdar & Guveli, 2023). The question that remains is whether families have been willing or able to support this shift and to what extent they meet the requirements for successful student participation in ERT.

Technological infrastructure is crucial for educational continuity during the transition to ERT. Students from more privileged families were more likely to have access to electronic devices and stable, fast internet connections (Cuisia-Villanueva & Núñez, 2021). This may not be the case for many families, especially those from lower income households, who do not have the necessary technological equipment such as computers, laptops or tablets to participate in online courses (Andrew et al., 2020; Bansak & Starr, 2021; Brom, 2020; Dietrich et al., 2021; Mabeya, 2020; Simpson, 2020). Many students had to use smartphones, which had limited capabilities and limited their ability to experience the full capacity of online education (Bączek et al., 2021; Mascheroni, 2021; Niemi & Kousa, 2020; Pramana et al., 2021; Scarpellini et al., 2021). In many cases, students relied on their parents' presence to access their smartphones, leading to disruptions in their education when parents worked outside the home (Bayrakdar & Guveli, 2023). Inequalities were also evident in families with many children attending ERT at the same

time who did not have sufficient technological equipment to meet their children's needs (Brom, 2020; Koskella et al., 2020; Mabeya, 2020; Scarpellini et al., 2021; Simpson, 2020). In many cases, students would have to rely entirely on educational television programs broadcast by national television stations or educational radio programs to receive any educational continuity (Namatende-Sakwa & Lewinger, 2022).

In addition, internet connectivity was a significant factor influencing educational inequalities. Many households experienced significant difficulties due to a lack of the required stable internet connection (Basuony et al., 2020; Bayrakdar & Guveli, 2023; Ramij & Sultana, 2020). Even among families with access to the internet, the majority had to cope with a poor, low-quality internet connection, which caused a variety of technical problems and made it difficult to access online educational platforms, retrieve information and interact with other people (Adnan & Anwar, 2020; Bayrakdar & Cardullo et al., 2021; Dietrich et al., 2021; Mascheroni, 2021; Ramij & Sultana, 2020). Many families using smartphones reported having insufficient data packages to connect online and participate in digital classrooms (Basuony et al., 2020; Bayrakdar & Guveli, 2023; Cardullo et al., 2021; Koskella et al., 2020).

Parental support in homeschooling meant that parents had to take on an additional role, that of a home teacher, trying to explain the educational content of digital lessons to their children. For many parents, especially those with lower educational backgrounds, this shift has been an unbearable burden to overcome, as many of them may struggle with the educational support of their children (Cusinato et al., 2020; Günbaşı & Gözükcük, 2020; Mascheroni et al., 2021). Parents with lower levels of education have expressed a lack of confidence in supporting and helping their children with their schoolwork (Easterbrook et al., 2023). In addition, many parents reported a lack of content knowledge and methodology to explain the educational content of digital lessons (Andrew et al., 2020; Cullinane & Montacute, 2020; Engzell et al., 2021). Single parents who were also working during the COVID-19 closure faced significant challenges in supporting and assisting with their children's homework (Bansak & Starr, 2021; Sari et al., 2023). Students from families with lower levels of parental education were found to spend less time on homeschooling activities than their peers whose parents had higher levels of education (Benzeval et al., 2020; Easterbrook et al., 2023). Students' self-assessments of parental support showed that students whose parents had higher levels of education rated their parental support skills higher than those whose parents had lower levels of education (Dumont et al., 2012). A comparison of assessment results before and after school closures showed significant learning losses for students with less educated parents (Engzell et al., 2020).

The lack of a suitable study space at home to access their digital lessons and focus on their schoolwork may be the case for many students (Koskella et al., 2020). Students, especially those from disadvantaged backgrounds or large families with many members, may live in small or overcrowded houses where there is no suitable, quiet or personal space for studying (Andrew et al., 2020; Dietrich et al., 2021; Sari et al., 2023). Under these conditions, students would have to deal with the presence and intervention of others or

be exposed to noise or other distractions that make it difficult to concentrate on the lesson (Dimopoulos et al., 2021; Scarpellini et al., 2021).

Parental employment status during the COVID-19 pandemic may be related to the increase in educational inequalities. Children whose parents either did not work or had to work away from home were found to spend less time studying during ERT than their peers whose parents worked at home (Bayrakdar & Guveli, 2023). Parents who were able to work from home or work flexible hours during the COVID-19 quarantine restrictions, usually parents with higher levels of education, were available to help their children with homework and study and provided better support (Bansak & Starr, 2021; Sari et al., 2023). It was also reported that although parents from lower socio-economic families who were not working or on leave during the lockdown had more time to help their children with their homework, many of them did not have the necessary knowledge or confidence to do so (Easterbrook et al., 2023).

2.3 The Present Study

In both the international and the Greek reality, there is a shortage of studies on family-related factors influencing educational inequalities in homeschooling during ERT. A broader research was conducted in order to identify the educational inequalities and the factors that may have aggravated them during the implementation of ERT, according to the experiences of school counselors, school principals, teachers, parents and students. The present study, which is part of a wider study, aimed to investigate the impact of family factors on students' participation in online education during the crisis period of the COVID-19 pandemic. We investigated whether family background was associated with inequalities in student participation in e-learning during the 2020-2021 COVID-19 pandemic lockdown.

Our research question for the present study is formed as follows:

Research question: What family-related factors may have affected students' ability to participate in ERT provided during the COVID-19 pandemic?

3. Material and Methods

The research followed a mixed methods design, combining components of both qualitative and quantitative research. This type of design was chosen to explore, describe and explain as fully as possible the complex educational process during the COVID-19 pandemic school closures from multiple perspectives (Creswell, 2015; Robson, 2007). More specifically, the research followed an explanatory sequential design, which consists of two distinct and interactive phases (Creswell, 2015). The first phase involved the collection and analysis of quantitative data from a large number of participants. The research was based on structured online and printed questionnaires. The second phase, which followed, was the collection of qualitative data from a subset of participants. Semi-structured interviews were used to collect qualitative data. The explanatory sequential design aimed to use the qualitative part of the research to explain the initial quantitative

findings. The collection and analysis of the quantitative and qualitative data were carried out separately, with a combined interpretation of the results at the end in order to better understand the phenomena under investigation.

3.1 Sample

The sample of our quantitative research consisted of 271 parents of primary school children. The participants who took part in the research came from different areas of Greece, trying to have a geographical distribution of the sample. Namely, we included participants from the mainland and the islands, from metropolitan, urban, semi-urban and rural areas. The sample for the qualitative phase of the research consisted of 20 parents who participated in the quantitative part of the research and agreed to be interviewed.

The research was approved by the Institute of Educational Policy (Act No. Φ.15/141611/ΑΛ/ 1017/Δ1 of the Board of IEP). All ethical aspects were taken into account in the present study. All participants were informed by letter about the purpose, procedure and duration of the research and agreed to sign their participation.

3.2 Instruments

For this study, the researchers designed specific questionnaires for parents. The questionnaire consisted of a total of 35 questions. The questionnaires included demographic, multiple choice, open and closed questions covering a wide range of educational experiences during the COVID-19 school closures. In addition, semi-structured interviews were conducted with a subset of participants in the second phase of the research. Semi-structured interviews were used to collect qualitative data in order to understand in depth and interpret the participants' experiences during ERT.

3.3 Procedure

The research was conducted over 1 school year and involved 2 stages: In the first stage, participants completed an online or printed questionnaire. In the second stage, after taking into account the preliminary data from the questionnaires, the researchers conducted semi-structured interviews with the participants who agreed to participate in the process. Particular attention was paid to including participants from all geographical areas, namely metropolitan, urban, semi-urban and rural areas. The interviews were conducted either online using the Webex application or face-to-face in order to deepen the understanding of the phenomena.

3.4 Statistical Analysis

In this paper, we have used non-parametric statistical tests to identify family factors that may have had an impact on students' access to ERT: Goodman-Kruskal gamma and Somers' d.

Goodman-Kruskal gamma (G) is a non-parametric test that measures the degree of association between two ordinal variables. However, G is a directional correlation coefficient that does not depend on the identity of the variables X and Y (as predictor and outcome). Gamma is calculated by comparing the responses for each question with every other question to determine whether the same logic was followed. The final score, which ranges from -1.0 to +1.0, indicates the trend in confidence ratings relative to the trend in actual performance outcomes (Metsämuuronen, 2021).

Somers' d is also a non-parametric test that examines the strength and type (direction) of association between two ordinal variables, X (independent or predictor) and Y (dependent or outcome). Somers' d is interpreted in terms of a proportional reduction in error, i.e. it indicates how much the prediction of Y improves as the value of X changes. The higher the value (movement towards -1 or +1), the better the predictive ability of the model (Metsämuuronen, 2020; Newson, 2010).

In order to identify family-related factors that may have had an impact on students' participation in ERT provided during the COVID-19 pandemic period, we conducted Goodman and Kruskal's gamma test between students' participation in ERT and family-related factors. Student participation in ERT was measured by the question, "How often did your child participate in ERT? Responses were collected using a 5-point Likert scale ranging from Every day, every hour / Every day, a few hours / Some days of the week / Some days during the ERT period / Not at all. In our qualitative results, we measured participation by classifying the data as full participation, participation with difficulties and limited participation.

Somers' d-tests were used to determine the effect of the explanatory variables on participation in ERT. Among the family-related factors, we categorized as individual factors the number of children who had to participate in ERT at the same time, the room at home from which they participated in ERT, the parents' level of knowledge and use of the Greek language, the language spoken at home, the parents' education and the parents' digital skills. For parental involvement, we categorized parents' employment status, combining work demands and supporting the child(ren) for ERT. As parental support, we categorized pedagogical support - parents' ability to understand and explain the educational material for ERT, technical support - parents' ability to solve technical problems that arose and met the demands and expectations of supporting the child during ERT. As technical/technological factors, we categorized internet connectivity and access to online educational platforms. As infrastructure we categorized the technological equipment for ERT and the adequacy of the technological equipment. As economic factors, we categorized the cost of printing educational materials and the cost of purchasing technological equipment. As geographical factors, we categorized the place of residence.

4. Results and Discussion

4.1 Demographic Characteristics of the Respondents

From descriptive statistics, Table 1 summarizes that the majority of respondents in the sample are female.

Table 1: Distributions by Demographic Characteristics of Participants

| Variables | Frequency | Percent | Variables | Frequency | Percent |
|--------------------------------|-----------|---------|---|-----------|---------|
| Gender | | | Father's use of the Greek language | | |
| Female | 215 | 80.5 | Native | 221 | 82.8 |
| Male | 52 | 19.5 | Very good | 27 | 10.1 |
| Age | | | Good | 12 | 4.5 |
| < 30 | 6 | 2.2 | Poor | 4 | 1.5 |
| 30-34 | 30 | 11.2 | Inability to use | 1 | 0.4 |
| 35-39 | 67 | 25.1 | Mother's use of the Greek language | | |
| 40-44 | 111 | 41.6 | Native | 219 | 82 |
| 45-49 | 43 | 16.1 | Very good | 31 | 11.6 |
| > 50 | 10 | 3.7 | Good | 13 | 4.9 |
| Father's Education | | | Poor | 4 | 1.5 |
| Lower secondary | 5 | 9.8 | Inability to use | 0 | 0 |
| Upper secondary | 21 | 41.2 | Residency | | |
| Diploma | 8 | 15.7 | Metropolitan | 11 | 4.1 |
| Graduate | 10 | 19.6 | Urban | 197 | 72.7 |
| Post-Graduate | 6 | 11.8 | Semi-urban | 48 | 17.7 |
| Doctorate | 1 | 2.0 | Rural | 15 | 5.5 |
| Mother's Education | | | Father's Employment Status | | |
| Lower secondary | 10 | 4.7 | Unemployed | 2 | 4.5 |
| Upper secondary | 52 | 24.2 | Retired | 3 | 1.1 |
| Diploma | 42 | 19.5 | Private sector employee | 83 | 31.1 |
| Graduate | 76 | 35.3 | Business owner | 57 | 2.3 |
| Post-Graduate | 31 | 14.4 | Public sector employee | 87 | 32.6 |
| Doctorate | 4 | 1.9 | Other | 20 | 7.5 |
| Computer Knowledge | | | Mother's Employment Status | | |
| Excellent | 59 | 22.1 | Unemployed | 46 | 17.2 |
| Very good | 84 | 31.5 | Retired | 2 | 0.7 |
| Good | 81 | 30.3 | Private sector employee | 75 | 28.1 |
| Average | 34 | 12.7 | Business owner | 32 | 12 |
| Not at all | 9 | 3.4 | Public sector employee | 88 | 33 |
| Language Spoken at Home | | | Other | 21 | 7.9 |
| Greek | 244 | 90 | Residency | | |
| Albanian | 8 | 3 | Metropolitan | 11 | 4.1 |
| Greek & Albanian | 9 | 3.3 | Urban | 197 | 72.7 |
| Greek & Russian | 3 | 1.1 | Semi-urban | 48 | 17.7 |
| Greek & Serbian | 1 | 0.4 | Rural | 15 | 5.5 |
| Greek & English | 4 | 1.5 | | | |
| Russian | 1 | 0.4 | | | |

Most participants were aged between 35-39 and 40-44. The majority of fathers had completed secondary education, while mothers had completed upper secondary education, a diploma, or a degree. In terms of participants' digital skills and computer knowledge, most participants reported having good or very good digital skills. The

language spoken in most families was Greek, with many parents being native speakers, while some families spoke Albanian, both Greek and Albanian, or both Greek and English. The majority of both fathers and mothers were employed in the private or public sector. Most of the participants lived in urban or semi-urban areas.

4.2 Research Question

With regard to the research question on family factors that may have had an impact on Students' participation in ERT, our research has identified several factors such as Individual factors, Parental involvement, Parental support, Technical/technological factors, Infrastructure, Economic factors and Geographical factors.

4.2.1 Individual Factors

Table 2 shows the association between each of the factors, such as the Number of children who had to attend ERT at the same time, and Students' participation in ERT. The results show that there was no association between Participation in ERT and the Number of children who had to attend ERT at the same time ($G = -.021, p = .891$) ($d = -.011, p = .891$).

However, our qualitative data show that the more children had to attend ERT at the same time, the more difficulties they had in participating in ERT ($N = 11$). Participation difficulties associated with the Number of children who had to attend ERT at the same time may be related to the adequacy of technological equipment or the availability of private space to attend ERT. Research confirms that many families faced inadequate technological equipment for all their children (Khlaif et al., 2021) or the inconvenience of having to share a room with siblings or working parents (Chifari et al., 2021).

Table 2: Frequency and Percentage for Children Who Had to Attend ERT at the Same Time Factor and Test for Association with Participation in ERT

| Variables | Everyday, every hour | Everyday, some hours | Some days of the week | Some days during the ERT period | Not at all | Gamma (G) | | Somers' d | |
|---|----------------------|----------------------|-----------------------|---------------------------------|------------|-----------|----------|-----------|----------|
| | N(%) | N(%) | N(%) | N(%) | N(%) | Value | <i>p</i> | Value | <i>p</i> |
| Children who had to attend ERT at the same time | 0 | 79(29.4) | 7(2.6) | 4(1.5) | 0 | -.021 | .891 | -.011 | .891 |
| | 1 | | | | 1(.4) | | | | |
| | 2 | 130(48.3) | 16(5.9) | 7(2.6) | 1(.4) | | | | |
| | 3 | 18(6.7) | 2(.7) | 0 | 0 | | | | |
| | 4 | 2(.7) | 0 | 0 | 0 | | | | |
| > 4 | 2(.7) | 0 | 0 | 0 | 0 | | | | |

Furthermore, no association was found between Participation in ERT and the Room at home from which they participated in ERT ($G = .333, p = .068$) ($d = .155, p = .068$), as can be seen in Table 3. Although the students who participated in ERT every day, every hour, from their private room made up 63.3% of our sample, this is not a statistically significant result. On the contrary, our qualitative data show that pupils who had a suitable private room for ERT participated fully or with some difficulty in ERT, whereas children who did not have such a room had limited participation. Research confirms that despite having access to the necessary digital equipment and internet connectivity, having to participate in ERT from an overcrowded, inappropriate shared room may have been distracting for pupils (Dimopoulos et al., 2021; Scarpellini et al., 2021). In many cases, students had to share a room with siblings or family members while trying to participate in the digital classroom, which may have caused difficulties in concentration due to the noise from the environment ($N = 9$): *“It was difficult because the room where our eldest daughter participated in ERT was also the room of our other two daughters. They would go into the room to look for their things or to play, interrupting their lessons”*. Such barriers with implications for pupils' learning outcomes have also been reported in the literature (Andrew et al., 2020; Chifari et al., 2021; Dimopoulos et al., 2021; Scarpellini et al., 2021).

Table 3: Frequency and Percentage for Personal Room to Attend ERT at the Same Time Factor and Test for Association with Participation in ERT

| Variables | Everyday, every hour | Everyday, some hours | Some days of the week | Some days during the ERT period | Not at all | Gamma(G) | | Somers' d | |
|------------------------------------|----------------------|----------------------|-----------------------|---------------------------------|------------|----------|------|-----------|------|
| | N(%) | N(%) | N(%) | N(%) | N(%) | Value | p | Value | p |
| Personal room to attend ERT | | | | | | | | | |
| Yes | 171(63.3) | 15(5.6) | 6(2.2) | 1(.4) | 0 | .333 | .068 | .155 | .068 |
| No | 61(22.6) | 10(3.7) | 5(1.9) | 0 | 1(.4) | | | | |

An important factor in the provision of educational support is the Level of knowledge and use of the Greek language. Table 4 shows that there was a strong positive correlation between Participation in ERT and the Language spoken at home, which was statistically significant ($G = .540, p = .029$). This finding suggests that children whose main language at home was Greek participated in ERT more often and for more hours than children whose main language was Albanian or Greek combined with another language. Table 2 also shows that participation in ERT has a moderate, statistically significant dependence on the Language spoken at home ($d = .225, p = .027$). The estimation of Participation in ERT can be improved by 22.5% by including information about the Language spoken at home.

Table 4: Frequency and Percentage for the Language Spoken at Home Factor and Test for Association with Participation in ERT

| Variables | Everyday, every hour | Everyday, some hours | Some days of the week | Some days during the ERT | Not at all | Gamma (G) | | Somers' d | |
|--------------------------------|----------------------|----------------------|-----------------------|--------------------------|------------|-----------|------|-----------|------|
| | N(%) | N(%) | N(%) | N(%) | N(%) | Value | p | Value | p |
| Language spoken at home | | | | | | | | | |
| Greek | 215(79.9) | 18(6.7) | 8(3) | 1(4) | 0 | .564 | .027 | .225 | .027 |
| Other than Greek | 17(6.3) | 7(2.6) | 2(7) | 1(4) | 0 | | | | |

Examining the relationship between parents' Level of knowledge and use of Greek and students' Participation in ERT, we found a strong, positive correlation between Participation in ERT and parents' Level of knowledge and use of Greek, which was statistically significant ($G = .480, p = .012$). Children whose parents are native speakers of Greek, participated in ERT in greater numbers, every day, every hour, as opposed to children whose parents had a good, average or no ability to use Greek. Participation in ERT has a small, statistically significant dependence on the Level of knowledge and use of the Greek language of the parents ($d = .218, p = .013$). The prediction of participation in ERT can be improved by 21.8% if information on parents' Level of knowledge and use of Greek is available, as can be seen in Table 5.

Table 5: Frequency and Percentage for Parents' Knowledge and Use of the Greek language Factor and Test for Association with Participation in ERT

| Variables | Everyday, every hour | Everyday, some hours | Some days of the week | Some days during the ERT period | Not at all | Gamma (G) | | Somers' d | |
|---|----------------------|----------------------|-----------------------|---------------------------------|------------|-----------|------|-----------|------|
| | N(%) | N(%) | N(%) | N(%) | N(%) | Value | p | Value | p |
| Parents' knowledge and use of the Greek language | | | | | | | | | |
| Native | 194(71.9) | 17(6.3) | 6(2.2) | 1(4) | 0 | .434 | .026 | .218 | .026 |
| Very good | 24(8.9) | 4(1.5) | 2(7) | 0 | 0 | | | | |
| Good | 12(4.4) | 1(4) | 2(7) | 0 | 1(4) | | | | |
| Poor | 2(7) | 2(7) | 0 | 0 | 0 | | | | |
| Inability to use | 0 | 1(4) | 0 | 0 | 0 | | | | |

The data from the interviews are consistent with the quantitative data above, which indicate that children from families who faced linguistic barriers had limited

Participation in ERT. Linguistic barriers that prevented them from supporting their children during ERT were mentioned by several respondents (N = 6): *“I don't know Greek very well to help him with his homework. My husband, who understands the language a little better, could help him when he comes back from work”* and *“I don't speak Greek very well. I could explain some things in Albanian, but not every time. It was difficult to help him”*.

Parents' ability to support their children and explain the educational material depended heavily on their preparedness and level of knowledge and understanding of the Greek language. The literature suggests that homeschooling in the official language of a country, without taking into account the variety of languages spoken by families at home, often left immigrant or refugee parents unprepared and helpless to support their children (Chen, 2021; Chifari et al, 2021; Cioè-Peña, 2021; Lehmann et al., 2021; Sari et al., 2023; Sugarman & Lazarin, 2021). Similar findings were made by Bond (2020), who pointed out that although it is crucial, there is a limited number of research studies examining support for students or families with an immigrant or refugee background. The literature outlines many factors that may have influenced migrant students' participation in ERT, including parents' education and less familiarity with the curriculum and the official language of the country (Chifari et al., 2021; Lehmann et al., 2021). The number of migrant and refugee parents may not be significant in our research, possibly because they may have experienced difficulties in responding to our questionnaires due to a lack of access to technological equipment, their level of education, and difficulties with the Greek language. There was a relatively strong negative correlation between Participation in ERT and parental Education, which was statistically significant ($G = -.420, p = .002$), as shown in Table 6. Children whose parents had a higher level of education participated more often and for more hours in ERT. Participation in ERT has a moderate, statistically significant dependence on parents' education ($d = -.343, p = .002$). The estimation of Participation in ERT can be improved by 34.3% with the information on parents' Education. As the variable of parents' Education increases in each category, so does children's Participation in ERT. The largest difference is observed between parents with a university degree and parents with at most lower secondary education.

Our results are in line with other studies (Chifari et al., 2021; Domina et al., 2021; Sari et al., 2020), which suggest that children whose parents have a higher level of education participate in ERT more often and for longer. This may be because parents with a higher level of education may be able to provide better technical/technological and pedagogical support to their children or have the educational orientation to motivate their children to be more involved in the educational process (Bol, 2020; Chifari et al., 2021; Domina et al., 2021; Sari & Maningtyas, 2020).

Table 6: Frequency and Percentage for Parents' Education
 Factor and Test for Association with Participation in ERT

| Variables | Everyday, every hour | Everyday, some hours | Some days of the week | Some days during the ERT | Not at all | Gamma (G) | | Somers' d | |
|---------------------------|----------------------------|----------------------------|-----------------------------|--------------------------------|---------------|-----------|----------|-----------|----------|
| | N(%) | N(%) | N(%) | N(%) | N (%) | Value | <i>p</i> | Value | <i>p</i> |
| Parents' Education | | | | | | | | | |
| Lower secondary | 10(3.7) | 5(1.9) | 0 | 0 | 0 | -.420 | .002 | -.343 | .002 |
| Upper secondary | 48(17.8) | 9(3.3) | 8(3) | 0 | 1(.4) | | | | |
| Diploma | 40(14.8) | 4(1.5) | 0 | 0 | 0 | | | | |
| Graduate | 89(33) | 2(.7) | 1(.4) | 0 | 0 | | | | |
| Post-Graduate | 39(14.4) | 3(1.1) | 1(.4) | 0 | 0 | | | | |
| Doctorate | 6(2.2) | 0 | 1(.4) | 1(.4) | 0 | | | | |

There was a moderate positive correlation between Participation in ERT and parents' Digital skills, which was statistically significant ($G = .256, p = .037$), as can be seen in Table 7. Higher Levels of digital literacy among parents are associated with higher levels of Participation in ERT among students. Participation in ERT has a small, positive, and statistically significant dependence on parents' Digital skills ($d = .194, p = .037$). The prediction of Participation in ERT could be improved by 19.4% if parents' Digital skills were known. As the variable of parents' Digital skills increases, so does the variable of children's Participation in ERT. This finding may be related to the greater ability of these parents to support their children technologically. However, having digital skills alone was not enough for parents to support their children effectively; they also needed to be familiar with the web-based learning environments in which ERT took place. Students would need to write texts, take pictures, and scan, receive and send educational material back to their teachers. It is, therefore, evident that younger children needed more support from their parents, who needed to improve their digital skills in order to support their children in ERT. Similar results were found by Koskela and her research team (2020).

Table 7: Frequency and Percentage for the Parents' Digital Skills Factor and Test for Association with Participation in ERT

| Variables | Everyday, every hour | Everyday, some hours | Some days of the week | Some days during the ERT | Not at all | Gamma (G) | | Somers' d | |
|--------------------------------|----------------------|----------------------|-----------------------|--------------------------|------------|-----------|----------|-----------|----------|
| | N(%) | N(%) | N(%) | N(%) | N(%) | Value | <i>p</i> | Value | <i>p</i> |
| Parents' digital skills | | | | | | | | | |
| Excellent | 54(20) | 2(.7) | 2(.7) | 0 | 0 | .256 | .037 | .194 | .037 |
| Very good | 73(27) | 10(3.7) | 0 | 1(.4) | 1(.4) | | | | |
| Good | 70(25.9) | 5(1.9) | 7(2.6) | 0 | 0 | | | | |
| Average | 29(10.7) | 6(2.2) | 1(.4) | 0 | 0 | | | | |
| Not at all | 6(2.2) | 2(.7) | 1(.4) | 0 | 0 | | | | |

4.2.2 Parental Involvement

Parents' presence during ERT was important to help their child(ren), mainly with technological/technical issues and connecting to the online educational platforms. Table 8 shows the relationship between students' Participation in ERT and factors related to Parental involvement, such as parents' Employment status and the Combination of work demands and support for the child(ren) for ERT. There was a moderate positive correlation between Participation in ERT and parents' Employment status during ERT, which was statistically significant ($G = .390, p = .000$). Participation in ERT has a moderate, positive and statistically significant dependence on parents' Employment status ($d = .279, p = 0.001$). The estimation of Participation in ERT can be improved by 27.9% by including information on parents' Employment status. As the variable parents' Employment status increases by category, so does children's Participation in ERT. An unexpected finding was that those children whose parents regularly worked outside the home and those who worked away from home participated more in ERT. It would be expected that these children would participate less due to the lack of parental presence and support, as many parents may not be able to help their children if their timetable coincides with their working hours. Parents who were on special COVID-19 leave, suspended from work or unemployed were more likely to be close to their child(ren) during the ERT timetable and to help with their needs. However, many other studies confirm that parents who worked remotely from home or who worked flexible hours, especially parents with higher education, were able to support their child(ren), in contrast to parents who were not working, on leave or on special COVID-19 leave during the lockdown (Bansak & Starr, 2021; Sari et al., 2023).

Table 8: Frequency and Percentage for Parental Involvement
 and Test for Association with Participation in ERT

| Variables | Everyday, every hour | Everyday, some hours | Some days of the week | Some days during the ERT | Not at all | Gamma(G) | | Somers' d | |
|--|----------------------------|----------------------------|--------------------------------|--------------------------------------|---------------|----------|------|-----------|------|
| | N(%) | N(%) | N(%) | N(%) | N(%) | Value | p | Value | p |
| Parents' employment status during ERT | | | | | | | | | |
| Special Covid-19 leave | 36(13.4) | 0 | 0 | 0 | 0 | .390 | .001 | .279 | .001 |
| Working remotely from home | 47(17.5) | 5(1.9) | 2(.7) | 1(.4) | 0 | | | | |
| Temporary suspension from work | 23(8.6) | 1(.4) | 0 | 0 | 0 | | | | |
| Unemployed | 46 (17.1) | 3(1.1) | 4(1.5) | 0 | 0 | | | | |
| Regular work outside the house | 79 (29.4) | 16(5.9) | 5(1.9) | 0 | 1(.4) | | | | |
| Combining demands from work and supporting child(ren) for ERT | | | | | | | | | |
| Could not correspond | 17(6.3) | 6(2.2) | 2(.7) | 1(.4) | 0 | -.296 | .033 | -.077 | .033 |
| Could correspond with great difficulty | 113(41.9) | 14(5.2) | 3(1.1) | 0 | 0 | | | | |
| Could correspond with medium difficulty | 52(19.3) | 4(1.5) | 4(1.5) | 0 | 0 | | | | |
| Corresponded without problems | 37(13.7) | 1(.4) | 2(.7) | 0 | 0 | | | | |
| Other | 13(4.8) | 0 | 0 | 0 | 1(.4) | | | | |

Parents had to balance the increased demands of supporting their child(ren) during ERT with their work responsibilities. We found a moderate, negative correlation between Participation in ERT and Combining demands from work and supporting child(ren) for ERT, which was statistically significant ($G = -.296$, $p = .033$). Participation in ERT has a very small, negative, statistically significant dependence on Combining demands from

work and supporting child(ren) for ERT ($d = -.077$, $p = .033$). The estimation of Participation in ERT can be improved by 7.7% with the information on Combining demands from work and supporting child(ren) for ERT. As the variable Combining demands from work and supporting child(ren) for ERT increases by category, so does the Participation of children in ERT. It was found that children whose parents managed to combine the demands of work and support were more likely to participate in ERT.

Our qualitative data differ from our quantitative data, suggesting that many of the children who showed limited Participation in ERT ($N = 10$) came from families where parents had difficulties in Combining the demands of their work and supporting their children in ERT. Data from the interviews indicate that in some families ($N = 6$) both parents worked regularly outside the home during the implementation of ERT, *"We both work as freelancers, so we didn't stop during the COVID-19 quarantine"*, some of which ($N = 4$) had difficulties combining the demands of work and home education, while others ($N = 2$) had no difficulties. In the majority of families ($N = 14$), one parent regularly worked outside the home and the other either worked remotely from home or stayed at home (unemployed/special COVID-19 leave/in suspension from work) *"My husband worked regularly and I was home on leave"*. Some of them ($N = 7$) experienced difficulties in combining the demands of work and homeschooling, while others ($N = 7$) did not. Our research findings are in line with other research which suggests that since the changes in employment status due to COVID-19 restrictions, many parents have either been working or staying at home and have been better able to support their children with homeschooling (Sari & Maningtyas, 2020). However, for many parents, the combination of working and assisting their children during ERT was particularly challenging (Tokić & Vukašinović, 2020). Parents expressed stress, frustration and inability to cope with the burden of supporting their children and working at the same time (Garbe et al., 2020; Lase et al., 2022).

4.2.3 Parental Support

A particular challenge for parents was how to support their child(ren) during ERT, especially on the pedagogical and technical/technological levels. Table 9 shows that there was a strong negative correlation between Participation in ERT and Meeting the demands and expectations of supporting the child(ren) during ERT, which was statistically significant ($G = -.418$, $p < .05$). The more parents were able to Meet the demands and expectations of supporting their child(ren) during ERT, the greater the student's Participation. Participation in ERT has a moderate, negative, statistically significant dependence on parents' Ability to meet the demands and expectations of supporting their child(ren) ($d = -.296$, $p = .004$). The prediction of Participation in ERT can be improved by 29.6% if parents are informed about their Ability to meet the demands and expectations of supporting their child(ren). As the variable parents' Ability to meet the demands and expectations of supporting their child(ren) increases, so does children's Participation in ERT. This finding is in line with other research in which parents find it difficult to balance time between their work responsibilities and the need to supervise children's learning

activities in ERT. Many parents complain about the complexity of taking on the role of teacher at home (Lase et al., 2022).

A significant difficulty encountered by several parents relates to their Ability to understand and explain the educational material of ERT in order to support their children pedagogically. From the questionnaires we can see that there was a very strong, positive correlation between Participation in ERT and parents' Ability to understand and explain the educational material for ERT, which was statistically significant ($G = -.601$, $p < .000$) (Table 4). The greater the parents' Ability to understand and explain the educational material for ERT, the greater the students' Participation in ERT. Participation in ERT has a strong, negative, statistically significant dependence on parents' Ability to understand and explain the educational material ($d = -.456$, $p < .001$). The prediction of Participation in ERT can be improved by 45.6% by including information on parents' Ability to understand and explain the educational material. As the variable parents' Ability to understand and explain the educational material increases, so does children's Participation in ERT. Our qualitative data is consistent with our quantitative data, as children with limited participation came from families where parents ($N = 9$) were unable to provide pedagogical support. In the interviews, many parents ($N = 4$) responded that they could not provide pedagogical support to their children: *"We speak Greek a little, but not well. We couldn't help her"* and the same number of parents ($N = 4$) that they could only help a few times by understanding and explaining the educational material *"I don't know Greek very well. I could only explain what I know in Albanian"*. Researchers investigating pedagogical support during ERT have reported difficulties for parents in supporting their children (Bayrakdar & Guveli, 2023; Cusinato et al., 2020; Günbaş & Gözüküçük, 2020; Mabeya, 2020; Mascheroni et al., 2021; Simpson, 2020), often due to a lack of content knowledge and methodology to explain the educational material (Andrew et al., 2020; Bol, 2020; Cullinane & Montacute, 2020; Engzell et al., 2021; Sari et al., 2023). Particularly for parents from lower educational backgrounds, research has identified a lack of self-esteem and confidence to provide educational support for their children (Easterbrook et al., 2023). Our research findings are consistent with other research in that parents' understanding of the learning materials used in ERT can be crucial to better supporting their children and encouraging their overall participation in ERT (Sari & Maningtonyas 2020).

Various Technical/technological problems arose during the ERT, either related to Internet connectivity or to the Use of online educational platforms. As we can see, there was a moderate, negative and statistically significant correlation between Participation in ERT and parents' Ability to solve technical problems that arose during ERT ($G = -.278$, $p = .029$). Participation in ERT has a very small, negative, statistically significant dependence on parents' Ability to solve technical problems ($d = -.072$, $p = .029$). The prediction of participation in ERT can be improved by 7.2% with the information on parents' Ability to solve technical problems. As the variable parents' Ability to solve technical problems increases, so does children's Participation in ERT. Various Technical/technological problems arose during ERT, either related to Internet

connectivity or to the Use of online educational platforms. Parents' responses in the interviews show that many parents (N = 5) could not always provide technical/technological support: "We showed him how to join the digital class the first time. Often, we couldn't help him", while some (N = 3) could not provide any technical/technological support at all "We just gave him the mobile phone to join Webex". The research reveals many cases where parents did not have the necessary digital skills and knowledge to cope with the technological demands of ERT and to solve the technical/technological problems that may have arisen, in many cases disrupting the students' education (Abuhammad, 2020; Rousoulioti et al., 2022).

Table 9: Frequency and Percentage for Parental Support
 and Test for Association with Participation in ERT

| Variables | Everyday, every hour | Everyday, some hours | Some days of the week | Some days during the ERT | Not at all | Gamma(G) | | Somers' d | |
|---|----------------------------|----------------------------|-----------------------------------|--------------------------------------|---------------|----------|-------|-----------|-------|
| | N(%) | N(%) | N(%) | N(%) | N(%) | Value | p | Value | p |
| Corresponding to the demands and expectations of supporting child during ERT | | | | | | | | | |
| Not at all | 0 | 1(.4) | 1(.4) | 0 | 0 | -.414 | .004 | -.296 | .004 |
| A few times | 6(2.2) | 4(1.5) | 0 | 1(.4) | 0 | | | | |
| Some times | 28(10.4) | 4(1.5) | 4(1.5) | 0 | 0 | | | | |
| Many times | 95(35.9) | 9(3.3) | 4(1.5) | 0 | 0 | | | | |
| Most of the times | 101(37.4) | 7(2.6) | 2(.7) | 0 | 1(.4) | | | | |
| Parents' ability to understand and explain the educational material | | | | | | | | | |
| Not at all | 4(1.5) | 2(.7) | 0 | 0 | 1(.4) | -.601 | <.001 | -.456 | <.001 |
| A few times | 5(1.9) | 6(2.2) | 2(.7) | 1(.4) | 0 | | | | |
| Some times | 27(10) | 3(1.1) | 2(.7) | 0 | 0 | | | | |
| Many times | 86(31.9) | 11(4.1) | 5(1.9) | 0 | 0 | | | | |
| Most of the times | 110(40.7) | 3(1.1) | 2(.7) | 0 | 0 | | | | |
| Ability to resolve technical/ technological issues | | | | | | | | | |
| Not at all | 13(4.8) | 2(.7) | 2(.7) | 0 | 0 | -.278 | .029 | -.072 | .029 |
| A few times | 26(9.6) | 3(1.1) | 2(.7) | 1(.4) | 1(.4) | | | | |
| Some times | 52(19.3) | 6(2.2) | 5(1.9) | 0 | 0 | | | | |
| Many times | 76(28.1) | 9(3.3) | 0 | 0 | 0 | | | | |
| Most of the times | 65(24.1) | 5(1.9) | 2(.7) | 0 | 0 | | | | |

4.2.4 Technical/technological Factors

As Technical/technological factors, we categorized Internet connectivity and Access to online educational platforms (Table 10). The results show that there was a strong negative correlation between Participation in ERT and Internet connectivity (speed and quality of Internet connection), which was statistically significant ($G = -.424$, $p < .001$). The higher the level of Internet connectivity, the higher the level of students' Participation in ERT. Participation in ERT has a moderate, negative, statistically significant dependence on Internet connectivity ($d = -.307$, $p < .001$). The estimation of Participation in ERT can be improved by 30.7% with the information on Internet connectivity. As the Internet connectivity variable increases, so does children's Participation in ERT.

Our qualitative data confirm that families with frequent Internet connection problems ($N = 11$) had difficulties or limited Participation in ERT. Internet connectivity problems were also mentioned in the interviews with parents ($N = 13$): *"In ERT, we faced various difficulties, the internet would freeze and our child would not be able to participate in the lesson"*. Although many families were able to access the internet during ERT, there were many problems with poor internet quality, slow network and weak WI-FI signal. Technical difficulties faced by families in relation to the functioning of the educational platforms for ERT were also mentioned in the interviews ($N = 10$): *"On the technical part, we couldn't do much when the online educational platform froze. We would restart and restart the router, the laptop, but sometimes it didn't work"* and *"..the platforms had technical, functional problems. They would crash all the time"*. Poor, low quality Internet connection causing a variety of technical problems such as malfunctioning of the online educational platforms and hindering access to ERT has been confirmed by other research (Ferri et al., 2020; Khlaif et al., 2021).

There was a moderate negative correlation between Participation in ERT and Access to online educational platforms required for ERT, which was statistically significant ($G = -.328$, $p = .024$). The greater the Access to online educational platforms, the greater the Participation of students. Participation in ERT has a moderate, negative, and statistically significant dependence on Access to online educational platforms ($d = -.230$, $p = .024$). The estimation of Participation in ERT can be improved by 23% with the information on Access to online educational platforms. As the variable Access to online educational platforms increases, so does children's Participation in ERT. Our qualitative data also show that families who experienced difficulties with online educational platforms ($n = 11$) reported that their children had difficulties or limited participation in ERT. In many cases, other factors, such as the family's Geographical location, interfered with Internet connectivity, with many families from rural or geographically remote areas reporting recurrent problems with internet connectivity: *"The online educational platforms would freeze and suddenly kick the students out and they would have to reconnect. There was a problem with the speed of the network. For example, in my neighborhood it is ok but in the next neighborhood there are many problems"* and (family living in rural area) *"He used the smartphone but many times there was no internet connection and he would get kicked off the online platform and then try to reconnect and miss the lesson"*. Disconnection and loss of

Internet signal due to bad weather was also reported: “The platforms would crash all the time. If the internet connection was cut due to bad weather conditions, there was nothing I could do”. The majority of studies conducted around the world indicate that a significant number of families face slow and poor quality Internet connections, resulting in a variety of difficulties in accessing online educational platforms, as well as platform malfunctions, thus hindering students' access to ERT (Bayrakdar & Guveli, 2023; Cardullo et al., 2021; Garbe et al., 2020; Khlaif et al., 2021; Mascheroni et al., 2021). Moreover, even in more developed countries where e-learning is used on a daily basis, significant problems have been encountered because digital learning environments and online educational platforms were not designed to support such intensive use as during ERT, and as a result there have been recurrent crashes in their functioning (Ferri et al., 2020).

Table 10: Frequency and Percentage for the Technical/technological Factors and Test for Association with Participation in ERT

| Variables | Everyday, every hour | Everyday, some hours | Some days of the week | Some days during the ERT | Not at all | Gamma (G) | | Somers' d | |
|---|----------------------|----------------------|-----------------------|--------------------------|------------|-----------|-------|-----------|-------|
| | N(%) | N(%) | N(%) | N(%) | N(%) | Value | p | Value | p |
| Internet connectivity | | | | | | | | | |
| No connection | 1(.4) | 0 | 0 | 0 | 0 | -.424 | <.001 | -.307 | <.001 |
| Very bad | 10(3.7) | 1(.4) | 1(.4) | 0 | 0 | | | | |
| Poor | 14(5.2) | 6(2.2) | 1(.4) | 0 | 0 | | | | |
| Medium | 79(29.3) | 11(4.1) | 7(2.6) | 1(.4) | 0 | | | | |
| Good | 90(33.3) | 7(2.6) | 1(.4) | 0 | 0 | | | | |
| Very good | 39(14.5) | 0 | 1(.4) | 0 | 0 | | | | |
| Access to online educational platforms | | | | | | | | | |
| Not at all | 1(.4) | 0 | 0 | 0 | 1(.4) | -.328 | .024 | -.230 | .024 |
| A few times | 12(4.4) | 2(.7) | 3(1.1) | 0 | 0 | | | | |
| Some times | 22(8.1) | 5(1.9) | 2(.7) | 0 | 0 | | | | |
| Many times | 97(35.9) | 12(4.4) | 1(.4) | 1(.4) | 0 | | | | |
| Most of the times | 100(37) | 6(2.2) | 5(1.9) | 0 | 0 | | | | |

4.2.5 Infrastructure

As infrastructure, we categorized the Technological equipment for ERT and the Adequacy of the technological equipment. It is evident that there is a strong, negative correlation between Participation in ERT and Access to the necessary technological equipment, which is statistically significant ($G = -.410, p = .002$) (Table 11). Participation in ERT has a small, negative, statistically significant dependence on Access to the necessary technological equipment ($d = -.114, p < .002$). The estimation of Participation in

ERT can be improved by 11.4% by including information on Access to the necessary technological equipment. As the variable Access to the necessary technological equipment increases, so does the Participation of children in ERT. The Adequacy of the necessary technological equipment is associated with a higher participation of pupils in ERT.

Our qualitative data show that in families without adequate technological equipment, children had difficulties with limited participation. From the interviews with parents, the lack of infrastructure was mentioned by many families (N = 10) and was linked to the lack of technological equipment: *“It was difficult for us. We were working and we had to take the mobile phone with us. But he needed the phone to join the online class”*. While many families reported having technological equipment, this equipment may have been used by other family members for ERT or remote work: *“I was working remotely from home, but it was quite difficult because three people needed equipment at the same time”*. In addition, while smartphones may have been used as a means of accessing ERT, their capabilities were limited, limiting students' access to the full experience of online lessons (Andrew et al., 2020). A lack of technological equipment was found to be associated with lower-income families who were unable to provide the resources that would benefit learning at home (Bol, 2020; Rousoulioti et al., 2022; Ahmed et al., 2024).

Table 11: Frequency and Percentage for the Infrastructure Factor and Test for Association with Participation in ERT

| Variables | Everyday, every hour | Everyday, some hours | Some days of the week | Some days during the ERT | Not at all | Gamma (G) | | Somers' d | |
|--|----------------------|----------------------|-----------------------|--------------------------|------------|-----------|------|-----------|------|
| | N(%) | N(%) | N(%) | N(%) | N(%) | Value | p | Value | p |
| Access to the necessary technological equipment | | | | | | | | | |
| Not at all | 5(1.9) | 1(.4) | 0 | 0 | 1(.4) | -.410 | .002 | -.114 | .002 |
| A few times | 16(5.9) | 3(1.1) | 3(1.1) | 0 | 0 | | | | |
| Some times | 19(7) | 6(2.2) | 1(.4) | 1(.4) | 0 | | | | |
| Many times | 89(33) | 9(3.3) | 4(1.4) | 0 | 0 | | | | |
| Most of the times | 103(38.1) | 6(2.2) | 3(1.1) | 0 | 0 | | | | |

4.2.6 Economic Factors

The implementation of ERT was a burden for many families who had to bear the Cost of printing the educational material and the Cost of purchasing the necessary technological equipment to participate in ERT (Table 12). Our quantitative results show that there was no association between Participation in ERT and the Cost of printing the educational material for ERT [(G = .068, p = .732) (d = .026, p = .732)]. There was also no association between Participation in ERT and the Cost of purchasing technological equipment [(G = .170, p = .370), (d = .045, p = .370)].

Two families from the interviews (N = 2) had to buy technological equipment to meet their children's needs: “...of course we had to buy technological equipment because we have three children who had to attend ERT and all three of them had to have their own equipment. It worked, but of course it was expensive”, and “The imposition and what I had to do was to buy a printer. Otherwise, they would not be able to study the materials sent during the ERT. The bookshops were closed, and you couldn’t print anything there. So the printer was an economic burden. I had to scan it and upload it for the teacher to check, that was the extra”. Research in other countries revealed a similar economic burden for many families to secure the necessary technological equipment such as laptops, printers, cameras and microphones (Guz & Filiz, 2022; Lase et al., 2022). They also had to purchase internet packages so that children could access online learning resources (Lase et al., 2022; Samsonova, 2023). However, the ability to purchase the technological equipment was limited for low-income families, reinforcing a digital divide with more privileged families (Andrew et al., 2020).

Table 12: Frequency and Percentage for Economic Factors and Test for Association with Participation in ERT

| Variables | Everyday, every hour | Everyday, some hours | Some days of the week | Some days during the ERT | Not at all | Gamma (G) | | Somers' d | |
|--|----------------------|----------------------|-----------------------|--------------------------|------------|-----------|------|-----------|------|
| | N(%) | N(%) | N(%) | N(%) | N(%) | Value | p | Value | p |
| Cost of printing the educational material | | | | | | | | | |
| Yes | 176 (65.2) | 18(6.7) | 9(3.3) | 1(.5) | 0 | .068 | .732 | .026 | .732 |
| No | 55(20.4) | 7(2.6) | 2(.7) | 0 | 0 | | | | |
| Cost of buying technological equipment | | | | | | | | | |
| Yes | 165(61.1) | 20(7.5) | 5(1.9) | 0 | 0 | .170 | .370 | .045 | .370 |
| No | 67(24.8) | 5(1.9) | 6(2.2) | 1(.4) | 0 | | | | |

4.2.7 Geographical Factors

Place of residence was categorized as a Geographical factor. There was a strong positive correlation between Participation in ERT and Place of residence, which was statistically significant ($G = .422$, $p = .028$) (Table 13). Participation in ERT has a small, positive, statistically significant dependence on Place of residence ($d = .186$, $p = .028$). The estimation of Participation in ERT can be improved by 18% by including information on Place of residence. We observe that children living in metropolitan or urban areas participated more often and for more hours than children living in semi-urban or rural areas.

In line with the quantitative data, our qualitative data show that most of the children who had difficulties or limited participation in ERT lived in semi-urban/rural areas. The participation with difficulties or limited participation found in semi-

urban/rural areas may be related to many family factors, such as the Room at home from which they participated in ERT, the Language spoken at home, parents' Level of knowledge and use of Greek, parents' Education, parents' Digital skills, parents' Employment status, Ability to provide support, Access to technological equipment and Internet connectivity. Studies conducted in other countries also show differences between different geographical areas within a country, which in some cases can be attributed to the sociocultural status of families (Chifari et al., 2021). Rural areas face significant barriers related to access to technological equipment, electricity and insufficient bandwidth to meet Internet connectivity needs during ERT (Ferri et al., 2020).

Table 13: Frequency and percentage for Place of Residence
 and Test for Association with Participation in ERT

| Variables | Everyday, every hour | Everyday, some hours | Some days of the week | Some days during the ERT | Not at all | Gamma (G) | | Somers' d | |
|------------------------|----------------------------|----------------------------|--------------------------------|-----------------------------------|---------------|-----------|------|-----------|------|
| | N(%) | N(%) | N(%) | N(%) | N(%) | Value | p | Value | p |
| Residency | | | | | | | | | |
| Metropolitan/ urban | 184(88.9) | 16(7.7) | 7(2.6) | 0 | 0 | .351 | .033 | .180 | .033 |
| Semi-urban/ rural | 48(76.2) | 9(14.3) | 4 (1.5) | 1(.4) | 1(.4) | | | | |

5. Recommendations

Our research suggests that important family-related factors played a significant role in children's Access to and Participation in ERT and may have exacerbated existing educational inequalities. Further research and analysis could focus on analyzing household dynamics to clarify the differences between our quantitative and qualitative data on the Number of children in a household and Participation in ERT. It should also focus on how family-related factors are intertwined and identify all possible relationships that might affect pupils' participation in the educational process. Further research should also identify the learning losses that occurred during the COVID-19 school closures, using test scores to investigate whether there is a correlation between family-related factors and learning losses. Further research on parental support should evaluate the effectiveness of parental help in students' participation in ERT.

6. Conclusion

In the present study, we attempted to identify family-related factors that may be associated with inequalities in access to ERT during the COVID-19 period. We used data collected through questionnaires and interviews with parents from several areas in Greece. Our findings indicate a number of family-related factors that affect children's participation in ERT, which may be related to the widening of educational inequalities.

The first group of factors we identified were the **Individual factors**. Our quantitative and qualitative results are contradictory in the first two factors, the Number of children who had to attend ERT at the same time and the Room at the home from which they attended ERT. The quantitative results show that the Number of children who had to participate in ERT at the same time and the Place in the home from which the pupils participated in ERT did not influence the pupils' Participation in ERT. On the contrary, our qualitative data show that the greater the Number of children who had to participate in ERT at the same time, the more difficulties they had in participating in ERT, and that children who had to participate in ERT in a crowded, noisy room had more difficulties. We found that the Language spoken at home played a significant role in students' Participation in ERT, suggesting that children whose main language at home was Greek participated in ERT more often and for more hours than children whose main language was Albanian or Greek combined with another language. In addition, children whose parents were native speakers of Greek participated in ERT more often, every day, and for more hours than children whose parents had good, fair, or no knowledge of Greek. Our data show that the level of Education of the parents influences the Participation of the pupils in ERT. Children whose parents had a higher level of education were found to participate more often and for more hours in ERT. Finally, with regard to parents' Digital skills, we found that parents' higher digital skills were associated with higher student participation in ERT.

The second group of factors was categorized as **Parental involvement**. Our quantitative results highlight that parents' Employment status during ERT influenced students' Participation in ERT. An unexpected finding was that children whose parents regularly worked outside the home and those who worked remotely from home participated more in ERT. Moreover, we found that children whose parents managed to combine the demands of their jobs with supporting their children with ERT were more likely to participate in ERT. Parents' working conditions during COVID-19 may have hindered children's access to ERT. Combining work and helping their children with ERT was particularly challenging for many parents.

The third group of factors had to do with **Parental support**, at a Pedagogical and Technical/technological level. We found that parents' Ability to meet the demands and expectations of supporting their child(ren) increased their children's Participation in ERT. In addition, parents' Ability to understand and explain the educational material for ERT played a significant role in students' Participation. In addition, various Technical/technological problems that arose during ERT, either related to Internet connectivity or to the Use of online educational platforms, and parents' Ability to solve them, influenced pupils' Participation in ERT. Lower participation was found among children whose parents could not always provide technical/technological support to their children.

The fourth group of factors related to **Technical/technological factors**, such as Internet connectivity and Access to online educational platforms. Both our quantitative and qualitative data show that Internet connectivity (speed and quality of internet

connection) was linked to students' Participation in ERT. Families with frequent Internet connectivity issues had difficulty or limited participation in ERT. In addition, families who experienced Malfunctions of the online educational platforms reported that their children had difficulties or limited participation in ERT.

The fifth group of factors was related to the **Infrastructure** for ERT. Access to the necessary Technological equipment and the Adequacy of the technological equipment are associated with higher levels of students Participation in ERT. Our data show that in families without adequate technological equipment, children had difficulties or limited participation.

The sixth group of factors, **Economic factors**, related to the additional burden that many families had to bear, such as the Cost of printing the educational material and the Cost of purchasing the necessary technological equipment to participate in ERT. Our quantitative and qualitative results show that there was no association between Participation in ERT and the Cost of printing the educational material for ERT nor with the Cost of purchasing technological equipment.

The seventh group of factors we identified were the **Geographical factors**, namely the Place of residence. Consistent with quantitative data, our qualitative data reveal that most of the children who had difficulty or limited participation in ERT lived in semi-urban/rural areas.

This study aimed to identify family-related factors that may have affected students' participation in ERT and has enabled us to gain a clearer picture of the reasons why many students may have missed out or been excluded from the educational process during the COVID-19 pandemic period.

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Conflict of Interest Statement

The authors declare no conflicts of interest.

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