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Effects of the COVID-19 pandemic in ECEC centers: social and psychological impact on children and teachers

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Abstract

Early Childhood Education and Care (ECEC) centers are extremely significant contexts for understanding the effects of COVID-19 pandemic, and teachers are privileged interlocutors to detect changes in children's behavioral manifestations. Starting from these premises, the present study aimed to investigate the social and psychological impact of the pandemic on children and teachers and the strategies implemented to cope with it in the context of ECEC centers. 161 teachers completed an online survey which investigated four main themes: 1) impact of pandemic on children; 2) impact of pandemic on teachers; 3) children's vulnerabilities and resources; 4) strategies implemented to cope with the impact of pandemic. Qualitative content analysis allowed to identify representative categories for each open-ended question and statistical frequency showed the distribution of the categories within each variable. The results show changes in behavior, play and conversations between children, let teachers' concerns emerge, highlight children's fragilities and resilience, and allow to identify the main strategies implemented to cope with negative effects observed after the lockdown. The study provides an interesting overview of the impact of the pandemic, which allows researchers and professionals to focus on aspects relevant to the design and implementation of interventions with both children and teachers.

Keywords: Early Childhood Education and Care; Covid-19; pandemic; children; teachers.

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Introduction

The Covid-19 pandemic has caused significant changes in people's lives, from a health, economic and social point of view. As the first years of life, from birth to school age, are crucial for human development, the youngest are exposed to the greatest risks due to the pandemic. Indeed, young children have experienced increased instability and insecurity, increased stress on the part of caregivers, in addition to significant changes in daily routines in both the family and educational settings (Bartlett et al., 2020; OECD 2020; Yoshikawa et al., 2020)

Research has started to investigate the negative socio-psychological impact of the pandemic on children and adolescents: in particular, some recent rapid reviews have found concerns related to socio-emotional behavior, anxiety and stress (Brooks et al., 2020; Loades et al., 2020). However, just a few studies have investigated the impact of the pandemic in the preschool age; such studies have reported post-traumatic stress disorder, attachment problems and a sense of grief among the main effects on children, also underlining how such problems may have a long-term impact (Pascal & Bertram., 2020). Moreover, preschoolers show tiredness, sadness, irritation, frustration and anger in relation to the pandemic (Malta Campos & Vieira, 2021).

The early childhood education and care (ECEC) centers are extremely significant contexts for understanding children's behavioral manifestations due to the COVID-19 pandemic (Masten & Motti-Stefanidi, 2020; O'Keeffe & McNally, 2020). ECEC centers also play a critical role in contrasting the negative impact of pandemic on children; through the educational activities proposed by teachers, children indeed have the opportunity to re-elaborate their emotional experience in order to face current threats and enhance resilience (Masten, 2019; UNESCO 2021b; Ungar et al., 2019). For the same reason, educational contexts are included among the three fundamental components of the pandemic-resilient society, alongside the economy and health care (Fay et al., 2020).

In particular, teachers are the privileged interlocutors when it comes to observing the effects of the lockdown on children, as they have the opportunity to observe children for a long time while engaged in different activities and can compare children's behavior before the lockdown and after the reopening of schools. In particular, they have expressed concerns in relation to a loss of both learning and socio-emotional development in children, due to school closures (Bao et al., 2020; Donnelly & Patrinos, 2021; OECD, 2020; Buheji et al., 2020; Giannini et al., 2020, UNESCO, 2021b).

Some studies have already underlined how teachers recognized some negative consequences for the young children who could not spend time with school friends during periods of home isolation. In particular, changes have been observed in children's behavior, play and conversations. Concerning behavior, research indicates increased levels of social isolation, loneliness and anxiety, propensity to cry and to destroy objects, regressions in language development (Davies et al., 2021; Toseeb et al., 2020; Brooks et al., 2020; Kim et al., 2020; Loades et al., 2020;). As for play, children showed more intensity and depth and a propensity to stay in small groups rather than big groups, the introduction of the theme "virus" in the pretend play, for example through the representation of

masks, illness and death (Pascal & Bertram, 2021). In relation to conversations, the main themes seem to concern getting ill, calls to respect the anti-Covid hygiene rules and regrets at not to be allowed to hang out with friends (Malta Campos & Vieira, 2021). Another interesting emerging data refers to the "Covid silence" effect: despite the requests of the operators, children do not want to dwell on their experiences regarding Covid but would rather play and discuss something else (Pascal & Bertram, 2021).

A recent scoping review (Lateef et al., 2021) indicates that psychosocial consequences of pandemics on children are understudied, highlighting the need for more research in the field. Graber et al. (2020) also underlined how few studies have investigated changes in children's play in a restrictive environment. Furthermore, among the studies published so far on the themes, only a few have been conducted in Italy (Bondioli & Savio, 2021; Mantovani et al., 2021) and these studies have focused mainly on pedagogical aspects or else investigated experiences of children and families during the lockdown, not in ECEC center contexts. Starting from all these premises, our study aimed to explore what changes have taken place in children's behaviors, play and conversations after the restart of school in Italian ECEC centers, by asking teachers a series of open questions in order to let their point of view emerge.

Study aims

Starting from the aforementioned premises, the present study aimed to explore the effects of the COVID-19 pandemic in ECEC centers by investigating the social and psychological impact on children and teachers.

We have chosen to investigate these issues in the contexts of ECEC centers, as they are a very significant environment both to observe the changes in children after school closures and to offset the negative impact of the pandemic. We conducted such investigations via the perception of teachers as privileged observers and experts in children's development in everyday life.

Four main aims were defined: 1) to explore the impact of the pandemic on children; 2) to explore the impact of pandemic on teachers; 3) to explore children's vulnerabilities and resources; 4) to explore which strategies have been implemented in ECEC centers to cope with the impact of the pandemic. Given the exploratory nature of the study and the lack of publications on the topic, we had no specific hypotheses about the nature of these effects.

For each aim, some critical aspects on which to focus were identified. As for the first aim, the impact of the pandemic on children was explored through the analysis of three different expressive channels: behavior, conversations, play. Such a choice was made in relation to the level of development of preschool children, with respect to their preferential modes of expression typical of age, and in line with the activities usually proposed in educational contexts. As for the second aim, the impact of the pandemic on teachers was explored by noting their main concerns and their point of view on the use of the mask. As for the third aim, the identification of the resources and children's vulnerability was explored through the teachers' perception in the educational context. Finally, as for the fourth aim, we

analyzed which coping strategies had been implemented by the ECEC system to face the impact of pandemic, declining the analysis at two different levels: 1) in relation to children (what particular activities and projects have been proposed to children at the restart of school after the lockdown; 2) in relation to teachers (what specific training support aids been prepared for teachers)”.

Method

Sample

The sample was recruited through the distribution of an online questionnaire, disseminated to teachers via email by the pedagogical coordinators of the provinces of Bologna, Ferrara, Ravenna and Parma, in the Emilia Romagna region, Northern Italy. As the teachers were contacted directly by the coordinators, it was not necessary to define inclusion and exclusion criteria. The recruited teachers worked in both public and private ECEC centers which are accessed by a heterogeneous population of children aged between 3 and 6, quite representative of the general population of that age in the Emilia Romagna region. The sample included 161 teachers, 2 males and 159 females; the most represented age was between 41 and 50 years old (43.5%) and the majority of the participants had been teachers for over 10 years (73.3%). The personal data of participants are reported in Table 1.

Tab. 1. Personal data of participants

Data	Variable	Percentages
Gender	Male	1.2%
	Female	98.8%
Age (years old)	18-30	3.1%
	31-40	19.3%
	41-50	43.5%
	Over 50	34.1%
Working Age (years)	Less than 1	3.7%
	1-5	9.9%
	6-10	13.1%
	Over 10	73.3%

Procedures and measures

Prior to the data collection, participants' informed consent was acquired, following the ethical guidelines defined by the American Psychological Association. The authorisation and approval of the provincial coordinators of the ECEC centers was also provided. After that, an online questionnaire was

administered, using Qualtrics software. The contents of the questionnaire were defined in two phases: a first draft was defined on the basis of the international literature available on the topic, then the final draft was refined on the basis of some interviews with internal coordinators of the ECEC centers, who were also teachers, to adapt the questions to the specific Italian context. The final contents of the questionnaire are reported in Appendix 1.

Besides the personal data of the participants (gender, age, working age) the questionnaire consisted in 27 questions, divided in four sections linked to the four aims of the study:

- social and psychological impact of pandemic on children (8 questions);
- social and psychological impact of pandemic on teachers (3 questions);
- children's vulnerabilities and resources (8 questions);
- strategies to cope with the impact of pandemic (8 questions)

The questionnaire included both closed-ended and open-ended questions. The choice of including open-ended questions was due to the explorative nature of the study, as the research on the topic is rather scarce.

Tab. 2. Areas and themes to explore

Areas	Specific themes	Closed-ended	Open-ended
Social and psychological impact of pandemic on children	Behavior	1	1
	Play	2	2
	Conversations	1	1
Social and psychological impact of pandemic on teachers	Concerns		1
	Use of masks	1	1
Children's vulnerabilities and resources	Vulnerabilities	5	1
	Resources	1	1
Strategies to cope with the impact of pandemic	Activities proposed to children	2	1
	Trainings for teachers	3	1
	Proposals for the future		1

Data analysis

As a first step, qualitative content analyses were conducted to identify representative categories for each open-ended question and define a coding grid (Appendix 2). The procedure consisted of five phases:

- Identification of the categories by two raters (r1 and r2)
- Definition of the coding grid (r1 and r2)
- Coding training for a third rater (r3) who did not participate in the definition of the coding grid
- Coding of the open-ended answers by two raters (r2 and r3)
- Assessment of categorical inter-rater reliability (Cohen's kappa)

Categorical inter-rater reliability, assessed for each variable by calculating Cohen's kappa coefficient (k), revealed good to excellent inter-rater agreement for all the categories (K -score range: 0.60-1).

As a second step, frequency analyses were conducted to assess the distribution of each category and of each answer to the closed-ended questions.

Results

The frequencies of all the categories within each section are reported in Appendix 2. The main results for each section are described below.

Impact on children

As for children's behavior, the majority of the participants (61.5%) reported observing some changes during the pandemic; in particular, there emerged an increase in difficulties in emotional regulation (60%) and a corresponding decrease in adaptive emotional regulation behaviors (35%), a decrease in acquired autonomy (30%), a greater demand for attention from adults (25.5%), difficulties in managing peer relationships (24%), insecurity (19%), search for physical contact with an adult (15%), hyperactivity and inattention (15%) and the manifestations of fears related to diseases (14%).

As for children's play, 41.3% of the teachers noticed the appearance of Covid-related issues in children's play, in particular pretend play with specific themes related to Covid (70%) and with issues related to hospital and diseases in

Tab. 3. Impact on children

Themes	Categories	Example	Frequency
Behavior	Difficulties in emotional regulation	Anxiety, fears, anger, nervousness	60.0%
	Decrease in adaptive emotional regulation behaviors	Less tranquility, less tolerance to frustration	35.0%
	Decrease in acquired autonomies	Regressions as putting hands and objects in the mouth, do not putting on shoes alone, enuresis	30.0%
	Request for attention	Search for adults, whims	25.5%
	Difficulties in peer relationships	Acute self-centeredness in one-to-one relationships, difficulties in interactions	24.0%
	Insecurity	Greater difficulty in detaching oneself from the parent	19.0%
	Search for physical contact with adults	Excessive attachment even with teachers, they seek physical contact	15.0%
	Hyperactivity and inattention	Hyperactivity, inattention	15.0%
	Fears related to disease	Caution in following the rules of hygiene, fear in contact with children or teachers of other classes	14.0%
Play	Covid-related themes in pretend play	Disinfecting games with a magic gel	70.0%
	Disease-related themes in pretend play	Doctor's game	34.0%
	Distrust of others	Solitary play has increased, difficulty respecting rules in a group	25.0%
	Greater demand of adults' presence	Increased demand for the presence of adults	22.5%
	Greater need for physical activity	They prefer outdoor games in the school garden, they are more physical in their games	21.0%
	More solitary play	They stay alone while playing	17.0%
	Less sharing	They don't share their games with others	17.0%
	Lower tolerance towards frustrations	They want to decide what to do, they do not accept defeat	12.5%
Conversation	Rules of Covid protocol	We must wear a mask because there is Covid, we must wash our hands well so there are no germs and bacteria	43.0%
	Consequences of the virus and its dangerousness	The virus makes people sick, Covid kills, we cannot kiss	22.0%
	Limitations in relationships	I cannot have a birthday party but I would like to do it so much, you cannot come to my house because there is Covid	18.0%
	Family experience	My grandfather got the vaccine yesterday, he was not very well	18.0%

general (34%). 21% of participants reported other changes in play behavior; among such changes, the data show a greater distrust of others (25%) and a greater demand for the adult (22.5%), a greater need for physical activity (21%) and solitary play (17%), less sharing (17%) and a lower tolerance of frustration (12.5%).

As for conversations between children, 78% of participants noticed issues related to Covid and the pandemic, with the recurrence of themes related to the rules of the Covid protocol (43%), the consequences of the virus and its dangerousness (22%), limitations in relationships (18%), family experiences (18%).

Impact on teachers

As for teacher's concerns, the main ones are related to the deprivation of sociality for children (48%), difficulties in the relationship between teachers and children (23%), children's emotional fragility (20%), delays in the development of certain skills (17%), deprivation of the experience of community and school life (14.5%).

As for the use of the mask, 73% of participants reported that it influenced their relationship with children, due to limitations in expressiveness (66%), general difficulties in understanding messages (41.5%), difficulties in breathing or speaking (20%), difficulties in communicating empathy (12%). They also noticed a delay in the development of verbal language in children (10%) and an increase in the ability to "read one's eyes" (10%).

Vulnerabilities and resources

As for children's vulnerabilities, most teachers noticed in children an increase in emotional fragility (70%),

closeness to the adult (68%) and distance from peers (29%) was noted. 85% of teachers reported having had some children in class with direct family experience of Covid; in these children they noticed greater insecurities (21%), greater manifestations of anxiety and fear (21%), greater difficulty in detaching themselves from parents (17%) and a greater sensitivity to issues related to the pandemic (17%), compared to others.

As for children's resources, 59% of teachers noticed the implementation of specific resources, such as compliance with new rules (53%), adaptation (30%), greater desire to talk about their experience in children who had a direct family experience with Covid (29%), responsibility in respect to others (13%), patience (9%), the desire to play outdoors (9%), and creativity in inventing new games with less material (8%).

Coping strategies

As for the activities proposed to children to cope with the impact of the pandemic, 31% of teachers provided different strategies or specific activities to cope with the impact of the pandemic, such as reading and circle time on emotions (36%), sharing experiences (19%), some specific games (15%), various pictorial and manipulative activities (14%), some activities related to personal care (10%), the creation of group stories (8.5%) and psychomotor activities (8.5%).

As for the trainings for teachers, 50% of teachers had the opportunity to participate in ad hoc training courses that they considered useful. The topics of the training were mostly aspects related to children's psychology (58%), inherent in the psychology of teachers (16%), aspects of peer socialization (14%), support for families (14%) and the theme of death and loss (14%).

Tab. 4. Impact on teachers

Themes	Categories	Quotes	Frequencies
Concerns	Sociality for children	Lack of socialization for children during the lockdown, isolation,	48.0%
	Difficulties in the relationship between teachers and children	Trying to maintain contact, fear of losing the emotional bond with them	23.0%
	Emotional fragility of children	Repercussions of isolation on their well-being, sadness, that they felt alone, angry, and afraid	20.0%
	Delays in the development of certain skills	Not being able to consolidate a training path of growth, regressions	17.0%
	Deprivation of the experience of community and school life	Loss of routine, deprivation of the experience of school life	14.5%
Use of masks	Limitation of expressiveness	Lack of facial mimicry, difficulties in communicating and understanding emotions	66.0%
	General difficulties in understanding messages	The voice is lost a lot and children struggle to follow, difficulty interpreting non-verbal expressions	41.5%
	Difficulties in breathing or speaking	I need to raise the tone of my voice, difficulty in singing songs	20.0%
	Difficulties in communicating empathy	The relationship is more detached, children do not see me smiling, worried, angry	12.0%
	Delay in the development of verbal language	Not being able to show the lip, often phonetically similar letters appear the same and consequently children do not always repeat correctly	10.0%
	Increase in the ability to "read the eyes"	We look more into each other's eyes	10.0%

Tab. 5. Vulnerabilities and resources

Themes	Categories	Quotes	Frequencies
Vulnerabilities	Emotional fragility	Nervousness, aggression, sadness, loneliness, anxiety	70.0%
	Closeness to adults	Search for physical contact with adults, search for the presence of the adult even during play	68.0%
	Distance from peers	Increased solitary play, greater self-centeredness	29.0%
	Insecurities*	Greater difficulties of acclimatization and relational, seek more reassurance and emotional reinforcement	21.0%
	Anxiety and fear*	Increased anxiety, more fears	21.0%
	Difficulties in leaving parents*	Greater attachment to the family, once welcomed in the section they let themselves be consoled but need well-thought-out words	17.0%
	Sensitivity to issues related to pandemic*	Greater sensitivity and fears about the virus	17.0%
Resources	Compliance with new rules	Compliance with safety regulations: hand washing, disinfecting, keeping a safe distance	53.0%
	Adaptation	Great spirit of adaptation to situations, acceptance of changes	30.0%
	Greater desire to talk about their experience*	More desire to talk about Covid experiences, need to talk about their experience with teachers and peers	29.0%
	Respect for others	They are very respectful of others	13.0%
	Patience	They show great patience	9.0%
	Desire to play outdoors	They ask to play outdoors more because they know that outside they can play with greater tranquility	9.0%
	Ability to create new games with less material	Play with little, invent new games with fewer materials	8.0%

Note. *Increase in children who had a direct family experience of Covid, compared to the others

Tab. 6. Coping strategies

Themes	Categories	Quotes	Frequencies
Activities for children	Reading and circle time on emotions	Reading books on emotions, conversations related to emotions, narration, direct evocation in circle time, emotional workshops on fear and one's own feelings	36%
	Sharing experiences	Increase in moments of sharing on the carpet in a circle.	19%
	Specific games	Creation of stories about Covid, activities that support and facilitate distancing, use of surgical masks to play	15%
	Pictorial and manipulative activities	We draw Covid, graphic activities on wrong and correct behaviors.	14%
	Activities related to personal care	Hand-washing game	10%
	The creation of group stories	We invented a song and a story all together.	8.5%
	Psychomotor activities	Psychomotor workshops on emotions, outdoor motor play	8.5%
Trainings for teachers	Psychology of children	Management of emotions, moments of distress and anger, management of moments of crisis	58%
	Teacher psychology	How to reintegrate into the relationship with children with safety measures, reflect on one's own emotionality	16%
	Peer socialization	How to help children's socializations, how to program the division into bubbles of children	14%
	Support for families	How to relate to families in this situation, how to support parents	14%
	Death and loss	Insights on themes related to death and loss and how to talk about them with children	14%

Discussion

The framework of the results showed the interesting aspects of the impact of the pandemic on children, derived from the spontaneous observations of teachers in the natural context of the ECEC centers. These complex results, on the one hand, help to fill the literature gap on the impact of the pandemic in preschool age, and on the other, allow us to identify some emerging themes that can guide educational actions for children and training courses in teacher support.

An initial important result indicated that most teachers recognized changes in children's behavior at the reopening of school after lockdown. One of the most frequently observed changes was a greater difficulty in emotional regulation, in particular related to irritability, fear and the inability to tolerate frustration, especially during peer play. Moreover, a lower percentage of teachers also highlighted greater attention difficulty and hyperactivity, aspects that are also linked to emotional dysregulation (Burnett et al., 2020; Zuberer et al., 2018). In addition to integrating evidence with other studies on the topic (Kairupan et al., 2021), our data allow for a greater understanding of children's difficulties in self-regulation, letting emerge such difficulty both in relationships with peers and adults. As for their peers, it was found especially referring to the resolution of conflicts and the ability to tolerate frustration during play. As for the adults, it was found especially in relation to separation from parents upon arriving at the ECEC center (Cigala et al., 2013; Venturelli & Cigala, 2016) and to a greater demand for teachers' presence during the day. As the first years of life are crucial for the development of emotional regulation (Carrol, 2019), and considering that such an ability is predictive of good adaptation to contexts also in later stages of life (Robson et al., 2020; Skibbe et al., 2019), these data appear to be very significant and need to be adequately embraced by education professionals.

The explanations of this fragility may be different. Since, in the early years of life, emotional regulation skills are learned from relationships with significant adult figures (Pallini et al., 2018) one of the explanations should be related to adults' lesser emotional disposition to welcome children's emotions, recognize them and regulate them: the literature indeed indicates that the pandemic has generated a lot of uncertainty, greater anxiety and a sense of precariousness in adult figures who have an educational role (Jones & Kessler, 2020). In relation to this result, it should be also observed that, according to teachers' perception, children seem to show a greater need for relationships and closeness with the adult, highlighting a decrease in many of the autonomies already acquired such as conflict resolution and group play. Considering Fonagy's perspective (Fonagy et al., 1991; 1997), we could hypothesize that the Reflective-Self functioning of the adult, which allows a child to develop the ability to regulate their emotions, has diminished in this period due to greater insecurity and anxiety. Another explanation could be related to fewer opportunities of peer-relationships during lockdown: as shown by recent research (Cordovil et al., 2021; Saltali, 2021), the pandemic caused an increase in the sense of precariousness and a deprivation of extrafamilial socialization experiences. Children may have had fewer opportunities to develop the understanding of emotion and self-regulation through peer-relationships.

In relation to changes in play, only a few teachers (21%) have highlighted general changes post-lockdown, reporting on three main aspects in particular. First, a greater distrust/detachment manifested in more solitary play and less sharing with peers. Second, a greater demand for adult participation during peer play. Third, a greater demand for physical play that involves the body in motor activities. More teachers (41.3%) observed the appearance of pandemic-related elements in children's pretend play, both related to specific aspects of Covid-19 or to general disease and hospitalization. These data confirm the relevance of pretend play in preschool age as a means of expression, communication and processing of affectively meaningful experiences for children (Galyer & Evans, 2001; Lillard, 2013), and in particular, its importance as a fundamental tool to elaborate fears in the context of illness and to support mind-mindedness (Erikson, 1964; Meins et al., 2013).

In relation to the conversations, most teachers reported the presence of themes related to the pandemic in children's speech and narratives. In particular, two levels of content are highlighted: one related to knowledge and the other to experiences. At the knowledge level, conversations referred to protocols and measures taken to counter the spread of the virus, to the consequences of the virus and its dangerousness, such as the possibility to get ill or to infect others. At the level of experiences, children's conversations referred to the limitations that Covid imposed on them, especially concerning activities, such as the possibility to share materials and to stay close, and family experiences, such as the possibility to meet their grandparents or to celebrate birthdays with parents.

Although these data would seem to be in contrast with the "Covid silence" reported in the literature (Pascal & Bertram, 2021), they are not. It is interesting to note that Covid silence was found in adult-led conversations, while we investigated a different form of conversation, the spontaneous dialogues between children, finding that such conversations include Covid-related ones. Moreover, it should be observed that we conducted our study a few months after the reopening of schools and it could be possible that a time was necessary for children to "be able to say" and "be able to share" what they experienced and felt.

The results of the study also allow us to focus on some aspects of vulnerability of children as well as on the resources that they had implement in the educational context. Concerning their vulnerabilities, the findings are consistent with data on changes in children's behavior; in particular, 70% of teachers recognized an increase in children's emotional fragility and a greater need for the physical presence of the adult. A smaller number of teachers also reported a greater distance among peers. The identification of these specific vulnerabilities, that to our knowledge were not found in previous studies, allows us to increase the adults' awareness about children's post-pandemic experience and, starting from such an awareness, it may contribute to orienting future educational actions.

In particular, for a greater understanding of the situation, these vulnerabilities should not be considered independently, but as interdependent and connected. As previously mentioned, children's ability to regulate their emotions is connected to the possibility that they have in everyday life to experience the containment of such emotions, especially at this age. The

need for the presence of an adult, which became stronger for children after the pandemic, should be considered a sort of “signaling mechanism”: the search for an adult who welcomes and recognizes their emotions. While for older children this containment might be found also in their peer relationships, in preschool age the adult still plays a highly critical role in the process of emotional regulation. In this perspective, the possibility of strengthening the bond of trust with significant adults becomes fundamental to explore the environment and the relationship with peers.

One of the major contributions of the study is to have identified the resources that children have implemented in the educational contexts after lockdown, that is from the teachers’ point of view. Most teachers observed a great ability to cope with the new context, in particular showing compliance with the rules imposed by the protocols, adaptation to the new situation, and also the implementation of behaviors that presuppose the taking of responsibility and attention to others, such as being respectful and taking care of others. Although reported with less frequency, another important resource has been children’s creativity, like the ability to invent new possibilities of play using a smaller number of materials, because many had been eliminated by the protocols.

The study also contributes to deepening the knowledge about children who have had direct experiences in the family of Covid infection. The vast majority of teachers (85%) reported having had at least one child in class with such an experience. Nevertheless, to our knowledge, this topic has not been yet explored in the studies on preschoolers. According to teachers’ perceptions, these children have some specific vulnerabilities, as compared with others: what emerged is a greater insecurity, a greater behavioral manifestation of anxiety and fear, greater sensitivity to issues related to Covid and also greater difficulties in separating from parents upon the arrival at the ECEC center. In these children, the teachers also recognized a greater disposition to tell about their experiences: such an aspect represents a resource since, as various research studies have highlighted, sharing can be an effective opportunity to process and contain the emotions and thoughts related to traumatic events (Bateman & Danby, 2013; Brown, 2011; Scaletti & Hocking, 2010).

The impact of the pandemic on education professionals, investigated both in relation to the main concerns of teachers for children and to the experience of using the face mask, allows other interesting data to emerge. Teachers declared concerns mainly in relation to the impact of Covid and school closures on children’s socio-affective development, referring in particular to the limitations of peer socialization, difficulties in the relationship between teachers and children and children’s greater emotional fragility. Fewer concerns emerged for children’s learning in terms of a slowdown in the development of cognitive skills. The latter finding seems to be in contrast with other recent studies that point to the loss of learning and opportunities for growth and development as major concerns about the adverse consequences of the pandemic on education. (Niemi et al., 2020; Onyema et al., 2020; UNESCO, 2021a). The contrasting findings may be due to the fact that such studies evaluate the impact of the pandemic on development at more advanced ages, when the cognitive aspects take on greater

importance both for the families and for the educational institution. Our exploration of early life educational contexts revealed that teachers’ main concerns were instead related to relational and emotional aspects more than cognitive ones. Nevertheless, it should be interesting to deepen such aspects, as the first years of life are crucial for children’s cognitive development.

The results of the present study also enrich the literature concerning the use of the face mask, with a focus on its impact on preschool teachers. Although recent research has already studied the correlation between the use of the mask and teachers’ anxiety in school age (Li et al., 2021; Spitzer, 2020), little is known about the effect of wearing masks in preschool. About 70% of Italian participant teachers reported that the use of the mask influenced their relationship with children. More specifically, it emerged that in most cases the mask represented for teachers a limitation of expressiveness in their communication with children, also negatively affecting the full understanding of verbal messages. An interesting fact is that, although teachers expressed concerns about the use of the mask in relation to a decrease in the communication of empathy, they also recognized that children have become better at “eye reading”, refining the ability to grasp emotions and non-verbal messages starting from the adult’s look. It would be interesting to deepen these results in future studies, as the ability to grasp mental states from eye-gaze in early childhood is still being discussed. Although children’s ability to distinguish emotional expressions through the upper part of the face is recognized, literature still does not support a causal connection between face-reading and mind-reading in early childhood (Pellicano & Rhodes, 2003).

Other important findings have emerged in relation to the strategies that have been implemented by the ECEC educational systems in the post-pandemic period to allow children to process their experiences related to Covid. About a third of the participants teachers (31%) reported having implemented specific strategies or activities aimed at helping children to cope with the impact of pandemic; such strategies referred mainly to readings and conversations about emotions, some specific games to increase awareness and responsibility (e.g.: play on distance, play with face masks), some manipulative activities, proposals for psychomotricity and even the creation of ad hoc stories in groups.

Regarding the training supports designed and proposed by the ECEC system for professionals, the data showed that only half of the teachers participated in specific training sessions and that they found them useful for their practice. It is interesting to note that most training sessions were focused on the needs of children and their development, while only 16% were centered on taking charge of the experiences and emotions of the teachers. These data allow us to reflect on the role of training for ECEC professionals and on the vision underpinning the training. If teachers should contain children’s experience, thoughts and emotions, it might be asserted that it would be useful for them to have the tools to manage their own experience, thoughts and emotions as well in such a challenging and new context. As one teacher put it: “children’s emotions echo our own”. The needs of children highlight the need of an adult who knows how to help them to regulate their

feelings: to do so, the main way is to lend support to the adult to also recognize their emotions and fears, insecurities with respect to taking charge of children and their emotional states. In this vision, trainings that support emotional awareness and emotional regulation for both children and teachers should be appropriate to face the effects of the pandemic (Berti & Cigala, 2020; Matiz et al., 2020).

Strengths and Limitations

Although this preliminary study provides interesting findings about the social and psychological impact of pandemic on children and teachers in Italian ECEC centers, the results should be considered in the light of certain limitations. First of all, the sample was small and representative of a limited population in Northern Italy; second, the study takes into account the point of view of teachers, considering them privileged observers of children's behavior, but it would be interesting and useful to integrate their perspective with that of the parents and also to conduct direct observation of children in the educational setting, to implement multi-informant research. Despite the above-mentioned limitations, the study does have many strengths. At a methodological level, the coding process of the open-ended questions of the questionnaire included three raters and one of them did not participate in the definition of the coding grid and was blind to the hypotheses of the research, ensuring greater stringency in the coding phase. At a content level, to our knowledge, the present study is the first to deepen some specific aspects about the impact of the pandemic observed in Italian ECEC centers, such as the resources put in place by children in the educational context, the teachers' experience about the use of a face mask and the strategies implemented to cope with the impact of the pandemic.

The present study could offer interesting points of reflection for future research, in order to further explore and deepen some emerging aspects, and for both practice and training to be implemented in the educational contexts, in order to cope with the negative impact of the pandemic and to support children who experienced the effects of the pandemic on their growth.

Author Contributions

The authors contributed equally to this manuscript.

Compliance with Ethical Standards

Conflict of interest

The authors declare that they have no competing interests.

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Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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Appendix 1.

Contents of the questionnaire and distribution of frequencies for each closed-ended question

Section A		Social and psychological impact of pandemic on children	
Question code	Question	Answer options	
A1 General Behavior	Have you noticed particular behaviors during pandemic in children in the school context (behaviors that have appeared or increased or decreased)?	No Yes, some Yes, many	36.0% 61.5% 2.5%
A2	Which ones?	Open-ended	[see table 3]
A3 General Play	Have there been any changes in the way children play during the pandemic?	No Yes	79.0% 21.0%
A4	Which ones?	Open-ended	[see table 3]
A5 Pandemic-related play	Have you noticed the recurrence of issues related to Covid-19 and aspects related to the pandemic in children's play?	No, never Yes, sometimes Yes, often	58.7% 28.0% 13.3%
A6	Which ones?	Open-ended	[see table 3]
A7 Pandemic-related conversations	In conversations between children, have you ever heard comments and conversations from children about Covid-19, or about aspects related to the pandemic?	No, never Yes, sometimes Yes, often	22.4% 46.9% 30.8%
A8	Which ones?	Open-ended	[see table 3]
Section B		Social and psychological impact of pandemic on teachers	
Question code	Question	Answer options	
B1 Concerns	What are the biggest concerns you have and/or had as a teacher for your children in relation to pandemic?	Open-ended	[see table 4]
B2 Mask	Do you think the use of face masks for children in any way influences the relationship with teachers and/or between peers?	Not at all Yes, a little Yes, quite a bit Yes, a lot	29.1% 35.8% 21.9% 13.2%
B3	Which kind of influence did you notice?	Open-ended	[see table 4]
Section C		Children's vulnerabilities and resources	
Question code	Question	Answer options	
C1 Emotional fragility	Have you noticed increased emotional fragility in children after the re-opening of the school?	Not at all Yes, in some children Yes, in many children I don't know	24.7% 45.3% 26.0% 4.0%
C2 Closeness to adults	Have you noticed a greater demand for contact and closeness to teachers during pandemic?	Not at all Yes, in some children Yes, in many children I don't know	29.3% 32.0% 37.3% 1.3%
C3 Distance from peers	Have you noticed a tendency of children to stay more distant from peers during pandemic?	Not at all Yes, in some children Yes, in many children I don't know	69.3% 20.0% 10.0% 0.7%
C4 Direct experience	Are there children of your class who have had a direct experience with Covid-19 (family members or close friends...)?	No Yes, some Yes, many	14.9% 77.0% 8.1%
C5 Differences	Have you noticed any difference between these children and others in terms of behavior, emotions or conversations?	No Yes	80.2% 19.8%
C6	Which ones?	Open-ended	[see table 5]
C7 Resources	Do you think children have implemented specific resources (strategies, behavior skills ...) to deal with pandemic?	No Yes I don't know	11.4% 57.9% 30.7%

C8	Which ones?	Open-ended	[see table 5]
Section D			
Strategies to cope with the impact of pandemic			
Question code	Question	Answer options	
D1 Activities for children	Have you thought and proposed to children specific activities on issues and/or particular emotions and behaviors of children related to Covid-19?	No Yes	53.5% 46.5%
D2	Which ones?	Open-ended	[see table 6]
D3 Activities effectiveness	Do you think these activities have been effective?	Not at all Yes, a little Yes, quite a bit Yes, a lot	4.6% 13.8% 30.8% 26.2%
D4 Trainings for teachers	Have you had the opportunity to participate in specific trainings related to pandemic?	No Yes	50.7% 49.3%
D5 Trainings effectiveness	Do you find them useful?	No Yes	2.9% 97.1%
D6 Aspects to deepen in trainings	Do you feel the need to deepen in other training sessions some aspects in particular that can help you in this period?	No Yes	49.3% 50.7%
D7	Which ones?	Open-ended	[see table 6]
D8 Proposals for future	What else do you think could be done and/or would you like to do to support children in this period?	Open-ended	[see table 6]

