



# Children's Social Representations of This Invisible and Never Previously Known COVID-19 Virus

iraklis Grigoropoulos<sup>1</sup>

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## Abstract

Children are the forgotten group as they have been excluded from examining how they understand information about COVID-19. This study examined how children in Greece represent the COVID-19 virus. The drawing method was used as a process of meaning construction combining subjective experiences with socio-cultural meanings. Thirty-four children aged 4 to 6 years old ( $M=5.4$ ) were asked to draw a picture of the COVID-19 virus and explain their drawings verbally. This study used participant-created drawings to assess how children represent the COVID-19 virus and reports that drawing is an effective method of examining children's social representations. Methodologically, by using drawing, this study reveals layers of social representations that may be difficult to put into words. Three distinct themes, namely "scientific" knowledge of the virus, the COVID-19 virus as the enemy, and the confinement situation, were identified in the children's visualizations and verbalizations constituting children's social representations of COVID-19. This study's results show that social representations give meaning to a novel reality and allow the participating children to direct themselves as regards this novel reality.

**Keywords** Social representations theory · Children · Objectification · Anchoring · Drawing · COVID-19 · Greece

## Introduction

The COVID-19 outbreak has put humanity in a unique situation, with people of all ages assimilating a plethora of messages regarding COVID-19 infection and COVID-19 prevention practices (Grigoropoulos & Daoultzis, 2022; Soma, 2020; Valadez et al., 2020). In addition, campaigns use visual and verbal slogans and messages to promote people's conformity to safe behaviors such as handwashing, social distancing, or wearing a mask (Bray et al., 2021a; Martikainen & Sakki, 2021).

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✉ iraklis Grigoropoulos  
griraklis@gmail.com

<sup>1</sup> Psychology Department, Panteion University, Athens, Greece

Children have also been receiving this information and were expected to conform. COVID-19 has been the main subject of scientific research because of its fatality and rapid expansion. In addition, COVID-19 is acknowledged as a physical and symbolic threat with massive media attention throughout the world. Thus, the majority of the population—among whom children—conceptualizes and understands COVID-19 based on media, news, images, and the social space wherein people communicate and act (Martikainen & Sakki, 2021). Nonexperts—among whom children—adopt commonly shared ideas about the COVID-19 virus that transform complex scientific knowledge making it understandable to nonexperts (Idoiaga et al., 2020). In this way, social representations help children construct a shared understanding of complicated issues (Moscovici, 1998, 2001).

Social representations theory (hereafter SRT), developed by social psychologist Serge Moscovici, indicates common ways of conceiving, considering, and evaluating social reality (Höjjer, 2011). Specifically, SRT has contributed to understanding how different social groups acquire and share knowledge. Social representations (SRs) are interpretations of realities that transform technical-scientific knowledge into daily knowledge by a process of anchorage and objectification and guide beliefs, attitudes, and behaviors (Moscovici, 2008). Specifically, through the mechanism of comparing (anchoring) unfamiliar threats to an already existing knowledge and through the process of emblemizing (objectifying) complex concepts through symbols and images, members of communities direct themselves in their social worlds and try to understand controversial and complicated concepts (Moscovici, 1984, p. 24; Smith & Joffe, 2013).

Following Bauer and Gaskell's (1999) recommendation to use natural groups that deal with the target of the research, this study examines children's social representations of the COVID-19 virus based on their drawings (Martikainen, 2019). The present study uses SRT as this approach can provide a context for understanding the symbolic meaning that is attributed to diseases in everyday thinking (see Joffe & Bettega, 2003; Idoiaga et al., 2020). Even though children represent a less vulnerable part of the population to this pandemic, they may play a role in spreading the infection (Pavone et al., 2020). In addition, they suffered from pandemic consequences as in most parts of the world, schools have been closed, and restrictions have been imposed regarding social distancing and limited contact with elderly family members (Brooks et al., 2020; Grigoropoulos, 2022; Grigoropoulos & Tekelidou, 2021). Furthermore, children are the forgotten group, as they have been excluded from both key health information about the COVID-19 pandemic and research examining whether or how children understand information about COVID-19 and measures to restrict the transmission of the coronavirus (Bray et al., 2021b; Rowland & Cook, 2021). Therefore, children aged 4 to 6 years old were asked to draw a picture of the COVID-19 virus and explain their drawings verbally. Taking into account that one way to construct and communicate our understanding of our world is through visual elements (Fleckenstein, 2007), this study tries to understand how COVID-19 is represented in children's everyday thinking by examining what kinds of social representations of the COVID-19 virus the participating children's drawings suggest. Thus, the present study uses the interpretative lens of SRT and qualitative content analysis to examine children's visual and verbal representations of the COVID-19 virus.

Overall, this study promotes the participation of different groups of people in research concerning social representations and provides new knowledge about how children represent the COVID-19 virus. Methodologically, by using drawing, this study reveals layers of social representations that may be difficult to put into words (Raty et al., 2012). Theoretically, this study seeks to examine the role of basic mechanisms and processes of the social representations theory (anchoring, objectification, ontogenesis) in a scarcely researched group and to understand how children represent a novel situation.

## Social Representations Theory

SRT examines how communities construct social knowledge through interaction and communication. Specifically, SRT emphasizes how novel and unfamiliar phenomena are perceived and converted into common knowledge. Thus, existing knowledge, acquired through social interaction with other people and the material world, is most important as a point of reference to relate new knowledge with previous information (Howarth, 2001; Moscovici, 1988, 2011). As Moscovici (1984, p. 24) argues, “the purpose of all representations is to make something unfamiliar, or unfamiliarity itself, familiar.” Hence, social representations are “ways of world-making” (Moscovici, 1988, p. 231) enabling us to make sense and function in the social world. In all, SRT examines “the processes through which knowledge is generated, transformed and projected into the social world” (Duveen, 2000, p. 2). In this context, representations are considered dynamic social-psychological phenomena that are acted out in discourse and social interaction (Moscovici, 2001). However, despite its strength, SRT has also received extensive criticism, particularly within British discursive psychology, based on the difficulty in understanding the dialectical relationship between individual agency and the social structure that constitutes the essence of SRT (see Voelklein & Howarth, 2005).

Moscovici (2008) notes that in times of extreme confusion and agitation, studies regarding the construction and dissemination of social representations are very important. SRT also underlines that in times of crisis, popular knowledge and common ideas may stem from different social groups including children (Idoia et al., 2020; Washer, 2006). In addition, according to SRT, different social groups may create different social representations of the same idea/point (Martikainen & Sakki, 2021). Furthermore, people or individuals belonging to the same social group may have inconsistent and opposite representations regarding the same target (polyphasic quality of commonsense knowledge; Moscovici, 2001).

Previous research data report the appropriateness of SRT for several emerging infectious diseases (see Joffe & Bettega, 2003; Ribeiro et al., 2018; Wagner-Egger et al., 2011). From this perspective, peoples’ understanding of diseases is based on popular knowledge that is socially shared through social representations (Jodelet, 1989; Moscovici, 1988). Thus, social representations are significant during the pandemic outbreak as they are phenomena in the process of continuous reconstruction based on specific socio-cultural experiences that different

groups may experience during this outbreak and the knowledge they assimilate from the media and their social interactions (Martikainen & Sakki, 2021).

Studies using the perspective of SRT use a variety of methodological approaches specified accordingly to each research problem (Flick et al., 2015). Social representations theory has relied mainly on verbal data (de Rosa, 2014); however, visual materials are increasingly used within SRT research (Hedenus, 2016).

Images can be considered factors that trigger and reveal social representations' effects (de Rosa, 2014). As Phoenix et al. (2017) argue, images materialize social representations in visual forms echoing and in parallel shaping people's thoughts. Therefore, SRT provides a theoretical framework to study the transmission of knowledge from scientific thinking to lay thinking within communities through images (Martikainen & Sakki, 2021). Overall, in a visual world where meanings are conveyed verbally and visually and merge with people's cultural norms, prior experiences, and commonly shared knowledge, SRT also focuses on visual images as they play a significant role in social common sense (Martikainen, 2019). Due to the pressing situation caused by the pandemic outbreak, visual representations of the COVID-19 coronavirus have prevailed in the public discourse displaying varying degrees of accuracy as most of these visualizations are not realistic resulting mainly from microscopic imagery (Joubert & Wasserman, 2020). However, these visual representations constitute a powerful objectification mechanism affecting meaning-creation with regard to COVID-19. As Joubert and Wasserman (2020) argue, visual images communicate meanings more easily making complex information accessible to nonexperts. Thus, images are acknowledged as significant sources of both influencing and examining social representations (Moscovici, 2001).

Even though there are limited research data concerning children from the perspective of social representations (Idoiaga et al., 2020) because SRT focuses on how the scientific discourse of a new phenomenon (e.g., the COVID-19 outbreak) becomes common knowledge of lay people, SRT provides a novel approach in examining how children understand an unknown disease (Joffe & Bettega, 2003). In addition, research regarding infectious diseases within the SRT framework has been mainly conducted from an adult perspective (Idoiaga et al., 2020).

Limited research has been conducted examining how children assimilate the pandemic outbreak into their everyday thinking (Idoiaga et al., 2020). Additionally, a limited number of studies have used children's drawings as a way to understand the range and variety of their representations with regard to infectious diseases and COVID-19 (Idoiaga et al., 2020). Thus, it is most significant to examine children's understanding of the COVID-19 outbreak since they constitute crucial social actors and co-learners of science-based knowledge (Bray et al., 2021b).

Overall, the current study contributes to the examination of social representations of the COVID-19 virus from the perspective of early childhood age. In addition, as social representations are socially constituted and shared, it is necessary to conduct studies in a wide range of cultures.

## The Current Study

Children are significantly affected by the pandemic outbreak since their lives and everyday activities have been greatly changed (e.g., going to school, playing with friends; Li et al., 2020). Even though recent research data report the consequences of the pandemic outbreak on children's well-being (Waller et al., 2021), only a few of them emphasize children's representations of this phenomenon (Idoiaga et al., 2020).

Moscovici (1976 as cited in Aim et al., 2017) hypothesized that the "new" is structured by the "old" and proposed that the emanation of SRs stems from a new situation, a phenomenon, or an unusual event. Thus, as with any other conceptual domain, children construct their understanding and interpretations of the COVID-19 virus by assimilating a vast amount of information from many sources, such as family members, their friends, media, and other social contacts (Provenzi et al., 2020). However, to the researcher's knowledge, studies concerning children's representations of this vast amount of information regarding the COVID-19 virus are scarce. Therefore, this study examines children's social representations of the COVID-19 virus. According to Aim et al. (2017), empirical studies concerning children could examine and identify the formulation and development of SRs. Furthermore, "methodological polytheism" is a crucial issue for the study of SRs (cf. Kalampalikis & Apostolidis, 2016) as the utilization of a standard methodology cannot guarantee the holistic aim of SRT (Moscovici, 1976 as cited in Aim et al., 2017). This means that researchers should use a plethora of methods taking into account the theoretical issues, the relevance of the population, and the object studied (Aim et al., 2017). According to Moscovici (2003 as cited in Aim et al., 2017, p. 36), "more account must be taken of researchers' creativity than recipes" concerning methodology.

The use of visual materials within SRT or social psychology is rather limited (de Rosa, 2014; Martikainen & Hakoköngäs, 2022); however, recent studies show increased interest in visual methods (de Rosa, 2014; Martikainen, 2019). In particular, the drawing method has been used in the study of social representations of mental illness (de Rosa, 1987), intelligence (Raty et al., 2012), teachership (Martikainen, 2019), and racism (Howarth, 2001). Furthermore, specific groups of people such as children may find it easier to reveal their conceptions visually than verbally (Gameiro et al., 2018). Hence, drawing can facilitate the expression of social representations (Martikainen, 2019; Martikainen & Hakoköngäs, 2022). Previous research findings show that children's drawings are an efficient way of exploring their understanding of complex scientific issues. In particular, children's representations of illness allow them to express their ideas without having to rely on a scientific vocabulary offering at the same time a more refined representation of their thinking and emotions than verbal communication alone (Jolley, 2010; Mutonyi & Kendrick, 2011; Zaloudikova, 2010). Drawing is also most appropriate for young children as there is no need for the ability to write, read, or acquire language. Through this method, the asymmetric relationship between children and adults is avoided and no further technical skills are

needed (Bensalah et al., 2006). In addition, it echoes the common understanding of novel or everyday significant matters (Mannay, 2015). Thus, it can be considered a doorway to children's worlds (Ångström-Brännström & Norberg, 2014).

Overall, children live in a preexisting psychosocial world structured by their own social group. Their construction of "common sense" enables them to be capable and energetic social agents within their social groups (Aim et al., 2017). The COVID-19 pandemic can undoubtedly be considered a novel phenomenon and according to Moscovici (2001), the social representations approach is most interested in new and unfamiliar phenomena. Additionally, as stated by Aim et al. (2017), researchers interested in SRs should work more with children and/or adolescents because the SRT is scarcely used for the study of the social construction of knowledge in young populations.

Thus, we tried to access children's social representations of the COVID-19 virus by asking them to draw whatever they wanted about the COVID-19 virus (e.g., would you like to make a drawing that concerns the coronavirus? You can draw whatever you want) and explain briefly their drawings verbally. Children's drawings and verbal accounts were considered materializing social representations of the COVID-19 virus (Sakki & Menard, 2014 as cited in Martikainen, 2019). For Moscovici (1984, p. 38), "to objectify is to discover the iconic quality of an imprecise idea or being, to reproduce a concept in an image."

Within the SRT perspective, this study aims to explore children's common understanding of the COVID-19 disease situation through their drawings and discover the core notions influencing their conceptions of COVID-19. Hence, this study uses participant-created drawings as a basic material for accessing children's social representations of COVID-19.

## Method

SRT was used to examine children's understanding of the COVID-19 virus considering that there are no objective data or truth outside of the social world, only socially based knowledge (Marková, 1996). In addition, as SRs function at multiple levels of consciousness, their examination entails the use of different empirical methods (Flick & Foster, 2008).

We used the drawing method in this study since it can "act as a nonverbal stepping-stone into the world of experiences and emotions" of people (Søndergaard & Reventlow, 2019, p. 3). According to Mannay (2015) through visualizations, participants might express issues they may not express verbally. Also, this method is adopted as children can express themselves through drawings better than through verbal accounts (Søndergaard & Reventlow, 2019) and because drawing reduces the influence of the researcher (Leavy, 2018). Drawing as a visual method is one of the suggested ways of reaching into more unconscious levels of social representations at the ontogenetic level (Moliner & Abric, 2015). In this study, children's drawings were used as a participant-driven method for data production designed to examine how participants see the world (Guillemin, 2004; Lyon, 2020).

## Participants

Similar to other qualitative studies, convenience sampling was conducted to recruit participants. Thirty-four children participated in this study from 4 daycare centers in Greece. The sample included 19 girls and 15 boys, aged 4 to 6 years old, mainly from middle-class backgrounds. The total mean age was 5.4 years. Three of the participating children were refugee children. All daycare centers were located in the northern part of Greece. Before the start of the study, the research goals and the drawing procedure were explained to the early childhood educators who volunteered to participate. Informed consent was given by all the participating children as well as by their parents. None of the children rejected the invitation to participate in the study.

## Data Collection and Procedure

The current study was conducted from September to November 2021. Children were asked to individually draw a picture that concerns the coronavirus and comment briefly on their drawings. The children drew their pictures during class time at their educators' desks while the rest of the children were participating in different activities in the other corners of the classroom. Educators provided children with pencils, colors, and paper. The instruction was as follows: would you like to make a drawing that concerns the coronavirus? You can draw whatever you want. No further instructions were given. There was no time limit. Children completed the assignment in approximately 8–16 min. They were all provided with paper and colors as with any other drawing activity. Children's verbal accounts were transcribed verbatim by the educators. This study followed all principles of the Declaration of Helsinki on Ethical Principles for Medical Research Involving Human Subjects and all the ethical instructions and directions of the institution to which the researcher belongs.

## Analysis

This study follows the significant tradition of qualitative research and content analysis in examining social representations (Sakki et al., 2014 as cited in Martikainen, 2019). Thus, qualitative content analysis was used to analyze children's drawings and verbal accounts. Usually, this method detects and classifies meaning and themes from the data (Krippendorff, 2004). Therefore, the analysis emphasized discovering inductively which interpretations of the COVID-19 pandemic situation children's drawings and verbal accounts reflect (Hughes et al., 2016). Children's visualizations and verbalizations were supposed to echo their visual and verbal objectification materializing social representations of the COVID-19 pandemic (Moscovici, 2001). Children's drawings were the primary data of this study. Children's verbal accounts elucidated the drawings. According to Martikainen (2019), drawings should be accompanied by their designers'

verbal or written accounts since visual images may be open to different interpretations (Rose, 2016). Therefore, in this study, the researcher's content analysis was grounded on the combination of the drawings' visual features and the participant's verbal explanations of their drawings.

A visual content analysis was conducted whereby identifying the meaning, the themes, and the visual characteristics of images constitutes the essential procedure of the analysis (Johnson & Christensen, 2013). According to Bock et al. (2011), the potential for quantitatively considering visual material makes visual content analysis more accessible. However, several scholars identify certain obstacles in using content analysis in visual material. Specifically, Rose (2016) argues that it relies mostly on subjective assessments while Hedenus (2016) states that through the quantification of particular visual elements, the image is simplified since these elements exist in parallel to each other modifying each other's meanings. Thus, the results of quantification should be considered mainly as expressing tendencies for recurring themes discovered in what is drawn (Hedenus, 2016).

First, children's drawings were analyzed per se. By doing so, the researcher tried to examine the meaning, the themes, and the visual characteristics of the drawings and identify recurring themes or categories without the influence of verbalizations (see Martikainen, 2019). Next, the researcher focused on children's verbal accounts examining possible recurring patterns concerning the COVID-19 virus. The researcher also examined whether girls and boys developed different recurring representations. Last, the recurring themes or patterns based on visual characteristics of drawings and the children's verbal accounts were quantified. In this way, any predominant themes and/or patterns of the COVID-19 virus representations were identified (Hedenus, 2016). Also, the consistency between visual and verbal data was examined to highlight any dissimilarity. Thus, the analysis was based on the researcher's driven analysis combined with participants' verbal accounts. This may be considered a strength since it can lead to tacit conceptions of the COVID-19 virus (Martikainen, 2019). The themes and interpretations were validated by an independent rater, any dissimilarity in the analysis was discussed, and a decision was made about their inclusion (Silverman, 2013). Overall, this analysis tried to examine the implicit concepts through which children represent the COVID-19 virus.

## Results

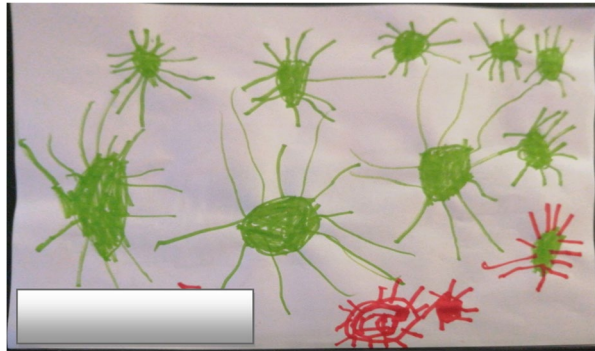
Children's representations of the COVID-19 virus discovered in their visualizations and verbal accounts were similar; therefore, this study's findings will be presented all together commenting on and clarifying each other. Three distinct themes were identified in the children's visual and verbal data constituting the participants' data. Twenty-one children drew and represented their "scientific" knowledge of the virus. Fifteen children represented the COVID-19 virus as the enemy. Eight children represented the COVID-19 virus by drawing the confinement situation.





**Fig. 1** Theme 1.1: The COVID-19 virus per se (*yes this is the coronavirus*; female student, 6 years old)

**Fig. 2** Theme 1.1: The COVID-19 virus per se (*This is the coronavirus, this is how I see it on TV*; male student, 5.5 years old)



### **Theme 1: The “Scientific” Knowledge of the Virus (Drawings as representations of Scientific Information)**

In children’s drawings, the coronavirus was represented mainly in two ways.

#### **Subtheme 1.1: COVID-19 per se**

Children’s graphic representations followed the dominating COVID-19 imagery in public discourse emphasizing its spherical shape and the exaggerated spikes. In their drawings, children understood this novel virus by connecting it with already known icon images and symbols mostly communicated by the media.

Representative drawings are presented in Figs. 1 and 2.

Thus, the visualization of the coronavirus that dominated the mass media served as a key representation for nonexpert children to rely on, process, and conceptualize complex scientific information. Children’s drawings show that their representations

**Fig. 3** Theme 1.2: Anthropomorphism (*this virus is an evil one and wants to make us all sick; female student, 4.8 years old*)



**Fig. 4** Theme 1.2: Anthropomorphism (*it is like a little monster who wants to catch us; male student, 5.6 years old*)



of the COVID-19 situation are founded on the dominating social messages they receive from the media.

### Subtheme 1.2: Anthropomorphism

Second, several children in their drawings attributed physical human features to the virus (e.g., eyes, mouth) in addition to its spherical shape and the spikes on its surface. Thus, another way of representing this novel virus and the pandemic situation was by attributing physical human features to the dominating mass media representations of the virus.

Representative drawings are presented in Figs. 3 and 4.

By anthropomorphizing the virus, the children turned an invisible threat into something tangible and visible as the well-known representation of the human being. In this way, through anchoring something, abstract was transformed into something more concrete.

Overall, through drawing, children connected a novel phenomenon to something that they already knew rendering the world more understandable. Participants' invariability regarding their graphic illustrations demonstrates the impact of the dominant visual representations and public discourse concerning coronavirus from the beginning of the pandemic and consequently how socio-cultural constructs (drawings) are shaped and echo public understanding (Smith & Joffe, 2013).

In this way, children's drawings convey their understanding of complex scientific information. Specifically, their drawings reflect how invisible entities are visualized and how complex aspects of the pandemic crisis become accessible to nonexperts.

Children's drawings echo the dominating public discourse about the COVID-19 virus that shapes public understanding. Overall, the participating children understood the COVID-19 virus by assimilating a vast amount of knowledge mainly from media sources and by intertwining sociocultural with scientific knowledge in their representations.

## Theme 2: The Enemy

Interestingly, in children's drawings and verbal accounts, the disease itself is represented as a virus that is undoubtedly their enemy. Consequently, the battle against it is represented as a war.

Representative drawings are presented in Figs. 5 and 6.

This theme shows how mass media influenced the participating children's representations. Specifically, the mass media and even politicians in Greece presented the COVID-19 virus as the unseen enemy (Poulakidakos, 2021). From the children's standpoint, this enemy-war framing enables them to contextualize a novel situation into a known framework and probably to anticipate certain harsh outcomes (e.g., the uncertainty that this war entails in the form of social restrictions). This representation may also entail the notion that in times of war, people will die and that hard times may lie ahead. This theme shows how commonly shared messages from the media are consumed by young children and construct their meanings, opinions, and

**Fig. 5** Theme 2: The enemy (*it is an evil virus that we have to fight back with water and soap. It bothers the children; female student, 5.2 years old*)



**Fig. 6** Theme 2: The enemy (*it is me... wearing a mask and making war on the coronavirus; it is our enemy.. it makes us very sick and we have to win it; male student, 5 years old*)



reality perceptions. Thus, how major issues are represented within mass media can affect how children perceive, embrace, and resonate with them.

Anchors serve the basic function of familiarization and the reference to a war context aimed probably to emphasize the threatening nature of the virus. Through this way of connecting something unfamiliar to a somehow familiar situation, children made sense of the COVID-19 disease situation. This process of anchoring is basic for the development of social representations (Marková, 1996). In all, enemy-war framing, as an anchor, serves the familiarization process with an unknown threatening situation aiming at contextualizing a complex situation into a known framework.

### Theme 3: Confinement

In this theme, children's drawings involved illustrations referring to lockdown conditions, such as lonely houses representing the outside world as dangerous or scary because of the undesirable consequences that this exit could have. These visualizations reflect the dominating messages, especially at the time of the first lockdown in which the "stay at home" slogan was commonly broadcasted by the Greek government through the media.

Representative drawings are presented in Figs. 7 and 8.

The endorsement of restrictions contrary to human characteristics (physical distancing) was achieved in the name of the necessary sacrifices (confinement) that have to be made to overcome these hard times and were massively conveyed to the public. In addition, children in their verbal accounts expressed their doubts and fears about going outside. This may also be explained by the fact that children for a significant period in Greece, as in other parts of the world, were not allowed to leave their homes almost under any circumstances. This theme reflects how physical (and sometimes social distancing) has become a central representation of one's own and others' way of health protection during the COVID-19 pandemic. In all, participants seemed to adjust to the widespread slogans spread by the mass media and the Greek

**Fig. 7** Theme 3: Confinement  
(if you go out you might be infected.. we should stay home and be careful; female student, 5 years old)



**Fig. 8** Theme 3: Confinement  
(I stayed home.. I was afraid that I would be infected if I went out.. I did not want to infect my friends; male student, 5 years old)



government intending to instruct the nation on how to act in order not to spread the disease.

## Discussion

This study's objective was to document the culturally shared social representations used by the participating children to construct their understanding of the COVID-19 virus. The drawing method was used since within the SRT perspective is considered a process of meaning construction (Literat, 2013) combining subjective experiences with socio-cultural meanings (Kress & Van Leeuwen, 2006). This study's results show that both girls and boys developed similar common ideas and representations about the COVID-19 virus. Specifically, children in their drawings adopted and shared a scientific representation of COVID-19 in the form and shape as depicted in the mass media and the public health messages. Children represented it as having a spherical shape and spikes on its surface. In most cases, the spikes were portrayed

with exaggeration. In this way, a complex idea became simplified in a graphic form and assimilated into the participants' symbolic social environment (see Marková, 1996, p. 187). Additionally, children represented the coronavirus in a spherical scheme with human-like characteristics (see McGellin & Grand Sullivan, 2021). Thus, anthropomorphism was used to personify and objectify the COVID-19 virus making it more concrete and familiar (de Rosa & Mannarini, 2021).

Accordingly, through the process of objectification, children connected an unknown entity to something they already knew by creating iconic images to rely on. This process helped them construct their understanding of the coronavirus. Objectification provided a way of meaning-creation for them during the pandemic. This process also shows how the participating children assimilate the surrounding social representations from their specific socio-cultural environment and reconstruct these representations to be able to manage that environment (ontogenesis; Duveen & Lloyd, 1990).

Furthermore, we argue that the social character of anchoring (Moscovici, 1984) is underlined in children's drawings since they try to clarify and understand an ambiguous situation by framing it as a war situation. According to Hilton and Hunt (2011, p. 941), "the media is a key source of health-related information." The conveyance of a war scenario, for example, "war against the virus" (BBC News, 2020) constructs an understanding of COVID-19 as the enemy providing a sense of danger and urgency on a global scale. Also, televised addresses such as "we are at the beginning of the battle [against the pandemic] which will be difficult" (17/03/2020) from the Greek Prime Minister symbolize the coronavirus pandemic as a life-threatening situation (Poulakidakos, 2021). Children anchored the novel coronavirus pandemic situation in a network of pre-existing representations such as the enemy-war concept. Carbonaro (2020, para. 18) argues that everyone "knows what a war is." Thus, this war framing allows people to understand the significance of the situation and acknowledge the tremendous risk involved with COVID-19. Such framing also aligns with a prototypical frame (the war framing) with which the children (and the public) are familiar and which also justifies actions such as restrictions and confinement on the grounds of wartime rules. In other words, the conveyance of such framing influences peoples' realities and the construction of meaning. Children also conceptualized confinement as an important aspect of their health in their drawings but also for winning the war against the coronavirus enemy. In addition, the war framing constructs a binary opposition (Alexandrescu, 2014, p. 27) of the ingroup (us)- and the out-group (it- the virus and/or those who are infected). Overall, the description of the coronavirus as the enemy and the pandemic as a war is a pivotal point leading to analogous representations and framings of the situation.

This study's findings show that the participating children used public health messages and information illustrated and circulated by the mass media to form an understanding of the coronavirus (i.e., Provenzi et al., 2020) reflecting the significance of meaning-making based on social representations during this pandemic outbreak. Furthermore, this study shows that drawing is an appropriate method for children to express their conceptualizations of various issues. It is also suitable to communicate socially shared perceptions that can inform us about commonsense understanding (Martikainen, 2019). In addition, it can be used to examine how and which

social representations are mobilized and used at the level of ontogenesis (Flick et al., 2015). To conclude, even though the information campaigns about the COVID-19 pandemic are designed by and addressed to adults, children should also be taken into account as significant social actors and co-learners of scientific knowledge.

## Limitations

Because creators and perceivers use different social interpretations, it is important to acknowledge that drawings are polysemous and open to multiple interpretations (Rose, 2016). Also, the generalizability of the results is limited as this type of research is inherently unfit for larger groups of people. However, this is a common disadvantage in qualitative research (Literat, 2013).

The interpretation of the findings constitutes another important concern as it is a highly interpretative research method. Visual data are more “open” and therefore more difficult to interpret. Hence, participants’ verbal accounts of their own drawings are recommended as a means of data triangulation (Literat, 2013).

In all, it is most important to consider the content of the children’s drawings as “a departure point for apprehending something of their worlds and world-making” rather than a complete depiction of their perceptions (Mitchell, 2006, p. 63).

## Conclusion

Despite the aforementioned limitations, there is significant interest and potential emerging from visual participatory research methods across countries (Literat, 2013). One of the ways to understand how the COVID-19 virus is commonly understood is to examine the knowledge, opinions, and beliefs that drive public discourse about this specific issue. The theory of social representations provides the framework for explaining how people interpret different/complex issues in their social and material world. As Moscovici (2001) notes, SRT is a theory of lay knowledge about a significant issue. This study’s findings provide evidence of how children assimilate coronavirus knowledge into their everyday thinking. Future research could focus on whether children’s representations relate to their parents’ views and practices or their family’s socio-cultural background.

Considering that there is little evidence of child-centered government information about public health issues and COVID-19 (Bray et al., 2021a; Rowland & Cook, 2021), public health messages meaningful for children and separate age-appropriate simple explanations for children should be designed. Therefore, it is of critical importance to gain an insight into how children represent this novel condition (Idoiaga et al., 2020). In this way, the role of the children in achieving community connectedness would be acknowledged. Overall, this study shows that social representations are mobilized by the participating children in two ways. First, they give meaning to the reality they face (anchoring and objectification). In addition, they allow them to direct themselves in relation to these realities (ontogenesis). Thus, this study shows how social representations allow the transformation of something

abstract into more concrete highlighting their active role in the construction of the social reality.

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**Data Availability** The data that support the findings of this study are available from the corresponding author upon reasonable request.

## Declarations

**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.

**Consent to Participate** Informed consent was obtained from all individual participants included in the study.

**Conflict of Interest** The authors declare no competing interests.

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