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# Social representations, media, and iconography: A semiodiscursive analysis of Facebook posts related to the COVID-19 pandemic

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## Abstract
The aim of this study was to explore the COVID-19 pandemic social representation in the early stages of its development. Following a free association task and a categorical analysis, a corpus of COVID-19-related editorial illustrations from articles posted by leading French newspapers was collected. Iconographic analysis of editorial illustrations revealed 12 iconic patterns that seemed typical of the pandemic iconography. Findings suggest that articles eliciting the greatest engagement (i.e. reactions, comments, and shares) are those that use a stable iconography so that the topic can easily be identified by most Facebook users. Therefore, these images could play an important role in the objectification process development of the COVID-19 social representation. Future studies should therefore explore the impact of the relationship between the news media and their audiences on the visual representation of highly topical issues, in the light of the objectification process of social representation theory.

Sales of print newspapers have declined over the past decade, largely because of the rise of the Internet. Consequently, exposure to news through social media, especially Facebook (i.e. most popular social platform, with some 2.5 billion users) is increasing,

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and most traditional newspapers use it as a medium for disseminating news and interacting with their audiences (Hille and Bakker, 2013). Online media target young audiences, made up mainly of under 35s (Newman, 2013) who are used to accessing information easily, quickly, and through multiple devices (e.g. mobile phone, computer, and digital tablet). Furthermore, online social networking enables individuals to instantly comment on and share the news with their virtual community. Audiences therefore tend to be more active in the dissemination process. This shift from paper to bytes through a third-party platform has changed the reader–news relationship. The format of Facebook posts relies on a large image (usually a photograph) accompanied by a short caption. Users must click on a permalink to read the whole article on the newspaper's website. However, it is difficult to assess the number of readers who go further to obtain more information. According to Gabielkov et al. (2016), 59% of links shared on social media are not actually opened. Social media in general, and Facebook in particular, have fundamentally changed the perception of news diffusion for at least two reasons: first, by allowing audiences to participate more actively in this process; second, by increasing the latter's reliance on the visual medium. To engage their audience (i.e. encourage them to react, comment, and share), community managers often add a text above the photo. As stated by Morin et al. (2019), "Images are a powerful vector of signification that social media users resort to more and more" (p. 1). The main characteristic of visual material is that it generates emotions: "Images are considered capable of drawing people along an emotional pathway, while textual or verbal material encourages them to follow a more rational, logical and linear thought process" (Joffe, 2007: 102, our translation). When Guerini et al. (2013) compared the popularity of posts with images versus text only, they found that those with images tended to be more viral. In their study, Ulloa et al. (2015) measured time spent fixating posts on Facebook, using an eye-tracking system. They compared three types of presentation: large image, medium-sized image, and text only. Results showed that posts with large images were more likely than the others to attract readers' attention. The extensive use of images on Facebook is based on the assumption that engagement is mostly elicited by visuals that attract users' attention and thereby generate high interest. The visuals that are selected must therefore contain components of users' social representations (Cohen, 2015; De Rosa and Farr, 2001; Moliner, 2016).

## Social representations: An iconographic approach

A *social representation* can be defined as a set of opinions, values, information, and beliefs shared by a social group about a given social object. In other words, it is a form of common knowledge that individuals develop about their environment. Social representations are formed when new situations or new objects appear. The primary function of a social representation is to "transform something unusual or unknown into something familiar" (Moscovici, 1961, 38, our translation). In his seminal work on the social representation of psychoanalysis, Moscovici found that religious people avoided evoking the concept of libido, and likened a session of psychoanalysis to a sacramental confession, a figurative schema (an ensemble of elements and images) that anchored the social object in the social group's preexisting sociocognitive system. The

process of *anchoring* consists in assimilating the new with what already exists. The foreign object is reconstructed within a familiar interpretative framework, and by making the unknown more familiar, it eventually becomes less threatening (Moscovici, 1961). Moscovici subsequently highlighted the impact of iconic aspects on the formation of social representations. Through the objectification process, social representations acquire a *figurative core*, that is, a concrete vision of social objects that is gradually naturalized, making communication easier among members of the social group. Images penetrate society, take root in the collective memory, and generate emotions. Abric points out that the concept of image "has long been key to the study of psychological phenomena" (1987: 60, our translation). Although theoretical and methodological approaches to social representations have mainly been applied to oral and verbal content (De Rosa and Farr, 2001), a number of studies have examined the link between social representations and images. The visual medium is viewed by some researchers as a means of production, a source, and an expression of social representations (Cohen, 2015; Da Silva et al., 2020; De Rosa and Farr, 2001; Sarrica et al., 2015). Images stimulate the production of representations, while representations can also be expressed in the form of mental images. In this sense, studies of iconography in social representations can be divided into two main categories: those focusing on the selection of visual images (Cohen and Moliner, 2018; Sarrica et al., 2015) and those focusing on the production of images elicited by an inducer (Devine-Wright and Devine-Wright, 2009; Le Moel et al., 2015). Although these studies have contributed to the development of the social representations framework, few of them have sought to decode images as verbal language, as suggested by the semiologist Roland Barthes (1964). In 1593, Cesare Ripa published *The Iconologia*, a guide to the meaning of allegorical or symbolic figures. The plethora of editions and translations indicate that artists feel it is important to know the conventional codes of the figures they conceive when seeking to convey a visual message. Thus, the concept of justice is represented by a woman (often referred to as *Lady Justice*) holding the twin attributes of a balance and a sword, while the concept of peace is represented by a dove holding an olive branch in its beak.

Although art has had a major impact on people's representations, it is not the only field in which typical images (i.e. corresponding to the components of social representations) are expressed. Historically, photography appears to have been used to spread propaganda or show reality. Goebbels' Propaganda Ministry used photographs to maintain the Nazis' political control, especially among young people. According to Brady, the camera is "the eye of History" (quoted in Delage, 2004: 362), and photography is also an efficient tool for showing what cannot be seen. Holocaust icons have the power to encapsulate the complex narratives of the Shoah (Stier, 2015). One stereotypical picture depicts a group of people wearing striped uniforms and standing behind barbed wire. This photo condenses the cruelty of the concentration camps. Finally, pictograms are probably the most relevant example of the link between images and social representations, with intended actions being based on the understanding of arbitrary signs. When Darras (2008) compared toilet pictograms in several countries, he found that most of them relied on gender stereotypes: long hair and dress/skirt for women, and short hair and trousers for men. Those gender stereotypes are reproduced by adults when it comes to draw a

picture of a man or a woman related to their mental imagery (Cohen and Moliner, 2021). Typical images (i.e. understood as the best visual representations of verbal concepts) may have a greater impact on short-term memory than nontypical images (Cohen, 2015). They may also allow for better understanding of a scenario, in the absence of text (Cohen and Moliner, 2018). Taken together, the above findings support the idea that images can convey commonsense knowledge and beliefs about social objects, and are able to express them in a way that people can easily understand. An image can be associated with its referent because of the degree of likeness between them, but also because people have acquired a system for interpreting and giving meaning to images. Today, because of their predominance in social media, images have become a channel of communication in their own right, and represent a vast area of study for better understanding of the dissemination of information, especially in the field of public health, where attitudes influence behaviors. When Joffe and Haarhoff (2002) studied the social representation of Ebola through articles published in British daily newspapers, they found an interaction between the media and lay representations of Ebola: "The media's role in shaping lay representations lies not only in what is written but also in the pictures that appear alongside the article" (p. 966). Joffe's work (e.g. 2007) has also highlighted the ability of visual material to evoke emotions.

## Social representations in the field of health and illness

Research on social representations in the field of health and illness began almost as soon as the theoretical framework itself had been developed. In line with Moscovici, the first study was conducted by Herzlich in 1969. It was based on 80 semistructured interviews, and found that social representations of health and illness existed independently of the scientific discourse. For participants, being ill was perceived as an intermediate state between health and illness. According to Laplantine (1989), illness is also perceived of as an exogenous entity that breaks into the body of an innocent individual who then has to fight this enemy. This supports Farr (1987)'s observation that whereas being in good health is mostly regarded as a normal condition of body and mind, illness needs to be explained. Social representations appear to be a relevant explanation for the impact of social groups on individual health practices. In *Medicine and Culture*, Payer (1988) compared the attitudes and behaviors of patients from four different countries (e.g. France, Germany, Great Britain, and the United States), highlighting the influence of cultural norms and values on medical care. Adopting a similar perspective, Fainzang (2001) highlighted differences in behavior according to patients' religion. Lupton (1994) investigated other factors, such as gender or body representations, which strongly contribute to perceptions of health and illness. Cohen and Moliner (2015) showed that social representations of medicine differ according to age, gender, socioeconomic status, and education level. A few studies in this field have also analyzed the relationship between social groups and objects implied in the care process, such as medication (Cohen, 2015) or vaccination (Gaymard et al., 2020).

Finally, the social representation framework also appears to be relevant when studying attitudes toward specific diseases. For instance, a study of influenza outbreaks (Eicher et al., 2014) revealed that individuals' beliefs are supported by *natural* (e.g. "the virus

mutated from previous strains of influenza") or *human* (e.g. "the virus was developed by the pharmaceutical industries in order to sell more drugs") factors, entailing specific chains of reasoning that have an impact on out-group discriminations, and perceived effectiveness of health measures for instance. The social representation of AIDS has also been widely investigated (see, e.g. Gaymard and Cazenave, 2018; Joffe, 1995, 1998; Morin, 1994; Payer, 1988), showing the spread of false information and beliefs about the virus. Applied to numerous social objects including in the field of health and illness, the theory of social representations enable a better understanding of communication and behavior of a given social group. Given its suddenness, its unfamiliarity, and the unpredictability of its effects on people's everyday lives, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic rapidly triggered the formation of social representations Páez and Pérez (2020). In this study, we examined the social representation of COVID-19 to assess anchoring and objectification processes of the pandemic using a multi-methodological approach.

## Method

### Population

A total of 428 participants ($M_{age} = 21.64$ years, $SD = 5.13$) were recruited online between early March and the end of May 2020, corresponding to the beginning and end of the first national lockdown in France. We published a post on the Facebook pages of students enrolled in four different universities in France asking for volunteers to contribute to a social psychology study about COVID-19, with a link to a questionnaire.

### Procedure

The questionnaire came in three sections: sociodemographic questions (age, sex), questions checking inclusion criteria (student, Facebook user, and a reader of online news at least twice a week), and finally, they were asked to spontaneously evoke and write down up to five words that came to mind on reading the word *coronavirus*.

Among the various data collection techniques that can be used to access the content of a social representation, the method of free associations is largely used since the princeps study of Di Giacomo (1981). Vergès (1992) suggested this analytical procedure to locate the central core of a given social representation. This method is divided into two stages, the first being prototypical analysis, which is based on the crossing of two criteria: word frequency and rank of appearance, and the second being "categorization under constraint", which enables semantically close terms to be grouped around prototypical notions (Roussiau and Blanc, 2001). Following other authors (e.g. Gaymard and Bordarie, 2015), we used the Evoc program (Vergès, 2005). A minimum frequency of 20 words was retained. Frequencies equal to or above 65 were deemed to be high. Mean rank was set at 2 as participants produced slightly fewer than four words on average.

The induced words were also coded and classified into categories according to their thematic character. The most frequent categories are thought to reflect the shared ideas about the topics under discussion, and therefore express the social representation

dimensions. Following the categorical content analysis, we ran a type-token ratio (TTR) analysis to assess lexical richness. We did this by dividing the total number of unique words (*types*) by the total number of words (*tokens*) in each category. From a linguistic perspective, the closer the TTR ratio is to 100%, the greater the lexical richness of the segment, while according to social representation theory (Cohen and Moliner, 2017), vocabulary redundancy is an important dimension of a given social object.

In the second part of the study, we collected a total of 250 editorial illustrations (10 posts × 5 newspapers × 5 categories) posted by 5 leading French newspapers between March and May 2020 on Facebook, the most popular social media platform (David et al., 2019). We selected the newspapers according to their number of followers on Facebook and their circulation: *Le Monde* (over 4.6 million followers, 323,565 copies per day), *Le Parisien* (over 3.4 million followers, 232,232 copies per day), *Le Figaro* (over 3.2 million followers, 325,938 copies per day), *Libération* (nearly 1 million followers, 71,466 copies per day), and *Ouest France* (over 717,000 followers, 323,565 copies per day). We carried out a keyword-based search, based on the five most frequent categories of the COVID-19 social representation revealed by our analysis: *disease*, *virus spread*, *mortality*, *lockdown*, and *location*. We then collected the illustrations of Facebook posts that had elicited the greatest engagement, based on the number of likes, comments, and shares (equal to or above 1000). Our analysis of the iconography of the COVID-19 outbreak in the press was inspired by Panofsky (1967; for recent development, see Le Moel et al., 2015; Moliner et al., 2018), who suggested a three-level method of analysis. The goal of the first level, labeled *pre-iconographic description* (primary meaning), is to break down the combinations of lines and colors (i.e. shapes) representing an object. The goal of the second level, labeled *iconographic analysis*, is to explore the conventional meaning. At this level, the image is considered as a combination of shapes creating a pattern (e.g. the combination of people gathered around a table is the pattern of a meal). The goal of the third level, labeled *iconological analysis*, is to investigate the sociocultural knowledge behind the choice of a given pattern to illustrate a specific script. At this level, we used the thematic qualitative content analysis method suggested by Bardin (1979): after carrying out a pre-analysis to gain an overview of the corpus, we identified the 12 most frequent forms in the different images. A given image was placed in one of these 12 categories after agreement by 2 independent judges. We then carried out a factorial correspondence analysis (FCA). This is a classic data analysis method in the field of social representations (e.g. Doise et al., 1993; Sanchez-Mazas et al., 2003). Exploring the link between two nominal variables, this analysis breaks down the inertia by identifying a small number of mutually independent dimensions that represent the greatest deviations from independence. Thus, FCA is an especially relevant tool for analyzing sets of data without preliminary hypotheses.

## Results

### Prototypical analysis

The free association task produced 1637 words ($M_{word} = 3.8$). As we can see in Table 1, the central core is articulated around four descriptive terms (e.g. *outbreak*, *disease*,

*pandemic*, and *virus*). Terms contained in the first periphery highlight SARS-CoV-2 consequences (*quarantine* and *death*) and its presumed country of origin (*China*). It is interesting to note that the *contrasted elements* box is empty, indicating the homogeneous character of the social representation, as this box "…can reveal the existence of a minority subgroup with a different representation…."(Abric, 2003: 64, our translation). The second periphery contains terms such as *mask* or emotional aspects such as *fear*. As these elements had a low frequency and a low rank, they played a "minor role in the representation" (Gaymard and Bordarie, 2015: 804).

## Categorical content analysis

Fifteen categories emerged from the categorical analysis (Table 2): *disease* (descriptive aspects of virus); *virus spread* (contagiousness and spread of virus); *lockdown* (isolation measures); excess (words expressing overestimation of danger); *mortality* (death caused by pandemic); *location* (areas concerned by virus); *prevention* (e.g. social distancing or face mask); *fear* (general terms relating to danger or fear); *political distrust* (government blaming and conspiracy theories); *feeling* (personal feelings and sensations); *media* (media coverage of COVID-19); *optimism* (positive aspects of crisis); *origins* (explanations about origins of COVID-19); *social and economic crisis* (social and economic impact of pandemic); and *caregivers* (medical and nursing professions).

## Iconography used by online press

The corpus comprised two different types of images: photographs ($n = 242$) and drawings ($n = 8$). Iconographic analysis revealed 12 iconic patterns (Table 3).

**Table 1.** Words associated to the inductor "coronavirus" ($n = 428$; collected between March and May 2020).

| Average rank | | | | | |
|---|---|---|---|---|---|
| | | Frequencies | First rank | | Frequencies | Last rank |
| FREQUENCY | | | | | | |
| | Outbreak | 71 | 1.97 | China | 69 | 2.96 |
| | Disease | 117 | 1.76 | Quarantine | 153 | 2.68 |
| | Pandemic | 76 | 1.91 | Death | 95 | 2.94 |
| | Virus | 138 | 1.78 | | | |
| High | **Central words** | | | **First periphery** | | |
| | | | | Contamination | 49 | 2.63 |
| | | | | Danger | 32 | 2.75 |
| | | | | Flu | 32 | 2.28 |
| | | | | Mask | 35 | 3.57 |
| | | | | Global | 25 | 3.12 |
| | | | | Fear | 32 | 2.56 |
| | | | | Psychosis | 22 | 2.28 |
| Low | **First periphery** | | | **Second periphery** | | |

The most important iconic pattern was labeled *healthcare workers and professionals*. This pattern mainly appeared as a photo of a caregiver standing next to a patient lying on a stretcher or in a bed. Then came the *individual* pattern, represented by close-up shots of persons mostly wearing sad facial expressions, if they were shown without a face covering. The third iconic pattern was labeled *ghost town*, and corresponded to photos of deserted environments, such as empty streets. The *politician* pattern featured close-up shots of leaders such as presidents and ministers. The *crowd* iconic pattern corresponded to photos of indistinct individuals walking in the street, wearing face masks and respecting social distancing, or else to people very close to each other and not wearing face masks. This pattern could be potentially associated with noncompliance. Other photos of two to five people chatting or walking down the street were labeled *small gathering*. The *lab/hospital* pattern included photos of laboratories, as well as temporary hospitals built to treat patients affected by COVID-19. The *animal* pattern included photos of animals suspected of being responsible for the emergence and spread of SARS-CoV-2, such as pangolins and bats, or animals that can be affected, including cats, dogs, or even a tiger diagnosed with the virus. *Various* encompassed an Italian flag and protective items such as gloves or face masks. *Medicine* mostly contained close-up shots of pills, or a syringe, the *graphic* pattern represented data on the spread of COVID-19, and finally, the *grave* pattern referred to photos of graves or cemeteries.

Five of these 12 iconic patterns represented nearly two-thirds of the corpus: *healthcare* (17.6%), *individual* (14%), *ghost town* (12.8%), *crowd* (10.4%), and *small gathering* (9.6%).

A correspondence analysis technique was used to determine the relationships between the five most frequent COVID-19 categories and the iconic patterns used to illustrate newspaper articles on Facebook (see graph in Figure 1).

The graph above (Figure 1) shows the relationship between the editorial illustration types and the five most frequent categories associated with the COVID-19 social representation.

**Table 2.** Categorical content analysis of free association task.

| Category | Most frequent words | TTR (%) | Category importance (%) |
|---|---|---|---|
| Disease | Virus, Disease, Fever | 15.5 | 27 |
| Virus spread | Pandemic, Epidemic, Contagion | 16 | 10 |
| Lockdown | Containment, Isolation, Quarantine | 15.3 | 9 |
| Excess | Psychosis, Paranoia, Exaggeration | 30.9 | 9 |
| Mortality | Death, Deaths, Morbidity | 10.3 | 8 |
| Location | China, Worldwide, Wuhan | 12 | 8 |
| Danger | Danger, Fear, Dangerous | 39.2 | 6 |
| Distrust | Lies, Government, Conspiracy | 69.5 | 4 |
| Feeling | Painful, Sad, Boring | 63.6 | 3 |
| Media | Media, Excessive media coverage | 28.6 | 3 |
| Optimism | Solidarity, Change, Ecology | 75.6 | 3 |
| Origins | Pangolin, Unknown origin, Bat | 41.2 | 2 |
| Healthcare | Caregiver, Hospital, Retirement home | 40 | 2 |

TTR: type–token ratio.

**Table 3.** Distribution of iconic patterns across most frequent categories yielded by categorical content analysis of free association data (i.e. social representation dimensions).

| | | Social representation dimension | | | | | |
|---|---|---|---|---|---|---|---|
| | | Disease | Virus spread | Lockdown | Mortality | Location | Total |
| Iconic pattern | Health care | 12 | 5 | 0 | 16 | 11 | **44** |
| | Individual | 9 | 3 | 15 | 8 | 0 | **35** |
| | Ghost town | 4 | 3 | 11 | 3 | 11 | **32** |
| | Politician | 3 | 6 | 10 | 5 | 7 | **31** |
| | Crowd | 4 | 8 | 3 | 5 | 6 | **26** |
| | Small gathering | 1 | 9 | 8 | 0 | 6 | **24** |
| | Lab/Hospital | 4 | 5 | 0 | 4 | 1 | **14** |
| | Animal | 3 | 3 | 2 | 0 | 3 | **11** |
| | Various | 3 | 4 | 0 | 0 | 2 | **9** |
| | Medicine | 3 | 0 | 0 | 6 | 0 | **9** |
| | Graphic | 4 | 4 | 0 | 0 | 0 | **8** |
| | Grave | 0 | 0 | 1 | 3 | 3 | **7** |
| Total | | **50** | **50** | **50** | **50** | **50** | **250** |

A total of four factors were obtained. If each factor brought the same proportion of explanation to our data, it would explain 25% of the total inertia. However, the first two dimensions explain together almost 78% (77.7) of the total inertia. The first main dimension, which is located on the right side of the vertical axis, corresponds to the first aid and treatment provided during the first French lockdown. That is, the FCA would gather elements associated with the healthcare management of the pandemic.

The first dimension extracted explains almost 44% (43.8) of the inertia. This dimension is characterized by the following iconic patterns: *medicine* (deviation from independence: 1.71), *health care workers* (.86), *laboratories and hospital* (.75), and data about the virus spread (*graphic* iconic script, .42). It also contains *various* patterns (.12), which is mainly composed of editorial illustrations of protective items, such as disposable gloves or face masks. The frequency of these iconic patterns is relatively high in the *mortality* and *disease*-related posts: *medicine* pattern was used 9 out of 9 times (100%), *health care worker* pattern 28 out of 44 times (63.6%); *laboratories and hospitals* 8 out of 14 times (57.1%), *graphic* (4 out of 8 times, 50%), and *various* 3 out of 8 times (37.5%).

The second dimension, which is located on the left side of the horizontal axis, explains about 34% (33.9) of the inertia and it is composed of elements associated with the biological threat and the social consequences of the pandemic. It comprises five iconic patterns: *grave* (1.27); *politician* (.88); *ghost town* (.48); small gathering, (−.95) and *animal* (−.33) These iconic patterns are typical of the *lockdown, location, and virus spread*-related posts: small gathering pattern were used a total of 23 out of 24 times (95.8%), ghost town 25 out of 32 times (78.1%), politician 23 out of 31 times (74.2%), animal 8 out of 11 times (72.7%), and grave were used 4 out of 7 times (57.1%). The two dimensions extracted from the FCA are opposing the health field on one side, combining both scientific and
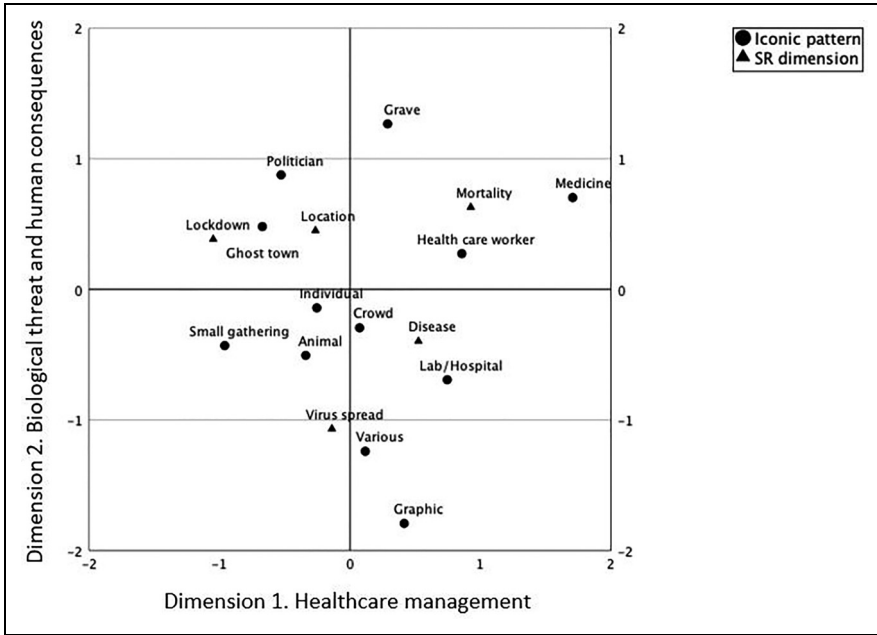
**Figure 1.** Correspondence analysis plot.

medical areas, from the social area on the other, embodying individual issues, notably due to the restrictions. Finally, the crowd and individual patterns are located at the intersection of these two dimensions, indicating that the difference between the expected frequency and the observed frequency (i.e. deviation from independence) were close to 0 (respectively .07 and −.25).

We finally ran a chi-square test to determine specifically the most important iconic patterns for each of the five social representation categories (shown in square brackets): *disease* [Various, Healthcare], $\chi^2(10) = 21.72$, $p < .05$, *virus spread* [Individual, Small Gathering, Crowd], $\chi^2(8) = 8.68$, $p < .05$, $p = .37$, *lockdown* [Individual, Ghost Town, Politician], $\chi^2(6) = 23.36$, $p < .001$, *mortality* [Healthcare, Individual, Medicine], $\chi^2(7) = 20.40$, $p < .01$, and *location* [Healthcare, Ghost town, Politician], $\chi^2(8) = 19.48$, $p < .05$. A significant interaction between social representation dimensions and iconic scripts was found regarding the distribution of the 12 iconic patterns across the 5 categories, $\chi^2(44) = 120.89$, $p < .001$.

## Discussion

The aim of the present study was to explore the nascent COVID-19 pandemic social representation. The most obvious finding to emerge is that verbal components (i.e. the free association task) and COVID-19 iconography as depicted in the media show areas of consensus.

   While the verbal component is mainly descriptive and devoid of affective elements, the COVID-19 iconography depicts a biological threat and its human consequences. Regarding the verbal elements, the epidemic and viral nature of COVID-19 were highlighted by *contagious*, *virus,* and *pandemic* terms. The TTR analysis revealed a degree of redundancy, indicating that the words *virus* and *disease* were salient features and therefore represented a key dimension of COVID-19. By contrast, more optimistic words related to a possible end to the pandemic, such as *treatment*, *cure*, and *medication*, were not associated with the word *coronavirus*, even though optimistic associations have regularly been reported by studies of social representations in the field of health and illness, such as the *cycle of medicine* which corresponds to the path from disease state to relief (Cohen, 2015; Cohen and Moliner, 2017; Garnier, 2003). This could be explained by the recency of the virus and the initial lack of treatment for COVID-19 which created a situation of ambiguity and obscured the healing perspective. Over history, the state of uncertainty generated by outbreaks and pandemics generally comes with specific attitudes and behaviors. For instance, the *excess* category resulting from our sample reflects a lower estimation of the sanitary risk at the beginning of the sanitary crisis. Rouquette (2013) recalled that individuals relied on their knowledge of syphilis to explain the AIDS outbreak when it swept across France. A similar anchoring was operated in the very early stages of the COVID-19 pandemic, and the similarity with seasonal influenza was emphasized to reduce uncertainty about this unknown virus. It was then anchored in a more pessimistic or more severe field, as the perceived danger was greater than expected. This underestimation of the risk could also be associated with the fact that very few elements are concerned with preventive measures. For instance, the term *mask* located in the second periphery reflected the lack of experience in preventive measures, as the importance of mask wearing was not established yet. Besides, very few photos of masks or people wearing a face covering were posted by traditional newspapers during this period. However, the massive use of masks had not yet begun. Given that social representations are linked to practices or behavior (Gaymard, 2021), it is likely that practice changed the social representation over time. Another phenomenon consists in pointing out the responsibility of a sanitary issue on a given group (see the 1918 influenza, HIV/AIDS or, the Plague pandemics. For instance, the most severe pandemic in recent history before SARS-CoV-2 was caused by the so-called *Spanish flu*, while rubella is commonly known as *German measles*). The association between a disease and a marginalized group, such as homosexuals in the case of HIV (considered responsible for unhygienic and immoral practices or guilty of conspiring to spread the disease according to Eicher and Bangerter, 2015) or the Jewish community during the Black Death, seems to have occurred systematically throughout history. Yet, a geographical connection of this kind between a disease and an ethnic group may fuel racism and discrimination. This could be explained by the anchoring process which serves, among other things, to defend collective self-esteem: a prototypical representation of epidemics is the anchoring of the disease as the responsibility of an outgroup, such as foreigners or marginalized groups. As the first periphery of the prototypical analysis and the *location* category shows, the group identified by our sample as being at the origin of the epidemic was the Chinese people and more specifically the residents of Wuhan. Several references to the stigmatization of Chinese or Asians tended to confirm this

trend. Indeed, many racist attacks on Asian individuals have been reported since February 2020, resulting in #StopAsianHate or #IamNotAVirus trending hashtags on Twitter. It should be recalled that COVID-19 was dubbed the *Chinese virus* by former American President Donald Trump. In conclusion, the verbal analyses provide insights into how social groups dealt with and became familiar with the COVID-19 from its genesis, relying on the anchoring process.

Regarding the COVID-19, it is supported by a low variety of iconic patterns (12 categories for 250 high-engagement posts). This finding indicates that such patterns tend to be stable, doubtless owing to their efficiency. Indeed, written articles, which are not directly accessible (Facebook is a third-party platform and it is required to click on the image to read the article on the newspaper website) are therefore condensed into a concrete visual, as the objectification process operates. When associated with a caption, these artifacts provide insight into which topic is covered by the online newspaper, and simultaneously play a role in symbolic interpretations and engagement.

Two salient aspects of the COVID-19 press iconography emerged from the editorial illustrations. The first dimension corresponds to the healthcare management of the crisis, implying antiviral drugs, vaccines, and health care professional involvement. The *disease* iconic pattern mainly featured caregivers standing near a patient lying on a stretcher or in a bed. Caregivers and/or protective clothing are recurring symbols in the representation of viruses (e.g. Joffe and Haarhoff, 2002). Although some metaphors are universal, such as those pertaining to death or war (e.g. *grave* and *ghost town* iconic patterns; see Kövecses, 2005), the understanding of some images can depend on many sociocultural factors and social representations. As shown by Páez and Pérez (2020), the current epidemic is personified by heroes and victims. Thus, the heroes are the scientific experts (Prof. Raoult was called the *new Messiah* for suggesting a controversial cure based on hydroxychloroquine) and healthcare workers, who are mainly perceived of as credible and trustworthy. During the first French lockdown, members of the public would go out onto their balconies to applaud healthcare workers as heroes who were fighting an enemy. The victims are the helpless people who have contracted COVID-19 as the posture (i.e. lying down) on this pattern suggests.

The other main dimension concerns the social consequences of the pandemic, such as the geographical and social restrictions (e.g. staying at home, physical distancing). One of the most occurrent iconic patterns is therefore composed of photographs of empty streets (*ghost town* iconic pattern). This appears to be one of the most frequent mental representations of a postapocalyptic world. Beginning with *The Last Man*, a novel published by Mary Shelley in 1826, there is a whole science-fiction subgenre dealing with situations following an apocalyptic event such as a pandemic. This symbolic imagery is often used in the popular culture, including posters advertising several movies (e.g. *28 Days Later* directed by Danny Boyle, *I am a Legend* by Francis Lawrence) or even video clips. In April 2020, the Rolling Stones released a song called "Living in a ghost town", in which the lyrics were adjusted to reflect life during the pandemic ("Life was so beautiful, then we all got locked down. Feel like a ghost, living in a ghost town"). The video clip used images of seven international locked down cities. Thus, the rock band, just like the leading newspapers, used this postapocalyptic vision to convey a message.

Finally, some elements belonging to the COVID-19 are referring to both dimensions. The *crowd* pattern could have different meanings. This imagery could as well correspond to an awareness of preventive measures (i.e. healthcare management of the crisis), as to the requirement for people to get together (social consequences). The first set of photos showed individuals wearing face masks and complying with social distancing, who seemed to be aware of the danger. However, the second set of photos showed people very close to each other, none of them wearing face masks. This pattern could therefore be potentially associated with disobedience. These results reflect Moliner et al. (2018)'s observation that the stereotyped photo of migrant people coming from Africa to Europe features the *horde* iconic pattern (i.e. large crowd of adult men). According to Smith et al. (2015), the process of objectification consists in personifying an idea or problem. Therefore, the same iconic pattern, in this context, could lead to two different interpretations depending on whether the people in the crowd are wearing masks or not.

Thus, through the selection of editorial illustrations, the traditional press, plays a major role in the objectification process, which involves simplifying abstract elements and making them more concrete, as it ultimately leads to new social representations being developed and therefore set of attitudes and behaviors.

## Conclusion

Along with the group communication, the groundbreaking study by Moscovici (1961) had highlighted the role of the media in the development of social representations, paving the way for several studies to analyze the content of articles in the press (for recent studies, see, e.g. De Oliveira Teixeira, 2020; Kay, 2018). Traditional newspapers have fundamentally changed over the past decade, in a bid to cope with the advent of digital communication media. As 64% of the articles posted on the Internet by the 86 most important media outlets in France appear to copy original articles (Cagé et al., 2017), editorial illustration plays an even more important role than it used to in the dissemination of news. The importance of this visual sign must be considered in the updating of the three communication systems (i.e. diffusion, propagation, and propaganda) suggested by Moscovici (1961). Indeed, images have the power to convey messages on their own (e.g. *ghost town* iconic pattern providing lockdown-related information, *politician* iconic pattern heralding an upcoming political speech), and can therefore attract the attention of social media users from amidst the huge information flow. Illustrations posted on Facebook serve as figurative clues to the information, guiding users. We suppose that the understanding of those visual messages is supported by individuals' objectification of a social representation, but they may also standardize the thoughts toward a given social object (e.g. a photo of a crowd of young people having fun in the street during the pandemic may convey a negative representation of this population). The low variety of illustrations of written articles emerging from the corpus suggests that journalists may reuse the most popular illustrations for their thematically related output. From this perspective, editorial illustrations can be regarded as the prototype of COVID-19 alertness. In other words, they serve as readymade thinking for overstimulated users scrolling through Facebook. We believe that these iconic patterns are carefully selected to attract users' attention and create engagement, and could thus be used for

health prevention purposes. It can be noted that few posts in the corpus focused on educating the public about the disease, through the dissemination of popular scientific information about the symptoms, risk factors, and so on.

In a way, these popular images are learned by users and act as road signs by helping users to rapidly analyze and categorize the information. Thus, in an overstimulating cyber environment, they give individuals an opportunity to briefly analyze the theme of the information, and potentially go further by reading the post, even if the study by Gabielkov et al. (2016) revealed that 59% of the URLs mentioned on Twitter are not opened before being retweeted).

In conclusion, the present study explored the nascent social representation of the COVID-19 pandemic through individual cognitive system and meta-system. The complementarity and the richness of the data provide insights on anchoring and objectification process development and therefore support opens up new avenues of research on the traditional press on social media, and more broadly the multi-methodological approach in the investigation of social representations.

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