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REVIEW ARTICLE

Collective Mourning during the COVID-19 Pandemic: The Importance of Neurosociology

Luis C. Herrera[1,*], Virginia Torres-Lista[2] and Markelda Montenegro[3]

[1]*Social Sciences, Researcher and Sociology at the School of Social Communication of the Universidad Católica Santa María La Antigua, (USMA), Panama City, Panama*

[2]*Universidad Católica Santa María La Antigua (USMA), Panama City, Panama*

[3]*Center for Scientific Research in Social Sciences (CENICS), Panama City, Panama*

Abstract:

The COVID-19 pandemic has had diverse effects on society worldwide, forcing social scientists to rethink, understand, and address the complexity of the current situation. One thing is certain: the coronavirus is here to stay, and the pandemic has radically transformed social dynamics and social events, regardless of the type of society or the level of development of the countries. COVID-19 has forced all societies to reflect on their priorities and how to achieve human well-being. This implies designing different strategies to overcome the challenges of social development. One of the critical social challenges of COVID-19 is that society as a whole is going through a process called 'collective mourning,' as all citizens have lost someone or something-from lives of loved ones to daily routines and ways of life; society is in deep mourning. We are confident that we will overcome this pandemic, thanks to vaccines, but the social effects of COVID-19 will not be resolved with vaccines. The objective of this article is to raise awareness on the importance of using an emerging sociological perspective (neurosociology) to cope with collective mourning so that the state can prepare to provide integrated responses.

Keywords: Neurosociology, COVID-19, Collective mourning, Mental health, Social dynamics, Pandemic.

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1. INTRODUCTION

The devastation wrought by the COVID-19 pandemic has caused collective mourning as each person has lost someone or something as a result of both personal and collective losses. Although the social contexts may be different, these various types of losses are real, and the social behavior arising from the loss of someone or something affects the entire society. In this regard, this article proposes to study these issues from other perspectives, such as emerging sciences, for example, neurosociology.

The feeling of loss, combined with isolation, is a complex situation that has affected everyone (Bzdok and Dunbar, 2020). On the one hand, many families have had to cope with the death of loved ones and have not been able to say goodbye properly or perform any religious rituals. On the other hand, we have lost the daily routines to which we were accustomed. In addition to this reality, the changes in the forms of social interaction are affecting everyone indiscriminately. For example, children are forced to take classes and study online and thus have limited extracurricular activities to play or learn with children of their own age. Women and men have lost their livelihoods and source of income. Moreover, the elderly cannot exercise in the park or socialize with their friends [1].

The need for isolation to avoid contagion of COVID-19 exposes shortcomings at the individual, familial, and social levels. It focuses on the importance of understanding the cognitive processes, human interaction in coexistence processes and collaborative work, specific social, educational, and cultural conditions, values, resilience, and what is called the satisfaction of basic needs [2].

The effects of isolation and/or quarantine uncover our fragility as a society, but there is also an opportunity to redefine society, our values, our priorities in life, and how we interact, as well as to learn to coexist with a different ethic to usher in a new social pact for life and for the planet, for preserving human beings and environmental sustainability [3].

2. WHAT IS NEUROSOCIOLOGY AND WHAT IS ITS THEORETICAL IMPORTANCE?

Neurosociology is at the frontier of science, a new field of

* Address correspondence to this author at the Social Sciences, Researcher and Professor of Sociology at the School of Social Communication of the Catholic University Santa María La Antigua, (USMA), Panama City, Panama;
E-mail: lherrera@usma.ac.pa

transdisciplinary social analysis. It provides a sociological perspective aimed at investigating how the human brain influences complex forces that guide human interaction and social organization and also examines how social processes influence neural functions. The science of neurosociology studies how social structures and their processes impact the brain and biology and how these, in turn, interact with social processes and behavior. It is based on the premise that the social and neural levels cannot be considered as separate dimensions, and social dynamics, life, and consciousness are thus part of the whole.

Neurosociology is an emerging scientific discipline that investigates the neurological bases of human sociability. With an interdisciplinary theoretical basis that integrates biology, sociology, and psychology, this new science was pioneered by the North American Warren D. TenHouten, co-author in 1972 of the first publication in which the term neurosociology was used and who is considered the father of this new discipline [4].

TenHouten presented his research in 1973, which was inspired by neurological findings on the capacities of the cerebral hemispheres. This research demonstrates cultural differences in the use of the cerebral hemispheres in Australian Aboriginal and Euro-Australian children and how culture and ecological pressures can affect brain structures, thinking preferences, and perception [5].

There was an opportunity in the 1990s for the development of social neuroscience, an opportunity to advance from the social sciences, especially neurosociology, in studies of the relationship between mind and brain [6].

Neurosociology allows understanding how the brain affects the forces that drive human interaction and social organization and how social processes affect neural functions. This specialization allows investigating how brain structures can be modified through human interaction and social organization and vice versa. This area of science is interdisciplinary and describes the brain processes that are important for the general development of sociological theoretical aspects that relate to understanding and/or explaining social processes. It uses the quantitative and qualitative research methods of the social sciences, integrating it with neurophysiological and functional neuroimaging techniques, using tools such as tomography, magnetic resonance imaging, magnetoencephalography, and ultrasound, which allow more in-depth studies on the relationship between social structures, their processes, and how these impact social behavior and the brain [7].

There is scientific evidence to support the discovery of a neuron, the spindle cell, which acts to guide us in immediate social decisions; the sociability closely linked to dopamine neurotransmission (modulates various functions in the brain, influencing behavior, cognition, motor activity, motivation, reward, sleep, mood, attention, and learning), and mirror neurons that are a type of brain cell that perceives the action that another person is about to perform and instantly prepares to imitate that movement [8].

On the other hand, neuroscience studies indicate that the human brain emerges, develops, and expresses itself in social environments, that is, an interaction between biological, cognitive, and social aspects. For example, humans experience certain emotions (*e.g.*, fear and anger) that, in some cases, prevent the search for solutions due to increased cortisol levels and blood pressure. The dopamine levels can decrease when the individual faces certain situations (*e.g.*, sadness, hopelessness, and pain), thereby affecting memory, cognitive processes, and decision-making [9 - 11].

Positive thoughts, hope, joy, and self-esteem help individuals in generating endorphins and enkephalins, which, in turn, give rise to feelings of pleasure, pain relief, psychological suffering, concentration, and attention [12 - 14]. There is still much to be discovered despite these advances, such as to better understand the role of the cerebellum, since it participates in most of the higher cognitive processes and is activated in all kinds of complex tasks [15, 16]. However, this is often ignored as the focus is on the cerebral cortex, which plays a key role in attention, perception, awareness, thought, memory, language, and consciousness and does not only occur in cognitive neuroscience [17].

The link between brain/social processes and how they impact both individual and collective techniques used by people can be observed in Fig. (**1**). For example, if individuals and societies have social conditions of well-being, the emotional responses will be favorable for all since they perceive, react, and interpret the world around them in a similar manner, reinforcing their own ethical values [18 - 21]. However, circumstances such as inequality, exclusion, marginalization, and mourning would lead to negative responses that alter the nervous system and neurophysiological responses.

3. NEUROSOCIOLOGY AND COLLECTIVE MOURNING DURING COVID-19 PANDEMIC

The COVID-19 pandemic has created a scenario that has aggravated problems and created obstacles in the path to fulfilling the Sustainable Development Goals (SDGs) by 2030. One example is the persistent social inequality [22], and we face its worst form, that of 'social exclusion.' The social reality of the population before the pandemic involved inequality in the access to quality education, health, drinking water, employment, housing, electricity, and health services [23], but all these problems have worsened during the COVID-19 pandemic, thus posing a great challenge for governments, who are now required to urgently address both the public health issues and the social problems caused by the pandemic.

Therefore, it is imperative that the States should promote public policies in the post-COVID scenario, clearly understanding that we are in collective mourning. We have all lost something in this pandemic, from the life of a family member and/or loved one, to livelihoods, income, to the simplest forms of routine and interactions in our daily life. If public policies are to be effective in post-COVID times, they must start from the premise that the entire society is in mourning. This implies incorporating the approach of social neurosciences in public policies.

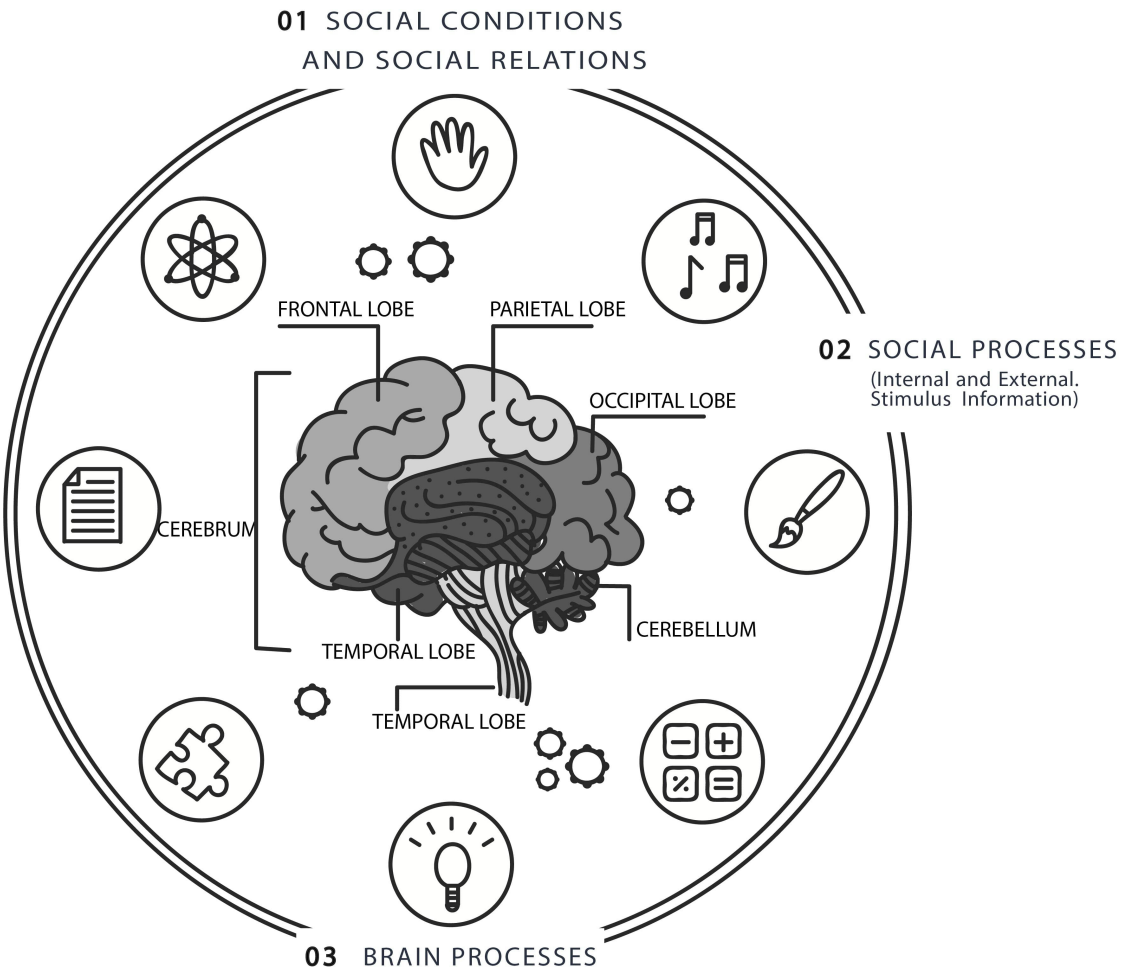

Fig. (1). Social processes and neurophysiological integration. Frontal lobe (movements, intelligence, reasoning, behavior, memory, personality). Parietal lobe (orientation, language, sensation, reading). Temporal lobe (speech, behavior, memory, hearing, vision, emotions). Cerebellum (balance, coordination, physical control of muscles).

The mourning process is a complex experience that includes physiological, cognitive, and behavioral factors and goes through five stages; (1) denial, (2) anger, (3) negotiation (hope that can influence the situation in some way), (4) depression, and (5) acceptance of the loss [24].

Memory has a social dimension according to the sociological analysis and is influenced by each socialization process, belonging to one's family, values, beliefs, social class, territory, memories, feelings, emotions, languages, and forms, but general sociology does not attempt to explain how they are linked to the physiological part.

The contribution of Halbwachs 1994 [25] (who pioneered the concept of collective memory) on the subject of memory should be highlighted, specifically the argument that memory is always social, as a product of the relationship with people, groups, places, or words. The contributions of Halbwachs' memory theory, applied in neurosociology, would allow one to understand that post-pandemic social solutions must assess other individual determinants so that each society seeks its own answers, considering both personal and cultural variables. Any memory, however personal, exists in relation to a set of notions that control us more than others, to people, groups, places, dates, words, and forms of language, even to reasoning and ideas, that is, to the material and moral life of the societies to which we have belonged [25].

The current health crisis caused by COVID-19 requires the consideration of different responses to overcome the associated problems, such as the collective sense of loss at various levels, be it personal, family, work, freedom, business, or life projects. The lack of social interactions due to isolation and adverse environmental events have had direct consequences on primary emotions, impacting all and creating feelings of sadness and hopelessness [4, 26].

The impact of the loss of human lives cannot be quantified, nor can the pain experienced by those who lose a family member and/or loved one. However, we can identify positive collective stimuli to overcome collective mourning and the effects of isolation to prevent mental health problems, such as depression, anxiety, heart disease, and sleep disorders [27].

Improvising public policies to face the social effects of the pandemic should not be an option. We advocate the implementation of innovative actions [28]. For example, an economic and labor market reactivation plan should incorporate actions to face this collective mourning while also

considering the involved individual, familial, social, and cultural values.

We are interested in analyzing the subject, so this disastrous experience with COVID-19 becomes an opportunity for science, in general, to assume a new reference framework to understand that we are facing, among other things, what Beck, 2006 [29] called the global risk society. In this regard, the problems brought on by this pandemic become windows to open research spaces for emerging sciences, such as neurosociology, to advance in innovative integrated responses, favoring new theoretical interdisciplinary approaches, focused on the well-being of individuals and their rights, which will allow us to solve the different problems.

CONCLUSION

COVID-19 has provided a global ethic to concerted scientific work. It has highlighted the importance of sharing scientific evidence, good practices, and lessons learned to save people's lives. However, to achieve this, it is necessary to invest more in research in social sciences and transdisciplinary areas, linking technical cooperation between research centers, academies, the state, and national, regional, and international organizations. Regional integration and cooperation spaces allow us to act in the midst of the pandemic, including those in Latin America [30] and the European Union, among others.

It is necessary to include new interdisciplinary scientific spaces in neurosociology to explain how social and neurophysiological processes can affect each other. It is a wide area that offers theoretical and practical possibilities, from neuroscience and sociology, to find formulas that can respond to recurrent social problems and, more specifically, post-pandemic COVID-19 issues, such as collective mourning.

The integrated efforts of neuroscience and sociology can create bio-psycho-social knowledge to understand the links and different reactions to basic and cognitive emotions and their neural connections in social interaction and to be able to build new spaces for healthy living and for post-pandemic collective resilience.

The incorporation of neurosociology as an emerging discipline provides responses to the collective mourning experienced by post-pandemic societies at different levels that can affect our habits, thoughts, and emotions. Our social health requires that the state's public policies integrate interdisciplinary spaces and human rights approaches.

CONSENT FOR PUBLICATION

Not applicable.

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CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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