ABSTRACT
This objective of this article was to reflect the conception, structure and functioning of the networks of protection against childhood abuse, in the light of the concept of the networks of the theoretical physicist, Fritjof Capra. The networks are living systems that can only be understood from a systemic perspective, and in the current study, as potentials of action, for coping with and prevention of aggravations as well as pediatric health promotion. They can mobilize several sectors of society in the defense of child rights by means of fully integrated actions. Thus, it is necessary to understand the concepts which allow dynamic, flexible, nonhierarchical, thus expanding the actions against the complexity of violence. Understanding the diverse processes of network performance, their objectives and potentialities, is a tool that supports health professionals to identify, create, support, share knowledge, in order to strengthen their practices, towards care delivery with a broader look at the social interconnections.

Keywords: Systems Theory; Social Support; Violence; Child Health; Nursing.

RESUMO
Objetiva-se com este artigo refletir sobre a rede de proteção contra a violência na infância à luz do conceito de redes do físico teórico Fritjof Capra. As redes são sistemas vivos que só podem ser compreendidos numa perspectiva sistêmica. Surgem como potenciais de atuação para o enfrentamento e prevenção de agravos e promoção da saúde infantil, pois mobilizam a prática de diversos setores da sociedade na defesa dos direitos da criança, com ações integrais. Para tanto, é necessário o entendimento de conceitos que permitam a dinamicidade, a flexibilidade e a não hierarquização, ampliando, desta forma, as ações frente à complexidade da violência. Compreender os processos de atuação em redes, seus objetivos e potencial pode permitir aos profissionais de saúde identificá-los, compor, apoiar ou compartilhar conhecimentos a fim de fortalecer suas práticas para um cuidado com olhar ampliado nas interconexões sociais.

Palavras-chave: Teoria de Sistemas; Apoio Social; Violência; Saúde da Criança; Enfermagem.

RESUMEN
El objetivo de este artículo es reflexionar sobre la red de protección contra la violencia infantil según el concepto de redes del físico teórico Fritjof Capra. Las redes son sistemas vivos que sólo pueden comprenderse desde una perspectiva sistémica. Surgen como potenciales de actuación para el enfrentamiento y prevención de agravios y promoción de la salud infantil pues movilizan la práctica de diversos sectores de la sociedad en defensa de los derechos del niño con acciones integrales. Para ello, deben comprenderse los conceptos que permitan la dinamicidad, flexibilidad y la no jerarquización de esta tarea, ampliando, así, las acciones ante la complejidad de la violencia. Comprender los procesos de actuación de las redes, sus objetivos y potencial puede permitirles a los profesionales de la salud identificarlas, crear, apoyar o compartir conocimientos a efectos de fortalecer sus prácticas para el cuidado con una mirada ampliada en las interconexiones sociales.

Palabras clave: Teoría de Sistemas; Apoyo Social; Violencia; Salud del Niño; Enfermería.
INTRODUCTION

Violence is one of the great challenges of this century, but it is a complex phenomenon that, from the perspective of contemporary society, degrades the autonomy of the individual and compromises his citizenship. This typical complexity of social problems, such as violence, requires resolution of conflict with interlacing of actions in different social networks, family, work and other national and international organizations.\(^1\)

In Brazil, the rate of child mortality relative to violence is within a classification known as external causes. This group of diseases currently corresponds to the first cause of death among the population from one to 19 years of age, reaching a percentage of 53.2%. It is noteworthy that a leadership preoccupied with these causes of death for this age group exists, given that the second individual cause, cancer and tumors, accounts for 7.8% of death events.

External causes include a varied combination of circumstances, differentiated as accidental ones generally associated to unintentional acts, such as traffic deaths, fatal falls, diverse traumas, etc. And other violent acts are associated to intentionality, such as homicides, suicides and practices linked to different types of violence.\(^2\)

It is noteworthy that a more complex discussion exists for some authors about this classification. Accidents may be considered unintentional, but can also be viewed as structural violence, related to lack of infrastructure, such as the absence of public policies for the transit area, flagging some causes of death.\(^3,5\)

In this article, with the view to broaden the discussion about violence in childhood that can be intentional or not, considering it to be a violation of the rights of children and adolescents. However, statistical data about violence and mortality are usually obtained by notifications to the competent services, such as community councils, emergency units, hospitals and police stations, among others, and they are strongly permeated by concepts of violence grounded in the intentionality of aggression.

An important source of information on violence is the Mortality Information System (SIM), although studies have shown that mortality due to violence expresses only part of the problem, the deaths that are recorded, while obscuring the extent of non-lethal events. And, therefore, there exists a representative proportion of underreported events.\(^7\) It has been estimated that for every child death due to violence there are 18 hospital admissions in the Unified Health System (SUS), excluding those from emergency attendances.\(^6\)

Another source is the Hospital Information System of the SUS (SIH-SUS), which gathers data about authorizations for hospitalization in public hospitals and, in particular, those relating to external causes. However, it is known that there are difficulties in using these tools as indicators, since such data often expresses only the violent cases with a certain gravity and whose outcome was hospitalization or performance of medical procedures.\(^4\)

Moreover, there is a flow of information on violence managed by the Ministry of Health with the Sistema de Informação de Agravos de Notificação (Information System for Notifiable Diseases – SINAN), which tabulates data resulting from notification by the health services.

The Sistema de Informação para a Infância e Adolescência (Information System for Children and Adolescents – SIPIA) is a data source populated by notifications to guardian councils in different regions of the country. This system acknowledged, in 2012, a total of 49,497 cases, from the 16 states reporting throughout Brazil. It is noteworthy that the state of Paraná ranked first, with a high number of reports of violence against children, responsible for 20,227 episodes. It cannot be affirmed whether this position is due to the high number of violations of children’s rights occurs or if it occurs due to the significant number of complaints and notifications of cases, given the fact that there are necessary trainings and systematization for the management of the program. According to SIPIA, the state with the lowest number of cases was the Federal District, with three events that occurred with children.\(^3\)

In this context, the role of public policy is crucial for ensuring the rights and protection of vulnerable populations that, sometimes, historically, have been denied to the pediatric segment of society. In this example, the Statute of the Child and Adolescent (ECA) was enacted, aimed at preventing violations of their fundamental rights. To ensure children absolute priority in maintaining their integrity and dignity, there must be connections between family, society and the state.\(^7\) Therefore, the effectiveness of the guarantee of these rights is conditional upon the articulation of various sectors of society, networks constructed for the production, development and oversight of child protective practices.\(^8\)

To develop these practices in a network perspective, one needs to adopt concepts that enable the dynamic, flexible and non-hierarchical connection, increasing, thereby, actions in the face of violence. A network, from the perspective of Capra, is considered an open structure composed of interconnected nodes, which allows for expansion through integration of new nodes, sharing communication codes that express concepts, values and objectives of a group or population.\(^9,10\)

The dynamism and flexibility of the network in a systematic way provides the expansion of the field of operation of the networks to protect children against violence, ranging from welcoming, notification, family support, guidance, community education and professional training, in order to prevent further forms of violence,\(^11\) up to the articulation of institutions inserted in this network in order to achieve appropriate interventions for this problem.
Given the complexity of the phenomenon of violence against children, it is necessary to reflect on the practices of coping in the network for this problem, understanding the importance of transdisciplinary and intersectoral work for the interruption of violence, in particular for the practice of nursing. For this, health professionals need knowledge and skills for their professional practice, working with appropriate legal measures for the case, as these professionals, in their work, may be the first subject requested to intervene by the victim of violence, especially in cases against adolescents and children – either by listening to parents and close family members or by the identification of physical injuries and the behavior of the victims.12

Thus, we sought, in this work, to reflect on the network of protection against violence in childhood in light of the concept of networks of the theoretical physicist, Fritjof Capra. For this, a deep ecology was considered, the conceptual model proposed by Capra, as a theoretical framework that permits broadening of the look to the protection of children, in order to respond to this complexity.

INTERCONNECTIONS OF FRITJOF CAPRA AND THE NETWORK OF PROTECTION AGAINST VIOLENCE IN CHILDHOOD

Fritjof Capra is an Austrian physicist residing in the U.S.A., internationally recognized for his presentations and publications that criticized the Cartesian way of thinking, which began with the Industrial Revolution. He proposed a necessity of changing this paradigm for a look that considered the interactions of human beings in the world. This change is known as deep ecology, with a holistic worldview that recognizes life in a network of phenomena that are interconnected and interdependent.9

In this conception, the major problems of our society, including violence, cannot be understood or addressed in an isolated way. On the contrary, they require a systemic focus, articulated to the global context, interconnected and interdependent of various areas of knowledge.9 Thus, it is necessary to reflect on the extent to which the actions of the network of protection against violence in childhood, especially those developed by nursing, have incorporated this systemic approach to deal with this phenomenon.

Networks of protection against violence can be seen as social networks, which are a living system, with a systemic focus, that construct communication webs involving symbolic language, cultural boundaries and power relationships. In addition to adding people in the social system as members, they articulate cognitive systems, consciousness and culture, thus having a unified view of mind, matter and life.9 Therefore, so that nursing professionals act in a systemic way to address the problem, it is necessary to understand this creative flow of life itself, and its interconnections, especially those that determine the cycle of violence.

For that, it is also required that the professional has a view of the network through the design of its connections, its institutional character, which requires the identification of its members and their articulations towards situations of protection against violence.13 To be characterized as a network, some aspects are essential, such as having common boundaries, laws, orders and objectives. Otherwise, it is not configured as network.14 Rather, it can be configured only as institutions that provide actions for children and their families in a fragmented and isolated manner.

Social networks, such as the example of living systems, have a pattern of organization that can be defined as a complex system, as it depends on the total connection between elements in a systemic and integrated perspective.9 To explain this specific dynamic and complexity of the organization of living systems, Capra appropriated the terminology of “autopoiesis”, diffused by the Chilean neuroscientist Humberto Maturana, which means self-creation. This is a property which guarantees the survival of the network.9

In autopoiesis, the network produces itself.9 This occurs by the maintainance of the connections and actions generated by its components, the institutions and professionals, that perform functions that structure and recreate, linked to a process of cognition, a constant learning. Autopoiesis has characteristics of the model of networks of Capra, represented in a circular form in Figure 1, which refers to cyclic feedback connections with variable flows; and the interconnected dotted lines express the permeability of energy, itself, in these systems.

![Figure 1 - Autopoiesis of the Networks.](image)

There are three characteristics that define the system of autopoiesis9, to be: self-limited, determining boundaries of performance inherent to the networks – these are based on constitutional and cultural foundations; self-generating, meaning...
that all network components are produced by processes internal to this organization; self-perpetuating, consisting of processes of production that are maintained over time – mechanisms for maintaining of the network causing it to be perpetuated exist, it is possible to notice the disappearance, emergence or substitution of new connections, but the network is always maintaining the logic of the objectives that guide its work.

To reflect on the organization of actions for confronting violence against children, by means of a network of protection, requires looking at the pattern of organization from the perspective of an autopoietic system, that incorporates these characteristics. Therefore, the network must have delimitation of its field of action, defining elements that interconnect one network to another, in order to promote the generation and perpetuation of effective practice. In view of the different formatting of the networks of protection against childhood violence in the pursuit of child protection, it is possible to realize this autopoietic character that permeates these systems.

Regarding systemic actions, any modification of the structure and operation of the network arises directly or indirectly by the organizational process, concepts and objectives, interconnecting from political, institutional and/or individual changes and collective practices of its members towards of child protection. It is understood, therefore, that a system with autopoietic characteristics may enhance care in a network, and respond to the complexity of this phenomenon.

It is up to the nurse, in different work settings, to recognize the actions that can interconnect different professionals and institutions, in order to create projects of care with actual systemic actions that share the same objective of interrupting violence against children and adolescents. However, it is essential to recognize the limits and strengths of the organization in each local network, its components and processes that permeate its interconnections. Therefore, it is necessary to reflect: to what extent do these professionals have expertise and skills to develop care in the network of an interdependent character? Have educational institutions worked to educate nurses with competences for care within a network? What tools need to be improved in health services so that they can work with this strategy?

Such questions are justified because the concepts of work in a network differ from actions involving the restriction of information and individual responsibilities. Generally, in a network production process, there exists a capacity of feedback triggered by the information in a kind of circular arrangement. Each component influences and suffers interference from the other, helping in the composition, transformation and performance of other members in a non-hierarchical way. The decisions and an approach of a sector or institution are reflected in the organization of the network of protection, but they may change its meaning and its practices. Given this, it is necessary to consider whether professionals, specifically the nurse and members of the network institutions, are aware that their actions can change the organizational pattern of this work, limiting or enhancing the interconnections between the components, interfering in its quality.

The network of protection against violence requires different actions and connections among professionals, industries and the institutions that compose them, according to the needs of each case. Thus, to recognize the specificities, types of connection and potential of each sector (legal, education, health, social, etc.), is important for effective action against violence, because there are different levels of complexity in the network. For this, we must all have the common objective of qualifying actions with immediate and long-term strategies, aimed at guaranteeing rights and global attention for children and adolescents.

The participation of different sectors of society reinforces one of the main characteristics of the network identified by Capra, which is its dynamic structure related to its self-creation with a proper reticular format, expanding itself and forming new connections. Because these networks are permeated by external and internal influences that reconfigure them, mediated by regulation and self-regulation processes that interfere with new ways of connection and organization of these.

Because the networks are open systems, they operate away from equilibrium, generating a constant flow of information. This flow can modify the network and it is modified every time it passes by the components of the system, and in this way can alter the organization of the same. However, open systems in their process of feedback suffer self-regulation by the network itself. The processes in social networks can be regulated in subjective and objective dimensions, as it is mediated by human beings and they act and receive interferences in a conception of interaction with the environment in which they live.

In the field of physics, open structures evolve to self-organizing systems, therefore, to expand, they generate points of instability known as dissipative structures, that reach, with time, a point of stability and evolution. These structures arise in the network in a state of disequilibrium, however, they dissipate even with adverse processes. It is known that the possibility of interconnection of the actors, communication, conceptions and values about protection, violence against children in society, among others, can be maintained and disseminated in the network, even with its restructuring.

However, this flexibility and evolution of networks, especially in the protection against child abuse, are essential to the approach of this phenomenon which is permeated by socio-historical issues. The potential role of networks of child protection is guided by their mobilization, as it enables the integration of actions across sectors, institutions and professionals, whether by the government, non-governmental organizations,
private companies, civil society and families, to recognize and meet the fundamental necessities of protection of children and adolescents. These arrangements and rearrangements arise from this dynamic structure that contributes to prevent and combat violence against children and adolescents, conferring autonomy to the local systems by their articulations.

When practices are established in an isolated and fragmented way, not guided in the network as an integrated system, reduced in parts, fragile or devoid of concepts that strengthen co-responsibility, actions can be nonresoluble when facing the situation of violence. In this regard, a study reported that professionals diagnosed a problem, but in the management of the cases encountered difficulties in obtaining institutional support for continuity of care, generating the feeling of isolation and powerlessness to break the cycle of violence.5

It is known that a number of questions, such as those citing the limitation of resources for services, lack of incentives for public policies, disqualification and even resistance from professionals for work in a network, can contribute to the permanence of these fragmented practices. A limited view of the possibilities of the network may compromise its real performance potential. To this end, it presents the model of Capra as a magnifier and liberator of ideas of an egocentric paradigm, with value in the interconnections between the different knowledge, with different actors calling for creative and integrated solutions to problems that violence in childhood embraces.

Currently, in the environment of the operationalization of the network, thinking how to transform the institutional relationships that, sometimes, are vertical, in non-linear relationships is needed, in which the members have the same power and strategically collaborate against violence. How to work in the capabilities of the services, integrating them and maintaining the essence of the work?

Accordingly, Capra discusses that the pattern of the network submits the system to non-linearity and non-verticality, in order to bring the structure to various meanings and directions.3 The flow of information happens nonlinearly and, therefore, cannot be controlled. And unlike the vertical relationships, that are hierarchical and involve subordination, the interconnections of the network of protection can be varied and surpass the articulations and flows, proposed by institutions or pre-established formally.

However, to extend these interconnections with the various institutions and actors, it is required that professionals from nursing and other areas approach their reality and recognize the available services at their place of work, whether they are of a state or community character, and also undertake to facilitate such connections. It is not discussed here that some services of a specific character need need to be implemented, however, in the network of protection that is configured as such with the integration of existing services, often needed to narrow the communication mechanisms between its members and to recognize its work space.

One study to identify risk factors and the network of protection of care to the child victims of sexual violence in Porto Alegre-RS showed that communication between the various institutions that acted in the cases was minimal, involving all of the work in the entire network.15 This suggests that inadequate flow of information causes structural and operational damage to the network, and may result in the absence of notifications or damage to team performance, with possible negative repercussions for child protection; on the other hand, underreporting may compromise understanding of the scale of the problem, to impede the construction of epidemiological indicators and reduce the transfer of financial resources that the municipality or the state could invest in the prevention of violence.

Thus, these networks not only have the task of protecting, but also to make it so the violence, its causes and consequenc- es are recognized as a problem that affects individuals and society. Therefore, it is necessary to augment public investment, minus bureaucracy in the flow of information and to incentivize more integration among its members.16 Therefore, the importance of understanding the concept of systemic network and of the integral protection of the child is highlighted, which, sometimes, requires paradigm shifts in all environments.

Social networks bring this new way of looking at the world under the different interactions between human beings and their consequent relationships. They constitute a major event that helps to understand the complexity of social life: be it the preparation of responses to local policies, quickly and effectively, to ensure the expansion of the exercise of citizenship, or through popular participation, which is one of the necessary elements for constructing a proposal that aims to meet the real needs of society.17

**FINAL CONSIDERATIONS**

The concepts of Capra allow reflection about the organization of networks of protection, considering the practices and actions in a systemic approach. Thus, professionals may, in addition to identifying, composing and supporting these networks, also share knowledge and concepts that allow the recognition of the factors that positively or negatively influence the work and objectives of this system, with a view to its development.

The conceptions of Capra subsidize the reflection about the flow of information and subsequent connections organized in the form of a network among different sectors of society, in a broader perspective, in a nonhierarchical and dynamic way, which are fundamental to the operationalization and maintenance thereof. Health professionals, as well as others, need to understand members and those jointly responsible for child care in the prevention and confrontation of violence.
An integrated assessment of this work is necessary, involving different segments and sectors that participate in the child protection network. Therefore, it is essential to glimpse auto-poietic characteristics that make the network create and self-create, seeking to potentiate them, as well as new possibilities for mediating roles in the networks.

It is known that this design of the network encounters institutional and individual barriers, making difficult, many times, the change of paradigm required. However, it is learned that the work in a network, proposed by Capra, can provide actions and connections with its members in a non-hierarchical perspective, but without emancipation, expanding the horizons of health care, as a tool for nursing, aimed at confronting this injustice, seeking to guarantee the integrity and development with more protection for the children.

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