

advantage of education is that it raises awareness in others but it may become a substitute for taking personal action relative to the problem.

Witness refers to making personal convictions known. An example of this would be wearing a pink ribbon to support breast cancer awareness. An advantage of this approach is that others know the individual's stance, but a disadvantage may be that simply speaking out may not be enough to overcome the problem.

Advocacy as social action involves working through the political system to impact public policy. An example is meeting with an elected official to discuss changes that need to be made in local policy about disability access. An advantage of advocacy is that it can create policy change, but in the process a disadvantage is that it can create divisions between those for and against the change.

Community organizing is a form of social action that redistributes power and resources more equally. An example is boycotting donations to a youth organization that discriminates against participation by individuals who are homosexual. An advantage of this approach is that it empowers individuals within their communities. However, a disadvantage is becoming overwhelmed by the complexity of the issue.

Conclusion

There are theoretical foundations for social action and various conceptual and engaged types of social action, including health-oriented examples. Each has both advantages and disadvantages.

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See Also: Community Mobilization; Community Organizing as a Research Approach; Community Participation; Community-Based Participatory Research; Social Capital.

Further Readings

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Social Aggregates

Interactions between individuals and groups of individuals are of great interest in the health context, as they can be studied, for example, with the goal of optimizing the diffusion of important health messages, or with the goal of identifying those members of a community whose influence on the rest of the community is particularly strong. In the first case, one is interested in identifying the preferred path of diffusion of a given message, or the path that offers the least resistance, so to speak; while in the second, one is interested in identifying the smallest number of individuals who can act as amplifiers for the message.

Modeling of social interactions with mathematical tools is a well-established area of research. In its simplest form, individuals are represented as points, and interactions among individuals (e.g., a dyad such as the patient-provider relationship) are represented by a segment (or curve) connecting the two points, which represent the individuals. The mathematical theory that describes this model is known as "network theory," and its mathematical study owes its relevance mostly to the pioneering work of Paul Erdős. In particular, Erdős studied the general properties that random networks display, as well as the evolution of such networks under simple rules that determine, for example, the probability that two individuals will develop a relationship, or that the relationship will break up. Applications of these ideas to the social sciences context, and in particular to broad health contexts, are generally understood.

The health context, however, presents some peculiarities that show how the model based on network theory is insufficient to capture the subtleties that appear when health issues are considered. The analysis of the relations that exist within a family, and how they impact health decisions, may serve as the simplest example of an instance where this occurs. Not only do the parents have a relationship with each other and with each of their children, but the entire family acts as a unit of higher order, so to speak: the decisions taken by the family appear to be the outcome of “group think,” almost as if the entire family were in fact a single individual. Thus, it becomes necessary to identify different mathematical tools that allow the scientist to capture the difference between a set of binary relations and the relationship that binds a family.

A different and even more complex and striking example arises when considering the diffusion of health messages through social media, where it appears that individual connections (so well modeled by networks) are not as important as higher-dimensional connections that aggregate several individuals into a unit that ends up acting as an individual in itself. The cluster of “friends” on Facebook (or any other social medium) is more than a set of binary relations, and should be regarded as such. Understanding how binary relations evolve into something that ties different individuals to each other is key to designing an effective and robust message, and a medium, that will resonate with the entire virtual community.

The Concept of Simplex

In a series of papers by the authors and their collaborators, the study of social aggregates has recently been approached with the help of the mathematical concept of “simplex.” By simplex one means a collection of points (just like in a network) and of one-dimensional connections (again, just like in a network, a set of curves connecting different points), but the model then allows the existence of triangles (bidimensional connections that link three individuals together), tetrahedrons (three-dimensional connections that link four individuals together), and so on. If one considers, for example, both an intact family composed of two parents and a child, and the same family after the parents divorce (but maintain some sort of

relationship), the network approach would represent both situations in the same way, with the three sides of a triangle that connect each member of the family to the other two members. However, the simplicial approach would differentiate these two situations by using the three sides of the triangle to depict the family after the divorce, and by using the surface of the entire triangle to describe the intact family.

The concept of simplex has therefore greater flexibility, and allows the social scientist interested in modeling and understanding a specific and complex health communication challenge to approach the problem in ways that were not available before. The use of simplexes to model social aggregates can play an important role in simplifying the otherwise intractable amount of data represented by a social medium. With the use of simplexes, the social scientist can now reliably identify the subgroups of the social medium that may be best suited to implement a new health campaign, for example, but also more accurately describe team dynamics that have become increasingly important in the delivery of health care, and that will be increasingly important with the newly introduced Patient Protection and Affordable Care Act (PPACA). Under this act, patients are no longer the responsibility of an individual physician, but rather of a multidisciplinary team of health care providers that includes physicians, physician assistants, nurses, pharmacists, radiologists, specialists, and a number of technicians.

Similarly to what has happened with network theory, there is significantly important work to be done in the theory of simplexes to analyze the properties of random simplexes (these are properties that would be sufficiently general to be shared by large subsets of Facebook users, as well as by large communities of scholars or other large-scale aggregates), as well as the probabilistic evolution of such simplexes. This work is fully in line with the recently exploding field of computational social science. Health communication researchers can now use high-performance computing to study a wide array of health issues and problems that would otherwise be too complex for manual computations. In this way, the social sciences follow the lead of what has already been the case for the physical and biological sciences, where

scientists are willing to consider increasingly complex models, as a result of the increasing computing capacity of their machines.

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See Also: Family Communication and End of Life; Measurement: Message Quality; Measurement Problems; Message Design; Opinion Leaders; Social Networks.

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roles of social capital in the contexts of media health campaigns, news consumption, the doctor–patient relationship, and interpersonal communication and social support.

Originally, the concept of social capital was proposed by sociologists such as Pierre Bourdieu and James Coleman, and political scientists such as Robert Putnam, in an attempt to explain and predict why and how certain individuals and social groups are successful in achieving their personal or common goals, while others are not. Because social capital has been conceptualized and measured in numerous ways, it is not easy to provide a clear and precise definition of social capital. In general, however, there are two different schools of social capital research.

One group of scholars, such as Bourdieu, focuses on potential or actual resources embedded within social networks, which each member or group as a whole can access and mobilize to solve either individual or group-level problems. These resources include other members' socioeconomic status, emotional support, informational flow, influence, and control. In contrast, the other group of scholars, such as Putnam, pays attention to infrastructure of a community that contributes to producing the aforementioned resources and facilitating community members' access to them. Assuming that trusting other members and maintaining connections among members are necessary to address any community's common issues, their social capital indicators consist of social trust, norms of reciprocity, and formal and informal group activities.

Prior research demonstrated that social capital is an essential ingredient for a group's economic progress, effective governance, well-being, and low crime rates. Also, it was reported that individuals with resourceful social networks have an advantage in terms of employment, educational achievement, socioeconomic attainment, promotion at work, and entrepreneurial success. Since Richard Wilkinson, an eminent social epidemiologist, introduced Putnam's conception of social capital into the domain of public health, social capital has received considerable attention as an environmental component that has important implications for health. Many studies have explored the associations between social capital and health outcomes, concluding that social

Social Capital

Although the term *social capital* was first developed and employed by political scientists, sociologists, and economists, it has become one of the most widely used concepts by health communication scholars in particular, and social scientists in general. Social capital refers to either the infrastructure of any social group (including communities) or the resources available to either individuals or groups. By developing accurate and reliable measures of media use, communication scholars have helped identify predictors of social capital that remained underexplored by scholars from other disciplines. Health communication scholars have revealed the important