Introduction

From social networks to health: Durkheim after the turn of the millennium

1. Introduction

Beginning with the immeasurable contributions of Émile Durkheim in the late 1800s (Durkheim, 1967), it is by now widely recognized by public health, biomedical, and social scientists that social relationships matter for health and mental health. While the study of social networks was initially borrowed from the field of anthropology to study how social relationships beyond kinship influenced trading patterns, mate selection, and local politics (Barnes, 1954; Bott, 1971), new interest in the social network patterning of health and mental health has developed at a steady pace over the last several decades. Fig. 1 shows the total number of articles published in leading epidemiologic, public health, and medical journals during the past several decades that included the phrase "social network" or "social networks" in the title or abstract.

Notably, the figure demonstrates a sharp uptick around the turn of the millennium. Prior to this point, the idea of "social networks" in the public health and medical literature was most often used in reference to the closely related but distinct concept of "social support," such as has been described in the stress "buffering" literature (Cassel, 1976; Cobb, 1976) and quite akin to Durkheim's notion of social cohesion and population well-being. Right before this uptick, Berkman et al. (2000) published, in the pages of this journal, a review paper that served as a call-to-arms of sorts, prodding researchers scientists to push the boundaries of network thinking. In their now-classic essay, which at the time of this writing has been cited more than 1500 times, Berkman et al. (2000) provided a conceptual model for thinking about the ways that social networks might influence health, mental health, and health behaviors. Specifically, as we discuss below, Berkman et al. (2000) called for a more systematic empirical approach to the study of social networks and health that not only captured the sprit of Durkheim but also leveraged rapidly developing methodological and computational advancements.

This Special Issue of *Social Science and Medicine* provides an occasion for reflection about how far we have come since the prescient essay by Berkman et al. (2000). At that time, Google was only two years old, the Winklevi had not yet had the idea for Facebook's predecessor, and the iPhone was still seven years away from release. Much has changed since then. But the spirit of the Berkman et al. (2000) essay and their charge seems to be one that researchers have taken quite seriously. Today, scholars across a multitude of disciplines ranging from field-driven anthropology to theoretical physics engage in a growing field known as "network science" whose applications to the study of health and mental health continue to proliferate, as evidenced in Fig. 1. In the remainder of this introduction, we provide a brief look back at the contribution of Berkman et al. (2000), summarize the themes raised by papers included in this Special Issue and how they advance our knowledge of networks and health, and conclude with remarks about potential avenues for future research.

2. Moving beyond social support

Much of the early empirical work, noted Berkman et al. (2000), used the term "social networks" in a fairly loose sense, often interchangeably with related concepts such as "social integration" and "social support." In other words, prior to 2000, health researchers rarely measured and analyzed networks in formal graph-theoretical terms. Rather, the idea that social relationships matter — and that they constituted some "web" of social relationships (Simmel, 1955) — remained largely amorphous, both theoretically and methodologically. The conceptual model Berkman et al. (2000) presented, however, neatly illustrated the distinctions between these three constructs (Fig. 2): social integration as the *extent*
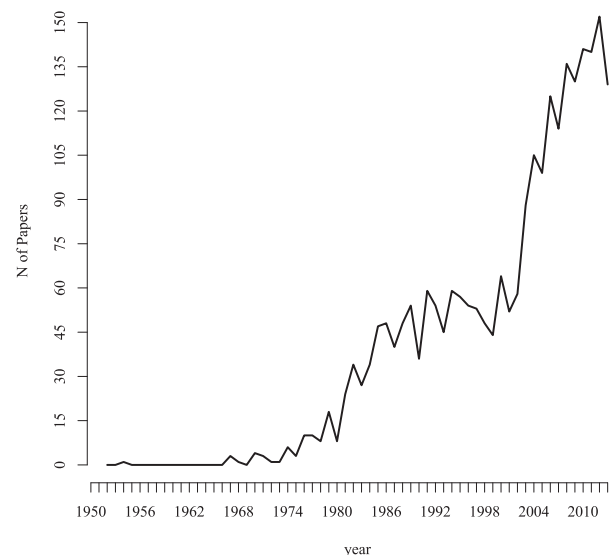
Note: Journals searched include: *American Journal of Epidemiology, American Journal of Public Health, Annals of Internal Medicine, British Medical Journal, Epidemiology, International Journal of Epidemiology, Journal of the American Medical Association, Journal of Epidemiology and Community Health, New England Journal of Medicine, Public Library of Science Medicine, Proceedings of the National Academy of Sciences, and Social Science and Medicine.*

Fig. 1. Total number of articles appearing in selected epidemiological, public health, and medical journals with the term "social network" or "social networks" in the abstract or title.

of participation in a range of relationships (Seeman, 1996); social networks as the formal *structure* of these relationships; and social support as the functional *content* of these relationships (Weiss, 1974). Berkman et al. (2000) further elaborated the *mechanisms* through which social networks are thought to affect health, mental health, and health behavior: through social influence (Marsden and Friedkin, 1993), by serving as conduits for the provision of social support (Weiss, 1974) or the direct transmission of disease (Klovdahl, 1985; Laumann et al., 1989; Obbo, 1993), or by providing opportunities for meaningful social engagement.

Berkman et al. (2000) issued two charges for scholars: to better understand the determinants of social network formation, and to more fully elucidate the mechanisms through which social networks affect health. In the ensuing 15 years, new developments in graph theory, large-scale data collection efforts, and computational methods have facilitated a proliferation of research on social networks and health. Particularly important turning points in the field include the public release of social network data from the National Longitudinal Study of Adolescent Health (AddHealth) (Bearman et al., 2004) — which has by now been featured in nearly 5000 publications — as well as the discovery of relational data in the Framingham Heart Study (Christakis and Fowler, 2007).

2.1. Contributions in this volume: social networks, health, and mental health

The purpose of this Special Issue was to highlight cutting-edge developments in the application of network science to the study of health and mental health outcomes. The interdisciplinary nature of the field corresponds nicely with the scope of *Social Science and Medicine*, which seeks to provide an international and interdisciplinary forum for the dissemination of social science research on health. We therefore sought submissions from a wide variety of fields, including those from researchers belonging to fields other than our own (medicine and sociology, respectively).

Beginning with an open call for manuscripts in November 2012, we received more than 100 submissions from scholars in a range of disciplines including anthropology, communications, computational science, criminology, economics, medicine, public health, and sociology. Thirty-six of these were sent out for initial review. Of the 210 scholars we contacted to serve as reviewers, 51% agreed. We could not have accomplished our work as guest editors without the enormously helpful feedback from experts in these various disciplines. For the median manuscript we rendered an initial decision in 69 days. Twelve manuscripts were rejected after review, while 24 manuscripts were provided with a revision opportunity for further consideration. After a median of 2 revisions each, 18 manuscripts were accepted for publication. These 18 articles speak to several of the critical gaps identified by Berkman et al. (2000) while at the same time pushing the boundaries of existing scholarship in several key subfields.

2.2. From macro to mezzo: social network formation

One of the key concepts embedded in Fig. 2 is the call for a richer understanding of how social, cultural, and economic forces condition the extent, shape, and nature of social networks — to understand, in other words, how macro-level forces shape mezzo-level networks. Several of the papers in the Special Issue take this question quite seriously.

Patulny et al. (this issue) used a series of natural experiments occasioned by Australian conscription lotteries to understand how
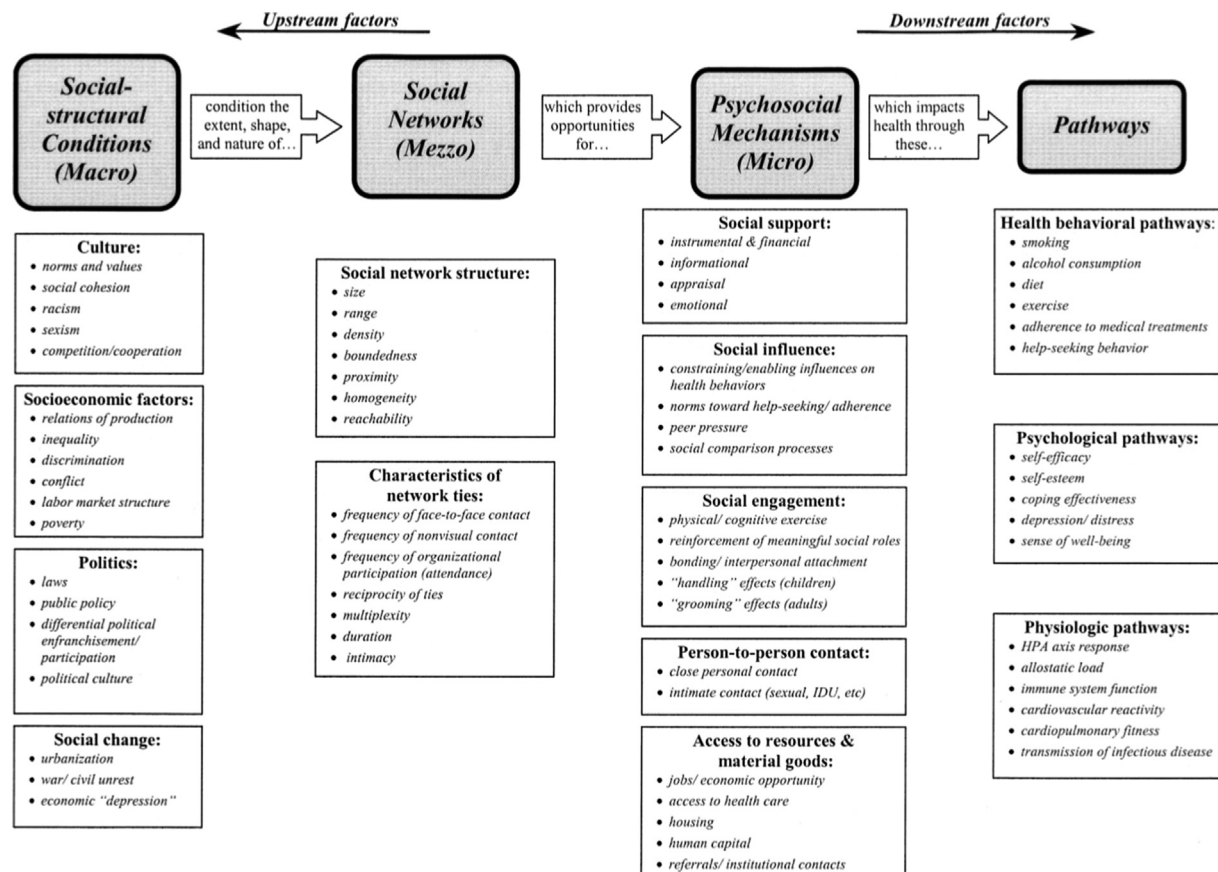

Fig. 2. Conceptual model for thinking about the relationships between social networks, health, mental health, and health behaviors. *Reprinted with permission from Berkman et al. (2000).*