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Social relationships and health: Berkman & Syme (1979)

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There have been many important and influential studies published over the last 20 years providing evidence for the role of thinking and feeling in physical health. I found the task of choosing the single most important study a bit daunting and arbitrary. However, I had less trouble choosing the study that had the most profound influence on my own career path. This is Lisa Berkman and Leonard Syme's seminal paper on social relationships and mortality in the Alameda County Study (Berkman & Syme 1979).

Twenty-two years ago, Berkman and Syme presented the results of a 9-year prospective study of 6928 adults residing in Alameda County, California. They found that the fewer social ties people reported at baseline on a 1965 survey, the more likely the people were to die over the 9-year follow-up period. The index of social ties (often called social integration) included marriage, contacts with friends and relatives, organizational membership, and church membership. The age-adjusted relative risks comparing the mortality of the most isolated to the mortality of those with the most social contacts ranged

Social networks, host resistance, and mortality: A nine-year follow-up study of Alameda County residents

Lisa F. Berkman and S. Leonard Syme (1979)

The relationship between social and community ties and mortality was assessed using the 1965 Human Population Laboratory survey of a random sample of 6928 adults in Alameda County, California and a subsequent 9-year mortality follow-up. The findings show that people who lacked social and community ties were more likely to die in the follow-up period than those with more extensive contacts. The age-adjusted relative risks for those most isolated when compared to those with the most social contacts were 2.3 for men and 2.8 for women. The association between social ties and mortality was found to be independent of self-reported physical health status at the time of the 1965 survey, year of death, socioeconomic status, and health practices such as smoking, alcoholic beverage consumption, obesity, physical activity, and utilization of preventive health services as well as a cumulative index of health practices.

from 2.3 for men to 2.8 for women. The association between social ties and mortality was found to be independent of self-reported physical health status at baseline, year of death, socioeconomic status, and health practices such as smoking, alcohol consumption, obesity, physical activity, and the use of health services.

One characteristic that makes this work stand out is that these findings are replicable and highly

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generalizable. In the years since its publication, studies conducted across a variety of populations indicate that people who are more socially integrated live longer (reviewed by House, Landis & Umberson 1988; Berkman 1995), are more likely to survive myocardial infarction (reviewed by Berkman 1995, Seeman 1996), are less likely to report being depressed (reviewed by Cohen & Wills 1985), are less likely to suffer a recurrence of cancer (reviewed by Helgeson et al. 1998), and are less susceptible to infectious illness (Cohen et al. 1997) than their less integrated counterparts. Even though the original study could be criticized for assessing "self-reported" health status at baseline, later studies employing more objective assessments of health status at baseline found similar results (for example, House et al. 1988). The health risks of being isolated are comparable in magnitude to the risks associated with cigarette smoking, blood pressure, and obesity, and remain even after controlling these and other traditional risk factors (Orth-Gomer & Johnson 1987, House et al. 1988).

Another characteristic that makes this study stand out is the breadth of its impact. This work provided provocative evidence that social environments are associated with important physical health outcomes. The social support literature is to a great extent beholden to this study for convincing behavioral and medical researchers and the funding agencies that support their research that it was important to study the role of our social ties in physical health. It also has served as an important stimulant in thinking and theorizing about the relationship between our social environments and health. What kinds of relationships are beneficial and what kinds are harmful? How do our experiences with others get translated into effects on our physical health? How do we intervene in social environments to improve health?

From my own perspective, the most interesting question raised by this work is how do our social ties "get inside" our bodies? Proposals have included social influences on health practices such as smoking and diet and also social networks as a wide-ranging psychological source of generalized positive affect; diversified self-concepts; feelings of

predictability and stability, purpose, and belonging and security; and recognition of self-worth (see reviews by Cohen 1988; Cohen et al. 2000). These positive psychological states are presumed to be beneficial because they result in greater motivation to care for oneself, or because they influence health-relevant biological systems. Other explanations emphasize the importance of social networks for accessing information. Information could influence health-relevant behaviors or help one to avoid or minimize stressful or other high-risk situations. There is also the possibility that those with a wide range of social ties are most likely to receive support that buffers them from the pathogenic effect of stressful events, although social integration measures are at best only moderately correlated with measures of social resources. Finally, these effects may be partly or wholly accounted for by nonpsychological pathways such as network importance in providing material and economic services or informal health care that prevents minor illnesses from developing into more serious disease.

Unfortunately, even more than 20 years later, we know little about how social networks influence our health and well-being. We do, however, have a start. It is increasingly clear (as Berkman & Syme reported) that actual health practices are not a major factor. None of these studies looking at health practices has found that they are responsible for anything but a small proportion of the variance. We also know that social integration is associated with the function of biological systems including endocrine function (Seeman et al. 1994), cardiovascular function (reviewed in Uchino et al. 1996), and the immune system's ability to fight off infectious illness (Cohen et al. 1997). However, for the most part, we still lack sufficient evidence to know which thoughts, feelings, and expectations (if any) are responsible for associations between social ties and morbidity and mortality.

In short, the Berkman and Syme article drew our attention to an important association and made a major contribution to a growing literature on social ties and health. However, we are still reaching to understand how these social factors "get inside" our bodies.

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Ivan Pavlov and the conditioning of physiological responses

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It must have been obvious to humans ever since they developed the capacity for self-reflection that many actions are voluntary, and that thoughts influence the body. Sometimes, these thoughts are outside conscious awareness, as in the aversion induced to specific situations by a fearful experience, or to foods as a result of an episode of poisoning. John Locke, in the 17th century, wrote: "Many children imputing the pain they endured at school to their books they were corrected for, so join those ideas together, that a book becomes their aversion, and they are never reconciled to the study and use of them all their lives after; and thus reading becomes a torment to them . . ." The great wisdom traditions go much further, expressing the idea that not only does the mind influence the body, it actually creates it. To Patanjali, in the Yoga Sutras, the whole material world, including the body, is an illusion created by the chitta or mind stuff. However, in our materialistic age, where introspection as a route to knowledge has been devalued, it has become necessary to find proof for the mind-body relationship via an approach that is rather cumbersome for the purpose, the scientific method.

Ivan Pavlov is a key figure in this endeavor because, in the first three-and-a-half decades of the 20th century, he objectively studied an important feature of mind-body operation: stimuli that would not normally provoke an observable physiological reaction may do so when they become linked, in the mind, with other stimuli that are able to produce the reaction spontaneously (Pavlov 1927/1960). His principal model, as is well known, was salivation in the dog. Dogs, like the rest of us, salivate when food is near. Also like the rest of us, they learn to do so, presumably without thinking much about it, when exposed to connected stimuli, like the sound of the feeder's footsteps or, as Pavlov demonstrated, the sound of a bell that had been associated with actual feeding. (A favorite cartoon in this area shows 2 dogs, one saying to the other: "Pavlov, Pavlov; that name rings a bell!") Pavlov explored his model diligently with the aim of developing a mechanistic theory of higher neural activity based on conditioning principles. His students extended his work, in some cases to human subjects. Thus,