# No Man Is an Island: Another Worthwhile Approach to the Study of Mental Disorders Using Social Network Analysis

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In this issue, Bryant and colleagues (1) present results from a study of bushfire survivors that examined associations between social structures and mental health indices, namely, posttraumatic stress disorder (PTSD) and depressive symptoms. The study used social network analysis to establish a variety of social connections within the network of 558 respondents, 2–4 years after the disaster. This empirical approach adds to many different ways that social support and social relationships have been examined in the context of coping with disasters (2). The social network analysis approach is based on network and graph theories (3). Its modern history can be traced to the early works of Moreno and Jennings in the 1930s, in which the term "sociometry" was coined (4).

Social network analysis enables investigators to understand group patterns and interdependent relationships within a network. The visual representation of graphs and maps shows how individuals are connected with each other within clusters of similar properties and across clusters. Different lines between individuals within the network map may indicate features such as centrality, intensiveness, inclusiveness, or exclusiveness.

In basic terms, close ties with others include those nominated by the participant (termed "egos"), those nominated by other participants ("alters"), and mutual (reciprocal) ties nominated by a pair of participants (1). Beyond basic constructs, complex structures based on triads may include a clique, which is a group of people interconnected with every member of the group; a brokerage, in which a person is connected to two individuals who have no direct ties between them; and a cyclic configuration (i.e., indirect reciprocity) suggesting that they are part of a connected social network. More complex structures exist beyond basic triads (1). Social network analysis can, in a visual manner, map complex social relationships and their connections to mental health outcomes such as depression (5). Statistically, the approach used by Bryant et al. is similar to logistic regression, and it is termed autologistic actor attribute model (ALAAM) (6). The ALAAM can act as logistic regression, predicting dichotomous outcomes from individual-level factors. However, unlike logistic regression, the ALAAM takes into account interdependence of social network relationships. ALAAMs can show how various configurations of network ties are associated with individual outcomes (6). This novel approach opens a new venue in the field of large-scale disaster mental health studies. Disaster and trauma investigations tend to look at individual-level assessments, and even if they use community-level approaches (7, 8), these studies tend to neglect the interdependence level of social networks. Collectively experienced disasters affect entire communities, and hence such events influence both the individuals' postdisaster social networks and interrelations within the affected communities (2).

Bryant and colleagues' results using the ALAAM were almost identical to those using logistic regression at the individual level. However, the interesting results were found at the network level (interdependent level) with relation to depression and PTSD. First, the participants who reported fewer ties with others were at greater risk for probable depression. This finding confirmed the importance of the network size effect, often reported by studies of social support and mental health (2). However, being linked to others with depression predicted that an individual was also likely to report depressive symptoms. This interesting result may point to an emotional contagion effect (9); being socially linked to survivors who are depressed may have a contagious effect, thus creating a vicious circle. This finding is relevant for both community psychiatry and individual-level interventions, as it reiterates adopting a systemic view on a depressed patient by probing at his or her social network connections. For example, during times of threat, individuals may often choose to "socially share" with others their anxieties and emotions in an attempt to alleviate distress, or they may seek reassurance from significant members of their social networks (10). This is a manifestation of the classic fear affiliation effect (11). The detrimental consequences of such behaviors have been found to increase the likelihood of depression (12).

It is also important to note that Bryant and colleagues' data collection took place 2–4 years after the disaster. Studies of

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postdisaster resilience and coping suggest that the initially high depressive and PTSD symptoms dissipate relatively soon after the disaster (13). To be surrounded by people with depression years after the process of recovery ended for the majority of survivors may have a disadvantageous impact on one's mental health. These still distressed people could be affiliating with each other because those who already recovered may be excluding them from their social networks. Such dynamics are congruent with social selection processes (14).

Additionally, the model demonstrated that having close ties to someone who moved away from the community predicted greater depression. This is in line with previous studies on postdisaster deterioration of social support (2, 15). Bryant and colleagues' results with regard to PTSD revealed that the individuals who were more frequently nominated by others as their close network members were at lower risk for PTSD; this finding again reaffirms social support findings concerning network size and its protective function in reducing postdisaster distress (2). However, the interesting result is that receiving nominations from alters who reported higher levels of property loss was associated with a higher likelihood of PTSD. Moreover, in terms of network-level (more than one tie) analysis, two results emerged. First, being positioned between individuals who were not connected with each other was associated with an increased risk for probable PTSD. Second, the risk for PTSD was lower when the person was connected in a larger cyclic configuration.

Taking a broader perspective on the study's findings, their pattern can be framed within the theoretical model of the "conservation of resources" theory (16). Hobfoll's framework postulates that individuals are seeking and acquiring resources that may range from physical objects to psychological and social constructs. During a traumatic event, a loss of resources occurs. For example, the loss of social resources resulting from a friend leaving the community, or having connections with others who have high property loss, leads to a depletion of one's physical and social resources, which in turn raises the likelihood of depression and PTSD (17). This framework can explain Bryant and colleagues' results at both the individual level and the network level by arguing that the loss of resources, particularly loss of social support, loss of close friends, and loss of property, influence the mental health of survivors.

In sum, the Bryant et al. study underscores the need for more investigations into postdisaster social processes using different quantitative and qualitative methodologies, such as the social network analysis approach along with advanced statistical models (ALAAM). This study highlights the importance of the individual within a social network and thus adds deeper insights to the contributions of social networks and social support in coping with disasters. Several of the study's findings are consistent with those reported in the disaster literature by investigations using less complex and sophisticated methods (2).

This research places itself among other pivotal studies that adopted new ways of looking at mental disorders, such as the use of social network analysis in investigating symptom clustering in PTSD (18) and more complex symptom structures of psychopathology (19). These new insights are stimulating and should accumulate more evidence that will help us gain a better understanding of the complexity of mental disorders. Using a multilayered (dimensional) approach will offer diverse applications to treatment in the future.

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