

cial support continues to use standard statistical packages, and ethnographers and social historians have usefully applied qualitative methods in their network analyses.

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SOCIAL NEUROSCIENCE. The early American psychologist William James (*Principles of Psychology*, New York, 1980/1950) was among the first to articulate that neurophysiological processes underlie psychological phenomena. James further argued that developmental, environmental, and sociocultural factors influence the neurophysiological processes underlying psychological and social phenomena. Although these influences could be studied as neurophysiological transactions, James recognized that unnecessary diseconomies and conundrums would result if psychological phenomena were described only as neurophysiological events.

Studies of the neural processes associated with social or psychological functions were once limited primarily to animal models, postmortem examinations, and observations of patients who suffered trauma to, or disorders of, localized areas of the brain. Developments in functional brain imaging, electrophysiological recording, neurochemical techniques, neuroimmunologic measures, and ambulatory recording procedures have increasingly made it possible to investigate the role of neural structures and processes in humans. As neuroscientific approaches are applied to the study of diseases and to elementary cognitive and behavioral processes, subtler medical and psychological phenomena are succumbing to neuroscientific inquiry. This led to the U.S. Congress declaring the 1990s the decade of the brain.

The brain does not exist in isolation but rather is a fundamental, interacting component of a developing, aging individual who is a single actor in the larger theater of life. This theater is undeniably social, beginning with prenatal care, caregiver-infant attachment, and early childhood experiences and ending with feelings of loneliness or of embeddedness and with familial or societal decisions about care for the elderly. Mental disorders such as depression, anxiety, schizophrenia, and phobia are both determined by and are determinants of social processes. Disorders such as substance abuse, prejudice and stigmatization, family discord, worker dissatisfaction and productivity, and the spread of acquired immunodeficiency syndrome are quintessentially social as well as neurophysiological processes. Social neuroscience, a term coined by John Cacioppo and Gary Berntson (1992), refers to the study of the relationship between neural and social processes.

There is growing evidence that multilevel analyses spanning neural and social perspectives can foster comprehensive accounts of cognition, emotion, behavior, and health. First, inroads to the logic of social processes have come from theory and research in the neurosciences (e.g., brain organization and localization of function, genetic determinants of behavior). Research in the neurosciences, for instance, has influenced what are thought to be the processes underlying social attitudes and decisions. Mechanisms for differentiating hostile

from hospitable environmental stimuli are imperative for the survival of species and for the formation and maintenance of social units. Noninvasive investigations of the physiological operations associated with evaluative processes provide an important window through which to view these processes without perturbing them. Research suggests that approach and withdrawal are behavioral manifestations that come from distinguishable motivational substrates. Ambivalence is a behavioral example of the concurrent activation of both positivity and negativity.

Second, the study of social processes has challenged existing theories in the neurosciences, resulting in refinements, extensions, or complete revolutions in neuroscientific theory and research. Classically, immune functions were considered to reflect specific and non-specific physiological responses to pathogens or tissue damage. It is now clear that immune responses are heavily influenced by central nervous system processes that are affected by social interactions and processes. For instance, the effects of social context now appear to be powerful determinants of the expression of immune reactions. It is clear that an understanding of immunocompetence will be inadequate in the absence of considerations of psychosocial factors. Thus, major advances in the neurosciences can derive from increasing the scope of the analysis to include the contributions of social factors and processes.

Third, reciprocal benefits and more general psychological theories have been achieved by considering or pursuing jointly macrolevel and microlevel analyses of psychological phenomena. Evaluative categorizations and response dispositions—criterial attributes of attitudes, affect, and emotion—are fundamental and ubiquitous in behavior. All organisms have rudimentary biological mechanisms for approaching, acquiring, or ingesting certain classes of stimuli and withdrawing from, avoiding, or rejecting others. Knowledge of the organization and operating characteristics of these rudimentary mechanisms may therefore lay down, at least in broad strokes, the rules by which rudimentary biological and social factors alter evaluative categorizations and evaluative response dispositions. Decerebrate organisms, for example, display stereotyped orofacial ingestion-ejection reflexes to relevant gustatory stimuli. Furthermore, reflexive responses demonstrate a sensitivity to social and motivational variables. These inherent dispositions allow an organism, even at early stages of development and without previous experience, to respond adaptively to important classes of environmental stimuli. These reflexes also represent only a single level in what appears to be a continuum of evaluative mechanisms. With the involvement of additional subcortical structures, the reactions of the decorticate organism evidence greater directedness, integration, serial coherence, goal-orientation, and

contextual adaptability. Thus, evaluative mechanisms are not localized to specific neuraxial levels but evidence a hierarchy or representation throughout the central nervous system. With progressively higher organizational levels in evaluative mechanisms, there is a general expansion in the range and relational complexity of contextual controls and in the breadth and flexibility of adaptive response.

Fourth, deciphering the structure and function of the brain is fostered by sophisticated social psychological theories in which the elementary operations underlying complex social behaviors are explicated and by experimental paradigms that allow these social psychological operations to be studied in isolation using neuroscientific methods. Brain imaging studies of the neural bases of emotion have contrasted positive and negative emotions based on the assumption that these emotions are served by the same neural structures. Social psychological paradigms for eliciting positive and negative emotions have now been developed, and brain imaging studies in which positive and neutral emotions are contrasted and negative and neutral emotions are contrasted have indeed revealed the activation of some distinguishable neural structures during positive and negative emotions.

Fifth, the social environment shapes neural structures and processes, and vice versa. The handling of rat pups, for instance, alters maternal behavior toward the pups and affects the structure and reactivity of the hypothalamic pituitary adrenocortical system. These early influences on the stress-hormone system, in turn, affect these animals' reactions to stressors and their susceptibility to disease in later life. Multi-level analysis across social and neural levels made these effects apparent.

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SOCIAL NORMS. See Norms.

SOCIAL PHOBIA is an anxiety disorder characterized by extreme timidity and social inhibition. Those affected

live in continual fear of doing something that will be embarrassing or humiliating, or that others will evaluate them in some negative way. These fears result in a pattern of social avoidance and inhibition that ranges from rather specific performance anxiety to virtually all situations involving the necessity for social discourse. When the pattern of fear and anxiety is circumscribed, as in the case of speech phobia, for example, the condition is referred to as the specific subtype. When there is a pervasive pattern of fear and anxiety, the term generalized subtype is used. In clinical settings, by far the most common type seen is the generalized type. The most common distressful situation is public speaking. Other situations that sometimes elicit distress include eating, drinking, writing, or typing in front of others, and social interactions such as parties, business meetings, or one-on-one conversations. Less common situations include using public lavatories, playing golf, or walking down the aisle at church. Often, the symptomatic picture includes many of these situations. The key element for social phobia is the fear of being judged negatively by others.

It is important to distinguish between typical public speaking anxiety and social phobia. A key concept is functional impairment. That is, in order to be considered a phobia, the fear must create significant emotional distress or prevent the individual from engaging in desired activities. For example, those with typical public speaking anxiety may feel somewhat anxious prior to giving a speech or going on a job interview. However, in these cases, once the event begins, the individual's anxiety diminishes and the activity is successfully completed. Those with social phobia, however, experience severe distress, in anticipation of or during the task, sometimes to the point of being unable to complete the task or avoiding it entirely. In addition, their initial severe anxiety does not diminish even if they are able to engage in the task. Similarly, the term shy is used to describe a pattern of social timidity similar to what is seen in social phobia. The relationship of shyness to social phobia is yet to be elucidated, but it has been speculated that many, but not all, of those labeled shy would meet diagnostic criteria for social phobia.

The most recent estimates of the prevalence of social phobia indicate that the 12-month prevalence rate for social phobia is 8% with the lifetime prevalence estimated to be approximately 12%. These figures, although higher than earlier estimates, are remarkably similar to emerging worldwide data. Epidemiological data are not available for children and adolescents but estimates suggest that perhaps 5% of all youth suffer from this disorder. These figures indicate that social phobia is the most common anxiety disorder. Indeed, its prevalence rate indicates that it is second in prevalence only to substance use