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Culture and Cognitive Theory: Toward a Reformulation

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In a provocative and important recent article Anthony Marsella (1998) makes an eloquent plea for the forging of a new metadiscipline of psychology that he labels global-community psychology. Marsella argues that we need a radical rethinking of the fundamental premises of psychology, rooted as they are in Western cultural traditions. Features of an emergent global-community psychology include an emphasis on multicultural and multidisciplinary approaches to human behavior that draw attention to the importance of context and meaning in human lives. Marsella's call for a global-community psychology reflects, in part, a growing body of literature that demonstrates the importance of cultural factors in a diversity of psychological domains such as cognition, emotion, social behavior, and psychopathology.

The relationship between culture and cognition, for example, has been explored in some detail by both psychologists (e.g., Semin & Zweir, 1997; Serpell & Boykin, 1994), and anthropologists (e.g., Bloch, 1998; D'Andrade, 1995). Bartlett's (1932) seminal work on the nature of human memory demonstrated the ways in which cultural knowledge, embodied in schemas, can affect the pattern and process of memory reconstruction. More contemporary research attests to the way cultural factors can impinge on various aspects of cognition, including memory and reasoning (D'Andrade, 1995), attribution style (Morris & Peng, 1994; Semin & Zweir, 1997; Triandis, 1989), knowledge structures, (Serpell & Boykin, 1994), and value hierarchies (Smith & Schwartz, 1997).

The importance of attending to cultural variables in understanding the nature of mental disorders is also becoming increasingly apparent (Tanaka-Matsumi & Draguns, 1997; Thakker & Ward, 1998). For example, the underlying philosophy of the universalist approach to the classification of psychopathology offered by the DSM-IV has been called into question. More specifically, the view entrenched in the biomedical model, that mental disorders are the same across cultures, cannot be sustained (Thakker & Ward, 1998). Presentation of major disorders such as depression and schizophrenia have been shown to vary significantly across cultures (see for example, Draguns, 1995; Kleinman, 1988; Westermeyer, 1989). Furthermore, the existence of a range of culture bound disorders (although diagnostically somewhat controversial), suggests that a satisfactory understanding of mental disorder must take into account the significance of cultural particulars (Kirmayer, 1991). Because cognitive factors often are viewed as central to the understanding of the diagnosis, etiology, and treatment of many mental disorders (e.g., Teasdale & Barnard, 1993; Williams, Watts, MacLeod, & Matthews, 1997), there is much scope for an exploration of the various relations that occur between culture, cognition, and psychopathology, as contributors to this volume demonstrate.

In this chapter, we aim to draw on and extend the implications of the body of research, briefly outlined above, in the context of a dynamic model of mental disorder; one that attempts to do justice to the rich interplay between cognitive, cultural, and biological variables. First, we outline a theoretical perspective of the relations between culture, cognition, and biology presented in the context of a domain specific view of human cognitive architecture. Second, we illustrate the relationship between culture, cognition, and biology in the domain of psychopathology, drawing on the example of anxiety disorder. Third, we present a model of mental disorder developed by Thakker, Ward, & Strongman (in press) that addresses the relationships between culture, cognition, and biology in the context of psychopathology. We conclude with some thoughts on the role of interdisciplinary integration in the domain of psychopathology.

THE RELATIONSHIPS BETWEEN CULTURE, COGNITION, AND BIOLOGY

"*What we are* is very much a matter of what culture has made us" suggests the philosopher Daniel Dennett (1995, p. 340) in his recent book *Darwin's Dangerous Idea*. It is clear, as Dennett indicates, that people are influenced in a myriad of ways by the culture in which they are embedded. Belief systems or worldviews vary considerably across cultures, with potentially profound implications for human thought and behavior. The striking pattern of within-culture similarities and between-culture differences in human behavior is testimony to the role of culturally acquired patterns of beliefs, desires, and values. However, it is also clear that there are substantial degrees of similarity between peoples of different cultures, regardless of the specific patterns of beliefs and values that occur. Indeed, it has been argued that anthropologists and crosscultural psychologists

have focused predominantly on patterns of differences between cultures while neglecting relevant underlying similarities (Brown, 1991).

The question of the nature and degree of crosscultural differences and, more generally, the extent or role that culture plays in human development, have been perennial themes in psychology, anthropology, and sociology. The well-worn distinctions between universalism and relativism and between culture and nature reflect this enduring interest. Focusing more specifically on the relations between culture and cognition we can make a distinction between weak and strong formulations of cultural cognition. The weak version of the relationship between culture and cognition concedes that the contents of cognition are often highly variable across different cultures, however, the processes that underlie these variations are themselves crossculturally invariant.

Thus, for example, although language varies in its surface features in different cultures, this variety is underpinned by universal psychological mechanisms that generate universal grammars (Chomsky, 1975; Pinker, 1994). Empirical support for this weak version of cultural cognition is provided by various lines of research. For example, living-kind classification, the natural taxonomies of flora and fauna, shows strong commonalities across all cultures although the specific contents of the classification scheme are naturally variable (Berlin, 1978; Atran, 1990). Specifically, there is a crosscultural tendency to classify living-kind entities in a hierarchical fashion and to treat biological species in essentialist terms. Of course, the specific animals and plants that people in different cultures treat in such fashions will be determined by local biogeographical features.

In contrast to the weak version of cultural cognition, advocates of the strong version maintain that not only does the content of cognition vary across cultures, but so too does the very nature of cognitive processes. Culture here can be seen to radically affect the basic nature of cognitive and neural architecture. As the psychologist Merlin Donald (1991, p. 14) suggests, "Cultures restructure the human mind, not only in terms of its specific contents, which are obviously culture bound, but also in terms of its fundamental neurological organization." An example of such culture-based effects on neural organization is provided by Jovanovski (1995). According to Jovanovski, people raised in urban areas respond differently to visual tests than people who have grown up in rural areas. The former respond more readily to angular and structured stimuli whereas the latter show more sensitivity to less regular and perhaps more natural configurations. This finding is explained as the result of differential deterioration of specific clusters of cells in the neural cortex during development. Jovanovski (1995) concludes on the basis of this research that "if cultural standards, impressions, and experiences can influence no less than our visual tendencies, then, indeed, we could hardly convincingly deny that those same social characteristics can and do give rise to context-identifiable ideas, interpretations, worries, phobias and obsessions" (p. 295).

How are we to reconcile these two versions of cultural cognition? Should we accept the idea that cultures have the power to radically restructure the fundamental organization of the human mind, or is the influence of culture on

cognition a more moderate one? This issue is crucial in the present context, for it lies at the heart of understanding how we should adequately conceptualize the importance of cultural factors in understanding the nature of mental disorder. We will argue that a richer understanding of the relationship between culture and cognition can be fruitfully obtained by adopting a domain specific or modular view of human cognition. Moreover, we argue that a consideration of biological factors, specifically evolutionary considerations, can further our understanding of the culture-cognition interface. Finally, we suggest that we must adopt an approach to human cognition that fully realizes the dynamic reciprocal relationship between mind and world. These three themes reflect important general trends in cognitive theory. In what follows we address each of these points in turn, before combining the central ideas in a way that helps us further our understanding of both cognitive universality and cultural diversity.

THE DECLINE OF INDIVIDUALISM IN PSYCHOLOGY

In a comprehensive review of historical developments in cognitive theory, Bechtel, Abrahamsen, and Graham (1998), note an increasing shift away from approaches to cognition that limit themselves to addressing information processing within the mind, toward a recognition of the importance of the environmental embeddedness of human cognitive systems. For a considerable period of time, mainstream cognitive psychologists have directed their intellectual labors toward elucidating the internal systems of information processing within the human mind via often highly artificial experimental protocols. This approach, by itself, however, has led to an impoverished view of the human mind; one that has failed to do full justice to the real-world nature of human cognition.

This individualist research program in cognitive psychology, which has been labeled methodological solipsism by the philosopher Jerry Fodor (1980), has drawn a variety of criticisms from a diverse range of sources. Philosophers of various theoretical persuasions (e.g., Burge, 1986; Kitcher, 1985; Millikan, 1993) have convincingly argued that the nature of mental states can only be fully understood by reference to the external environment. In a similar vein, researchers in cognitive psychology and artificial intelligence have begun to direct their attention to the situated nature of human cognition (e.g., Clark, 1997) as it occurs in real-world environments (see Hutchins, 1995).

Cognitive anthropologists (e.g., D'Andrade, 1995) have also drawn attention to the way in which environmental factors, specifically those related to the cultural environment, can exert important influences on the nature of cognition. D'Andrade (1995) emphasizes that we should conceptualize the relationship between culture and cognition as essentially reciprocal in nature: the psyche is influenced by cultural representations, which themselves are selected and modified in terms of the capacities of the human cognitive system.

THE MODULARITY OF MIND

Another important development in cognitive theory is the growing acceptance of some version of the modularity thesis of human cognitive architecture (Appelbaum, 1998). Made popular in part by Fodor (1983), proponents of the modularity thesis argue that human cognition can be best characterized as containing many distinct subsystems that are dedicated to specific functions. Modular, or domain specific, approaches to the mind reject the view that knowledge acquisition is driven by a few content-independent domain general processes. Instead, the human mind is replete with a multiplicity of content specific mechanisms dedicated to processing specific classes of information.

The modularity thesis has received a growing body of empirical support. Specifically, there is evidence for modular mechanisms dedicated to various cognitive domains such as language (Chomsky, 1975; Pinker, 1994), biological classification (Atran, 1990; Berlin, 1978), mental state attribution (Baron-Cohen, 1995; Leslie, 1987), object perception (Spelke, 1988), and numeracy (Wynn, 1992), among others (see Hirschfeld & Gelman, 1994, for a good review). However, there still remains considerable debate over many aspects of modularity. It is unclear just how many modules humans possess, how best to characterize them, what their relationships are to one another, and so forth (see Karmiloff-Smith, 1992, and Samuels, 1998, for interesting alternatives). We will not address these issues here. However, it is likely that the range of domain specific mechanisms that humans possess is likely to be supplemented by some more domain general processes, and that there are rich connections between different modules (conceptual ones at least) that give rise to the creative and flexible nature of human cognition.

THE ROLE OF EVOLUTIONARY THEORY

The importance of evolutionary theory for understanding the nature of human mentation and behavior has also received renewed interest in recent times (e.g., Barkow, Cosmides, & Tooby, 1992; Buss, 1995; Pinker, 1997). Evolutionary psychologists argue that to understand how the mind works we must pay due attention to the problems that the mind has been designed to solve. The mind, it is suggested, is as much a product of evolution as is the body, and should be studied using similar methods. Although we reject the claim that evolutionary psychology provides a revolutionary new paradigm for psychological science (e.g., Buss, 1995), we would argue that questions of evolutionary origin are certainly relevant to our understanding of human cognition and its relation to culture.

An evolutionary approach naturally meshes with both a domain specific view of mind and an anti-individualist approach to human cognition. Evolutionary psychologists (e.g., Cosmides & Tooby, 1994; Pinker, 1997) argue that cognitive modules are best characterized as evolved mechanisms with distinct

phylogenetic histories. A general purpose view of cognition, it is argued, is biologically unfeasible, because what counts as adaptive behavior differs significantly across different domains. Moreover, there must be some way in which learning is framed, or constrained, in order to direct the organism toward the narrow envelope of contextually relevant behavior. Furthermore, from an evolutionary point of view, cognition must be embedded in the real world. That is, for adaptive behavior to be generated there must be rich, reciprocal relations between the mind and the environment, including the social environment,

EXPLAINING CULTURAL DIVERSITY

At first glance, a modular theory of mind, coupled with an evolutionary perspective, may seem unable to do justice to an understanding of the role of culture in cognition, and the generation of cultural diversity. However, if we accept the thoroughly epigenetic character of human cognitive development, cultural diversity can be viewed as a natural consequence of an evolved, domain specific mind embedded in a rich social and cultural environment. Cultural learning, according to this perspective, is not a passive domain general affair (cultures do not entirely determine the nature of thought), but rather is best thought of as active, directed, and domain specific in character. The view we adopt here is nicely summarized by E. O. Wilson (1998) in his recent book *Consilience*:

Culture is created by the communal mind, and each mind in turn is the product of the genetically structured human brain. Genes and culture are therefore inseparably linked. But the linkage is flexible, to a degree still mostly unmeasured. The linkage is also tortuous: Genes prescribe epigenetic rules, which are the neural pathways and regularities in cognitive development by which the individual mind assembles itself. The mind grows from birth to death by absorbing parts of the existing culture available to it, with selections guided through the epigenetic rules inherited by the individual brain. (p. 127)

To understand how cultural diversity is generated from this perspective, it is useful to consider the important distinctions made by the cognitive anthropologist Dan Sperber (1996) between proper and actual domains. The proper domain of some conceptual module is all the information in the organism's environment that it is the module's biological function to process; the actual domain is all the information that satisfies the module's input conditions. For example, the living-kind module alluded to earlier has been designed to process information about biological species that one encounters in the environment. However, the actual domain of this module will include information about all sorts of other entities such as dinosaurs and dragons, which we have had no direct experience with at all. In a similar fashion, our theory-of-mind module, designed to generate causal explanations of human behavior in terms of intentional states (beliefs, desires, and so forth), is employed to explain the behavior of other animals, and even nonbiological entities such as weather systems and automobiles. In these cases,

what remains invariant across individuals are the underlying cognitive operations, while content is free to change depending on specific local details.

Cultural cognition, therefore, can be seen to be generated from an active process of domain specific learning across varying cultural contexts. Although innate knowledge structures guide the organisms to certain classes of information in the environment, culture strongly influences the subsequent form that the acquired knowledge will take. As Gardner (1983, 1985) has argued, modules undergo lengthy developmental constructions and thus are open to potentially strong influences from social and cultural factors.

The perspective on the human mind we have presented in this section thus far suggests that the weak version of the cultural cognition hypothesis is both true and potentially highly relevant in understanding human behavior. Although learning, including cultural learning, is likely to some extent to be constrained along domain specific lines, there are substantial degrees of freedom available for the generation of culturally unique patterns of representations. Moreover, the way various systems of information are integrated in the mind provides further avenues for cultural differentiation. We remain agnostic, however, on the strong version of cultural cognition. Although it is unlikely that cultures radically alter fundamental cognitive processes within domains, there is still room for substantial cognitive reorganization on the basis of specific patterns of development. In evaluating the plausibility of the strong hypothesis on cultural cognition, it is best to proceed on a case-by-case basis.

In the next section we explore some of the implications of the framework presented above in the context of psychopathology. More specifically, we demonstrate the interplay of cognitive, cultural, and biological variables in the context of anxiety disorders.

CULTURE AND COGNITION IN THE CONTEXT OF PSYCHOPATHOLOGY: ANXIETY DISORDERS

Anxiety disorders provide a potentially fruitful example for illustrating the interrelationships that occur between cognitive, cultural, and evolutionary factors in the context of mental disorder. Research on anxiety disorders has often directed attention to the role of cognitive processing mechanisms (e.g., Beck & Emery, 1985; Eysenck, 1997; Mathews & MacLeod, 1994; Williams et al., 1997) as well as invoking the potentially functional or adaptive role that anxiety has to play (e.g., Beck & Emery, 1985; Marks, 1987; Marks & Nesse, 1994). Crosscultural investigations have also revealed considerable cultural patterning in the manifestation of anxiety disorders, as well as the occurrence of specific culture bound instances of anxiety related disturbances (e.g., Al-Issa & Oudji, 1998; Kirmayer, 1991; Levine & Gaw, 1995).

Many important approaches to anxiety have adopted a cognitive perspective. For example, Beck and Emery (1985) have argued that cognitive factors are

central to the etiology and maintenance of a wide range of anxiety disorders. Beck and Emery emphasize the role that schemata—cognitive structures that influence a person's appraisals and interpretations of experiences—have to play in relevant information processing tasks. Schemata direct processing resources toward certain aspects of the situation that they are congruent with. The schemata of anxious individuals are characterized by themes of danger, vulnerability, and threat. Thus a range of cognitive distortions and biases are generated in anxious individuals that influence how they experience events and that feed back into their cognitive and emotional states.

Other important theoretical approaches to anxiety (e.g., Eysenck, 1997; Williams et al., 1997) have also adopted a cognitive perspective. Although to some extent similar to the approach pursued by Beck and Emery (1985), both Eysenck and Williams et al. have extended the work of Beck and Emery by highlighting the importance of attending to multiple levels of processing in the context of anxiety disorders. The distinction between perceptual and conceptual processing favored by Williams et al. (1997), for example, is helpful in understanding the nature of unconscious attentional mechanisms that appear to be relevant in the generation of anxiety states. What all the cognitive approaches to anxiety disorders emphasize, however, is the importance of examining the nature of specific attentional and interpretive biases.

The occurrence of such processing biases in anxious individuals has received considerable empirical support from a diverse range of experimental studies (for reviews see Mathews & MacLeod, 1994; Mineka & Gilboa, 1998; Mineka & Sutton, 1992). The general finding from this body of literature is that anxiety is closely associated with typically automatic preconscious biases for threatening information. Some kind of attentional biases seem to exist in all anxiety disorders. Cognitive biases and distortions have been found in patients with social phobia (Foa, Franklin, Perry & Herbert, 1996; Wells & Clark, 1997), panic disorder (Khawaja & Oei, 1998), post-traumatic stress disorder (Cassidy, McNally & Zeitlin, 1992), and specific phobias (Watts, McKenna, Sharrock & Trezise, 1986). Such biases have been shown to occur entirely unconsciously (e.g., Ohman & Soares, 1994), although for some anxiety disorders, such as social phobia, conscious cognitive distortions are also implicated (Wells & Clark, 1997).

The specific pattern of attentional and interpretative biases found in anxiety disorders, along with the nature of the stimuli that elicit them, has led a number of researchers to adopt an evolutionary framework (e.g., Baumeister & Tice, 1990; Beck & Emery, 1985; Marks, 1987; Marks & Nesse, 1994). Broadly speaking, advocates of evolutionary approaches suggest that anxiety in general is adaptive, because it directs cognitive resources and motivates behavior in a manner that is likely to reduce the possibility of harm and hence increase reproductive success. Anxiety disorders, from this perspective, simply reflect exaggerations of various subtypes of normal anxiety (Marks & Nesse, 1994). Marks and Nesse stress the relative domain specificity of anxiety responses; subtypes of anxiety evolved to give selective advantages to particular kinds of danger. These

subtypes, however, are only partly differentiated because different threats often co-occur, and similar responses to diverse stimuli are sometimes indicated.

The early work of Marks (1969) and Seligman (1970) on the development of phobias had implicated the role of evolutionarily prepared biases in both attention and learning. Marks argued that humans are more likely to attend to phylogenetically relevant stimuli in the world, a phenomenon he labeled *prepotency*. In a similar fashion, Seligman argued that humans are more likely to learn fear associations to some classes of stimuli but not to others; that is, humans are prepared to develop fears to objects and events in the world that have important consequences for survival and reproduction. This approach to the development of fears and phobias helps to explain the nonrandom distribution of such fears. As Marks (1987) suggests, humans are more likely to develop phobias to objects and events that would have posed specific threats to reproductive success in ancestral environments. Thus fear of spiders, snakes, heights, social situations, enclosed spaces, and so forth are more prevalent than are fears of dangerous but novel stimuli such as cars and electric outlets. An evolutionary approach also helps to explain the ontogenetic development of such fears and phobias. For example, a fear of heights appears in infants immediately prior to the average age that they begin crawling and intensifies with crawling experience. Similarly, a fear of animals emerges at about age two—an age when infants begin to explore further afield (see Ost, 1987, for details of the ages when different phobias typically emerge). To summarize, evolutionary approaches to anxiety disorders emphasize the role of innate domain specific mechanisms that direct attention (often preconsciously—see Ohman, 1997) toward certain kinds of stimuli in the world: ones that have phylogenetic relevance.

Evolutionary approaches to anxiety disorders, however, have not gone without criticism (e.g., Davey, 1995; McNally, 1987; Merckelbach & de Jong, 1997). Questions have been asked regarding the putative adaptive advantages of specific phobias, such as blood injury phobia (Page, 1994), and their have been critiques of more general approaches such as Seligman's preparedness theory (McNally, 1987; Davey, 1995). The details of these criticisms will not concern us here, however. What emerges as prominent in the challenges to evolutionary approaches is the role that cultural factors have to play in the nature of anxiety disorders. Both Davey (1995) and Merckelbach and de Jong (1997) argue that variations in social taboos, culturally variable patterns of beliefs, locally relevant information about potential dangers, and so forth, exert potentially powerful effects on the development of specific fears. Cultural schemata are conceptualized as providing strong top-down influences on the cognitive mechanisms that direct attention toward relevant stimuli in the environment. Hence it is suggested that it may be cultural, rather than evolutionary, factors that generate expectancy biases regarding the sorts of objects and situations toward which people develop fears and phobias.

Crosscultural approaches to anxiety disorders suggest that they are a universal phenomenon. However, the events that precipitate anxiety are strongly

influenced by a diverse range of cultural factors (Aderibigbe & Pandurangi, 1995; Al-Issa & Oudji, 1998; Levine & Gaw, 1995). Al-Issa and Oudji (1998, p. 144), for example, in a recent review of culture and anxiety, conclude: "Epidemiological data suggests [sic] that anxiety disorders are universal. However, the meaning of the concept of anxiety and of its manifestations seem[s] to vary from one culture to another." The existence of a number of culture bound anxiety syndromes serves to underscore this conclusion. Some examples of such culture bound disorders include *ataque de nervios*, *dhat*, *kayak angst*, *brain fog*, *koro*, and *taijin kyofusho* (Levine & Gaw, 1995).

Koro, to take one example, provides an instructive illustration of the role that cultural beliefs have to play in the manifestation of anxiety. *Koro* occurs in a diverse range of cultures but is most prominent in India, Southeast Asia, and China (Aderibigbe & Pandurangi, 1995). *Koro* is characterized by an extreme fear that the penis is retracting into the abdomen and will eventually cause death. Individuals with this fear experience extreme panic and terror, often accompanied with heart palpitations, outbursts of sweating, and catastrophic cognitions relating to sexual functioning and the sexual organs (Levine & Gaw, 1995). *Koro* appears to be associated with a specific pattern of beliefs regarding the existence of *koro* itself, as well as more general beliefs and values centered on micturation, masturbation, and sexual functioning. The role of beliefs in *koro* itself in the etiology of this disorder is clearly illustrated in the incidence of *koro* epidemics, such as the one that occurred in Guangdong, China (Tseng, Mo, Jing, Li, Ou, Chen & Jiang, 1988). *Koro* has, however, been reported in individuals with no prior knowledge of the disorder. For example, Chowdhury & Rajbhandri (1995) report a case of *koro* in a Nepali patient, which in the absence of any preexisting beliefs about *koro*, seemed to be related to more specific beliefs about the fear of semen depletion and guilt associated with masturbation. A general model of *koro* proposed by Simons (1985) suggests that endemic beliefs about *koro* (and general beliefs about sexual functions, seminal fluid, and so forth) lead to a greater monitoring and awareness of penile states, which leads in turn to anxiety if the penis appears to be smaller than usual. This anxiety, by reducing blood flow to the penis, increases penile shrinkage, leading to a feedback loop of mounting anxiety. This feedback loop is exacerbated when a *koro* epidemic is believed to be occurring.

The example of *koro* and other such culture bound disorders seems to be problematic from an evolutionary perspective. It is hard to see how catastrophic cognitions and attentional biases directed at penile states is likely to further reproductive goals (although no doubt some such story could be concocted). Moreover, the culture specific nature of *koro* seems to implicate the role of more general and culturally idiosyncratic patterns of belief. However, we argue that the adaptive nature of anxiety has both more general and specific characteristics (see Marks & Nesse, 1994, for a similar perspective), and nicely illustrates the complementary role of evolutionary and cultural factors. Because what is harmful and threatening in the environment is, in some cases, specific to given times

and locations, some learning mechanisms implicated in the development of fears are relatively content free. That is, the learning mechanisms are directed toward what other individuals in the community find aversive or threatening; subsequently, some fears will be idiosyncratic to particular cultural or historical contexts. In addition, other kinds of threats are likely to have been more enduring in nature. Thus fears of social exclusion, certain kinds of animals, heights, strangers, and so forth are representative of recurrent threats to survival and reproductive success. More domain specific mechanisms are implicated in the generation of fears in such contexts. Of course, such specific fears can still be exacerbated, attenuated, or altered in various ways depending on specific cultural and developmental contexts. Thus the attentional and interpretive biases found in the context of anxiety disorders reflects both phylogenetically and ontogenetically mediated influences that are directed toward specific objects and events in the physical and cultural environment.

The dynamic, interactive, role that biological and cultural factors have to play in the context of anxiety disorders is nicely illustrated in the case of social phobias. With a lifetime prevalence of eleven and fifteen percent for men and women, respectively, social phobias are one of the more common anxiety disorders that clinicians are presented with (Kessler, McGonagle, Shanyang, Nelson, Hughes, Eshleman, Wittchen, & Kendler, 1994). Cognitive approaches to social phobia (e.g., Wells & Clark, 1997) stress the important role that various cognitive distortions, especially pertaining to the self, have to play in the etiology and maintenance of this disorder. Various lines of research indicate that socially anxious individuals engage in excessive degrees of self-focused processing in social situations (e.g., Hartman, 1983; Hope, Rapee, Heimberg, & Dombeck, 1990). Social phobics are also more likely to choose negative interpretations of ambiguous social situations (Stopa & Clark, 1993) and overestimate the probability that negative social events are likely to occur (Foa et al., 1996). These distortions tend to be domain specific in character, only occurring in the context of social situations.

Fear of social exclusion, argues Baumeister and Tice (1990), is one of the major causes of anxiety and is the essential factor underlying the fears exhibited in social phobics. It is suggested that the desire for interpersonal belongingness is a fundamental human motive (Baumeister & Leary, 1995), one that reflects an evolutionary history of adaptation to social life. Threats of social exclusion generate anxiety, as such indications may be symptomatic of rejection from one's group, which in ancestral environments would have entailed substantial costs in fitness. Baumeister and Tice (1990) indicate that such threats of social exclusion are perceived as threats to the self. The self has the important function of relating a person to their social group. Self-esteem, therefore, may function as a proxy measure of one's interpersonal status (Leary, Tambor, Terdal, & Downs, 1995). Individuals with social phobia represent cases where a concern for social inclusion, coupled with relatively low self-esteem, generates an excessive monitoring of one's behavior in social contexts, leading to negative evaluations of social performance and the various symptom patterns characteristic of social phobia.

The important role of the self in the generation of social anxiety suggests that social phobias should manifest in different ways across cultures. This follows from a consideration of the way that the construction of the self varies depending on the specific cultural contexts (Markus & Kitayama, 1991; Markus, Mullaly, & Kitayama, 1997; Triandis, 1989). Specifically, whereas in Western cultures the self is conceptualized as an independent entity, in other collectivist cultures, such as Japan, the self is an interdependent construct, one that draws its meaning from the context of specific, often highly homogenous social groups. These differences imply different pathways for the generation of self-esteem. As Baumeister and Tice (1990, p. 178) suggest: "... high self-esteem arises from believing that one possesses the traits that should maximize one's chances for being included in social groups."

In the context of Western culture the characteristics indicative of high self-esteem and social inclusion include the maintenance of independence, material success, and self-enhancement. By contrast, collectivist cultures emphasize that a positive view of self is intimately linked to the appropriate adjustment of oneself so as to fit in with others in interpersonal situations. These crosscultural differences in the construction of self and corresponding differences in the values associated with social inclusion, should generate variations in the contexts that generate social anxiety. Specifically, in individualistic Western cultures, fear of being negatively evaluated by others should be a primary social concern, whereas in collectivist cultures, fear of not "fitting in" or of giving offense should be relatively more important in social situations.

The existence of the culture bound syndrome *taijin kyofusho* and the way it contrasts with social phobia as it is manifest in Western cultures is an instructive illustration of some of the differences outlined above. *Taijin kyofusho* is a common disorder in Japan and is characterized by an excessive concern with offending others by inappropriate social behavior. Typical concerns include fear of embarrassing others by blushing, generating offensive body odors, or having unpleasant facial expressions (Kirmayer, 1991). The unique pattern of symptoms found in *taijin kyofusho* are linked to the importance of certain values in Japanese culture such as those related to the importance of acting appropriately in front of other individuals. The complex demands of intricately structured status hierarchies in Japan further contribute to the etiology and maintenance of this disorder (Kirmayer, 1991). The development of an interdependent view of self in Japan brings to the fore concerns related to maintaining the appropriate pattern of social behavior in interpersonal contexts.

In summary, universal concern with social inclusion and belongingness to one's social group leads, in some individuals, to social anxiety when such inclusion is perceived to be threatened. The mechanisms that are implicated in the evaluation of one's social acceptance are intricately linked to the construction of self. Following Baumeister and Tice (1990), we suggest that the self can be viewed as an adaptation to social life that functions to provide information regarding one's relative position within the social group. Because the nature of

the self varies across cultures, the sorts of situations that generate threats to the self will also manifest cultural variability. These differences will generate variations in the etiology and symptomology of socially related anxiety disorders.

Thus innately prepared, domain specific fears can generate cultural diversity in the manifestation of specific disorders, depending on specific developmental pathways. In accordance with this view, a disorder such as *taijin kyofusho* can be conceptualized as being bioculturally constructed. More generally, a view of cognition (itself central to an understanding of a diverse range of mental disorders) that emphasizes the centrality of context, evolutionary forces, and domain specificity can help us understand both the ubiquity of anxiety disorders as well as the specific patterns of cultural differences that are found. The relative explanatory role that evolutionary or cultural factors may play in the context of anxiety disorders can be assessed only on a case-by-case basis. However, we wish to highlight here that our understanding of anxiety disorders, and indeed mental disorders in general, is advanced by considering the interplay of multiple factors, including those of a cognitive, cultural, and biological nature. A model of mental disorder, which aims to capture this interplay, is presented in the following section.

Cognitive Theory in Context: A Model of Mental Disorder

The examples presented above suggest that in the context of psychopathology there are particular aspects of cognition that vary across cultures. Cognitive variability is linked on the one hand to specific biological aspects of cognitive development, and on the other to patterns of cultural diversity. In order to fully understand the relationship between culture and cognition in the context of psychopathology, it is useful to develop a visual conceptualization of the interrelationships between these variables. Figure 14.1 depicts a model that has been used elsewhere to define mental disorder (Thakker, Ward, & Strongman, in press). However, it is equally useful as a means for conceptualizing the nature of cognition and the connection between cognition and other variables that are relevant to psychopathology. Arguably, an adequate theory of cognition must look not only at "core" cognitive components, but also at the forces that act on those components, such as sociocultural and biological factors. Also relevant are factors that are unique to the individual, who may be referred to as the "self."

According to this view, then, cognition is part of a system that has four main components: (1) psychological components, which are the mental processes that are seen as central to cognition, and in relation to which cognition is typically defined; (2) biological components, which are the "hardware" underlying the mental processes; biological components can also be thought of in ultimate terms in respect to evolutionary adaptation and phylogenetic history; (3) sociocultural variables, which constitute the social environment in which the person exists; and (4) the self, which is the individual element or, more precisely, the unique

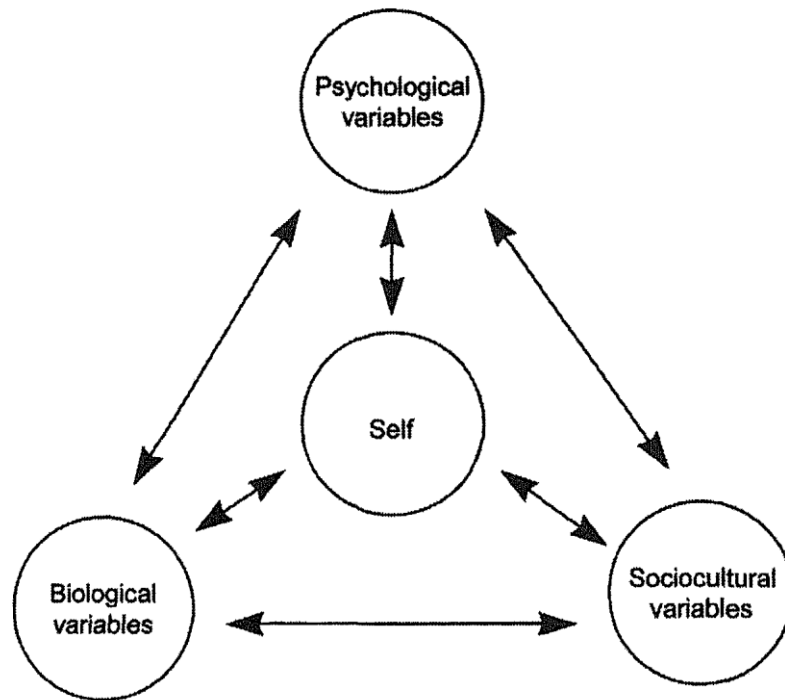


Figure 14.1. A model of mental disorder.

confluence of all the components. The placing of the self in the center of the model emphasizes the very significant and dynamic impact that the self has on all other factors. As indicated by the arrows in the representation, all the variables interact, sometimes directly and sometimes via the self. However, the self as an active purveyor and processor of meaning is seen as critical in the manifestation of mental disorder.

While, as mentioned, this model was previously presented simply as a definition of mental disorder, it is wholly pertinent to the present discussion insofar as it provides a formulation of the relationship between culture and cognition in the context of psychopathology. In terms of understanding mental disorders—especially their etiologies and crosscultural determinants—it is advantageous to analyze cognition in relation to other significant variables with which cognition interacts. However, although this model has four components, each of which is proposed to be essential to understanding psychopathology, it is theorized (Thakker, Ward, & Strongman, in press) that the extent of involvement of each component may vary across disorders. What is suggested, then, is that some disorders may have a strong biological component, whereas others may have a stronger cultural component. The key point is that different disorders are seen as

having different etiological pathways, not simply in terms of the precise cause but also in terms of the general type of cause.

A useful distinction to employ in this context is the one drawn by the philosopher Peter Railton (1981) between relevance and salience. Railton argues that we should be striving for ideally complete explanations in science, ones that can elaborate the full panoply of causal (and noncausal) connections that obtain between phenomena. Such an explanation, however, is unlikely to be forthcoming. Individual scientists labor, instead, on illuminating specific aspects of the ideal causal story, and are strongly influenced by pragmatic concerns. The complete causal story determines what is relevant in a particular case, while salience is determined on a more individual basis. Thus in the context of mental disorder, aspects of biology, cognition, culture, and self are all relevant in furthering our understanding of all mental disorders. However, some kinds of variables will be more salient, depending on the disorder under consideration.

For example, in the case of a disorder such as dementia, although it may have important cognitive and cultural aspects, biological variables are probably most salient, in terms of specific patterns of neural degeneration in the brain. Autism, on the other hand, is perhaps most saliently conceptualized as a cognitive disorder, one that results as the malfunction to the "theory-of-mind module" (Baron-Cohen, 1995). In contrast, the Japanese culture bound syndrome of *taijin kyofusho* (Kirmayer, 1991) suggests the salience of variables that focus on the relationship between culture and the self. Patients with *taijin kyofusho*, as outlined earlier, demonstrate an extreme form of social phobia characterized by an excessive concern with offending others by inappropriate social behavior. It is likely that cultural variables relating to the inappropriateness of emotional display and the interdependence of self, characteristic of collectivist cultures such as Japan, are predominantly responsible for the specific nature of this disorder. Of course the more general fear of social exclusion is probably universal in nature and may reflect the presence of mechanisms that have evolved to respond to more enduring and ubiquitous threats to survival; so other sorts of variables are relevant in this context, but are arguably not as salient.

One important aspect of the model presented here is that it views psychopathology as occurring within a context. Behavior is mediated by beliefs and values (that is, psychological or cognitive variables) that are influenced to various degrees by cultural circumstances, depending on the specific psychological domain in question. The breakdown of behavior also has similar constraints. These constraints work in two ways. First, behavior is influenced by implicit rules governing that which is considered normal; even when people are mentally unwell they still will attempt to conform to the expectations of those around them. Second, behavior is influenced by folk conceptions and folk categories of mental disorder; people who are mentally ill will be affected by their own ideas of mental illness and by what they believe is typical of people who are "mad" or who have "lost their minds." The impact of cultural beliefs and values on the nature of mental disorders can be assessed only on a case-by-case basis, and will

depend in part on the cognitive domains under consideration. It is clear, however, that any fully realized theory of mental disorder must pay due attention to the influence of cultural factors on cognition, biology, and the self.

CONCLUSION

In this chapter we have considered the importance of cognitive theory for understanding the way that cultural variables impact on the nature of psychopathology. We suggest that a view of cognition informed by a domain specific evolutionary approach can prove fruitful in understanding the relationships that exist between culture and cognition and thus between culture and mental disorder. Because, regardless of domain specific constraints, cognitive development is thoroughly epigenetic in nature, there is substantial room for the generation of cultural diversity at the cognitive level, which has important implications for the nature of self and the etiology and presentation of psychiatric disorders.

Marsella (1998), in his plea for a global-community psychology, embraces the values of theoretical pluralism, cultural diversity, and interdisciplinary intellectual endeavor. We concur with these values and suggest that the plenitude of theories of mental disorder pitched at multiple levels of analysis needs to develop in a way that fosters mutual coherence between theories. Thus our best cognitive theories of mental disorder should be consistent with and informed by our best biological and cultural theories, and vice versa. Furthermore, our efforts at theory construction in the field of mental disorder should be informed by the efforts of mainstream psychologists working in a variety of domains. Shweder and Sullivan (1993, p. 517) in their review of cultural psychology conclude by suggesting that "The 1990's is the decade of ethnicity. It should also be the decade when anthropologists and psychologists (and linguists and philosophers) unite to deepen our understanding of the varieties of normal consciousness." We endorse these general ideas, but would add (now that the decade has drawn to an end), that a richer understanding of *abnormal* psychological processes is similarly advanced by considered crossdisciplinary investigations.

REFERENCES

- Aderibigbe, Y. A., & Pandurangi, A. K. (1995). The neglect of culture in psychiatric nosology: The case of culture bound syndromes. *International Journal of Social Psychiatry, 41*, 235-241.
- Al-Issa, I., & Oudji, S. (1998). Culture and anxiety disorders. In S. S. Kazarian and D. R. Evans (Eds.), *Cultural clinical psychology: Theory, research, and practice*. (pp. 127-152). New York: Oxford University Press.
- Appelbaum, I. (1998). Modularity. In W. Bechtel & G. Graham (Eds.), *A companion to cognitive science* (pp. 625-636). Oxford: Basil Blackwell
- Atran, S. (1990). *Cognitive foundations of natural history: Towards an anthropology of science*. Cambridge, UK: Cambridge University Press.

- Barkow, J., Cosmides, L., & Tooby, J. (Eds.). (1992). *The adapted mind: Evolutionary psychology and the generation of culture*. New York: Oxford University Press.
- Baron-Cohen, S. (1995). *Mindblindness: An essay on autism and theory of mind*. Cambridge, MA: MIT press.
- Bartlett, F. C. (1932). *Remembering: A study in experimental and social psychology*. Cambridge, UK: Cambridge University Press.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*, 497-529.
- Baumeister, R. F., & Tice, D. M. (1990). Anxiety and social exclusion. *Journal of Social and Clinical Psychology*, *9*, 165-195.
- Bechtel, W., Abrahamsen, A., & Graham, G. (1998). The life of cognitive science. In W. Bechtel & G. Graham (Eds.), *A companion to cognitive science* (pp. 1-105). Oxford: Basil Blackwell.
- Beck, A. T., & Emery, G. (1985). *Anxiety disorders and phobias: A cognitive perspective*. New York: Basic books.
- Berlin, B. (1978). Ethnobiological classification. In E. Rosch & B. Lloyd (Eds.), *Cognition and categorization* (pp. 9-26). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Bloch, M. E. F. (1998). *How we think they think: Anthropological approaches to cognition, memory, and literacy*. Boulder, CO: Westview Press.
- Brown, D. E. (1991). *Human universals*. New York: McGraw-Hill.
- Burge, T. (1986). Individualism and psychology. *The Philosophical Review*, *95*, 3-46.
- Buss, D. M. (1995). Evolutionary psychology: A new paradigm for psychological science. *Psychological Inquiry*, *6*, 1-30.
- Cassiday, K. L., McNally, R. J., & Zeitlin, S. B. (1992). Cognitive processing of trauma cues in rape victims with post-traumatic stress disorder. *Cognitive Therapy and Research*, *16*, 283-295.
- Chomsky, N. (1975). *Reflections on language*. London: Pantheon.
- Chowdhury, A. N., & Rajbhandri, K. C. (1995). Koro with depression in Nepal. *Transcultural Psychiatric Research Review*, *32*, 87-90.
- Clark, A. (1997). *Being there: Putting brain, body and world together again*. Cambridge, MA: MIT Press.
- Cosmides, L., & Tooby, J. (1994). Origins of domain specificity: The evolution of functional organization. In L. A. Hirschfeld, & S. A. Gelman (Eds.), *Mapping the mind: Domain specificity in cognition and culture* (pp. 85-116). Cambridge, UK: Cambridge University Press.
- D'Andrade, R. (1995). *The development of cognitive anthropology*. Cambridge, UK: Cambridge University Press.
- Davey, G. C. L. (1995). Preparedness and phobias: Specific evolved associations or a generalized expectancy bias? *Behavioral and Brain Sciences*, *18*, 289-325.
- Dennett, D. C. (1995). *Darwin's dangerous idea: Evolution and the meanings of life*. New York: Simon & Schuster.
- Donald, M. (1991). *Origins of the modern mind: Three stages in the evolution of culture and cognition*. Cambridge, MA: Harvard University Press.
- Draguns, J. G. (1995). Cultural influences upon psychopathology: Clinical and practical implications. In A. Bergman & J. Fish (Eds.), *Special issue: Multicultural influences on mental illness, Journal of Social Distress and the Homeless*, *4*, 89-114.

- Eysenck, M. W. (1997). *Anxiety and Cognition: A unified theory*. Hove: Psychology Press.
- Foa, E. B., Franklin, M. E., Perry, K. J., & Herbert, J. D. (1996). Cognitive biases in generalized social phobia. *Journal of Abnormal Psychology, 105*, 433-439.
- Fodor, J. (1980). Methodological solipsism considered as a research strategy in cognitive psychology. *Behavioral and Brain Sciences, 3*, 63-73.
- Fodor, J. (1983). *The modularity of mind*. Cambridge, MA: MIT Press.
- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.
- Gardner, H. (1985). The centrality of modules. *Behavioral and Brain Sciences, 8*, 11-12.
- Hartman, L. M. (1983). A meta-cognitive model of social anxiety: Implications for treatment. *Clinical Psychology Review, 3*, 433-456.
- Hirschfeld, L. A., & Gelman, S. A. (Eds.). (1994). *Mapping the mind: Domain specificity in cognition and culture*. Cambridge, UK: Cambridge University Press.
- Hope, D. A., Rapee, R. N., Heimberg, R. G., & Dombeck, N. J. (1990). Representations of the self in social phobia: Vulnerability to social threat. *Cognitive Therapy and Research, 14*, 177-189.
- Hutchins, E. (1995). *Cognition in the wild*. Cambridge, MA: MIT Press.
- Jovanovski, T. (1995). The cultural approach of ethnopsychiatry: A review and critique. *New Ideas in Psychology, 13*, 281-297.
- Karmiloff-Smith, A. (1992). *Beyond modularity: A developmental perspective on cognitive science*. Cambridge, MA: MIT Press.
- Kessler, R. C., McGonagle, K. A., Shanyang, Z., Nelson, C. B., Hughes, M., Eshleman, S., Wittchen, H. U., & Kendler, K. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States. *Archives of General Psychiatry, 51*, 8-19.
- Khawaja, N. G., & Oei, T. P. S. (1998). Catastrophic cognitions in panic disorder with and without agoraphobia. *Clinical Psychology Review, 18*, 341-365.
- Kirmayer, L. J. (1991). The place of culture in psychiatric nosology: Taijin Kyofusho and DSM-III-R. *Journal of Nervous and Mental Disorder, 179*, 19-28.
- Kitcher, P. (1985). Narrow taxonomy and wide functionalism. *Philosophy of Science, 52*, 78-97.
- Kleinman, A. (1988). *Rethinking psychiatry: From cultural category to personal experience*. New York: The Free Press.
- Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology, 68*, 518-530.
- Leslie, A. (1987). Pretence and representation: The origins of "theory of mind." *Psychological Review, 94*, 412-426.
- Levine, R. E., & Gaw, A. C. (1995). Culture bound syndromes. *The psychiatric clinics of North America, 18*, 523-537.
- Marks, I. M. (1969). *Fears and phobias*. New York: Academic Press.
- Marks, I. M. (1987). *Fears, phobias and rituals*. New York: Oxford University Press.
- Marks, I. M., & Nesse, R. M. (1994). Fear and fitness: an evolutionary analysis of anxiety disorders. *Ethology and Sociobiology, 15*, 247-261.
- Markus, H. R. & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224-253.
- Markus, H. R., Mullaly, P. R., & Kitayama, S. (1997). Selfways: Diversity in modes of cultural participation. In U. Neisser & D. A. Jopling (Eds.), *The conceptual self in*

- context: *Culture, experience, self-understanding* (pp. 13-62). Cambridge, UK: Cambridge University Press.
- Marsella, A. J. (1998). Toward a "global community psychology": Meeting the needs of a changing world. *American Psychologist, 53*, 1282-1291.
- Mathews, A., & MacLeod, C. (1994). Cognitive approaches to emotion and emotional disorders. *Annual Review of Psychology, 45*, 25-50.
- McNally, R. J. (1987). Preparedness and phobias: A review. *Psychological Bulletin, 101*, 283-303.
- Merckelbach, H., & de Jong, P. J. (1997). Evolutionary models of phobia. In G. C. L. Davey (Ed.), *Phobias: A handbook of theory, research and treatment* (pp. 323-349). Chichester: John Wiley & Sons.
- Millikan, R. G. (1993). *White queen psychology and other essays for Alice*. Cambridge, MA: MIT Press.
- Mineka, S., & Gilboa, E. (1998). Cognitive biases in anxiety and depression. In W. F. Flack, Jr., & J. D. Laird (Eds.), *Emotions in psychopathology: Theory and research*. New York: Oxford University Press.
- Mineka, S., & Sutton, S. K. (1992). Cognitive biases and the emotional disorders. *Psychological Science, 3*, 65-69.
- Morris, M. W., & Peng, K. (1994). Culture and cause: American and Chinese attributions for social and physical events. *Journal of Personality and Social Psychology, 67*, 949-971.
- Ohman, A. (1997). Unconscious pre-attentive mechanisms in the activation of phobic fear. In G. C. L. Davey (Ed.), *Phobias: A handbook of theory, research, and treatment* (pp. 349-375). Chichester: John Wiley & Sons.
- Ohman, A., & Soares, J. J. F. (1994). "Unconscious anxiety": Phobic responses to masked stimuli. *Journal of Abnormal Psychology, 103*, 231-240.
- Ost, L. G. (1987). Age of onset in different phobias. *Journal of Abnormal Psychology, 96*, 223-229.
- Page, A. C. (1994). Blood-injury phobia. *Clinical Psychology Review, 14*, 443-461.
- Pinker, S. (1994). *The language instinct*. London: Penguin.
- Pinker, S. (1997). *How the mind works*. London: Allen Lane, the Penguin Press.
- Railton, P. (1981). Probability, explanation, and information. *Synthese, 48*, 233-256.
- Samuels, R. (1998). Evolutionary psychology and the massive modularity hypothesis. *British Journal of Philosophy of Science, 49*, 575-602.
- Seligman, M. E. P., (1970). On the generality of laws of learning. *Psychological Review, 77*, 406-418.
- Semin, G., & Zweir, S. (1997). Social cognition. In J. W. Berry, M. H. Segall, & C. Kagitcibasi (Eds.), *Handbook of cross-cultural psychology: Vol. 3. Social behavior and applications* (pp. 51-77). Boston: Allyn & Bacon.
- Serpell, R., & Boykin, A. W. (1994). Cultural dimensions of cognition: A multiplex, dynamic system of constraints and possibilities. In R. J. Sternberg (Ed.), *Thinking and problem solving* (pp. 235-258). San Diego, CA: Academic Press.
- Shweder, R. A., & Sullivan, M. A. (1993). Cultural psychology: Who needs it? *Annual Review of Psychology, 44*, 497-523.
- Simons, R. C. (1985). Introduction. The genital retraction taxon. In R. C. Simons & C. C. Hughes (Eds.), *The culture-bound syndromes: Folk illnesses of psychiatric and anthropological interest* (pp. 151-155). Dordrecht, the Netherlands: D. Reidel Publishing Company.

- Smith, P. B., & Schwartz, S. (1997). Values. In J. W. Berry, M. H. Segall, & C. Kagitcibasi (Eds.), *Handbook of cross-cultural psychology: Vol. 3. Social behavior and applications* (pp. 77-119). Boston: Allyn & Bacon.
- Spelke, E. (1988). The origins of physical knowledge. In L. Weiskrantz (Ed.), *Thought without language* (pp. 168-184.) Oxford: Clarendon Press.
- Sperber, D. (1996). *Explaining culture: A naturalistic approach*. London: Blackwell Publishers.
- Stopa, L., & Clark, D. M. (1993). Cognitive processes in social phobia. *Behaviour Research and Therapy*, 31, 255-267.
- Tanaka-Matsumi, J., & Dragons, J. (1997). Culture and psychopathology. In J. W. Berry, M. H. Segall, & C. Kagitcibasi (Eds.), *Handbook of cross-cultural psychology: Vol. 3. Social behavior and applications* (pp. 449-493). Boston: Allyn & Bacon.
- Teasdale, J. D., & Barnard, P. J. (1993). *Affect, cognition, and change: Re-modelling depressive thought*. Hove, UK: Lawrence Erlbaum Associates.
- Thakker, J. & Ward, T. (1998). Mental disorder and cross-cultural psychology: A constructivist perspective. *Clinical Psychology Review*, 18, 501-529.
- Thakker, J., Ward, T., & Strongman, K. T. (in press). Mental disorder and cross-cultural psychology: A constructivist perspective. *Clinical Psychology Review*.
- Triandis, H. C. (1989). The self and social behavior in differing cultural contexts. *Psychological Review*, 96, 506-520.
- Tseng, W. S., Mo, G. M., Jing, H., Li, L. S., Ou, L. W., Chen, G. Q., & Jiang, D. W. (1988). A sociocultural and clinical study of a Koro (genital retraction panic disorder) epidemic in Guangdong, China. *American Journal of Psychiatry*, 145, 1538-1543.
- Watts, F. N., McKenna, F. P., Sharrock, R., & Trezise, L. (1986). Colour naming of phobia related words. *British Journal of Psychology*, 77, 97-108.
- Wells, A., & Clark, D. M. (1997). Social phobia: A cognitive approach. In G. C. L. Davey (Ed.), *Phobias: A handbook of theory, research and treatment* (pp. 3-27). Chichester, UK: John Wiley & Sons.
- Westermeyer, J. (1989). *Mental health for refugees and other immigrants: Social and preventative approaches*. Springfield, IL: Thomas.
- Williams, J. M. G., Watts, F. N., MacLeod, C., & Mathews, A. (1997). *Cognitive psychology and emotional disorders (2nd ed.)*. Chichester, UK: John Wiley & Sons.
- Wilson, E. O. (1998). *Consilience: The unity of knowledge*. New York: Alfred A. Knopf.
- Wynn, K. (1992). Addition and subtraction by human infants. *Nature*, 358, 749.