



World Psychiatry



OFFICIAL JOURNAL OF THE WORLD PSYCHIATRIC ASSOCIATION (WPA)

Formats:

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[World Psychiatry](#). 2002 Jun; 1(2): 72–75.

PMCID: PMC1525137

PMID: [16946856](#)

Attachment, information processing, and psychiatric disorder

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Attachment theory is a theory about protection from danger and the need to find a reproductive partner (1-4). As a theory of psychopathology, it is concerned with the effects of exposure to danger and the failure to find a satisfying reproductive relationship on mental and behavioral functioning. When these effects extend far beyond the threatening circumstances themselves, they can be considered psychopathological. Attachment theory is also a developmental theory. Thus, unlike other theories of psychological disorder, it traces individuals' developmental pathways from infancy to adulthood. Indeed, most of the work on attachment has been done in infancy and early childhood, thus providing a sound developmental base from which to understand later pathology. In addition, the developmental emphasis permits a focus on the

interactive outcomes of maturational processes, individual differences in genetic inheritance, and individual differences in experience. The outcomes are individuals' strategies for protecting the self and progeny and for seeking a reproductive partner. These strategies, i.e., the patterns of attachment, provide both a description of interpersonal behavior and a functional system for diagnosing psychopathology. This perspective offers several advantages for the understanding of psychopathology.

INNATE ORGANIZING MOTIVATIONS

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Attachment theory proposes that humans have an innate propensity to organize self-protectively and, after puberty, sexually. In infancy and childhood, attachment figures both provide protection and also teach children how to make meaning of the information available to their minds. After puberty, the protective function is integrated with the reproductive function and both are directed to a sexual partner. This relationship produces the next generation of children to whom parents will be protective attachment figures. In that role, they act on their own understanding of what is dangerous and safe, thus creating the environment in which their children learn to make self-relevant meanings. These meanings, however, reflect the child's experience and, therefore, they may not be the same meanings and strategies used by the parents. Postulating the role of protection and reproduction in organizing human behavior permits attachment theorists to interpret psychopathological behavior as maladaptive attempts to protect the self or find a reproductive partner.

DEVELOPMENTAL PSYCHOPATHOLOGY

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Attachment theory presumes that the same developmental processes regulate both normative and disordered development. This permits the separate bodies of empirical research to be brought together to inform one another (5). The processes of primary interest are: a) the ways in which the brain transforms sensory stimuli to generate meaningful representations of the relation of self to context, b) the ways in which the mind regulates the application of these representations to the organization of behavior, and c) the organizations of self-protective and reproductive behavior.

The brain and transformations

Universal genetic factors, in the context of environmental conditions, regulate maturation. As the brain matures, it becomes capable to transform incoming sensory stimuli in increasingly sophisticated ways. These permit increasingly complex representation of the relations between past and future. That is, the only information that we have is information about the past, whereas the only information that we need is information about the future. Information about the past is transformed to yield representations of the probable relation of self to context in the future.

The simplest transformations respond to two features of stimuli: the temporal order in which stimulation is received and its intensity. The former yields information about causation and operates according to the principles of behavioral learning theory. Disorders tied to this transformation include disorders of inhibition and compulsion. The transformation based on intensity generates feelings and physiological arousal; associative learning modifies the eliciting stimuli. The anxiety disorders are associated with too great and too generalized arousal. These two transformations can be made at or before birth.

More complex representations are generated as the brain matures; by processing the initial transformation through additional parts of the brain, additional meanings are generated. For example, infants can exclude some information about the past from further processing, thus distorting the representation of the probable future. Young children can distort the retained information while concurrently excluding some information from representation; the effect is greater distortion of representation than was possible in infancy. By the school years, children can falsify information, that is, they can represent the opposite of what is expected and, by acting on that representation, they can mislead others about their future behavior. These sorts of transformations enable individuals to regulate the probability with which they identify danger. The more an individual feels threatened by imminent and severe danger, the less error can be tolerated; consequently, distorting transformations usually increase the probability of over-identifying danger.

The mind and representation

The transformations yield dispositional representations, i.e., patterns of neurological activity that dispose individuals to act in some manner (6). Depending upon whether the representation is based on temporal order or intensity of stimulation, individuals are disposed to behave based on expected consequences or on feelings. The various representations that are generated may dispose an individual to incompatible responses. In that case, the mind must select which response to enact or construct a new response. This occurs in the cortex, the last portion of the brain to mature fully.

When the estimation of danger is very high, individuals are propelled into action on the basis of the precortical representation that signaled threat most clearly. This representation is likely to be an over-estimation of threat, and because it has been processed only precortically, the error cannot be discerned or corrected. Thus, behavior will often be maladaptive. When this happens sufficiently often, it is deemed psychopathological. Because of cortical immaturity and greater vulnerability to danger, children are at particular risk for over-attributions of danger and maladaptive responses. Development promotes the correction of these errors, except in cases of severe, ongoing, and deceptive danger. In these cases, the pervasive and ambiguous nature of threat increases the probability of incompletely processed information regulating behavior. Together with increasingly sophisticated precortical distortions of representation, the outcome in adolescence or early adulthood can be very complexly distorted patterns of behavior.

Self-protective organizations of behavior

Ainsworth's classic work identified three basic patterns of attachment (7). Type A individuals tend to omit feelings from processing and to act in accordance with expected consequences. Type C individuals do the opposite: they act in accordance with their feelings with little attention to consequences. Both tend to over-estimate the probability of danger and act in an unnecessarily self-protective manner. Type B individuals use both sources of information; they have balanced mental processes and adaptive behavior. Crittenden (8) has expanded the array of strategies to include compulsive Type A strategies and obsessive Type C strategies. These reflect commonly recognized forms of

maladaptive behavior. They differ from symptom-based diagnoses in that strategies are seen as a functional attempt to reduce danger as represented, albeit erroneously, by the individual.

DEVELOPMENTAL PATHWAYS

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Attachment theory addresses the process by which normal development differentiates into a wide range of human displays, including those considered psychopathological. A particular advantage of this perspective is that the most serious disorders of adolescence and adulthood, the personality disorders and psychoses, can be seen as the cumulative effect of a series of developmental transformations, each of which adds distortion to previously distorted functioning. That is, given numerous branching points in development, the cumulative effect of always selecting the distorted pathway leading away from balance and normality will be an array of serious disorders that, when viewed only in adulthood, appear incomprehensible. Following the behavior forward from infancy renders the accretion of distortion comprehensible, albeit, in a person-specific manner.

Representation as a mediating variable

Recognizing that behavior results from the process of mental representation helps to explain why individuals exposed to similar dangers can have different outcomes and why genetically identical individuals exposed to different threats have different outcomes. The representational process, rather than genes or experience directly, organizes individuals' behavior. This suggests the need to differentiate between contributing, necessary, and sufficient conditions for psychopathology. There is little evidence that genes alone are sufficient to cause mental illness, nor is it evident that they are an essential condition. To the contrary, genetic influence more often functions as a contributing factor. Neither, however, does experience determine outcomes. Attachment theory, through its emphasis on individual representation of events, suggests a process by which similar circumstances could yield different outcomes. Attachment researchers have developed a series of age-specific assessments to permit researchers and clinicians to assess individuals' representations.

PREVENTION

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By tracing developmental pathways indicative of progressive risk, attachment theory fosters prevention. If risk were treated early on, the number of adolescents and adults who would experience the late-forming and most severe psychiatric conditions, i.e., personality disorders and psychoses, might be reduced. Further, attachment theory suggests what sorts of experiences might lead to risk for psychopathology.

DISTORTION, STRATEGY, AND MEANING

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When mental transformation and representation are viewed developmentally and as self-protective and reproductive strategies, much of the incomprehensible behavior of very disturbed adolescents and adults becomes meaningful. For example, delusional behavior can be viewed as a series of small distortions that culminate in an inscrutable fantasy. Initially, intense sensory stimulation yields physiological arousal. With repetition, this effect can be augmented by increasing attention to more subtle elicitors, including especially somatic feelings. Recalling the experience can then recreate the physiological state in the absence of external stimuli. Next, by imagining possible events that didn't actually happen, arousal can be generated and then maintained or augmented by attentional processes. Finally, imagining impossible events can yield a delusional reality that feels somatically exactly like reality. At all steps, arousal functions to elicit the motivating affective state that the individual feels is necessary for safety. Identifying the process by which layers of distortion are added, in a developmental sequence tied to brain maturation, has several advantages. It makes maladaptive behavior meaningful; this will help therapists to communicate with patients. It indicates developmentally earlier points that might be open to intervention and prevention. And it suggests new approaches to treatment, particularly treatments that address the strategic function of the distorted process. For example, in the case of delusions, treatment might address both the somatic arousal process and also the subjective need to identify every possible source of danger.

CULTURE AND PSYCHOPATHOLOGY

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The emphasis on the role of experienced danger permits interpretation of cultural differences in distributions of self-protective (attachment) strategies and prevalence of psychiatric disorders. Because different cultural groups have been subjected to different histories of danger as well as different current exposure to danger, differences in distributions of strategies and disorders tied to strategy would be expected (8).

OPPOSITE STRATEGIES; OPPOSITE TREATMENTS

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In this approach, Type A and C are psychological opposites. The transformations that lead to Type A are based on a different characteristic of the incoming signal and are processed through different parts of the brain than are the transformations associated with Type C. Because they result from opposite processes, they are likely to be corrected by opposite forms of treatment. For example, a Type A individual might benefit from techniques that focused on feeling and somatic representation of feeling, whereas this treatment might increase somatic symptoms of stress in a Type C individual. Similarly, a Type C individual might benefit from a behavioral approach emphasizing self-relevant contingencies, whereas this might expand the repertoire of compulsive behavior of a Type A person.

VALIDITY AND DIRECTIONS FOR FURTHER RESEARCH

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Published studies of infants and preschool-aged children suggest the validity of attachment theory and its relation to risk for psychiatric disorder. Unfortunately, there is little published work using this model with adolescents and adults.

On the other hand, it is only recently that a suitable tool has been developed to test hypotheses relating adults' selfprotective attachment strategies and psychiatric disorder. The Adult Attachment Interview (AAI, 9) has been modified to permit analysis of a wide range of distortions of information processing (10,11). Unpublished dissertation research using the modified AAI suggests that these distortions are associated differentially with several types of psychiatric disorder. In addition, these studies suggest that disorders

with different symptoms may sometimes be functionally similar at the levels of distorting transformations and functional self-protective strategy. If this is the case, treatment might be improved by clustering patients on the basis of these similarities rather than symptom-based diagnoses.

CONCLUSIONS

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Attachment theory focuses on protection and reproduction as central organizing functions and on the array of ways that these may be realized as the interactive outcome of universal maturational processes, individual genetic differences, and unique environmental contexts. Its contributions to understanding psychopathology include a model of functional diagnoses (as opposed to symptom-based diagnoses), development-based hypotheses regarding the relation of childhood experiences to later psychopathology, and an information processing model with implications for treatment.

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