The Neurodevelopmental Impact of Early Trauma and Insecure Attachment: Re-Thinking Our Understanding and Treatment of Sexual Behavior Problems

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The article examines how recent research and writing regarding the neurological impact of trauma and early attachment experiences might inform our understanding of sexual behavior problems, particularly in dealing with children and adolescents. The author suggests that neurologically based processing difficulties contribute to many of the behavioral and learning problems exhibited by these clients and argues for a treatment approach that is more trauma focused in theory and multi-modal in its interventions.

INTRODUCTION

Recently, clinicians and programs that provide treatment for children with sexual behavior problems have begun to discuss more “developmental” or “holistic” approaches to understanding and addressing this issue. This desire for a shift to a developmental perspective has generated an increased interest in attachment theory (Bowlby, 1969, 1973, 1980) and increased attention to the attachment problems that many of the children we treat appear to exhibit. At the same time, advances in brain imaging technologies have spurred research on the development of the human brain that has become increasingly refined and more broadly accessible.

One aspect of this research has focused on the neurological consequences of trauma, with studies connecting the experience of abuse and neglect in childhood with significant structural and functional consequences for neurodevelopment (Teicher, Andersen, Polcari, & Navalta, 2002; Perry, 2001; De Bellis et al., 1999; Putnam & Trickett, 1997). Intertwined with this...
research examining the neurodevelopmental effects of trauma are the writings of Alan Schore, Daniel Siegel, and others who argue that the nature of the child’s early emotional experiences in relation to their primary caretakers (attachment relationships) are the central organizing feature in early brain development (Balbernie, 2001; Siegel, 1999; Schore, 1994).

The changes that occur in the brain as a consequence of trauma and disrupted attachment offer a way of understanding many of the behaviors we see in children and adults with significant behavioral and emotional difficulties (Bremner, 2002; Streeck-Fischer & van der Kolk, 2000). This article attempts to integrate current research with regard to the psychobiology of trauma and attachment into our assessment and treatment of sexual behavior problems, in the hope that understanding the brain’s response to both trauma and attachment experiences broadens our perspective on the dynamics of sexual behavior problems and directs us to interventions that focus on the interaction of neurological, social, and emotional development.

**TRAUMA, ATTACHMENT, AND SEXUAL BEHAVIOR PROBLEMS**

There have been a variety of factors suggested as being contributory or causal in explaining the origins of sexually abusive behavior (Schwartz, 1995). While a number of these factors have changed in focus or importance over time, certain variables appear to persist as being essential to our understanding of the etiology of sexual offending. I would contend that these persistent variables are: (1) the presence, in childhood, of some type of trauma; if we define trauma to include not only incidents of physical and sexual abuse but also neglect, abandonment, witnessing domestic violence, and other experiences that the child may view as life threatening (McMackin, Leisen, Cusack, LaFratta, & Litwin, 2002; Prentky, Knight, & Sims-Knight, 1989), and (2) the deficits abusers appear to experience in intimacy, social competency, and empathy that from our perspective are best understood as problems that offenders experience in their attachment relationships (Hudson & Ward, 2000; Marshall & Marshall, 2000; Burk & Burkhart, 2003).

Much of the research on the trauma histories of offenders appears to be either explicitly or implicitly driven by a social-learning theory of sexual offending (Ryan, 1989; Garland & Dougher, 1990; Burton, Miller, & Shill, 2002). While this research provides evidence for a correlation between histories of sexual victimization and later sexual offending behaviors, these studies do not account for the majority of sexual abuse victims who do not go on to sexually offend, or for those offenders who experience trauma other than sexual abuse but go on to be sexually abusive. In addition, these studies frequently identify individuals who engage in sexually abusive behavior but have no reported history of prior trauma, though in these cases one might examine
how broadly or narrowly the researchers and/or subjects are defining the terms abuse and trauma.

Marshall and Marshall (2000) suggest that the origins of sexual offending behavior are found in the poor attachment relationships offenders experience with their parents. They postulate that these poor relationships increased the risk of the offenders being sexually abused and led to offenders being more sexually preoccupied, less self-confident in relationships, and more likely to use sexualized behaviors as a preferred coping mechanism to manage stress in their lives. Marshall and Marshall highlight the importance of attachment in their model, with disrupted attachment providing the framework for the social learning process that ensues after victimization. While providing safety to the child is a fundamental function of early attachment relationships, the impact of poor attachment as described by Marshall and Marshall appears to identify only one of the pathways to sexual offending behavior in which disrupted or insecure attachment may play a part.

Along with maintaining proximity to a secure and trusted figure during periods of perceived danger and stress, developing and sustaining secure attachment relationships has been noted as increasing feelings of security, mastery, self-esteem, and social competence. By contrast, the loss, inconsistency, or unavailability of secure attachment can lead to sorrow, anxiety, anger, and confusion (Bowlby, 1969, 1980). Without specifically defining it as attachment, Baumeister and Leary (1995) write that the need for intimacy and connection is as fundamental a human need as food and sex. One could argue that the need to develop attachment relationships is a biological imperative for humans, since the failure of a human infant to engage a caretaker, on at least a minimal level, would threaten the infant’s existence. It is important to note that experiences that are perceived as a threat to one’s life or sense of personal integrity are the very definition of trauma. This leads to our belief that sexually abusive behavior arises in large part from a fundamental need for attachment (safety, attunement, nurturance, acceptance, care) and that it is the process that some individuals follow to meet this need that can become distorted and abusive. To understand abusive behavior we need to view it in the context of attachment and relationship. To understand how the process becomes distorted it is useful to begin with an understanding of the neurological impact of trauma and disrupted attachment.

THE BRAIN’S RESPONSE TO TRAUMA

Bremner (2002) argues that the physiological response to stress results in common changes in neurological function that underlies the symptoms frequently seen in the aftermath of trauma. This viewpoint moves us away from being limited to examining specific responses to specific traumas such as sexual victimization and focuses attention on traumatic experiences in a broader
context that includes factors such as: the developmental stage at which the trauma occurred, frequency, context, and available supports, as well as, the particular type of experience that the individual endured.

Researchers have been involved in describing the physiological responses to stress and identifying the areas of the brain involved in these responses for a considerable period of time (Cannon, 1927; Papez, 1937; MacLean, 1949; Selye, 1956). There is also a considerable body of research that has linked the experience of childhood stressors to higher degrees of behavioral difficulties, particularly aggression (Pynoos, 1990). More recently, researchers have begun to identify the neurodevelopmental consequences of these childhood stress experiences (Perry & Pate, 1994; Perry, 1997; DeBellis, 2001) and more clearly connect these developmental processes to a range of behavioral and emotional difficulties exhibited by children and adults (Lewis, 1992; Loeber et al., 1993; MacEwen, 1994; Perry, 1997).

Deprivation of developmental experiences or atypical/abnormal patterns of neurochemical cues due to the extremes of experience can lead to disrupted neuronal organization and diminished functional capabilities (Perry, 2001). These diminished capacities may exhibit themselves through a loss of cortical modulation of responses mediated through the lower and mid-brain (e.g. arousal, impulsivity, aggression) or a lack of integration between cortical and sub-cortical processing (e.g. learning difficulties). Also, because the brain is organized in a “use-dependent” manner, persistent stressful environmental cues, especially those experienced during critical developmental periods can lead to malorganization and compromised function in the brain. While this stress-induced organization and function might have been adaptive to the child growing up in a highly chaotic or abusive environment, these continued patterns of neural responses prove detrimental and maladaptive when the environment changes (Green et al., 1981; Pynoos, 1990; Perry, 1997).

The effects of this malorganization in persistent neural response patterns can be seen in a variety of symptoms and presentations. Hyperarousal to potentially threatening cues in the environment can create difficulties in attending to tasks leading to frequent diagnosis of attention deficit disorder (Haddad et al., 1992; Kafka & Prentky, 1998; Streeck-Fischer & van der Kolk, 2000; Fago, 2003). Pynoos (1990) and Perry (1997) argue that the ADHD diagnosis for many of these individuals is misleading. They suggest that these individuals do not have a core abnormality in their capacity to attend but rather, that their lower and mid-brain responses have organized around experiencing persistent, low level states of fear and anxiety resulting in a consistent focus on nonverbal, threat-related cues. Since these individuals are hyper-vigilant to threat-related cues there is a tendency to over-interpret neutral environmental input as traumatic. Conversely, if sensory input is not viewed as threat related, it is frequently interpreted as unimportant and therefore ignored (van der Kolk & Ducey, 1989; Mac Farlane et al., 1993).
Studies have indicated that many traumatized children have difficulties with complex auditory and visuo-spatial processing tasks (Saigh et al., 1997; Bremner & Narayan, 1998; Teicher et al., 2002). Increasingly, research has found that the activation of fear and anxiety responses stemming from the amygdala and differentially from other sub-cortical stress response pathways can cause hippocampal atrophy and other effects on hippocampal functioning. This appears to impact functions such as verbal memory, spatial memory, contextual learning, and associative learning and memory (McHugh et al., 2004; Teicher et al., 2002; Bremner & Narayan, 1998). As a consequence, the neuro-developmental organization of the brain in response to threat can create ongoing difficulties with the processing of new information, and it generates obstacles for the individual learning from experience and developing new coping and problem-solving approaches.

Teicher and his colleagues (2002) have reviewed the research related to the neurobiological impact of stress and trauma and have identified a variety of findings. They report significant alterations in the amygdala and increased limbic irritability. These changes generate a “kindling effect,” leading to hypervigilance, a greater tendency to interpret social/environmental cues and interactions as being threatening, and a stronger tendency to engage in fight/flight responses in reaction to these cues. Their research also identifies changes in the hippocampus increasing the possibility for the dissociative, amnestic, and disinhibitory aspects of PTSD, as well as deficits in verbal memory and processing. According to Teicher, trauma victims also evidence diminished left hemisphere maturation, diminished corpus callosum size, decreased left-right hemisphere integration, and diminished capacities in the cerebellar vermis. Teicher suggests that there is a close fit between the symptoms observed in abused clients and the effects of early trauma on brain development. He points to depressive symptoms, PTSD, ADHD, Borderline Personality Disorder, Dissociative Disorders, and Substance Abuse as having correlations in the neurodevelopmental responses to stress. Of specific importance to sexual behavior difficulties and sexual offenses, hippocampal alterations, reduced corpus collosal size, and diminished left-right hemisphere integration are postulated by Teicher to augment the individual’s capacity to shift into angry/aggressives states when threatened with danger or loss (Teicher et al., 2002, p. 414). He also notes that early stress can produce life-long changes in the hormones vasopressin and oxytocin. Research has suggested that oxytocin is a critical factor in affiliative love and normal non-sexual social interactions (Carter, 1998; Uvnas-Moberg, 1998). “Theoretically, early neglect or abuse by altering levels of vasopressin and oxytocin could predispose mammals to suffer from enhanced sexual arousal, diminished capacity at sexual fulfillment, and deficient commitment to a single partner” (Teicher et al., 2002, 415).

Trauma and stress can affect the adaptive developmental path along which the brain organizes itself. The timing and persistence of the trauma in
terms of when it occurs in the child’s life combined with the environmental response to the child during times of stress, most notably by the child’s primary caretakers, will greatly influence the structural and functional nature of those pathways. As a consequence, the degree of symptomatology, the level of impairment, and the pervasiveness of maladaptive behaviors are likely to be varied and complex.

ATTACHMENT THEORY

In his early formulation of attachment theory, Bowlby (1969) initially described an evolved behavioral process by which the attached person sought out a potentially protective attachment figure during periods of danger or threat. The primary goal of attachment was seen as being protection and safety. In infancy, these protective figures are identified as being the child’s primary caretakers, most frequently the parents and in most attachment research specifically the child’s mother. In later writings, Bowlby integrates information processing with attachment theory, focusing on patterns of perceiving, representing, and utilizing information especially when that information is tied to danger (Bowlby, 1980; Crittenden, 1997). Bowlby expanded and refined attachment theory to include developmental processes that culminate in adaptive or maladaptive functioning. He believes that the child’s experience of these early caretaking relationships results in the individual developing an “internal working model” or a framework for experiencing oneself in relation to others and that this “working model” is largely sustained throughout the individual’s life.

Observing toddlers and their mothers in a laboratory experience described as “the strange situation,” Ainsworth and her colleagues (1978) began to identify distinct attachment patterns, generally defined as secure, avoidant, ambivalent, and disorganized. Secure behavior was associated with a history of responsive and nurturing caretaking by the parent. The child experiences their parent as consistently and predictably available to meet both physical and emotional needs. Behaviorally, these children are emotionally and cognitively engaged, using their parent as a secure base from which to explore their environment. Avoidant behavior was associated with a history of rejection, neglect, or emotional distance by the caretaker. The child experiences the parent as emotionally unavailable or rigid. Behaviorally, these children frequently present with a blunted or flattened affect or are rigidly responsive to the specific expectations and demands of the environment. Ambivalent behavior was associated with a history of inconsistency by the parent. Behaviorally, these children frequently present as clingy, tense, and angry and with greater difficulties around impulse control. Main and Solomon (1990) later described the fourth category of attachment as disorganized. Disorganized behavior was associated with a parent’s history of loss or severe
trauma and has been found to predominate in children with a history of abuse, neglect, and family chaos. Behaviorally, these children present with contradictory approach/avoidance behavior associated with frightening or frightened behavior by the parent (Alexander & Anderson, 1997).

ATTACHMENT AND NEURODEVELOPMENT

Patricia Crittenden argues that the infant attachment patterns identified by Ainsworth and her colleagues are reflected in identifiable patterns of mental processing (Crittenden, 1997; Ainsworth et al., 1978). Crittenden proposes a model for understanding attachment that incorporates neuro-processing with observations of affect and behavior. She would define secure attachment as the ability to effectively integrate the sub-cortical (limbic and lower brain) emotional responses to environmental stimuli with accurate cognitive transformation and discrimination of those emotions regarding their meaning. Secure attachment styles of processing information are likely to yield greater specificity in terms of responses to complex situations as well as greater flexibility in the individual’s capacity to adapt behavioral responses to changing environmental cues. Avoidant attachment styles are likely to have developed cortical pathways that may “over-modulate” limbic and lower brain input, creating a limited and often rigid cognitive transformation of emotional stimuli. Cognitive representations of emotions are less specific, less flexible, and less responsive to context. Ambivalent attachment styles correspond to the development of cortical pathways which “under-modulate” affect-related behavior. These pathways may respond more quickly and with greater intensity to a broad range of fear eliciting stimuli. These responses bypass the cortex, leading to less discriminatory inhibition of behavioral responses and as with the avoidant style, less specificity and flexibility in response to context. Attachment patterns that can not effectively integrate affective responses from the limbic system and lower brain with appropriate levels of modulation and adaptation from the cortex create obstacles for individuals in recognizing and/or adapting to changes in context of day to day living situations and different relationships. Crittenden’s proposal is especially important when viewed in the context of Teicher, et al.’s (2002) findings that trauma experiences significantly impact the level of neural integration in the brain. One of the ramifications of trauma may be the development of neurological obstacles to developing secure attachment relationships.

Studies have shown that the ability to regulate emotional responses is an important aspect of effective peer interactions; successful cognitive performance in tasks involving delay, inhibition, or pursuit of long term goals; and the management of stress at home (Galderisi & Mucci, 2000; Cummings et al., 1989; Rubin & Rose-Krasnor, 1986; Mischel & Mischel, 1983). Rather than simply being a manifestation of the child’s innate temperament, more
recent studies suggest that emotional reactivity—what clinicians might typically see described as impulsive, explosive, tantruming, or intensely avoidant behaviors—results from an interaction of genetic and environmental influences. Primary among these environmental influences are the quality and nature of parental care (Galderisi & Mucci, 2000). Siegel (1999) argues that emotion is a central organizing process within the brain and that from the infant’s perspective the most important aspect of the environment is their emotional connection with their caregiver. Developing a process for engaging the attention and responsiveness of a caregiver is an essential factor in childhood survival. This capacity to engage and maintain the involvement of a caregiver is the fundamental dynamic of attachment and defines in large part the experience-dependent environment in which neural stimulation and growth will occur. Because brain development is geared to progress from lower to higher degrees of complexity and organization, the activity-dependent shaping of brain circuitry through changes in synaptic connections is more prominent during different developmental periods and is different for different circuits and areas of the brain (Greenough, Black, & Wallace, 1987; Galderisi & Mucci, 2000). This reinforces our view that it is not simply the presence or absence of severe stressors or trauma, but also the developmental stage when the trauma occurs, the persistence of the stressors, and a variety of other variables that define the environmental context in which the trauma occurs that will effect outcome and possible symptoms. Again, from an attachment perspective, the most notable of these variables in the individual’s early life will be the nature and quality of their attachment relationships.

The orbitofrontal cortex is seen as essential for regulating primary sensory and motor responses and critical periods for its development appears to occur at the end of the first and second years (Schore, 2000; Todd et al., 1995; Huttenlocher, 1979). Schore (2001) writes that the orbitofrontal cortex is highly involved in attachment functions, playing an essential role in processing the interpersonal signals necessary for the initiation of social interaction between individuals. It is also a part of the neural network that mediates empathic and emotional relatedness (Balbernie, 2001). When neuro-developmental researchers and writers discuss the individual’s capacity for transforming or regulating sub-cortical stimuli for the purpose of a more specified or flexible cognitive/behavioral response or when we later discuss the individual’s executive functioning skills, it is largely functions centered in the orbitofrontal or pre-frontal cortex to which they are referring.

Through its connection with the limbic system the orbitofrontal cortex monitors the state of the body, evaluates meaning, and translates sensations into recognizable emotions (Balbernie, 2001). Siegel describes attunement between the infant and caretaker as a way in which the caretaker initially serves as an affect regulator, an “auxiliary cortex” for the infant’s
still underdeveloped brain (Lott, 2003). Schore (1997) identifies these attunement experiences as being essential for the synaptic development of the orbitofrontal cortex and suggests that they serve as a template for processing emotional information. He also contends that abuse, neglect, and chronic states of mis-attunement leads to an overpruning of synapses in the orbitofrontal cortex leaving individuals with an impaired capacity to modulate and regulate emotion in response to threat (Lott, 2003).

The brain is setting up synaptic connections in an activity dependent manner. If specific brain structures are being regularly activated by abuse and other forms of trauma then those circuits are the ones which are more firmly programmed and easily activated. The amygdala, which sends projections to all areas of the cortex establishes an emotional bias to cognitive functions. That is, higher intensity stimuli identified as indicative of reduced safety (or increased sexual arousal) are given privileged attention (Le Doux, 1995; Crittenden, 1997). If threat and trauma persist, the brainstem and mid-brain become under-modulated and the neurobiological responses to trauma (fear/flight, freeze) become established with little influence from cortical control (Balbernie, 2001).

 Appropriately integrated levels of cortical control, primarily centered in the frontal cortex can therefore be seen as essential for establishing arousal and impulse control, attunement, empathy, and a recognition of the impact and consequences of one’s behavior. One might argue that these are exactly those issues which we attempt to address in our treatment of sexual behavior problems.

ATTACHMENT, NEURODEVELOPMENT, AND SEXUAL ABUSERS

Hudson and Ward (2000) contend that the difficulties offenders experience in intimacy, empathy, social skills, and cognitive distortions can be understood as the consequences of their poor attachment relationships. This view is consistent with research by Webster and Beech (2000) and Fernandez and Marshall (2003) which has suggested that, what was previously defined as a lack of empathy in offenders might more accurately be viewed as a lack of integration between affective and cognitive responses in the offender (cognitive distortions) rather than a broader inability to be emotionally responsive to others. This lack of integration is also what Crittenden (1997) described in her discussion of neuro-processing patterns associated with insecure attachment styles. Wahlberg, Kennedy, and Simpson (2003) in studying adolescent sexual offenders suggested that impairment in sensory-emotional integration contributed to a greater likelihood of violent behavior in their sample. Marsa et al. (2004) found that 93% of the sexual offenders in their study evidenced an insecure attachment style and that secure attachment was less common in the sex offender group that in any of the other three groups studied.
(violent, non-sex offenders; non-violent, non-sex offenders, and community controls).

Galski et al. (1990) linked both violent and non-violent manifestations of disordered sexuality to a wide range of deficits in brain functioning. When comparing the quantitative EEG’s (QEEG) of non-sex offending and sex offending subjects, Corley et al. (1994) specifically identified EEG abnormalities in the left hemisphere of the sex offender sample. These findings are consistent with Teicher et al.’s (2002) findings of a lack of differentiation and development in the left hemisphere of his trauma victims.

Raine and Buchsbaum (1996) reviewed 14 brain imaging studies indicating that frontal to temporal lobe dysfunction appears to be related to violence and sexual offending behavior, with frontal lobe dysfunction more closely related to violence while temporal lobe dysfunction was more aligned with sexual offending behavior. Gillespie and McKenzie (2000) found evidence suggesting left fronto-temporal dysfunction in their mentally disorder sex offender sample when compared to a mentally disordered, non-sex offender sample. These studies would appear to be consistent with Alan Schore’s findings that insecure attachment relationships in early childhood would lead to difficulties in the orbitofrontal cortex development and create difficulties in the cortex modulating and integrating sub-cortical (limbic and lower brain) responses (Schore, 1997).

What the research appears to indicate is that environmental stimuli associated with threat and/or sexuality may be processed by the cortex in an over-modulated or under-modulated manner creating either distorted and rigid cognitive representations or more impulsive, sub-cortical responses with little (if any) cortical control. In the past, when treating sexual perpetrators, we have labeled these brain processes as cognitive distortions, sexual impulsivity, deviant arousal, sexual compulsivity and other symptoms that present a greater risk for problematic or abusive sexual behavior. Historically, we have utilized cognitive behavioral or straight forward behavior management approaches to treat these issues often with an underlying assumption that if the individual did not make progress it was due to a lack of motivation. As a result, a failure of progress was typically met with increasing levels of negative consequences to motivate the client’s involvement in treatment, with the largest consequences being increasingly longer periods of incarceration. While treatment providers and probation officers would often complain that some client’s “just don’t get it” the problem was believed to rest solely with the client as opposed to being a problem with how we understood the behavior or how we were making interventions. An understanding of the developmental and processing obstacles experienced by many of our client’s may refocus and refine not only how we make interventions but our understanding of the etiology of the problem.
NEUROLOGICAL PROCESSING AND CHILD BEHAVIORAL PROBLEMS

Research has for some time indicated the impact of abuse and neglect on cognitive functioning (Martin et al., 1974; Hoffman-Plotkin and Twentyman, 1984; Cahill et al., 1999). Frequently, language delays and language processing difficulties have been specifically identified as an important aspect of the cognitive sequelae of child maltreatment (Fox, Long, & Langlois, 1988; Rogeness et al., 1986; Culp et al., 1991). These cognitive difficulties have also been correlated with increased behavioral problems in school (Hoffman-Plotkin & Twentyman, 1984; Wodarski et al., 1990; Kendall-Tackett & Eckenrode, 1996) and in behavioral terms differences begin to appear in the behavioral problems exhibited by children who suffer physical/sexual abuse and those whom are more generally neglected (Hoffman-Plotkin & Twentyman, 1984; Wodarski et al., 1990).

Neuropsychological deficits have also been identified in a number of studies involving delinquent youth (Morgan & Lilienfield, 2000; Teichner & Golden, 2000; Aguilar, Stroufe, Egeland, & Carlson, 2000; Moffitt, 1997; Moffitt, 1993). Particularly, verbal abilities appear to be affected in adolescents identified as anti-social or delinquent, with delinquent youth frequently showing significantly lower Verbal IQ’s than Performance IQ’s on standardized tests of cognitive abilities (Hirschi & Hindelang, 1977; Bleker, 1983; Grace & Sweeney, 1986; Lyman et al., 1993; Teichner & Golden, 2000; Teichner et al., 2000). Murray et al. (2001) found that lower Verbal IQ scores distinguished learning disabled sex offenders from learning disabled non-sex offenders. These studies are consistent with Teicher et al.’s (2002) findings noted earlier indicating a lack of right/left hemisphere integration as well as changes in the hippocampus of trauma victims which produce difficulties in verbal learning and verbal memory.

In addition to verbal deficits, delinquent youth are frequently identified as having difficulties in “executive” functioning. Executive functioning relates to a variety of brain functions that support effective learning and problem solving. These functions include: attention, concentration, anticipation, planning, abstract reasoning and concept formation, cognitive flexibility, and the ability to control impulsive, unsuccessful, and inappropriate behavior. A recent review of the literature by Morgan and Lilienfield (2000), indicates that anti-social groups performed significantly lower than comparison groups on tests of executive functioning. Stone and Thompson (2001) specifically identified executive functioning difficulties in their testing of 63 sexual offenders, though they were quick to note that the type of executive functioning difficulty was individualized rather than specific to all the sex offenders. Most frequently, conduct disordered children and adults with anti-social personality have been identified as having prominent difficulties with attention and impulse control (Newman, 1987; Henry & Moffit, 1997; Teichner et al.,
Again, these findings parallel the neurological consequences which can result from early trauma, neglect, and attachment difficulties. As we examined earlier, the lack of cortical and sub-cortical integration is likely to produce difficulties in modulating responses to environmental stimuli creating specific problems for individuals in attention and impulse control. Conversely, over-modulation from the cortex, proposed by Crittenden (1997) as occurring in individuals with more avoidant attachment styles, is likely to limit cognitive flexibility and experienced based learning, and contribute to identified difficulties in performing complex auditory and visual-spatial tasks.

Despite the research which indicates that language skills and executive functioning should be important considerations in deciding on treatment placement, treatment priorities, treatment style, and the evaluation of ongoing risk, attention to auditory processing, expressive/receptive language difficulties, and executive functioning deficits are rarely evident in the assessment protocols, treatment planning, or risk assessment discussions for adults, adolescents, or children. Of equal concern is the apparent lack of focus on presenting or developing treatment interventions which might effectively teach clients how to address, manage, or contain these issues even when some productive interventions might already be available through collaboration with speech and language educators, occupational therapists, developmental psychologists, and neuropsychologists.

**IMPLICATIONS FOR ASSESSMENT AND TREATMENT**

There appears to be sufficient research to indicate that our clinical perspective with regard to sexually inappropriate and abusive behavior needs to be significantly broadened to include developmental and neurological factors as primary components in our assessment and treatment (Fago, 2003; Ryan, 1999; Raine & Buchsbaum, 1996). If we accept the fact that the vast majority of our clients come into treatment with significant trauma histories and/or attachment difficulties, then an assessment protocol and treatment model which does not address these issues and their neurological consequences seems inadequate for meeting the needs of this population. There is reason to believe that the current focus on a cognitive-behavioral, relapse prevention model that is primarily presented in a language based modality largely ignores the type of neuro-processing obstacles that might make it difficult for many of our clients to learn, remember, and retrieve useful information and skills necessary to avoid or prevent further abusive behavior. With these concerns in mind it would seem imperative that we evaluate our current assessment and treatment protocols to ensure that they are keeping pace with current neurodevelopmental research.
Assessment

Current standards of care indicate the need to take into account the client’s cognitive functioning, however the actual assessment of cognitive skills in most adult evaluations for outpatient treatment are either limited to a standard IQ test or in many cases are based on the clinician’s perception of how articulate or “bright” the client may be. While knowing a client’s Full Scale IQ is useful information, it does not offer an adequate assessment of the client’s cognitive functioning for the purpose of making specific recommendations for forensic settings or for future treatment planning. At the very least, attention should be paid to significant differences in Verbal and Performance abilities on cognitive testing. Ideally, further information should be gathered on the client’s abilities in verbal memory, auditory processing, visual organization/processing skills, and executive functioning. Specific inquiry into past diagnosis of learning disabilities especially in the area of receptive/expressive language disorders would also be pertinent to the client’s capacity to participate in court related matters as well as any future treatment.

While this information may already be available for many of the school-age children and adolescents we treat, it is frequently seen as only being relevant to the client’s academic performance rather than being an indication of persistent obstacles the client experiences with regard to daily behavioral control, compliance, social relationships, and the learning of everyday life skills. As part of our evaluation of the client’s cognitive abilities, the research would suggest the utility of, at least, a broad assessment of the client’s executive functioning skills. Executive functioning skills might be seen as including areas such as; concentration, planning, impulse control, attention, working memory, and cognitive flexibility. Without these skills the client’s capacity to effectively learn and utilize information presented in a treatment setting, especially in group treatment, may be severely hampered. There is also some research which suggests that differences in executive functioning skills and autonomic arousal levels might distinguish different types of sociopathy and different styles of attachment (Crittenden, 1997; Lynam, 1996; Deckel et al., 1996; Raine & Buchsbaum, 1996).

Given the ongoing impact that trauma can have on overall physiological arousal, cognitive functioning, and social functioning, some assessment of a client’s current trauma symptoms would appear to be an important aspect of a broadly based multimodal evaluation. At present, while most evaluators take a psycho-sexual history with an eye towards identifying the client’s trauma experiences, the assessment of current trauma symptoms does not appear to be a regular aspect of the assessment process for most evaluators or treatment providers. A variety of self-report measures of current trauma symptoms exist that could be easily included into assessment protocols.
Assessment of attachment style creates a greater dilemma for the evaluator. Current measures of attachment style are either quite broad (Bartholomew & Horowitz, 1996) or like the Adult Attachment Interview (Main & Goldwyn, 1991) not readily transferable to more typical clinical settings. Nonetheless, a broader knowledge of attachment theory and styles might be useful in examining the relational dynamics of sexually abusive behavior, treatment issues, and ongoing risk (Ward, Hudson & McCormick, 1997; Smallbone & Dadds, 2000).

There are a variety of assessment instruments that might be used for each of the assessment areas noted above. Decisions regarding the purpose of the evaluation, clinical setting, age of the client, administration time, scoring, and expense will all be important factors in determining what a particular assessment protocol might contain. However we believe that information regarding a client’s current experience of trauma symptoms, a broad assessment of attachment style, and at least a screening for information processing and executive functioning strengths and deficits should become a standard part of every assessment.

The inclusion of assessment instruments which examine trauma symptoms, executive functioning, information processing, and attachment are not meant to replace current assessment measures which examine personality, cognitive distortions, sexual interests, or risk. Rather, this additional information should create a context in which to examine, analyze, and interpret the information that is already collected.

Treatment

While there appears to be research indicating that the experience of early trauma and/or attachment difficulties contributes significantly to the etiology of sexually abusive behavior (Prentky, Knight, Sims-Knight, 1998), frequently our treatment models fail to address either of these issues as treatment priorities. Many clinicians continue to believe that allowing a client to address their trauma history before completely addressing their abusive behavior somehow enables the client to avoid responsibility for the harm which they have caused others. This view would suggest that a client’s trauma history and their abusive behavior are somehow distinct and separate issues. Clinicians who regularly treat trauma survivors would suggest that the experience of trauma and neglect, especially when that experience occurs early and frequently throughout life, can significantly impact important aspects of an individual’s cognitive, emotional, and social functioning throughout their lives (Allen, 2001; van der Kolk, McFarlane, & Weisaeth, 1996).

Trauma Focused Treatment

The literature that addresses the treatment of trauma appears to have currently reached a consensus regarding the need for a phase-oriented treatment
approach (Allen, 2001; Chu, 1992; Herman, 1992; van der Hart et al., 1998; van der Kolk, McFarlane, & van der Hart, 1996). Allen (2001) notes that ‘we must foster our client’s capacity to work on the trauma before tackling traumatic memories’ (p. 292) and this would generally suggest that supportive interventions precede expressive interventions. The term ‘phase-oriented treatment’ does not suggest a rigid, cook-book like, step by step approach. Rather it suggests a shift of focus over time based on client needs, support, tolerance, control, and motivation.

Van der Kolk et al. (1996) writes that phase-oriented treatment should include the following:

1. Stabilization, including (a) education and (b) identification of feelings through verbalizing somatic states.
2. Deconditioning of traumatic memories and responses.
3. Restructuring of traumatic personal schemes.
4. Reestablishment of secure social connections and interpersonal efficacy.
5. Accumulation of restitutive emotional experiences.

These authors suggest that while some clients may be able to move quickly from one phase to the next, many others will require that the stabilization phase be repeated frequently.

Re-Defining Stabilization

Allen (2001) takes the notion of stabilization and broadens this phase through the use of the term containment. He proposes that containment be given priority in treating trauma and writes of how containment is gained through increasing the client’s level of self-regulation, developing a structure for treatment, and developing and sustaining supportive relationships.

A focus on self-regulation appears especially important and problematic in light of the neurological impact of trauma which may lead to either increased levels of hyper-arousal or more frequent triggering of dissociative states. Both of these responses lead to diminished capacities for self-regulation since both occur at a sub-cortical level and are not immediately accessible to more conscious coping responses. While treatment for sexual behavior problems has often focused on how to modulate sexual arousal to ‘deviant’ or ‘risky’ stimulus there seems to have been far less focus on helping clients regulate the full range of emotional/physiological responses or to understand how sexual arousal fits into the client’s broader experiences of overall physiological arousal or dysregulation. It would appear that the teaching and practice of skills to increase overall self-regulation might be considered as a regular aspect of treating sexual behavior problems. A range of techniques, including but not limited to, neuro-feedback, yoga, tai-chi, music therapies, and more traditional deep breathing and progressive
muscle relaxation techniques might be effectively adapted for use in both an individual and group treatment approach.

While previously treatment for trauma victims had a more exploratory and expressive focus that either implicitly or explicitly encouraged the client to ‘dredge up’ their previous traumatic experiences and ‘get it all out’, a shift has occurred over the past decade that recognizes that an emphasis on exploration and expressiveness without adequate support, structure, and containment not only can be unproductive but can actually lead to deterioration in the client. The abuser field, with a focus on taking responsibility and holding the abuser accountable, has typically required the abuser to provide detailed and repeated accounts of their offenses. When abusers avoided reporting particular offenses, fantasies, or details these individuals were viewed as being avoidant, deceptive, and resistant to treatment. An alternative explanation could be that some clients’ sexually abusive behavior is closely intertwined with their trauma histories and that discussing their offenses triggers both traumatic memories and intense affect that the individual has difficulty regulating or that the impact which trauma has on memory may make memory retrieval (especially for traumatic events) particularly difficult for some clients.

Processing Trauma

Foa (1997) identified three essential components for processing traumatic experiences: 1) engaging emotionally with the traumatic memories, 2) organizing a coherent narrative of the trauma, and 3) modifying core beliefs about the self and the world. In treating sexual behavior problems, we feel that this process is essential in addressing the client’s own traumatic experiences and in addressing the client’s abusive behavior toward others. While this process may appear obvious when addressing the individual’s own trauma history, it may not be as clear when addressing abusive behavior. In treating abusers, clinicians are regularly confronted with individuals who engage in denial, avoidance, and thinking errors in relation to the specifics of their abusive behavior. All of these cognitive processes can be broadly thought of as avoidant coping responses. Generally, these cognitive processes are confronted by the therapist and/or the treatment group, often on a repeated basis, until the individual stops his expression of these cognitions. Quite frequently, we experience clients in treatment groups who learn to say the right thing but never integrate these cognitive lessons into their relational behavior or belief systems.

Allen (2001) points out that avoidance is problematic in that it blocks more effective coping responses but that avoidance of distress is generally adaptive. Our clients frequently have a great deal of embarrassment, shame, and negative self-beliefs connected to their abusive behaviors. In turn, their
abusive behaviors often are connected to their own trauma histories through anxiety, fear, abandonment, anger and other difficult (frequently overwhelming) affective states. In the same way that clients can develop a new narrative for how they think and feel about their own trauma, we want them to develop a new narrative about their abusive behavior. This new narrative seeks to emphasize taking responsibility for the abusive behavior, not as a means of blaming but as a foundation for new, non-abusive coping responses. The narrative seeks to include empathy for the victim as well as compassion for the self. The client may, in fact, experience a great deal of guilt as they go through the process of developing this new narrative and that is appropriate and generally productive. As treatment providers we should be seeking to diminish or eliminate feelings of shame which typically blocks adaptive change and is therefore unproductive. The goal is that the client will actively engage in changing how they participate in current relationships and also consider the possibilities for active restitution for past abusive behaviors.

As a prelude to this phase of treatment or perhaps as a bridge between deconditioning traumatic responses and restructuring the narrative, specific treatment techniques such as Eye Movement Densensitization and Reprocessing (EMDR) (Shapiro, 1995) and Sensorimotor Psychotherapy (Ogden and Minton, 2000) may prove to be useful in bringing physiological and affective states into conscious awareness where they can be identified and more effectively regulated.

Integration

It is during this re-structuring phase of treatment that the more widely used cognitive-behavioral and cognitive restructuring techniques (Resick & Schnicke, 1992; Meichenbaum, 1994; Pithers, 1990) may prove to be more effective. However, even at this phase of treatment, the neurological research suggests that these techniques should be adapted so that multi-modal treatment interventions (music, movement, art, psychodrama, etc.) are used. Given the language processing and verbal memory deficits in this population, the need for multi-modal assessment and treatment interventions, that are less loaded to verbal learning is perhaps the most obvious change we can make in our treatment with these clients. The greater the variety of ways in which we can help individuals learn and integrate new information and experiences the greater the possibility that they can access and use this information when triggered by traumatic cues.

Given the broad range of trauma experiences in our clients’ backgrounds we may be able to learn from the neurological research and trauma focused treatment approaches to adapt our treatment model and interventions to the particular presenting issues and treatment needs of our population.
Discussion

The current level of research on neurological development and neurological functioning indicates that our understanding of brain structure and function will continue to grow at a steady rate over the coming years. Findings from this research are already beginning to impact our understanding of normal adolescent development and explain many of the behaviors (e.g., poor decision making, quickly shifting moods, seeking highly charged emotional experiences, etc.) that are frequently associated with adolescence. While specific research on populations with sexual behavior problems is still relatively new, the increased understanding about the neurological impact of trauma on development, learning, and behavior certainly addresses many of the issues that our clients present in treatment. Some of this research will invariably challenge some of the theoretical models and assumptions we make regarding the etiology and dynamics of problematic or abusive sexual behavior. Ideally, this research should enhance, augment, and complement our theoretical models and treatment interventions.

A concern is that for years we have had research indicating the presence of language and other learning difficulties in some portion of the adolescent delinquent population and we have done little to adapt our assessment protocols or treatment interventions. We have also had a wide range of research and clinical interventions available from the trauma field and other clinical populations, that we have paid relatively little attention to despite the obvious overlap in our client populations. An unwillingness to examine and utilize the information gained from present and future brain-based research would be a disservice not only to our clients but to the community at large. The recent move towards considering a more “developmental” approach to understanding sexual behavior problems is offset by a widespread and often narrowly focused relapse prevention model of treatment. Increasing our understanding of neurodevelopment and neurological processing and incorporating this understanding into our theory and treatment of sexually abusive behavior should be an important and necessary step toward a more developmental approach.

REFERENCES


Le Doux, J. E. (1994). Emotion, memory, and the brain: Neural routes underlying the formation of memories about primitive emotional experiences, such as fear, have been traced. *Scientific American, June*, 50–57.


