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## Introduction: Forensic Applications of QEEG and Neurotherapy

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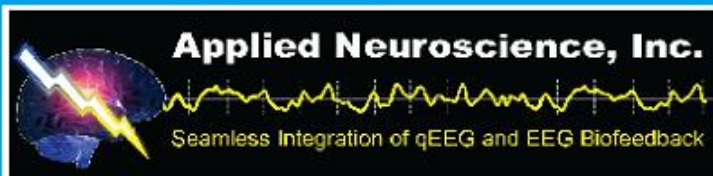
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# Introduction: Forensic Applications of QEEG and Neurotherapy

James R. Evans, PhD

Many of us who have followed the field of neurotherapy from its beginnings have long believed that forensic settings would be ideal locations for this form of treatment. After all, there is a very high incidence of attention deficit hyperactivity disorder and related symptoms among persons convicted of crimes and a great many criminal acts involve impulsive behaviors or loss of control of emotions such as rage. Improved control of behavior and emotion are among the most commonly reported results of neurotherapeutic treatment. Research and clinical experience also demonstrate positive effects of neurotherapy with alcohol and drug abuse and depression, both common accompaniments of criminal behaviors. Furthermore, incarcerated persons would be available for treatment sessions over extended periods of time and can be given strong incentives for successful participation, such as “good behavior” credit toward early release. Why then have there been so few research and clinical neurotherapy applications in forensic settings?

In the early 1990s this editor made several attempts to develop a neurotherapy program in his home state. Initially these attempts re-

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ceived a lukewarm reception but by the middle of the decade a shift in philosophy from rehabilitation to punishment in the penal system occurred and it became obvious that no such program was to be. Perhaps this shift also occurred elsewhere, or maybe a punishment philosophy has always existed in many places. In any event it seems most leaders of the forensic community are not yet ready for neurotherapy. One can hope, however, that this situation is changing, however slowly, and that as more research findings supporting its efficacy are published it will become a major force in both prevention and treatment of criminal behaviors.

This volume contains reports on two of the very few studies known to exist in which neurotherapy was used in forensic settings where attempts were made to measure outcome. Although the studies by Smith and Sams and Martin and Johnson contain some shortcomings in terms of experimental design, both provide support for the efficacy of neurotherapy in such settings and will hopefully provide impetus for much more related research involving sophisticated design, and larger numbers of participants from diverse groups.

As important as treatment and rehabilitation of offenders may be, prevention of criminal behaviors may be even more important. Here again, neurotherapy can play a major role through early treatment intervention with persons at risk for criminal behavior, such as those with behavioral or neurological conditions associated with sociopathology or impulsivity. Attention deficit hyperactivity disorder, especially hyperactive-impulsive and mixed types, intermittent explosive disorder and oppositional defiant disorder are three disorders which come to mind but any disorder of executive function would qualify. Accurate and early diagnosis of the predisposing conditions and their physiological cause is important, and it is here that quantified EEG (QEEG) measures are especially useful. A growing body of research supports the value of QEEG findings in delineating abnormalities of brain electrical activity related to problems with executive control, including engaging in violent acts. Furthermore, many neurotherapy practitioners rely on QEEG results to help plan specific treatment protocols. QEEG research with death row inmates by Vendemia, Caine, and Evans reported in this issue adds to existing research supporting cortical dysfunction in frontal areas in many persons convicted of violent acts. While there is strong evidence for neurobiological abnormalities among criminals, there is evidence that external environmental factors can also play major roles separately or in interaction with abnormal neurology. The article by Kaiser emphasizes this, as he provides evidence supporting the role of

large group size and related feelings of anonymity and rejection to school violence by teens.

Children and adults who have difficulty sustaining attention and controlling impulses often struggle with interpersonal relationships, not only with parents, teachers and spouses, but with law enforcement personnel as well. Such difficulties may lead to seeking relationships with individuals or groups where affiliation needs are taken advantage of, such as by gang leaders who use these vulnerable individuals in criminal dealings. Similarly, these individuals may also be predisposed to impulsive but false confessions to crimes or may fail to attend appropriately to directions from police, judges and others in forensic settings, which could lead to a high incidence of such persons inappropriately convicted of crimes. Highly reliable and valid measures of deception would be extremely useful in such cases, as present methods of lie detection are considered insufficiently reliable to be used as evidence in court. Articles by Thornton and by Vendemia, Buzan, Green, and Schillaci in this special issue describe sophisticated QEEG measures of deception which could revolutionize this aspect of forensics.

It is the hope of this editor that the research and speculation reported here portends later forensic editions a few years from now which will contain articles providing strong scientific support for the value of neurotherapy and QEEG in preventing, diagnosing, and treating forensic-related issues.