

## **Impulsive versus Premeditated Aggression: Implications for *Mens Rea* Decisions**

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**Science can provide more information about the nature of aggressive acts, and therefore the *mens rea* of criminal offenses, than is commonly assumed. For example, progress has been made in classifying aggression as impulsive or premeditated within the context of the role of conscious experience in controlling behavior. This review of the status of the scientific ability to distinguish conscious from unconscious acts and more specifically impulsive from premeditated aggressive acts is organized around four themes: (i) How is aggression defined and measured in general? (ii) How does the distinction between impulsive and premeditated aggression relate to the legal concept of *mens rea*? (iii) How do various scientific disciplines contribute to the mind/body discourse? (iv) What risk factors are associated with impulsive and premeditated aggression respectively? The authors conclude that the most promising approach to researching the nature of behavioral intention and motivation is to apply a discipline neutral model that integrates the data from multiple disciplines, collectively designated the cognitive neurosciences. Copyright © 2003 John Wiley & Sons, Ltd.**

Forensic decisions involving criminal behavior are based on an interpretation of acts (*actus reus*) within the rules of society and a related mindset or *mens rea*. This legal process cuts to the core of the long-standing debate about human self-control. Simply asked, to what extent can and do individuals actually control their behavior at any given moment? Is individual self-control a delusion? Although the propositions of this debate involve age-old philosophical theories, current research using new techniques (e.g., psycho-social and brain scanning techniques) have provided new data and suggested new theories about what can best be described historically as the mind/body and/or free will controversy.

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To put this debate into a current scientific perspective, aggressive/violent behaviors that are a common forensic problem will be reviewed. To what extent are aggressive acts premeditated (i.e., planned, intentional, or proactive) and to what extent are they committed without thinking (impulsive or reactive)? To what extent are the aggressive acts unconscious? To what extent do these acts involve lack of concern about consequences to self or others? An overview of the current scientific status of the answers to these questions will be reviewed in five sections: (i) *mens rea* from a forensic viewpoint; how does the distinction between impulsive and premeditated aggression relate to *mens rea*? (ii) current scientific disciplines that are intimately involved with research on the mind/body debate; (iii) defining and measuring aggression: risk factors and criterion measures for premeditated versus impulsive aggression; (iv) UTMB aggression research; and (v) impulsivity and mental responsibility for criminal acts. This review of the current status of research on aggression and violence will not provide definitive answers to the questions posed earlier, for there are no definitive answers at this point in time. It will, rather, point a direction in line with an observation made in 1969 by law professor Perkins: "As more is learned about human conduct in general, and about regulating and controlling such conduct, many changes in the general administration of criminal justice can be expected. There will probably be revolutionary changes in the treatment of those who have been convicted of a crime. But so far as criminology itself is concerned the indications are that any changes in regard to the physical element will be in the direction of giving more heed to this part of the problem,—rather than less" (Perkins, 1969, p. 741).

### **MENS REA: A FORENSIC PERSPECTIVE ON AGGRESSION AND VIOLENCE**

*Mens rea*, in Latin meaning "guilty mind," is "(t)he state of mind that the prosecution, to secure a conviction, must prove that a defendant had when committing a crime; criminal intent or recklessness" (Garner, 1999). In contrast to the criminal act itself, *actus reus*, *mens rea* is the equally essential component of a criminal offense. The criminal intent or purpose of the actor is required if the act is to be considered criminal. Thus, *mens rea* serves to distinguish a criminal offense from the same act committed accidentally or for some legal or non-criminal purpose such as self-defense.

There is a wide range of alternative components of *mens rea* adapted in various criminal codes of the United States and elsewhere (e.g., intent, malice, premeditation, etc.) that will not be elaborated upon herein. Rather, as noted, we will concentrate on *mens rea* as it applies to acts of aggression and violence without reference to the various subtleties implied in its components. We will concentrate on whether an aggressive or violent act was impulsive or premeditated. The relevance of this distinction within the context of *mens rea* was made clear by Morse (1999): "... a standard definition of first degree murder is the premeditated, intentional killing of another human being. If the defendant kills without premeditation, the defendant cannot be guilty of first degree murder. The *mens rea* claim is simply that evidence of mental abnormality casts doubt on whether a defendant possessed the requisite *mens rea*... a defendant who kills immediately in response to command

hallucinations does not premeditate according to the dominant definition of premeditation and therefore cannot be guilty of first degree murder” (pp. 161–162).

In summarizing, common mental elements of criminal offenses—intent, malice, specific intent, premeditation, and recklessness—presume conscious awareness and contemporaneous abilities to form a wish to act and/or to anticipate consequences from the act. Whether actual psychological intent amounts to criminal intent, and how much conscious anticipation establishes a mental state of recklessness, may be difficult to quantify in individual cases. As will be appreciated in the following sections, evolving scientific knowledge promises to cast more light on these often nebulous issues. Certainly, developing techniques for distinguishing impulsive from premeditated aggression should eventually be of assistance in determining whether an act was premeditated or not.

## **MIND/BODY DUALISM AND BEHAVIORAL CONTROLS: A MULTIDISCIPLINARY PROBLEM IN SEARCH OF A MODEL**

One of the most powerful and often debated statements about mind/body dualism was Descartes’ observation that “I think, therefore I am.” This observation has come to personify the dualist debate. Descartes proposed that the brain was divisible into parts but the mind was indivisible. Conscious awareness of self was part of the indivisible mind (Taylor, 1999). Damasio (1994), as part of a compelling argument against Cartesian dualism, noted that Descartes’ error was “the abysmal separation between body and mind” (p. 249). However, Damasio also noted “the Cartesian split pervades both research and practice” (p. 251). This is the problem that will be very briefly addressed in this section. How does science currently broach the mind/body split? This is a broad question, which will be superficially reviewed here but in enough depth to support the observation that the most pressing need in the study of human self-control is the need for a discipline neutral model as a context for studying the mind/body controversy (Barratt and Slaughter, 1998).

A meaningful question is why as we propose a discipline neutral model as a basis for understanding a person’s conscious experiences and behavior. The answer is simple. Different disciplines and subdisciplines describe the same phenomena using different languages and different methodologies. The lack of a standard language or model results in confusion in both communication and procedures. This was made clear by Lazare (1973) in his demarcation of four “hidden conceptual models” that psychiatrists use in clinical practice to describe aggression: (i) the medical model, based primarily on biological concepts; (ii) the psychological model, typified by psychoanalysis and cognitive concepts; (iii) the behavioral model, grounded primarily in learning theory concepts; and (iv) the social model, in which patients are assessed in a social context. Psychiatrists with backgrounds in these different contexts not only diagnose the same patients differently but also intervene with different therapies.

Further evidence for the need for a discipline neutral model is related to the development of “new” scientific disciplines that pertain to the division of labor for studying the biopsychosocial nature of persons. Consider the disciplines that purport to broach the study of mind and body. Beyond the subdivisions in the

traditional sociological, psychological, and biological disciplines, the development of new professional societies reflect broad areas of “overlapping research” across disciplines related, for example, to the study of behavior and biology that are, for example, related to aggression and impulsivity. The Neuroscience Society, whose members emphasize the study of the nervous system, has become one of the largest professional societies in the world. This group of scientists studies “one part” of the mind/brain split, namely the nervous system. Within psychology, the split into cognitive and behavioral divisions has resulted in describing the person from very different perspectives, and recently a “*cognitive neuroscience*” society has emerged, which held its ninth annual meeting in San Francisco in 2002. The members of this society are involved with studying both the mind and brain. A still more recent methodological approach has been termed “social cognitive neuroscience” (Ochsner and Lieberman, 2001). Paralleling these movements toward specialization has been the publication of large texts that exemplify the extensive research activity in each of these disciplines: (i) Kandel, Schwartz and Jessell (Eds.). (2000). *Principles of neural science* (4th ed.) (1414 pages); (ii) Posner (Ed.). (1989). *Foundations of cognitive science* (888 pages); (iii) Gazzanigol (Ed.). (1995). *The cognitive neurosciences* (1447 pages). As Damasio noted, dualism exists, and we suggest much in these texts is “old wine in new bottles.” What is different is the techniques, which lead to data that need to be interrelated. As noted, we propose there is an urgent need for a discipline neutral model to allow us to better assess the current status of mind/body research.

Barratt (1972, 1985) proposed a modification of a cybernetics or general systems theory model described by Ashby (1960) as one approach to a discipline neutral model. Barratt’s model contains four categories of descriptors of a person. The four categories parallel the four hidden conceptual models in psychiatry that Lazare proposed: (i) the biological; (ii) social or environmental; (iii) behavioral; (iv) cognitive or psychological. Interestingly, Ochsner and Lieberman (2001) in their discussion of “social cognitive neuroscience as an emerging field of research” (p. 717) use a model with four levels of analysis, which also corresponds to these four categories. Barratt’s model was proposed not as the only or unique approach to a discipline neutral model but as one example of a model that allows for the synthesis of data across the life science disciplines. Because of space restrictions, this model will not be discussed in depth herein, but it has been outlined elsewhere (Barratt, 1985; Barratt and Slaughter, 1998). The lack of integration across these four classes of constructs is proposed as the main source of confusion in resolving the mind/body controversy.

One construct that is pervasive in the mind/body literature is consciousness that is related to awareness of intentions, hence, *mens rea*. On the July 1999 cover of the *American Psychologist*, a cryptic note read “Behavior: It’s Involuntary.” Using different methodologies, four articles in that issue essentially came to the same conclusion: We perceive ourselves to have much more control over our human behavior than we actually have (Park, 1999). The four articles discuss the role of automaticity in intention, motivation, and experiments involving implicit learning. Bargh and Chartrand (1999) note that “the automaticity of being is far from the negative and maladaptive caricature drawn by humanistically oriented writers . . . rather, these processes are in our service and best interests—in an intimate and knowing way at that. They are, if anything, mental butlers who know our tendencies

and preferences so well that they anticipate and take care of them for us, without having to be asked" (p. 476). Wegner and Wheatly (1999) described an interesting series of experiments in this same issue of the *American Psychologist* providing data to demonstrate that we experience everyday life events "to the degree that an apparent causal path is inferred from thought to action" by us (p. 483). These cognitive experiments have broad implications for *mens rea*.

From another perspective, there is a wide range of biological evidence that involuntary input in two sensory modalities can unconsciously complement and enhance discrimination in both modalities (McDonald and Ward, 2000). For example, unconscious mechanisms involved in controlling behavior are evident in neurological disorders. One example of a neurological deficit that results in not being consciously aware of part of the environment is unilateral neglect. As Kinsbourne (1995) described this disorder, in contrast to general sensory disorders these patients "do not receive inputs from the left or act toward that side"; they are not aware of this behavior and also are not aware of this restriction in sensory input and behavior (pp. 1325–1326). Many similar examples could be presented to emphasize biological bases of unconscious acts.

As an example of a common problem involving *mens rea*, impulsive aggression is discussed below. As will be noted, impulsivity not surprisingly is a risk factor for impulsive aggression. Impulsivity is defined clinically as "an individual's predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions to themselves or others" (Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001). Impulsive acts are unconscious at the time they are committed; they may become known to the self through introspection.

Consciousness is being studied using a wide range of models related to "brain circuit" approaches. Taylor (1999) in his book *The race for consciousness* summarizes much of the current brain research on consciousness and many of the related theories. In his own theory of consciousness, Taylor stresses cognitive/motor interfaces in the brain involving neural structures once thought to be primarily related to motor activity (e.g., basal ganglia). He proposes a "cortex–basal ganglia–thalamus" system as crucial in the cognitive/motor interface. He asks, "How does this system do its amazing work of allowing us to learn actions, plan and reason, and even be creative? The answer must be in terms of how frontal cortical activity is controlled by the basal ganglia, an influence absent from the posterior cortex" (p. 200). Barratt proposes that the basal ganglia play a crucial role in the biological bases of impulsiveness, but he also emphasizes the role of the posterior cortex (Barratt, Stanford, Dowdy, Liebman, & Kent, 1997b). Another research approach in the study of consciousness and intentions contrasts the behavioral and neurosciences approaches. Rachlin (2000) proposes studying self-control from a strictly behavioral point of view and offers a critique of models based on cognitive neurosciences or a strictly cognitive approach. He proposes a model of "teleological behaviorism" as a basis of self-control. This model involves "suspension of the concept of an *inner life* as distinct from *life*," which he suggests is dualistic (Rachlin, 2000). He considers the models used by neuroscientists and cognitive psychologists to be "dualistic" and not amenable to scientific study to the extent that they involve private events.

In contrast, a neuroscience approach to consciousness and intentions that emphasizes social interactions was presented by Freeman (1995). He notes that

“minds are the collections of thoughts and beliefs, which are the actualization of intentional structures in brains. Consciousness is an attribution by each brain to other brains in recognition of the existence of others beside the self . . . the awareness of self is not in control but continually runs to catch up with self . . . Causality is properly used to described intentional actions and their consequences” (p. 154). This neuroscience approach encompasses social, biological, and cognitive constructs and actually is closer to a discipline neutral approach than the more limited behavioral or cognitive approaches. A large part of the current research on consciousness that involves the study of the nervous system uses brain-imaging procedures of various types. Before leaving this section, it should be noted that these procedures have in some instances resulted in what Uttal (2001) has referred to as “the new phrenology”. There is a tendency to localize a cognitive function in one area of the brain. For example, emotions are related to the amygdala or “executive functions” are found in the frontal lobes. Uttal as well as others (e.g., Freeman above) point to the need for caution in this line of reasoning in the cognitive neurosciences. Uttal notes that “the mentalist zeitgeist, dominated by cognitive neuroscience, has reified separate mental modules and their distinct cerebral localization” (p. 231). He goes on to note that cognitive neuroscientists assume that their techniques “do indeed peer directly into the organization of the brain–mind”. He notes that cognitive neuroscientist must learn to “live happily with their limits and constructs” (p. 231). Thus, although new techniques such as brain imaging have allowed for a new approach to studying consciousness, these techniques could also easily lead to a misunderstanding of the role of the brain in consciousness.

This section was not developed to provide closure on understanding consciousness and intentions but to develop an appreciation for the wide range and status of research that is directed at trying to understand conscious awareness related to behavioral control. The need for a “discipline neutral” model for better understanding this wide-ranging research aimed at measuring intentions and consciousness appears obvious. Closure will come through the synthesis of data across disciplines using a discipline neutral model.

## **DEFINING AND MEASURING AGGRESSION: RISK FACTORS AND CRITERION MEASURES FOR PREMEDITATED VERSUS IMPULSIVE AGGRESSION**

Aggression is a common form of behavior that in various and extreme forms often constitutes a crime. Aggressive acts can be measured many ways including (i) frequency; (ii) intensity; (iii) target; (iv) mode (e.g., verbal versus physical); (v) type (e.g., impulsive, premeditated, or secondary to a medical disorder); (vi) pattern (e.g., cycles of intensity). In this presentation, we will concentrate on types of aggression that have direct implications for *mens rea* and murder. Is an aggressive act premeditated and impulsive or not planned? Can premeditated and impulsive aggression be measured? Are premeditated and impulsive aggressions on a continuum or are they independent constructs? Can persons reliably describe their aggressive acts as premeditated or impulsive? What are potential risk factors for

impulsive aggression? Answers to these questions will be sought in a brief review of the results of a research program conducted over the past decade at the University of Texas Medical Branch (UTMB) in Galveston, Texas. This research is part of a long-range study of impulsivity and impulse control disorders dating back to 1959 (Barratt, 1959).

### **UTMB Aggression Research**

In the late 1980s, it was decided to extend our study of impulsivity and impulse control disorders to the study of aggression and violence. We were in a favorable position to study aggression among inmates in prison because a prison hospital on the UTMB campus served all of the serious medical needs of inmates housed in prisons in the southern half of the State of Texas. Buses made daily trips to and from the prisons. We could screen inmates for violence in prison and then bring them to the Cognitive Neuroscience Laboratory at UTMB for assessments. Parenthetically, all of our research was reviewed and approved by the UTMB Internal Review Board for research. Further, no attempts were made to coerce subjects to participate. In fact we encouraged inmates not to participate unless they were seriously interested in seeking help for their aggression.

We were interested in exploring the use of anti-convulsants in controlling aggression based on earlier studies with lower animals. In our early research with primates and their "impulsive-like" behaviors, we developed a theory that intra-individual variability of performance on timing and rhythm tasks among lower primates was a model for impulsivity. We had demonstrated that intra-individual variability of behavior among humans was related to self-report measures of impulsivity. We demonstrated in these early studies using lower primates and cats that lesioning the amygdala reduced intra-individual variability of performance while the animals performed complex operant tasks (Barratt, 1963, 1967). In unpublished studies we also observed that "kindling" the amygdala decreased intra-individual variability of behavior. Further, Dilantin<sup>®</sup> (phenytoin) had the same effects as kindling on intra-individual variability of behavior. Thus, in our studies of human aggression as an impulse control disorder in the late 1980s, we decided to determine whether phenytoin would decrease aggression on the assumption that all aggressive acts involved impulsivity. Earlier studies that had been reported in the literature using phenytoin to control aggression had obtained equivocal results (see Barratt, Stanford, Felthous, & Kent, 1997a, for a historical overview). Consistent with the earlier published results, our initial results were also equivocal. Some inmates responded with a very significant reduction in aggressive acts when administered phenytoin, while for other inmates phenytoin was ineffective. Why would there be this discrepancy in responses? We reviewed the data describing the aggressive behaviors in the responders and non-responders and one difference was clear: The responders had displayed impulsive or reactive aggression while the non-responders had displayed primarily premeditated or planned aggressive acts. We then proposed that aggression was not a monolithic impulsive disorder but, rather, consisted of at least three types: (i) impulsive or reactive; (ii) premeditated or proactive; (iii) aggression secondary to medical (including psychiatric) disorders (Barratt, 1991). We further proposed that both impulsivity and anger were

significantly related to impulsive aggression but not to premeditated aggression. Our next goal was to develop a technique to measure impulsive versus premeditated aggression. Based on aggression studies reported in the literature, we developed a semi-structured interview for this purpose. The interview had good reliability (Barratt, Stanford, Kent, & Felthous, 1997a). Cognitive psychophysiological and personality profile differences were clear between inmates with impulsive versus premeditated aggression. The profiles for the impulsive aggressive inmates included low cognitive verbal skills (e.g., verbal memory), significantly lower peak P<sub>300</sub> amplitude ERPs (especially in the parieto/occipital cortex for the "target" stimuli in a modified oddball task), and low reading scores. Impulsivity and anger were not significantly different between impulsive and premeditated inmates as we hypothesized. However, all inmates met DSM-III-R criteria for antisocial personality disorder (APD) and, thus, one would not necessarily expect them to differ on impulsivity, which is implicated in APD. Impulsivity was significantly higher in inmates than in non-inmate control subtests.

We found (Barratt et al., 1997a) that phenytoin significantly reduced the frequency and intensity of impulsive aggressive acts but not premeditated aggressive acts. Further, phenytoin significantly changed the target P<sub>300</sub> ERPs in the direction of being more "normal" as aggression was decreased. Thus, biology and behavior were convergent in defining the construct of impulsive aggression.

The serum levels of phenytoin among inmates whose aggressive acts responded to phenytoin were in general lower than those levels normally obtained for the control of epileptic seizures. Inmates did not report any conscious awareness of cognitive changes related to drug or placebo conditions when taking phenytoin.

When inmates were questioned about their impulsive aggressive acts, they replied that they did not know why they persisted in these self-defeating aggressive behaviors. The inmates' behavior was monitored on a 24 hour basis and their aggressive acts were well documented by correctional officers. Aggressive acts resulted in either a longer time before qualifying for parole review and/or placement in a more restricted living arrangement. One would have predicted these punishments to result in the inmates controlling their aggressive behaviors. The inmates noted that they would "swear I will not do this again" after committing an impulsive aggressive act but, "I always do it again."

Since impulsivity was not different between inmates with high and low levels of impulsive aggression because all inmates were characterized by APD, we decided to extend this study to a non-inmate and non-clinical population who were free of APD. Based on the content of the structured interview which we designed to classify impulsive versus premeditated aggression, we developed a "self-report" questionnaire, the Aggression Acts Questionnaire (AAQ) (Barratt, Stanford, Dowdy, Liebman, & Kent, 1999) to measure impulsive and premeditated aggression. One goal of developing the AAQ was to determine whether impulsive and premeditated aggression could be measured by self-reports among a non-clinical population. We were also interested in answers to other questions: (i) Are impulsive and premeditated aggression independent dimensions? (ii) Can persons assess their own behaviors to differentiate between these two types of aggression? (iii) Importantly, do impulsivity and anger relate to impulsive aggression but not to premeditated aggression among persons who do not have an APD? The AAQ was administered to 216 college students along with the Barratt Impulsiveness Scale (BIS-11; Patton,

Stanford, & Barratt, 1995), the Buss–Perry Aggression Questionnaire (Buss and Perry, 1992), and Part III of the Spielberger State–Trait Anger Expression Inventory (Spielberger, 1988). The items on the AAQ were all derived as noted from our semi-structured interview for differentiating between premeditated and impulsive aggression. In taking the AAQ, the subjects listed four aggressive acts that they had committed and then answered 15 questions about each act on a five point scale, from definitely yes to definitely no. A factor analysis of the AAQ items resulted in four orthogonal dimensions: (i) impulsive aggression (typical items were, “I now consider the act to have been impulsive,” “I lacked self-control,” and “I felt guilty following the act”); (ii) mood on the day the act occurred (typical items were, “The day the act occurred I was having a bad day in general”, and, “I was in a good mood before the act occurred” (reversed scoring)); (iii) premeditated aggression (typical items were, “The act led to power over others”, or, “Improved social status for me” and “The act was planned”); (iv) agitation (typical items were, “I became agitated and emotionally upset during the act”, and, “My aggressive behavior led to poor social interactions during the incident”). These results indicated that not only were impulsive and premeditated aggression independent dimensions, but these latent structure dimensions were present in a non-clinical population of subjects who were able to self-assess their aggressive attributes by recalling their behaviors when completing the AAQ. Further, when for each individual the ratio of their factors scores on the impulsive and premeditated aggression dimensions were computed, the frequency distribution of the ratios approached a normal distribution. This suggests that at the extremes of these distributions there were individuals who were more characterized by committing purely impulsive or purely premeditated aggressive acts, while the majority of persons committed a percentage of both. Based on our research with inmates including youthful offenders (Barratt, Felthous, Kent, Liebman, & Coates, 2000), we estimate that about 20% of persons at each extreme of the distribution commit primarily impulsive or premeditated acts while 60% of the persons commit a mixture of both types of act.

Both impulsiveness and anger were significantly correlated with impulsive aggression factor scores but not with premeditated aggression factor scores. This is consistent with our 1991 hypothesis and the suggestion that these two personality traits are “causal” factors in impulsive aggression. This line of research has emphasized the synthesis of multi-disciplinary techniques in defining impulsive and premeditated aggression.

In summary, based on the above suggestion that impulsivity is a risk factor for impulsive aggression, “normal” persons were able to assess and classify their impulsive aggressive behaviors in retrospect, but according to interview data they were not able to consciously inhibit this behavior at the time of the act. Further, abnormal patterns of brain electrical activity were related to impulsive aggression and were reversed as aggressive behaviors declined under the influence of phenytoin. Were these changes in aggression related to conscious or unconscious control of behavior? Obviously, there is a long way to go to better understand the conscious experiences related to reliably classifying aggressive acts as premeditated or impulsive. The implications of this research for *mens rea* and assigning penalties for homicides is that science is approaching an objective basis for making decisions about whether an act of murder, for example, is impulsive or premeditated.

## IMPULSIVITY AND MENTAL RESPONSIBILITY FOR CRIMINAL ACTS

This new and still developing understanding of impulsive aggression raises important questions about its applicability to the unconsciousness defense, the insanity defense, the extreme emotional disturbance defense, and specific elements of *mens rea*. If one accepts that a truly impulsive act is unconscious, would it not qualify for an unconsciousness defense? After all, the unconsciousness defense has been applied not only to defendants who lost consciousness in the usual sense, but also to those whose acts occurred during somnambulism or constituted automatism. Undoubtedly the concept of an “unconscious” impulsive act qualifying for an unconsciousness defense would be a “hard sell” for policymakers and ordinary citizens, if not behavioral scientists, for two reasons. First, the alertness and awareness of surroundings apparently allows the individual to commit the act. Second, complete acquittal for such a common mental state during the commission of a crime does not seem to be a satisfactory way of controlling criminal activity.

Opposition to applying impulsive aggression to the insanity defense would predictably result from the same type of conceptual and social concern. One of the main debates, even among supporters of a special insanity defense, is whether it should be restricted to a cognitive test, e.g., rationality, or whether it should include a volitional test as well, e.g., ability to control. The American Law Institute’s volitional prong could be satisfied if the act were uncontrollable and a result of impulsive aggression. First, however, impulsive aggression would need to be recognized as a mental disease or defect. Even more problematic, however, is the disqualifying criterion when the disorder is represented only by repeated criminal conduct. On the one hand, the criterion was intended to exclude antisocial personality disorder (APD) for consideration for the insanity defense. On the other hand, recent research suggests that APD as well as impulsive aggression, as demonstrated here, is not manifested only by undesirable behaviors.

Even if this exclusionary criterion were to be reworded to reflect current understanding (e.g., more clearly excluding disorders of impulse or personality disorders or excluding only those behaviors that are not due to an actual disorder), any further liberalization of the insanity test in the United States would probably not be popular because of the acquittal outcome. However, if the possibility of “indeterminate” and lengthier confinements were more widely known, even those most concerned with public safety could favor such an approach. Then the handling of those who committed acts of “impulsive aggression” would be subjected to the types of criticism aimed at sexually violent predator laws in the United States and British law concerning psychopathic issues which have been dealt with in other recent issues of *Behavioral Sciences and the Law* (see generally issues 18 (1), (2/3)).

The extreme emotional disturbance defense, hybridizing insanity and diminished responsibility approaches, would most appropriately take into account the nature and existence of impulsive aggression. Here a serious mental disorder is not necessarily required and impulsive aggression would fit the requirements for this defense, in contrast to a “heat of passion” defense wherein the outburst is thought to be that of a normal person with no specific defect of judgment or self control.

This brings us to the more likely and practical consideration: application to the mental elements of criminal offenses. Most obviously, but probably under appreciated, is the application to the element of premeditation. If the act can be shown to have resulted from impulsive aggression, this argues against premeditation. On the other hand, impulsivity could support culpability where recklessness (i.e., “mindlessness” rather than “conscious indifference”) is an element of the crime. Far more typically, psychiatric and psychological evidence is produced to disprove specific intent. Although relevant laws in the United States are far from uniform and not all states permit diminished responsibility defenses, it is with this defense in particular that impulsive aggression can be most appropriate, depending upon the precise nature of specific intent. If, as in England, treatment without hospitalization could be enforced by the judgment, this approach could satisfy those who wish to apportion guilt to the appropriate mental state, address this underlying cause and rehabilitate the offender, and protect the public from further acts of violence.

## A SUMMARY STATEMENT

The many facets of *mens rea* that relate to intent or motivation are the subject of a wide range of multidisciplinary research projects. One of the main problems in this research is interrelating the results from different disciplines into a synthesized profile of intent or preplanned criminal acts versus criminal acts that are impulsive in nature. It is proposed herein that a discipline neutral model that can be used to synthesize data from the many disciplines involved in cognitive neuroscience research is a necessary prerequisite for the current research efforts to achieve a practical level of significance for making forensic decisions. However, it is also obvious that the main basic assumption in *mens rea*, namely that individuals without mental illness or defect are capable of controlling their behavior, is seriously challenged from several research viewpoints, particularly when an act is the product of impulsive aggression.

Is it too early to speculate how laws will be written to both protect the integrity of social institutions and be consistent with the nature of persons with regard to self-control and individual freedom? Is crime a disorder? (Raine, 1993, pp. 287–320). Are far more criminal acts the result of a treatable disorder than commonly assumed?

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