

# Commentary: The Forensic Psychiatry of Frontotemporal Dementia

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The article by Dr. Mendez is a timely contribution to the literature on the study of antisocial behavior associated with frontotemporal dementia. My commentary is focused on the need to take into account the neuroscientific advances involving frontotemporal dementia and the way in which such information may be conceptually helpful in furthering our understanding of forensic psychiatric cases of individuals with frontotemporal dementia. I place particular emphasis on the need to present basic psychiatric-legal aspects of such cases before we attempt to integrate the relevant neuropsychiatric information. I use the cases presented by Dr. Mendez to highlight this important need in forensic neuropsychiatry. With this commentary, I support the view that both theoretical and practical aspects of neuropsychiatric and forensic psychiatric knowledge must be carefully integrated to achieve effective forensic neuropsychiatric assessments.

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Dr. Mario Mendez has written an article of great value for forensic neuropsychiatry. In “The Unique Predisposition to Criminal Violations in Frontotemporal Dementia,”<sup>1</sup> he describes four patients with diagnosed frontotemporal dementia (FTD) who exhibited antisocial behavior of psychiatric-legal importance. He informs us that problematic behavioral difficulties are not uncommon in frontotemporal dementia and raises many important questions in his evaluation of the four cases. In this commentary, I focus on additional matters of potential psychiatric-legal importance involving persons with FTD. Whenever possible, I use Mendez’s cases to highlight those concerns.<sup>1</sup>

## The Neuromoral System

As explained by Mendez, although neuroimaging studies of FTD may show abnormalities in frontotemporal brain regions, functional neuroanatomic technologies alone lack sufficient power to make a diagnosis.<sup>1</sup> However, as he points out, recent research involving persons with FTD supports the idea that it is associated with abnormalities in a cerebral network that includes the ventromedial prefrontal cortex (vmPFC).<sup>1</sup> In another recent publication,

Mendez states that the vmPFC, particularly the right vmPFC, is a core component of a “neuromoral” system that becomes activated whenever individuals are challenged with tasks that demand the processing of explicit moral judgments.<sup>2</sup> He also states that, “The vmPFC, with its rich interconnections with limbic structures, mediates these strong, automatic, negative “gut reactions” to moral violations that prevent individuals from implementing morally impermissible actions . . .” (Ref. 1, p 322), and cites the studies of the experimental philosopher Joshua Greene and his colleagues,<sup>3,4</sup> as well as the work of Moll and his colleagues.<sup>5</sup> In another publication, Mendez stated that “. . . Most moral judgments are rapid, involuntary, and intuitive; whereas, deliberate rational reasoning is often *post hoc* rationalization for judgments that have already occurred. Normative morality appears to be rooted in an intrinsic neuromoral network” (Ref. 2, p 616). I tend to agree with the idea that rapid and involuntary processes are likely to be important in the generation of moral judgments. This line of thinking makes particular sense if we rely on the results of the studies of Greene and Moll and their colleagues. However, I find it prudent to consider the statement of Greene and Haidt<sup>6</sup> to the effect that morality is not likely to be of a “natural kind” in the brain. Instead, they believe that the ordinary concept of moral judgment is likely to be associated with a disparate combination of both cognitive and affective processes. If this is true, then it makes great sense

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to continue to consider in which ways abnormalities involving both affective and cognitive factors are likely to play a role in mentation and behavior associated with persons with FTD who also happen to exhibit antisocial behavior.

Persons who have FTD and display associated antisocial and criminal behaviors also present with a problem that has yet to be fully appreciated in forensic neuropsychiatric-legal contexts, and in other behavioral legal settings. To appreciate this problem we must take into account that the four cases presented by Mendez appear to involve persons in the early stages of FTD. Mendez reminds us that persons who display early symptoms of FTD associated with antisocial behavior of criminal significance may present with a degree of cognitive impairment insufficient to qualify as an impairment of rationality as defined by the law. However, Mendez also suggests that if persons who have FTD also have abnormalities in vmPFC areas, then such abnormalities may also be associated with “. . . diminished emotional experience with reduced sociomoral emotions, such as compassion, shame, guilt, and regret . . .” (Ref. 1, p 322). Nonetheless, he states that there is a need to take into account the serious deficit in moral rationality that is often present in persons who have FTD. Therefore, he recommends considering, “. . . a reappraisal of how we view criminal violations among brain-injured patients and how we can incorporate neurological factors involved in moral capacity or moral cognition” (Ref. 1, p 322).

### **The Role of Neuropsychological Assessments in the Forensic Psychiatric Evaluation of Persons With Frontotemporal Dementia**

Mendez’ recommendation still leaves us with the challenge of articulating a course of practical action. I think it is important to emphasize that the evaluation of FTD patients via a typical psychiatric history, a neurobehavioral examination, and brain functional neuroimaging may not be sufficient to arrive at an optimal characterization for psychiatric-legal purposes. A potentially useful approach should consider a role for psychometric assessments, including neuropsychological testing designed to characterize the neuropsychological deficits associated with FTD,<sup>2,7-9</sup> especially those deficits of potential psychiatric-legal importance. Since previous research suggests that a large subset of persons with FTD are

at risk of engaging in behaviors and thoughts of dubious moral value, we must endeavor to use tools that may help us characterize relevant deficits, such as those involving moral discrimination. Mendez provides us with a lead when he informs us that FTD is associated with decreased emotional empathy.<sup>1</sup> He gives us another clue in his recent article on the neurobiology of human moral behavior, where he referred to studies that document abnormalities in theory of mind and defects in other phenomena of social significance, such as face processing.<sup>9</sup> He also stated that persons with FTD can present with deficits in emotional empathy. I agree with the idea that theory of mind (ToM) is intrinsically associated with the ability to appreciate that others have thoughts, feelings, and beliefs.<sup>2,9</sup> Furthermore, available information indicates that psychometric instruments such as the Reading the Mind in the Eyes Test and the Faux Pas Test<sup>8,10,11</sup> may be effectively used to assess theory of mind capabilities in persons with FTD.<sup>8</sup> Since antisocial behavior *per se* is not likely to be closely associated with serious cognitive deficits in persons with FTD, persons with frontotemporal dementia who present with antisocial behavioral problems are likely to have sufficient cognitive abilities to enable them to be successfully tested with ToM measures.<sup>8</sup>

At least one reason that assessing ToM capacity with psychometric instruments in persons with FTD is important is that ToM capacity is likely to be an important determinant of empathy. Given that ToM can be defined as the ability to appreciate the thought, feelings, and beliefs of others,<sup>2,8</sup> it is likely that empathy is closely linked to ToM abilities.<sup>12,13</sup> The act of empathizing has been defined by psychologist Simon Baron-Cohen as, “. . . the drive to identify another person’s emotions and thoughts, and to respond to them with an appropriate emotion” (Ref. 14, p 2). It is important to consider formally testing persons with FTD provided that they have sufficient cognitive abilities to understand the tests. Available information indicates that at least some persons with FTD are able to complete ToM tests despite cognitive deficits in areas such as executive functioning. Likewise, persons with early-stage FTD are likely to be testable with instruments designed to assess empathy. Ultimately, the ability to test for empathy depends on the specific person who suffers with FTD and the type of instruments used to evaluate for empathy.<sup>15</sup>

Given the available information on empathy, I agree with the idea that empathy is intrinsically related to an emotional component.<sup>14</sup> Also, there appears to be at least a subset of persons with FTD who present with deficits involving emotional components of empathy.<sup>1</sup> However, the cognitive deficits associated with FTD may help to explain the deficits in empathy observed in persons with FTD. For this reason, among others, persons with FTD should be assessed for cognitive deficits with neuropsychological testing. It is important to emphasize that there is substantial information indicating that persons with FTD have a significant degree of cognitive deficit, even during the early stages of the disease.<sup>8</sup>

Mendez writes that, “Patients with FTD can commit criminal violations while retaining the ability to know moral rules and conventions” (Ref. 1, p 318). This statement highlights the important problem of what it means “to know.” Although the statement to know could be reasonably interpreted as having a sufficient degree of rationality to appreciate the basic meaning of the rule of law, we should also consider that the law may encompass a broader consideration, by taking into account a person’s ability to appreciate the meaning of the law. The ability to appreciate may depend not only on cognitive but also on affective factors, such as the degree of fear or depression affecting an individual at the time of involvement in criminal behavior. Therefore, testing for affective factors may be very important in persons with FTD who present with antisocial behavior.

Furthermore, there may be other concerns that cannot be appropriately assessed from a psychiatric-legal viewpoint until both cognitive and affective factors are carefully considered. For example, a person who has FTD may be cognitively able to understand the accusations against him. However, like many persons with FTD, he may also exhibit a serious degree of apathy, to the point that he is unable to appreciate the need to work with an attorney in developing a legal defense. It may also be instructive to communicate to others that persons with FTD may present with a lack of caring about self, and that deficit can also find expression in a lack of caring for others (i.e., lack of empathy).

### Importance of Longitudinal Assessment of Frontotemporal Dementia

Mendez indicated that FTD can be difficult or even impossible to diagnose by considering clinical

criteria at one point in time.<sup>1</sup> Therefore, long-term clinical assessment over one or more years may be necessary to establish the diagnosis. This point is important because it underscores the necessity of performing careful clinical assessments, even in cases of a neuropsychiatric nature in which neuroscientific tools may be of substantial diagnostic value. The diagnostic assessment of FTD illustrates the value and necessity of performing careful prospective longitudinal assessments rather than relying only on data derived from technologies such as brain scans. In cases of a psychiatric-legal nature, in which the ability to engage in prospective longitudinal evaluations of persons with FTD may not be practical, it may be diagnostically valuable to conduct evaluations of a retrospective longitudinal nature. For example, in criminal psychiatric-legal cases this consideration becomes even more crucial because the occurrence of mental disorders of potential psychiatric-legal significance often must temporally coincide with legally relevant events, such as the time of an offense.

As Mendez’s cases illustrate, assessing personality change in persons with FTD is a common problem.<sup>1</sup> Even more important, taking into account personality change that is associated with antisocial behavior may be difficult with instruments such as the Hare Psychopathy Checklist,<sup>16,17</sup> which was designed to uncover antisocial tendencies in persons who do not have dementia. However, an instrument such as the Iowa Scales for Personality Change can be useful. It is sensitive to antisocial features associated with conditions involving significant cognitive deficits and also allows for the behavior of the person before and after the onset of dementia to be assessed.<sup>17</sup>

### Potential Importance of Localizing Abnormalities Within the Brain Space

Brain functional neuroimaging may increase the sensitivity of detecting FTD.<sup>18</sup> Ultimately, however, functional neuroanatomic evidence alone cannot be diagnostic of FTD.<sup>1</sup> Nonetheless, identifying the position of abnormalities within the brain can increase our understanding of function. In three of Mendez’ cases, brain imaging technology provided some information concerning the localization of abnormalities in areas of the brain known to be affected in FTD.<sup>1</sup> All three of those cases revealed temporal lobe hypometabolism, in two cases, confined to the left side. Only one case showed hypometabolism in both frontal and temporal regions, apparently bilaterally.

It is also important to take into account that in recent years, clinicians have been criticized, allegedly because they often mistake cerebral localization as a legally relevant factor, instead of focusing on the controlling and legally relevant factor, that being the threshold of rationality as defined by the law.<sup>19</sup> Mendez clearly indicated that rationality is the key in legal responsibility.<sup>1</sup> However, if rationality is truly the relevant legal concern in assigning legal responsibility, why did Mendez dedicate so much space and effort to discussing the parameters related to cerebral localization? I think that, contrary to recent opinions that seek to show that the process of localizing brain abnormalities is essentially an irrelevant undertaking in addressing psychiatric-legal concerns involving legal responsibility, localizing a brain abnormality can be important in forensic neuropsychiatric evaluations associated with criminal responsibility. However, I think it is critical to acknowledge that the localization of abnormalities in brain space is, by itself, neither important nor necessary in considering the psychiatric-legal aspects of the relevant thresholds of legal responsibility. Localizing brain abnormalities can become important legal considerations, however, because in many forensic neuropsychiatric cases the psychiatric (and nonpsychiatric), mental, and behavioral evidence that is available to the law to aid in determining thresholds of legal responsibility turns out to be by itself neither clearcut nor an easy either/or call.

Information that allows for the characterization of brain abnormalities as a function of discretely localized three-dimensional brain space (i.e., a static MRI brain scan), or as a function of spatiotemporal units (i.e., via serial brain scans) alone, may turn out to be topographic cerebral information of substantial objective value compared with psychological information alone (i.e., irrational thoughts involving violence, of a clinical nature, reported by a defendant to have occurred during an alleged violent crime). Brain scan technology can make it possible for physical structures, including abnormalities within the brain, to be localized with great precision in brain space. Furthermore, previously unlinked psychological information, such as the irrational thoughts, which can be linked via mathematical correlation to the type of topographic information, may attain greater validity once the psychological information is linked to the more objective phenomenon, mainly the topographic brain information. For example, the de-

fendant who reports his thoughts is more likely to be trusted concerning the objectivity of his report if it can be topographically linked. Also, the results may become more legally relevant if published studies support findings similar to those shown by brain studies in the defendant.

However, even if the reported thoughts assume greater validity as a psychological construct by being correlated to topographic information, it does not necessarily mean that the psychological information assumes greater psychological or psychiatric-legal relevance. Whether such linked psychological information has any legal relevance depends on the specific psychological and legal nature of the matter at hand.

For example, if responsibility is at issue, then a legal threshold for rationality must be considered. In this situation, the matter of localization becomes important if the linked data support the existence of a type of brain lesion identified in the literature as being frequently associated with highly irrational, violent thoughts. Thus, in one scenario, after the jury also considers six additional pieces of evidence in support of a mental state indicative of highly disabling irrationality, it concludes that the defendant lacks legal responsibility for the alleged crime. However other scenarios are possible. In a second one, the one with reported violent thoughts and other psychological information without brain scan data, the jury finds the evidence is insufficiently supportive of a highly disabling state of irrationality. The third scenario is the same as the first one, except that the jury lacks two of the important items of evidence available to the first jury. The jury in the last scenario concludes that although the evidence is suggestive of a mental state involving serious irrationality, all of the evidence when taken together indicates that the defendant's irrational thoughts did not preclude the defendant from being legally responsible for the alleged crime.

### **Importance of Legal Outcomes in Understanding Psychiatric-Legal Cases Involving Persons With Frontotemporal Dementia**

Legal dispositions in psychiatric-legal cases should be specified, in order to gain an optimal appreciation of the case. In one of Mendez's cases the intervention of family members prevented legal action by merchants who apparently were victims of theft. In another case, a man was charged with at least one crime



involving failure to stop after a hit-and-run accident in which the man struck a van with passengers. Legal action ended a year later due to the defendant's death. We must assume that the reason for his death is unknown or otherwise not relevant from a psychiatric-legal standpoint. In another case, legal action ended with no incarceration, but ultimately we did not learn about what led to that outcome. We learned that in Case 1, the patient was not prosecuted. Given this information, we should wonder why, if FTD patients do ". . . not have a general decreased capacity for rationality nor would they be exonerated because of an internal coercion or irresistible impulse" (Ref. 1, p 322), the person in Case 1 was not prosecuted?

Given the information provided to us, we could conclude that the missing facts prevent us from fully understanding the reasons for the legal outcomes in some of the cases. However, we should also take into account that such information is often difficult, if not impossible, to obtain. Because of the nature of the legal process, particularly if charges are dropped without the benefit of a more formalized proceeding such as a trial, the relevant information may never be fully recorded. Improvements in the ability to document adequate information in cases in which legal action is not pursued are necessary for clinicians to be able to consider such information. I suspect that the problem may be more common in cases of FTD, in which dropping of the charges without an extended proceeding may result in a substantial dearth of detail concerning the legal process that led to the ultimate outcome.

Mendez's article should be considered a noteworthy contribution to forensic psychiatric education. Also, I strongly recommend that the index article be read in conjunction with his article on the neurobiology of morality,<sup>2</sup> since the articles complement each other. Finally, those forensic psychiatrists with an interest in developing an in-depth understanding of the forensic neuropsychiatric aspects of FTD will benefit from reading other articles by Mendez, a scholar with the reputation of being an outstanding and indefatigable worker in the study of frontotemporal dementia.<sup>20-22</sup>

**References**

1. Mendez MF: The unique predisposition to criminal violations in frontotemporal dementia. *J Am Acad Psychiatry Law* 38:318-23, 2010

2. Mendez MF: The neurobiology of moral behavior: review and neuropsychiatric implications. *CNS Spectr* 14:608-20, 2009
3. Greene JD, Sommerville RB, Nystrom LE, *et al*: An fMRI investigation of emotional engagement in moral judgment. *Science* 293:2105-8, 2001
4. Greene JD, Nystrom LE, Engell AD, *et al*: The neural bases of cognitive conflict and control of moral judgment. *Neuron* 44: 389-400, 2004
5. Moll J, de Oliveira-Souza R, Bramati IE, *et al*: Functional networks in emotional moral and nonmoral judgments. *Neuroimage* 16: 696-703, 2002
6. Greene J, Haidt J: How (and where) does moral judgment work? *Trends Cogn Sci* 6:517-23, 2002
7. Snowden JS, Bathgate D, Varma A, *et al*: Distinct behavioural profiles in frontotemporal dementia and semantic dementia. *J Neurol Neurosurg Psychiatry* 70:323-32, 2001
8. Gregory C, Lough S, Stone V, *et al*: Theory of mind in patients with frontal variant frontotemporal dementia and Alzheimer's disease: theoretical and practical implications. *Brain* 125:752-64, 2002
9. Rosen HJ, Perry RJ, Murphy J, *et al*: Emotion comprehension in the temporal variant of frontotemporal dementia. *Brain* 125: 2286-95, 2002
10. Baron-Cohen S, Wheelwright S, Hill J, *et al*: The "Reading the Mind in the Eyes" test revised version: a study of normal adults, and adults with Asperger's syndrome or high-functioning autism. *J Child Psychol Psychiatr* 42:241-51, 2001
11. Baron-Cohen S, O'Riordan M, Stone V, *et al*: Recognition of faux pas by normally developing children, and children with Asperger's syndrome or high-functioning autism. *J Autism Dev Disord* 29:407-18, 1999
12. Vollm BA, Taylor ANW, Richardson P, *et al*: Neuronal correlates of theory of mind and empathy: a functional magnetic resonance imaging study in a nonverbal task. *Neuroimage* 29:90-98, 2006
13. Decety J, Jackson PL, Brunet E: The cognitive neuropsychology of empathy, in *Empathy in Mental Illness*. Edited by Farrow T, Woodruff P. New York: Cambridge University Press, 2007, pp 239-60
14. Baron-Cohen S: *The Essential Difference: the Truth about the Male and Female Brain*. New York: Basic Books, 2003
15. Eslinger PJ, Dennis K, Moore P, *et al*: Metacognitive deficits in frontotemporal dementia. *J Neurol Neurosurg Psychiatry* 76: 1630-5, 2005
16. Hare RD: *Hare Psychopathy Checklist-Revised (PCL-R): Technical Manual* (ed 2) Toronto: Multi-Health Systems, 2003
17. Barrash J, Tranel, Anderson SW: Acquired sociopathy: characteristic personality changes following ventromedial frontal lobe damage. *Dev Neuropsychol* 18:355-81, 2000
18. Mendez MF, Shapira JS, McMurtray A, *et al*: Accuracy of the clinical evaluation for frontotemporal dementia. *Arch Neurol* 64:830-5, 2007
19. Morse SJ: Brain overclaim syndrome and criminal responsibility: a diagnostic note. *Ohio State J Crim Law* 3:397-412, 2006
20. Mendez MF, Shapira JS: Altered emotional morality in frontotemporal dementia. *Cogn Neuropsychiatry* 14:165-79, 2009
21. Mendez MF, Anderson E, Shapira JS: An investigation of moral judgment in frontotemporal dementia. *Cogn Behav Neurol* 18: 193-197, 2005
22. Mendez MF: Functional neuroimaging and presenting psychiatric features in frontotemporal dementia. *J Neurol Neurosurg Psychiatry* 77:4-7, 2006