# Cognitive Fluctuations and the Lucid Interval in Dementia: Implications for Testamentary Capacity

Kenneth I. Shulman, MD, SM, Ian M. Hull, LLB, Sam DeKoven, BSc, Sean Amodeo, BSc, Brian J. Mainland, MA, and Nathan Herrmann, MD

The lucid interval is a long-held legal concept widely accepted in case law as a possible means of countering a challenge to testamentary and related capacities. In parallel, the clinical phenomenon of cognitive fluctuations has been considered a common element of several neurodegenerative disorders (dementias), including Alzheimer Disease, but is especially prevalent in vascular dementia and dementia with Lewy bodies. In this article, we review the objective evidence for cognitive fluctuations in dementia and the implications for the validity of the legal notion of the lucid interval cited in recent case law. The literature on cognitive fluctuations in dementia shows that such fluctuations largely affect attention and alertness, rather than memory or the higher level executive functions that are essential components of testamentary capacity. Moreover, these fluctuations are small in magnitude and very short in duration. These findings cast doubt on the validity of the lucid interval and invite a critical rethinking of this legal concept as applied to will challenges involving testators with dementia.

**J Am Acad Psychiatry Law 43:287–92, 2015**

For over a century, the concept of the lucid interval has been raised as a method of undermining a testamentary capacity challenge. Through the perspectives of both law and medicine, we explore the validity of the concept of the lucid interval as it relates to testamentary capacity and examine its current application by the courts. We focus on dementia in this article, as it is the most common medical condition associated with challenges of testamentary capacity.[1]

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition,[2] defines major neurodegenerative disorder (formerly dementia) as a disorder presenting "evidence of significant cognitive decline from a previous level of performance in one or more cognitive domains (complex attention, executive function, learning and memory, language, perceptual-motor, or social cognition)"; these deficits interfere with everyday activities and do not occur exclusively in delirium. In the context of major neurocognitive disorder (or dementia), the legal concept of a lucid interval is best understood using the medical phenomenon of cognitive fluctuations, which can be defined as "spontaneous alterations in cognition, attention, and arousal" (Ref. 3, p 989). We describe cognitive fluctuations, and their relevance to the concept of the lucid interval. Cognitive fluctuations are observed in virtually all major subtypes of dementia, but with varied prevalence: 20 percent in Alzheimer's Disease (AD), 35 to 50 percent in vascular dementia (VAD), and 90 percent in dementia with Lewy bodies (DLB).[3] A recent qualitative study of the medical records of patients in a tertiary care memory clinic found a relatively high frequency (12%) of reports of good days and bad days.[4] These reports appear to be influenced by caregiver reactions to disruptive or disturbing behavior, but objective measures of cognition were not systematically assessed or correlated with the caregiver reports.

Drs. Shulman and Herrmann are Professors and Mr. DeKoven is a summer student, Department of Psychiatry, Sunnybrook Health Sciences Centre, and Mr. Amodeo is a medical student, Faculty of Medicine, University of Toronto, Ontario Canada. Mr. Hull is a Partner, Hull & Hull LLP, Toronto, Ontario, Canada. Mr. Mainland is a doctoral candidate, Department of Psychology, Ryerson University, Toronto, Ontario, Canada. Address correspondence to: Kenneth I. Shulman, MD, SM, Department of Psychiatry, Sunnybrook Health Sciences Centre, 2075 Bayview Avenue, Room FG 08, Toronto, ON, Canada, M4N 3M5. E-mail: ken.shulman@sunnybrook.ca.

Disclosures of financial or other potential conflicts of interest: None.

Based on a review of recent case law and contemporary medical understanding of cognitive fluctuations, the application of lucid intervals may have to be updated to reflect scientific findings that appear to alter the current legal interpretation of the lucid interval. Indeed, the current application of a lucid interval may not be valid, because the traditional notion of good and bad days in individuals with dementia may not extend to testamentary capacity in the manner that courts have traditionally applied it.[5]

Delirium is defined by the DSM-V as "a disturbance of consciousness and a change in cognition that develop over a short period of time."[2] Cognitive fluctuations are a hallmark symptom of delirium, but are qualitatively different from those that occur in dementia. Therefore, in this article we will not address the lucid interval as it may apply to delirium, but rather will focus on the clinical syndrome of dementia.

## Testamentary Capacity

The onus of proving testamentary capacity rests on the party propounding a will. For over a century, the leading case providing the test for testamentary capacity remains *Banks v. Goodfellow*.[6] Lord Chief Justice Alexander Cockburn wrote, in this judgment delivered in 1870:

> It is essential to the exercise of such a power that a testator shall understand the nature of the act and its effects; shall understand the extent of the property of which he is disposing; shall be able to comprehend and appreciate the claims to which he ought to give effect; and, with a view to the latter object, that no disorder of the mind shall poison his affections, pervert his sense of right, or prevent the exercise of his natural faculties—that no insane delusion shall influence his will in disposing of his property and bring about a disposal of it which, if the mind had been sound, would not have been made.

Testamentary capacity encompasses the capability to execute a will and is determinate upon both the ability to understand relevant facts and an appreciation of the reasonably foreseeable consequences of taking specific actions regarding the formation of a will.[7] In a general holistic sense, testamentary capacity is proven through an ability to manipulate information rationally and connect beliefs and values to a testamentary disposition.

This capacity can be distilled into three basic competencies: comprehension and encoding of information, information processing and internal arrival at a decision, and communication of that decision.[1] Specifically, it is a question of whether the testator has the task-specific capacity to execute a will in the context of a situation-specific environment.[8]

To create a valid will, one must be "of sound mind, memory and understanding" where the testator understands "the nature and quality of the act."[9] More specifically, the testator must:

> . . . be sufficiently clear in his understanding and memory to know, on his own, and in a general way:
>
> (a) the nature and extent of his property,
>
> (b) the persons who are the natural objects of his bounty, and
>
> (c) the testamentary provisions he is making; and he must, moreover, be capable of:
>
> (d) appreciating these factors in relation to each other; and
>
> (e) forming an orderly desire as to the disposition of his property . . . [10]

Courts appear to lean in favor of testamentary capacity when wills are challenged. The reasoning for this policy has been described as follows: Generally, the courts will lean favorably in the direction of protecting family integrity if there is a balance of testimony, since it is in the state's interest that families care for themselves and not become wards of the state (Ref. 11, p 256).

In fact, it may be that common law judiciaries have used the lucid interval to push judicial rulings toward an outcome that is deemed equitable in the circumstances. The true subjectivity of the test for capacity is illustrated by the case of *Sharp v. Adams*,[12] which examined the leading case of *Banks v. Goodfellow*,[6] illustrating how the formula applied to two sets of facts "is often a coin toss and a contrary conclusion would not offend rational sensibilities."[13,14]

## The Lucid Interval: A Legal Perspective

In a claim of a lucid interval, the test for testamentary capacity must be met during the interval for a testator to have a will upheld. Where testamentary incapacity has been proven before the drawing of a will, such as in a testator with dementia, it is the party propounding the will who has the burden of proving that the will was executed or drafted during a lucid interval.[15]

It has been stated that:

> Where a testator is shown to have been insane prior to the date of the will, it must be shown that the will was made during a lucid interval. Even a person of unsound mind so found could make a will during a lucid interval. To establish the existence of a lucid interval [it] is not necessary to

> prove complete mental recovery. It is sufficient if it is shown that the testator understands that he is making a testamentary disposition and what is required of him in making the disposition and that any delusion from which he is still suffering does not affect such disposition. A person may suffer from intermittent insanity and perhaps the burden of proving a lucid interval is then less than where it is sought to prove an isolated interval, but, once insanity is established, it is for the person setting up the lucid interval to prove the lucid interval and that the testamentary act was done during the interval [Ref. 16, p 46].

The lucid interval has been defined broadly as [16,17]:

> A temporary cure, Succession of Tyler, 193 La. 480, 190 So. 651 [La. 1939], 656; a temporary restoration to sanity, Abercrombie v. Mc-Larty, 173 Ga. 414, 160 S.E. 611 [Ga. 1931], 612. A full return of mind to sanity as places the party in possession of the powers of his mind enabling him to understand and transact his affairs as usual, Succession of Tyler, 193 La. 480, 190 So.651 [La. 1939], 656; an interval in which the mind, having thrown off the disease, has recovered from its general habit, Melody v. Hamblin, 21 Tenn. App. 687, 115 S.W.2d 237 [Tenn. App. 1937], 245i. Intervals occurring in the mental life of an insane person during which he is completely restored to the use of his reason, or so far restored that he has sufficient intelligence, judgment, and will to enter into contractual relations, or perform other legal acts, without disqualification by reason of his disease, Roberts v. Pacific Telephone & Telegraph Co., 93 Wash. 274, 160 P. 965 [Wash. 1916], 970; Oklahoma Natural Gas Corporation v. Lay, 175 Okla. 75, 51 P.2d 580 [Okla. 1935], 583; [the] period of time during which [the]person had sufficient mental capacity to know and understand [the]nature and consequence of [a]marriage relation, and the reciprocal and mutual duties and obligations thereof, Carter v, Bacle, 94 S.W.2d 817 [Tex. Civ. App. 1936], 919 [Ref. 17, p 1098].

At law, individuals can still be found to have the requisite capacity to instruct or execute a valid will after having been declared incapable of managing their own affairs,[18] if those propounding the will are able to prove that such instruction or execution took place during a lucid interval.[19]

One hindrance in defining the lucid interval is that the preliminary case law upon which courts continue to rely dates to 1902.[20] These notions persist even today in the face of contemporary medical opinions on these concepts that have accelerated, advanced, and vastly outpaced the legal profession's notions of lucid intervals.

## Cognitive Fluctuations: A Medical Perspective

Although the lucid interval is a legal concept, it is informed by medical knowledge about mental capacity. In many cases, evidence can depend heavily on expert medical assessment. Cognitive fluctuations are broadly defined in the sense that they can affect multiple cognitive domains, such as attention and vigilance, behavior, cognition, and functional abilities.[21] Fluctuations may result in daytime drowsiness, diminished awareness of surroundings, behavioral confusion, incoherent speech, inability to perform tasks, and incoherent or illogical thoughts.[22]

In addition to the varied prevalence between dementia subtypes, the nature and severity of fluctuations also varies among subtypes.[23,24] Caregivers report spontaneous remission in DLB, where patients appear to recover cognitive functions and memory recall briefly, whereas such intervals are rarely reported in patients with AD.[24] Studies suggest that cognitive fluctuations are more frequent and severe in DLB than in other forms of dementia.[25,26] However, across all types of dementia, these fluctuations are generally most prevalent in the area of attention.[3] Trials conducted in patients with DLB or AD have demonstrated the presence of fluctuations in attention that increase in severity in correlation with increases in the severity of cognitive fluctuations,[26] and Ballard *et al.*[25] demonstrated that these attentional fluctuations are the only ones significantly associated with Clinical Assessment of Fluctuation (CAF) scores. These studies indicate that cognitive fluctuations do not occur to a significant degree in cognitive domains that are essential to achieving testamentary capacity, such as episodic memory and higher-level executive brain functions. Thus, cognitive fluctuations may not be an appropriate justification for the legal determination of a lucid interval.

Longer range fluctuations on the order of days or weeks appear minor; trials in patients with VAD and AD show minimal improvement over spans of approximately two weeks of about two percent,[27] indicating that long-term fluctuations may be minimal.

## Length and Frequency of a Lucid Interval: A Legal Perspective

> Lucid intervals are a particular feature where disease of the brain causes mental illness, when it may be well known to the family doctor or attendant nurse that the testator is quite lucid early in the morning or in the evening, but is confused at other times. They should be consulted or asked to be present when the will is to be prepared or executed [Ref. 5, p 13-07].

The notion of the lucid interval is born from the time-specific framework by which courts analyze capacity. Under this reasoning, a testator may lack capacity at one point and have the requisite capacity at

the next. The colloquial expression that reflects this notion is that one can have good days and bad days. However, the idea of good and bad days has been stretched further, where conceivably: ". . . someone can lack capacity for 23 hours and 58 minutes in a day and yet have a lucid interval which would be sufficient to allow a court to determine that he or she had the necessary capacity to transact the event in question" (Ref. 28, p 6).

Therefore, the notion of good and bad days appears to be capricious, where one can have not only good and bad days, but also good and bad minutes. However, an individual may be unable to consider all the necessary information relevant to the will (see above) in such a short time frame. In addition, fluctuations that last for minutes may not give time to assess whether the testator has the requisite level of capacity.[26]

## Length and Frequency of Cognitive Fluctuations: A Medical Perspective

The idea that fluctuations in dementia are short-lived is supported in the medical literature on cognitive fluctuations. Walker *et al.*[26] tested for the presence of cognitive fluctuations by examining variability in attention-related performance over time. As noted above, attention is the cognitive domain known to be most commonly affected. In addition, there is evidence to suggest that attention will fluctuate in parallel with other cognitive domains, given that they are related by a "common underlying cholinergic deficit" (Ref. 26, p 328).[29]

Walker *et al.* analyzed patients with DLB or AD with respect to whether fluctuations were more pronounced within trials (a 90-second interval) or between trials (separated by hours or weeks). It was shown that the greatest fluctuations in both DLB and AD were seen across a 90-second period, when compared with those observed hourly or weekly. In addition, Walker *et al.*[30] demonstrated that these second-to-second variations correlate significantly with in-office physician assessments of the clinical severity of cognitive fluctuations. They concluded that "the attentional profiles in patients with severe [cognitive fluctuations] illustrated a pattern of continual fluctuation. This is in direct opposition to previous reports that [cognitive fluctuations] occur in the form of individual episodes" (Ref. 26, p 334).

## The Lucid Interval: A Case Study

In a 2008 Arkansas case,[31] an extensive amount of expert medical testimony overturned a lawyer's evidence that the testator was experiencing a lucid interval during a meeting where the testator significantly modified his will.

In *McPhail &* (*Estate of*) *McPhail Jr. v. McPhail*, Mr. McPhail (the testator) received a diagnosis of dementia in 2003 and was deemed severely disabled. Within 2 weeks of the death of his wife, the testator executed another will, dated December 31, 2004, that purported to devise his entire estate to his only son, expressly to the exclusion of his only daughter. The daughter challenged the will on the grounds of the undue influence of her brother and on a lack of testamentary capacity. The brother and sole beneficiary of his father's estate claimed that his father was experiencing a lucid interval at the time of the will's modification and claimed that as a result it should be upheld.

The testator died on April 12, 2006, at age 86. The lower court found that he lacked testamentary capacity on December 31, 2004. The brother appealed this finding.

Three medical experts testified that the testator had progressive dementia that would only worsen over time. One testified that this particular form of dementia did not ever permit a lucid interval, although he could have good days. The same doctor stated that the testator would not have been able to understand that he was disinheriting his daughter.

Contrary to the medical evidence was the testimony of the attorney who drafted the will. The attorney noted that he had much experience with people with dementia and believed that on December 31, 2004, the testator had the requisite capacity to execute a will, that the testator did not appear confused, and that he appeared to know what was going on.

The medical experts recognized that the only way to determine whether a lucid interval took place on the day in question was through observation of the testator's capacity on that very day. However, even though such an observation was not made, the totality of the medical evidence presented was very compelling. The court noted:

> The medical evidence supports that Mr. McPhail [the testator] maintained a baseline level of confusion that rose as his condition progressed. Rather than experiencing lucid intervals during which somehow he was less confused,

> Mr. McPhail was more confused at times, and then seemed "clearer" by comparison when he returned to his previous baseline level of confusion. Thus, he never went from being "confused" to being "lucid." He only experienced periods of greater or lesser confusion.[31]

Therefore, while the testator could have indeed experienced cognitive fluctuations, according to the medical experts and the court, such fluctuations never rose to the level of a lucid interval. This finding led the court to uphold the lower court's decision that no lucid interval was experienced.

This case exemplifies the proposition that cognitive fluctuations do not necessarily mean that during upswings toward lucidity, it can be assumed that a testator has reached the requisite level of capacity to execute a will. Also, courts in the United States appear to be more willing to rely on indirect medical evidence versus layperson observation, in some instances, in determining whether such an upswing met the required level of lucidity to validate a will.[32]

## Conclusion

Based on recent medical findings on the subject of cognitive fluctuations, the application of the lucid interval to dementia appears to be invalid. Generally, objective measures of fluctuations are extremely short in duration, often on the order of seconds or minutes. Such short-term changes in mental state would not allow a testator to appreciate all of the factors needed to execute a valid will, even if a state of true lucidity was ever reached. In addition, the fluctuations are not so large as to render a previously incapable person to be temporarily able to execute a will. These fluctuations are minor and occur in the areas of attention and alertness, rather than in the higher level functions that are necessary for testamentary capacity, such as episodic memory and frontal executive functioning.

The expression "good days and bad days" appears to be more a reflection of the caregiver's perspective influenced by behavior rather than an objective measure of cognitive fluctuations. Therefore, it should not be assumed that a good day means that testamentary capacity was achieved. Further medical insight into cognitive fluctuations is necessary to prove definitively that such an elevation actually reaches the level of lucidity. Otherwise, courts may incorrectly assume that a report of cognitive improvement (in basic, lower level functions) is associated with attaining the disposing mind and memory needed to execute a valid will. Although courts have the last word, clinical realities can inform these decisions and can shed more light on a potentially complex capacity.

## References


1. Shulman KI, Cohen CA, Hull I: Psychiatric issues in retrospective challenges of testamentary capacity. Int J Geriatr Psychiatry 20: 63–9, 2005
2. American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Washington, DC: American Psychiatric Association, 2013
3. Lee DR, Taylor JP, Thomas AJ: Assessment of cognitive fluctuation in dementia: a systematic review of the literature. Int J Geriatr Psychiatry 27:989–98, 2012
4. Rockwood, K, Fay S, Hamilton L, *et al*: Good days and bad days in dementia: a qualitative chart review of variable symptom expression. Int Psychogeriatr 26:1239–46, 2014
5. Williams, Mortimer, and Sunnucks on Executors, Administrators and Probate Trusts. Wills and Probate Library (ed 20 of Williams on Executors and ed 8 of Mortimer on Probate). Edited by Martyn JR, Caddick N. London: Sweet & Maxwell/Thomson Reuters, 2013, p 13-07
6. Banks v. Goodfellow, [1870] L.R. 5 (Q.B.) 549
7. Shulman KI, Peisah C, Jacoby R, *et al*: Contemporaneous assessment of testamentary capacity. Int Psychogeriatr 21:3, 2009
8. Shulman KI, Cohen CA, Kirsh FC, *et al*: Assessment of testamentary capacity and vulnerability to undue influence. Am J Psychiatry 164:5, 2007
9. Majority in Otto v. Kapacila Estate, [2010] S.J. No. 387, [2010] 9 W.W.R 575 (C.A.)
10. Re Schwartz, [1970] O.J. No. 1438, [1970] 2 O.R. 61, 78 (C.A.), Laskin J.A.
11. Sprehe DJ, Kerr, AL: Use of legal terms in will contests: implications for psychiatrists. Bull Am Acad Psych Law 24:255–65, 1996
12. Sharp v. Adams, [2006] E.W.C.A. Civ. 449
13. Mackenzie J (editor): Feeney's Canadian Law of Wills (ed 4). Canada: LexisNexis (Butterworths), 2000, at, s 2.5
14. Boyce v. Rossborough, [1857] 6 H.L.C. 2, 45
15. Per Lord Thurlow in Att. Gen v Parnther (1792) 3 Bro.C.C. 441, 444; Hall v Warren (1804) 9 Ves. 605, 61; Groom v Thomas (1829) 2 Hagg.Ecc. 443, 434
16. Williams on Wills (ed 9, vol 1) The Law of Wills. Edited by Sherrin CH, Wallington RFD, Meadway SL, *et al*. London: Butterworth-Heinemann, 2002, p 46.4.14
17. Black HC: Black's Law Dictionary (ed 4, rev.). St. Paul, MN: West Publishing Co, 1968
18. Royal Trust Co. v. Rampone, [1974] B.C.J. No 612, [1974] 4 W.W.R 735 (S.C.)
19. Baker Estate v. Myhre, [1995] A.J. No. 314, 28 Alta. L.R. (3d) 428 at 439–440 (Q.B.) Murray J
20. Skinner v. Farquharson, [1902] 32 S.C.R. 58
21. Varanese S: Fluctuating cognition and different cognitive and behavioural profiles in Parkinson's disease with dementia: comparison of dementia with Lewy bodies and Alzheimer's disease. J Neurol 257:1004–11, 2010
22. Escandon A, Al-Hammadi N, Galvin JE: Effect of cognitive fluctuation on neuropsychological performance in aging and dementia. Neurology 74:210–17, 2010
23. Bradshaw J, Saling M, Hopwood M, *et al*: Fluctuating cognition in dementia with Lewy bodies and Alzheimer's disease is qualitatively distinct. J Neurol Neurosurg Psychiatry 75:382–7, 2004

24. McKeith IG, Galasko D, Kosaka K, *et al*: Consensus guidelines for the clinical and pathologic diagnosis of dementia with Lewy bodies (DLB): report of the consortium on DLB international workshop. Neurology 47:1113–24, 1996
25. Ballard C, Walker M, O'Brien J, *et al*: The characterisation and impact of "fluctuating" cognition in dementia with Lewy bodies and Alzheimer's disease. Int J Geriatr Psychiatry 16:494–8, 2001
26. Walker MP, Ayre GA, Perry EK, *et al*: Quantification and characterisation of fluctuating cognition in dementia with Lewy bodies and Alzheimer's disease. Dement Geriatr Cogn Disord 11:327–35, 2000
27. Taylor R, Gilleard CJ, McGuire RJ: Short-term cognitive fluctuation in multi-infarct dementia and dementia of the Alzheimer's type. Int J Geriatr Psychiatry 6:497–500, 1991
28. Hull I, Popovic-Montag S: Undue Influence and Capacity Litigation. A paper delivered to the Ontario Bar Association Conference on Trusts, Trustees, Trusteeships, Toronto, ON, Canada, October 2012, pp 1–17
29. Perry BD, Pollard RA, Blakely TL, *et al*: Childhood trauma, the neurobiology of adaptation, and use dependent development of the brain: how states become traits. Inf Ment Health J 16:271–91, 1995
30. Walker MP, Ballard CG, Ayre GA, *et al*: The clinician assessment of fluctuation and the one day fluctuation assessment scale two methods to assess fluctuating confusion in dementia. Br J Psychiatry 177:252–6, 2000
31. McPhail & (Estate of) McPhail Jr v. McPhail Smith & Lay, CA08-304, Div II, (2008), ACA [McPhail]. 734202.1
32. Champine P: Dichotomies in the treatment of expert testimony: expertise and instinct in the assessment of testamentary capacity. Vill L Rev 51:25, 2006