

## Medicine on the big and small screen: *Awakenings*

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### *Awakenings*

Starring Robert De Niro, Robin Williams, Julie Kavner, Ruth Nelson, John Heard, Penelope Ann Miller, and Max von Sydow

Directed by Penny Marshall, released December 22, 1990,  
Columbia Pictures, Rated PG-13, 121 minutes

Reviewed by Allison Kavey, PhD

Based on British neurologist Oliver Sacks' memoir *Awakenings*, the movie of the same title tells Sacks' story fictionalized through American doctor Malcom Sayer (Robin Williams). The movie portrays Sacks' work with catatonic patients during the summer of 1969.

In the movie, Sayer finds a temporary cure for a group of unresponsive patients confined to a mental hospital for several decades. Many of the patients were inaccurately diagnosed with "atypical schizophrenia," and "fed and watered" by the institution's staff until Sayer, a research-trained neurologist, was hired.

Sayer nearly did not get the job. In his interview, he carefully explains the experimental work he has been engaged in for the previous five years, the goal of which was to extract one decagram of myelin from four tons of earth worms. The head of the hospital board cuts him off, noting that his hypothesis was not possible. Sayer proudly announces, "I know that. I proved it!"

However, Sayer stumbles as the interviewers repeatedly ask him about his experience with patients. Despite his very limited history in patient care, and his evident lack of interest in accumulating more, he gets the position. He immediately begins reviewing case histories, and conducting patient examinations.

For Sayer, the transformation from laboratory nerd to caring physician who values relationships and human contact is an integral part of the film, and it is inherently linked to the relationships he builds with his patients, particularly Leonard Lowe (Robert De Niro), and Eleanor Costello (Julie Kavner), the only member of the medical staff who consistently supports his efforts.



Robin Williams and Robert De Niro in *Awakenings*.

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Collecting all of the schizophrenia cases into a group, Sayer notes, "You'd think at a certain point all of these atypical somethings would amount to a typical something." He begins to search for commonality in their physical exams and patient histories. He makes two observations: all of the people in this particular group were infected with encephalitis before developing their current symptoms, and all of them are capable of responding to rapid movement (and some to other external stimuli). He takes these findings to the head of the hospital only to be told that he has incorrectly identified a defensive reflex (batting away an object) as response (catching an object). In one of the most memorable scientific ripostes of film history, Sayer responds to his chief, "I'm sorry. If you were right, I would

agree with you,” and continues with his investigation.

Sayer connects with retired neurologist Peter Ingraham (Max von Sydow) who worked extensively on encephalitis lethargica. Ingraham explains that of those who survived the original infection, most were fine for a period of years, and then entered a vicious spiral of deterioration. “They could no longer dress themselves or feed themselves. They could no longer speak, in most cases. Families went mad. People who were normal, were now elsewhere.”

Sayer asks if these patients knew what was happening to them, and Ingraham responds that their cognitive faculties could not have been spared. Sayer asks for evidence to support this conclusion, and Ingraham responds, “The alternative is unthinkable.”

Lowe is one of the youngest afflicted patients. He first attracts Sayer’s attention when he catches a softball thrown at him. Lowe emerges as the focus of Sayer’s efforts to reverse the effects of encephalitis lethargica.

Lowe’s mother (Ruth Nelson) tells the story of how her son went from an intelligent, focused, playful boy to an invalid whose uncontrollable palsy so damaged his handwriting and concentration that he was forced to leave school. Left inside to watch from the window as his friends played, he increasingly found himself locked inside the cage his body became. Decades passed before Sayer encountered Lowe, while his mother faithfully visited, fed him, combed his hair, and mourned the bright boy stuck in the shell of a man.

### The discovery of L-dopa

After attending a lecture by a specialist on Parkinson’s disease who was getting good experimental results using L-dopa (levodopa), Sayer convinces his department chief to allow him to try the drug on his patients.

L-dopa was discovered to be crucial to brain function during the first half of the 20th century. Isolated in 1913 from plant seedlings, its actions were uncovered in 1938 with the isolation of the enzyme that breaks it down, L-dopa decarboxylase, which produces dopamine from L-dopa. In 1957, dopamine was demonstrated to be present in the brain, and by 1959, it was shown to be enriched in the basal ganglia.<sup>1</sup>

In 1957 and 1958, studies on untreated and reserpine injected animals demonstrated that it might have effects on reserpine induced parkinsonism. Beginning in 1960, post-mortem dissection of Parkinsonian brains demonstrated a significant lack of dopamine. In 1961, the first clinical trial occurred, and it was highly successful.

### Patient awakenings

The patients’ “awakenings” are not uncomplicated. Very few have any sense of how much time has passed while they were “away,” and losing three or four decades of their lives is painful. When asked how he feels, one man replies, “Well, my parents are dead, my wife is in an institution. My son has disappeared out west somewhere...I feel old, and I feel swindled, that’s how I feel.”

Others are reluctant to engage with the world they have re-entered. After a summer of refusing to accommodate her new reality, one woman says, “I can’t imagine being older than 22; I’ve no experience at it. I know it’s not 1926. I just need it to be.”

Lowe, however, embraces his new world with remarkable energy and enthusiasm. His decline, despite ever higher doses of the drug, is thus doubly devastating. His mother is the one who finally withdraws permission for the trial to continue after he has become violent, increasingly spastic, and unable to control his movements. Sayer’s affection for Lowe is real, and he wants to see his patient recover—not solely for clinical reasons. However, Mrs. Lowe’s love for her son cannot permit her to continue to see him endure agony with no promise of relief.

Sayer’s clinical trial shed light on the way neurotransmitters work, and the effect they can have on damaged brains. It shed light on what it meant to be human, and to love in the face of grief, with no evidence that it will last.

This film remains important in its genre because of the questions it raises about conflicts between research and treatment; the puzzles posed about when to engage in a clinical trial, and how to explain it to caretakers or patients with limited capacity; and the challenges of determining when to use a potentially helpful new drug that also has the potential to be dangerous. It is a reminder that medicine is a human practice conducted by people who are building knowledge that is often provided through observations and experiments on patients.

*Awakenings* reminds us that emotional intelligence is as valuable and important for physicians as the ability to think, learn, and make decisions. Evidence in this film is not simply the product of physical observation and statistical analysis, but the truth generated from learning with heart.

### Reference

1. Hornykiewicz O. A brief history of levodopa. *J Neurol.* 2010 Nov; 257 (Suppl 2): S249–52.

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