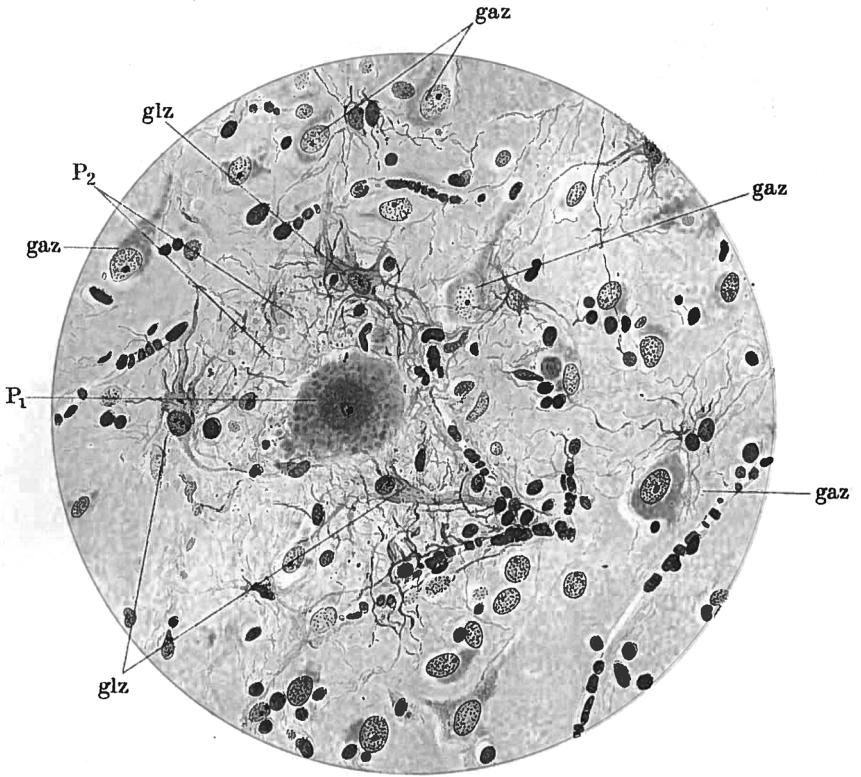
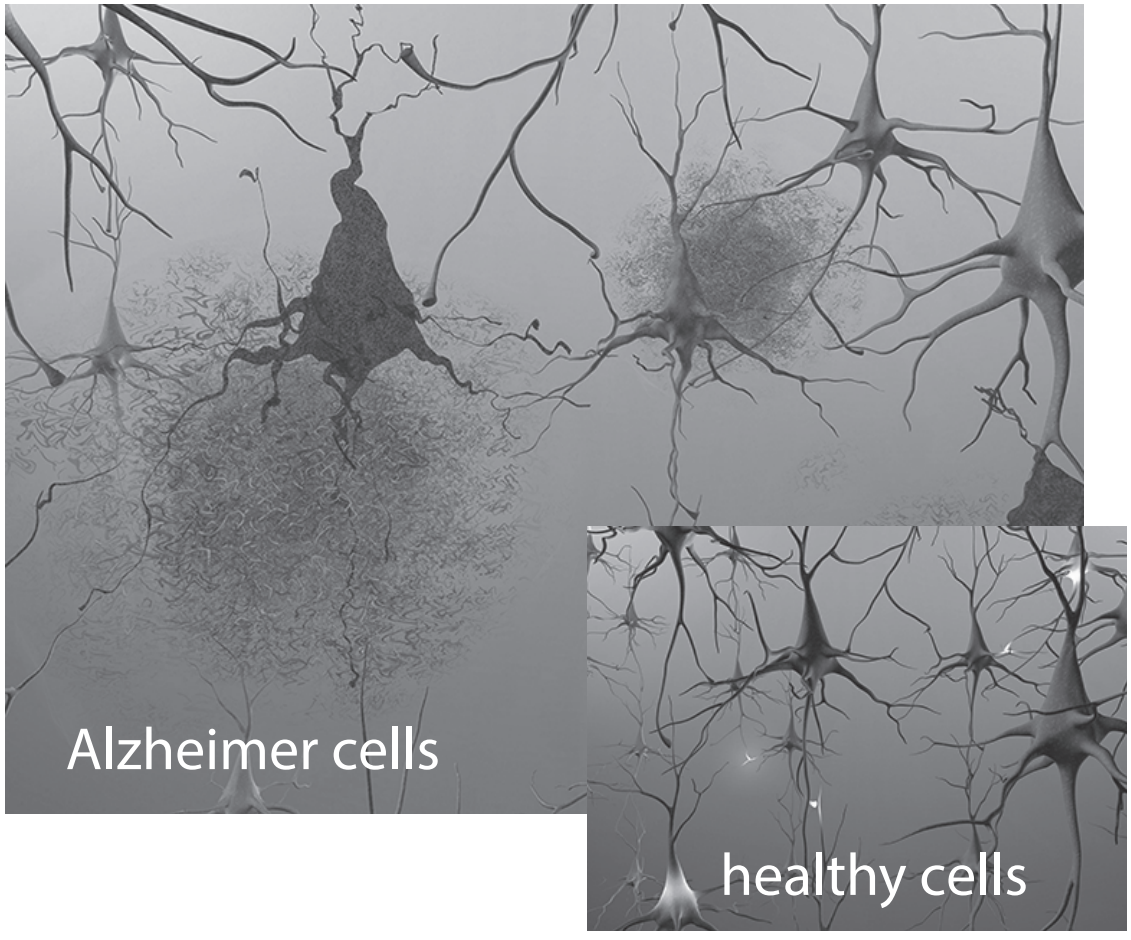


Figure 1.1.

Alois Alzheimer, 1911. Neuritic plaque, in Javier DeFelipe, *Cajal's Butterflies of the Soul: Science and Art* (2010). Reproduced with the permission of Oxford University Press p.278



Alzheimer's tissue has many fewer nerve cells and synapses than a healthy brain.

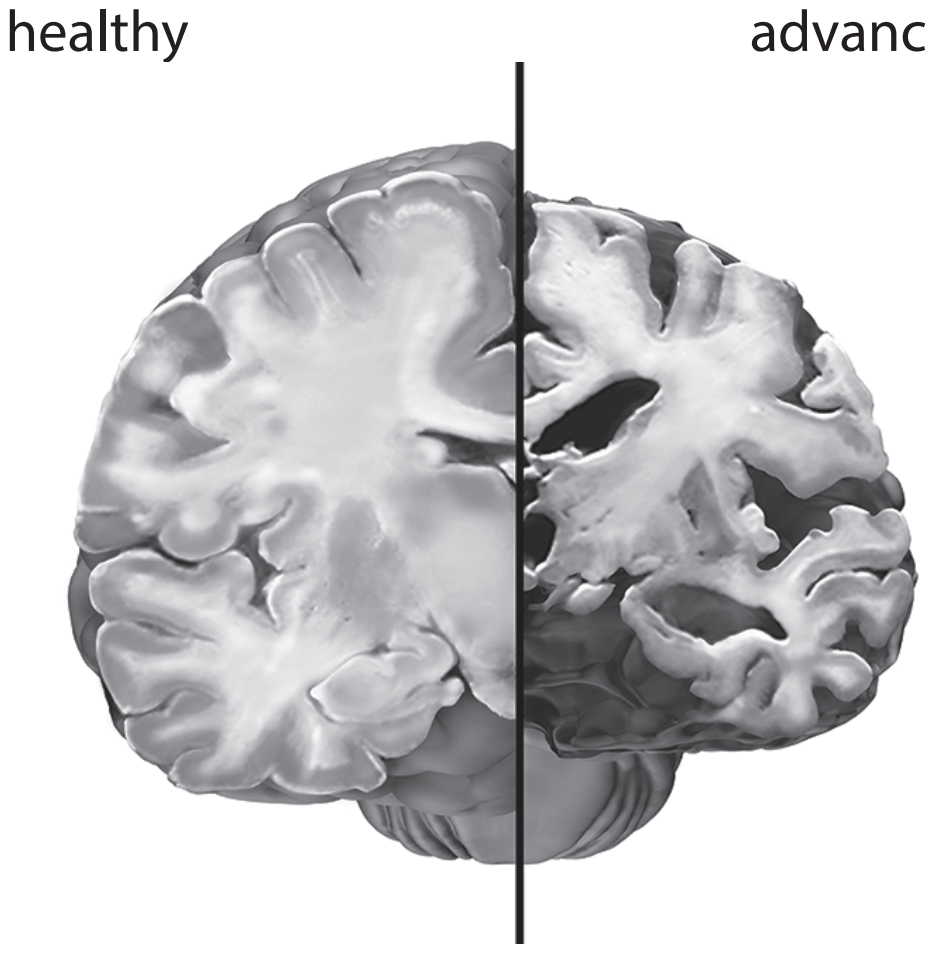
Plaques, abnormal clusters of protein fragments, build up between nerve cells.

Dead and dying nerve cells contain *tangles*, which are made up of twisted strands of another protein.

Scientists are not absolutely sure what causes cell death and tissue loss in the Alzheimer's brain, but plaques and tangles are prime suspects.

Figure 1.2.

Under the microscope: Plaques and tangles. Reproduced with the permission of the Alzheimer's Association, from Inside the Brain: An Interactive Tour, Alzheimer's Association, http://www.alz.org/alzheimers_disease_4719.asp. This tour is available in 14 different languages.



In the Alzheimer's brain:

The **cortex shrivels up**, damaging areas involved in thinking, planning and remembering.

Shrinkage is especially severe in the **hippocampus**, an area of the cortex that plays a key role in the formation of new memories.

Ventricles (fluid-filled spaces within the brain) grow larger.

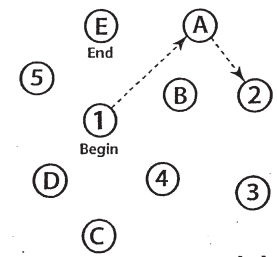
Figure 2.1.

Cell loss in a brain diagnosed with Alzheimer's disease. Reproduced with the permission of the Alzheimer's Association, from Inside the Brain: An Interactive Tour, Alzheimer's Association, http://www.alz.org/alzheimers_disease_4719.asp. This tour is available in 14 different languages.

MONTREAL COGNITIVE ASSESSMENT (MOCA)

NAME :
Education : Date of birth :
Sex : DATE :

VISUOSPATIAL / EXECUTIVE



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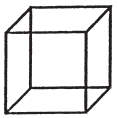


[ ] [ ]

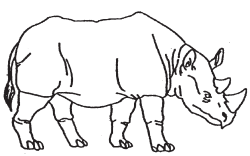
Draw CLOCK (Ten past eleven) (3 points)

[ ] Contour [ ] Numbers [ ] Hands

POINTS __/5

NAMING

[ ]



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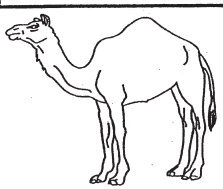

[ ]

__/3

MEMORY Read list of words, subject must repeat them. Do 2 trials, even if 1st trial is successful. Do a recall after 5 minutes.

	FACE	VELVET	CHURCH	DAISY	RED
1st trial					
2nd trial					

No points

ATTENTION Read list of digits (1 digit/ sec.).

Subject has to repeat them in the forward order [ ] 2 1 8 5 4

Subject has to repeat them in the backward order [ ] 7 4 2

__/2

Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors

[ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B

__/1

Serial 7 subtraction starting at 100 [ ] 93 [ ] 86 [ ] 79 [ ] 72 [ ] 65

4 or 5 correct subtractions: **3 pts**, 2 or 3 correct: **2 pts**, 1 correct: **1 pt**, 0 correct: **0 pt**

__/3

LANGUAGE Repeat : I only know that John is the one to help today. [ ]

The cat always hid under the couch when dogs were in the room. [ ]

__/2

Fluency / Name maximum number of words in one minute that begin with the letter F [ ] _____ (N ≥ 11 words)

__/1

ABSTRACTION Similarity between e.g. banana - orange = fruit [ ] train – bicycle [ ] watch - ruler

__/2

DELAYED RECALL

	FACE	VELVET	CHURCH	DAISY	RED	Points for UNCUED recall only
Has to recall words WITH NO CUE	[ ]	[ ]	[ ]	[ ]	[ ]	
Optional Category cue						
Multiple choice cue						

__/5

ORIENTATION [ ] Date [ ] Month [ ] Year [ ] Day [ ] Place [ ] City

__/6

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TOTAL __/30

Add 1 point if ≤ 12 yr edu

Figure 3.1.

Montréal Cognitive Assessment instrument. Reproduced with the permission of Ziad Nasreddine MD.

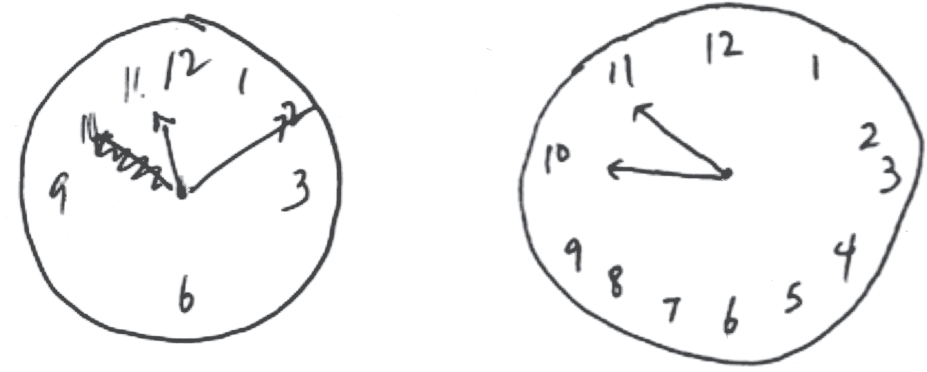


Figure 3.2.

Draw-a-Clock test, administered at the Memory Clinic, Jewish General Hospital, McGill University Health Center, Montréal. This illustration shows two clocks drawn by the same patient three years apart. Each time he was asked to "draw a clock, put on all the numbers, and make the time read ten past eleven." On the left is the clock drawn after being diagnosed with MCI, and on the right is the clock drawn three years later, when this patient was clinically diagnosed with mild dementia due to Alzheimer disease. Illustration reproduced with the permission of Howard Chertkow MD.

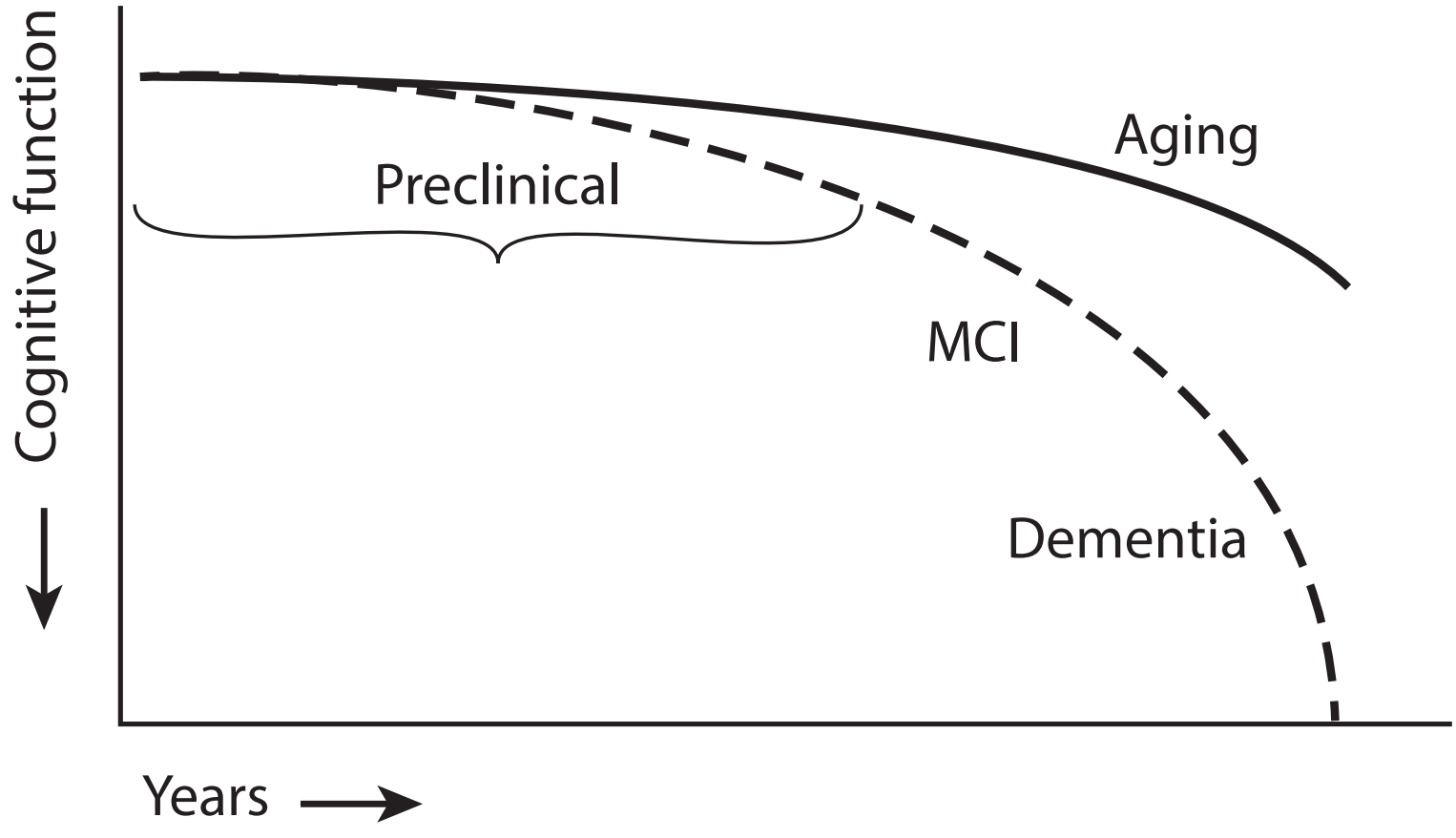


Figure 4.1.

The continuum of Alzheimer disease (AD). Model of the clinical trajectory of AD. The stage of preclinical AD precedes mild cognitive impairment. Note that this diagram represents a hypothetical model for the pathological-clinical continuum of AD but does not imply that all individuals with biomarker evidence of AD-pathophysiological process will progress to the clinical phases of the illness. Reprinted from *Alzheimer's & Dementia*: 7, no. 3, Sperling et al., "Toward defining the preclinical stages of Alzheimer's disease: Recommendations from the National Institute on Aging-Alzheimer's Association workgroups on diagnostic guidelines for Alzheimer's disease", 280-292, © 2011, The Alzheimer's Association, with permission from Elsevier.

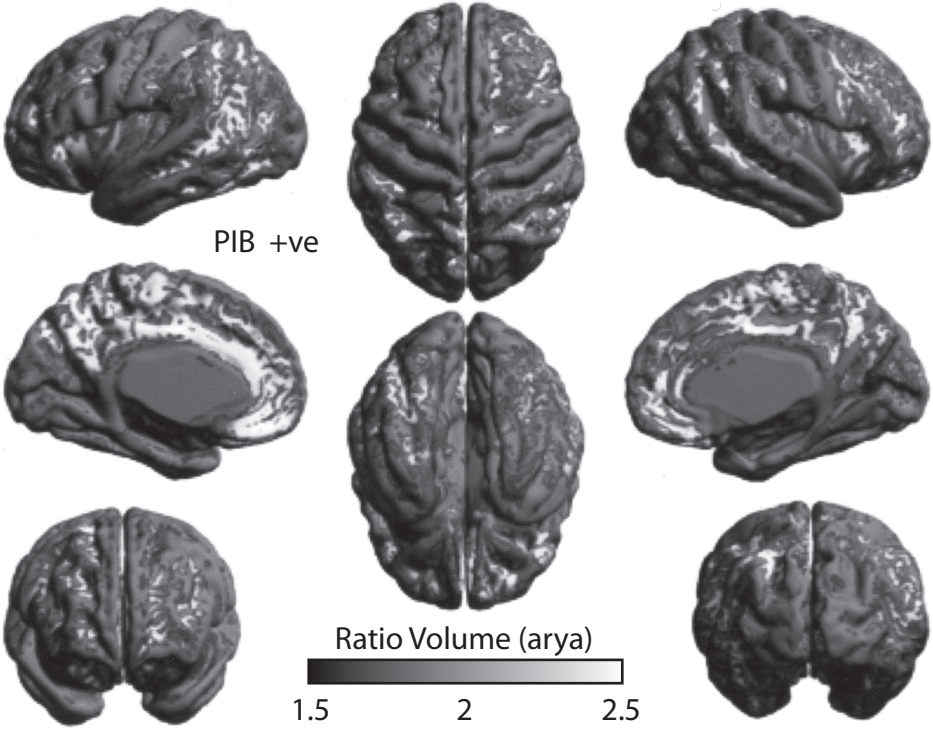
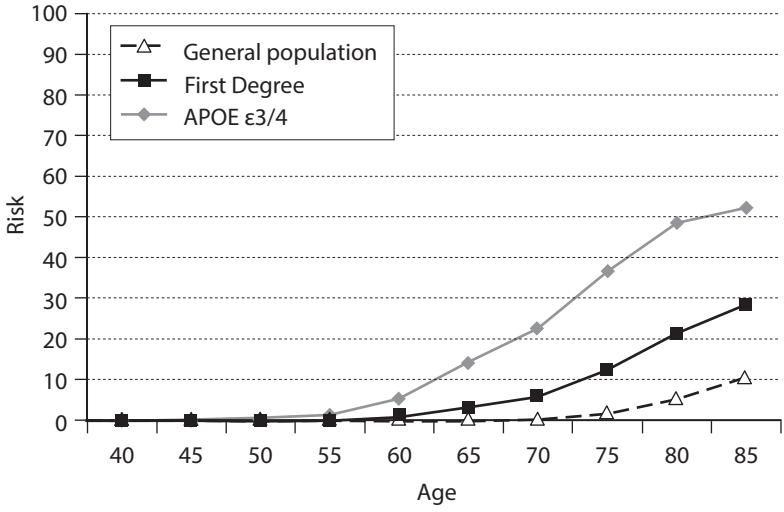


Figure 4.2.

A neuroimage composed of multiple reconstructed images of one patient's MRI (magnetic resonance imaging) scan together with a PIB PET (positron emission tomography with Pittsburgh B compound) scan. The MRI images have been reconstructed with multiple surface renderings and appear as though gray. The PIB PET results are overlaid on the surface, with amyloid-rich areas appearing as whitish coloration. The PIB is distributed in regions of the brain typically known as the "association cortex," and primary sensory and motor areas are not affected. Reproduced with the permission of Howard Chertkow MD.



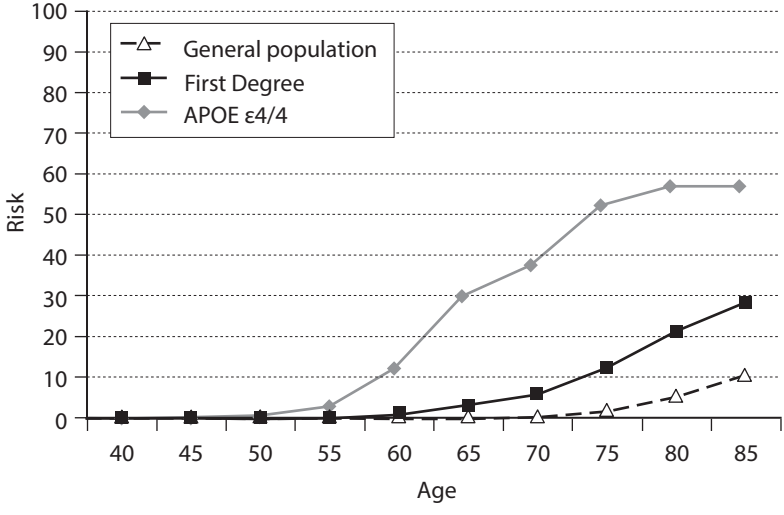


Figure 7.1.

Lifetime risk curves that are part of the education and counseling protocol used in the REVEAL study. Copies of these curves were given to women with APOE genotypes ε3/ε4 and ε4/ε4. Each curve appears in juxtaposition to a curve based on estimates of risk of AD in the general population and to a second curve based on estimates of increased lifetime risk in families where first-degree relatives have been diagnosed with AD. Roberts JS, Cupples LA, Relkin N, et al. Genetic Risk Assessment for Adult Children of People with Alzheimer's Disease: The Risk Evaluation and Education for Alzheimer's Disease (REVEAL) Study. *J Geriatr Psychiatry Neurol* 2005;18:250. © 2005 SAGE publications. Reprinted by permission of SAGE publications.