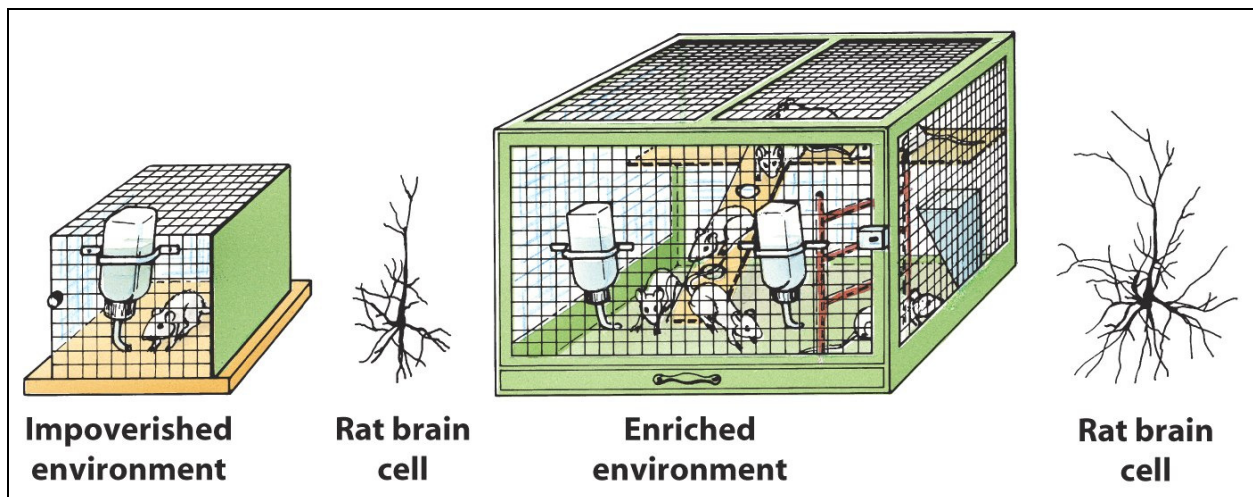


The Interplay of Genes and Environment Wires the Brain

To study the effects of experience on development, researchers reared rates in two different laboratory environments ([page 118](#)).



When you look at the brains of adults who led lives that provided mental challenges such as learning new activities, they developed more neural connections in the brain. Although, these adults were as likely to develop Alzheimer's disease, they were like likely to be impaired by it.

Social and Environmental Contexts Influence Genetic Expression

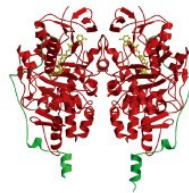
What factors predicted who became a violent criminal (page 113)

- Do children who are mistreated by their parents more likely to become violent criminals? However, not all mistreated children become violent criminals.

Hypothesis: The enzyme monoamine oxidase (MAO) may be important in determining susceptibility to the effects of maltreatment, because low levels of MAO have been implicated in aggressive behaviors.

Research Method:

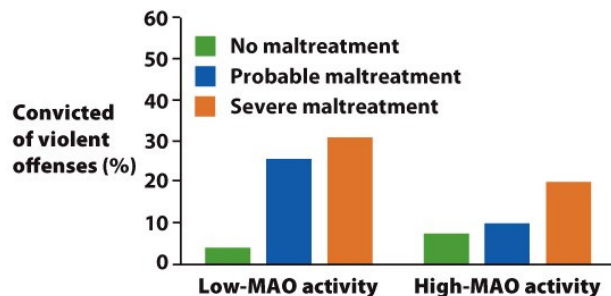
- 1 A group of more than 1,000 New Zealanders were followed from birth to adulthood.
- 2 Researchers measured which children were mistreated by their parents (nurture).
- 3 Researchers measured the presence of the MAO gene, which comes in two forms. One form leads to higher levels of MAO, and the other form leads to lower levels (nature).



- 4 Researchers measured the tendency toward criminal behavior.



Results: Those who had the gene for low MAO activity were much more likely than others to have been convicted of violent crimes if they had been maltreated as children. The effects of maltreatment had less influence on those with the high-MAO gene.



Conclusion: Nature and nurture can work together to affect human behavior.

Source: Caspi, A., McClay, J., Moffit, T. E., Mill, J., Martin, J., Craig, I. W., et al. (2002). Role of genotype in the cycle of violence in maltreated children. *Science*, 29, 851–854.

Psychological Science, 4/e Figure 3.36
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Environmental factors influencing intelligence

Average IQ scores, like height and weight, have steadily increased over the last century. As a group, Black Americans once scored about 15 points lower than white Americans; however, this gap has narrowed over the past few decades to 10 points or less. Environmental changes occur much more drastically than the genetic variations in one or two generations.

Economics:

- Being raised in a high-SES (socio-economic status) family rather than a low SES family is worth between 12 to 18 points of IQ (page 347).
- Siblings adopted by an upper-middle SES family had an average IQ of 109, while the sibling raised by a low SES family had an average IQ of 95.
- Black children raised by white families who are highly educated and above average in occupational status and income (families with a high SES) had IQ scores higher than the average scores of other black and white children.

It is believed that a higher SES have better nutrition, better medical care, experience lower stress levels, and less likely to be exposed to environmental toxins such as air pollution and lead (page 347). All of these can influence brain development. In addition those in a higher SES are more likely to be breast fed, which is associated with a higher IQ and provide a more cognitively stimulating environment and interact with their children.

Education:

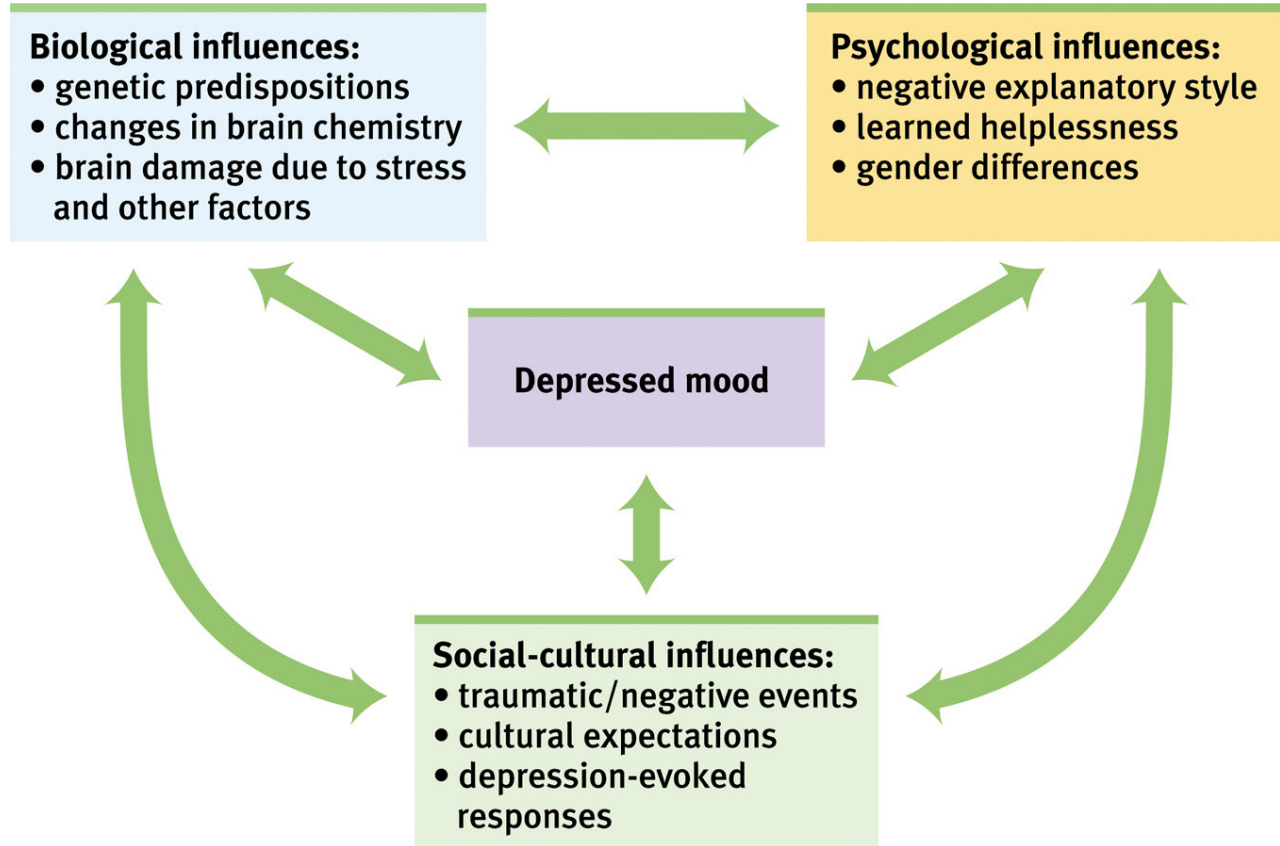
- When schooling is delayed by war, political strife, or lack of qualified teachers, children show a measurable decline in IQ ([page 412](#)).
- African American children who were exposed to an intensive early-education program that began when they were 6 months old and lasted until they entered kindergarten showed higher IQ scores when compared to a control group of similar children.

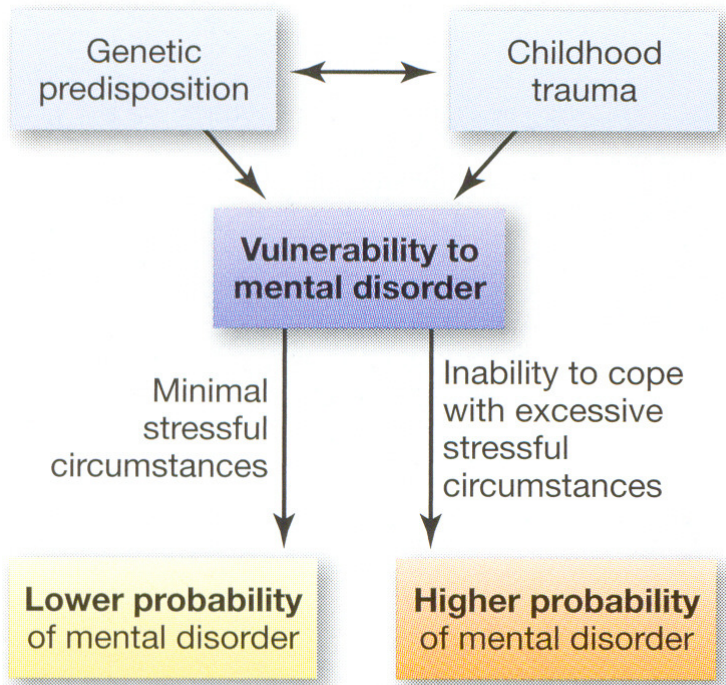
Culture:

- In early childhood there is no difference in IQ between Chinese, Japanese and American children. However, Chinese and Japanese middle school children tend to score above white Americans on both math and reading. These differences appear to be due to different educational systems.
- The average IQ is lower for members of a discriminated-against minority group—even when the group is not racially different from the dominant group. The Buraku, the poorest people in Japan have lower IQs than the Japanese. However, when they are treated like "Japanese" in America, they score just as well as any other Japanese-Americans.

It is argued that poor treatment of minority groups can make them pessimistic about their chances of success within their cultures, potentially making them less likely to believe that hard work will pay off for them ([page 349](#))

Factors that Lead to Depression





- Vulnerability factors**
- Genetic factors
 - Biological characteristics
 - Psychological traits
 - Previous learning history
 - Low social support

- Stressors**
- Economic adversity
 - Environmental trauma
 - Interpersonal stresses or losses
 - Occupational setbacks or demands

FIGURE 14.8 Diathesis-Stress Model In this model, nature and nurture work together: A person can be vulnerable to a mental disorder because of an inherited predisposition, an environmental influence, or both. Stress then may act upon the person’s vulnerability.

Environment and Achievement Development of Achievement Motivation

Achievement Motivation: The desire to excel at some task.

How does achievement motivation develop?

- Providing a cognitively stimulating home environment fosters children's intrinsic motivation (doing something for its own reason) to perform academic tasks.
 - A stimulating environment is one that makes the child think, challenges the child, and is engaging. Just listening to "Baby Einstein" CDs may not help the child think, challenge them or engage them.
- As seen in [Chapter 9](#) (Development: Erikson's Psychosocial Conflicts), find something the person finds interesting. This may require you to experiment with a lot of different tasks and provide guidance for that person to succeed.
- Praise of a learning process, hard work, diligence (*you worked hard*) versus praise of innate ability (*you are smart*).
- Caregivers that encourage and reward achievement, but don't punish failure help foster a strong motive for success (remember, punishments can increase anxiety).
- Fear of failure seems to develop when caregivers take success for granted and punish failure. Fear of failure keeps people from taking safe risks.

Cultural

The cultural perspective studies how culture reflect and shape the psychological processes of their members (page 23).

One of the major cultural differences psychologists look at is the collectivist versus individualistic orientation different cultures have

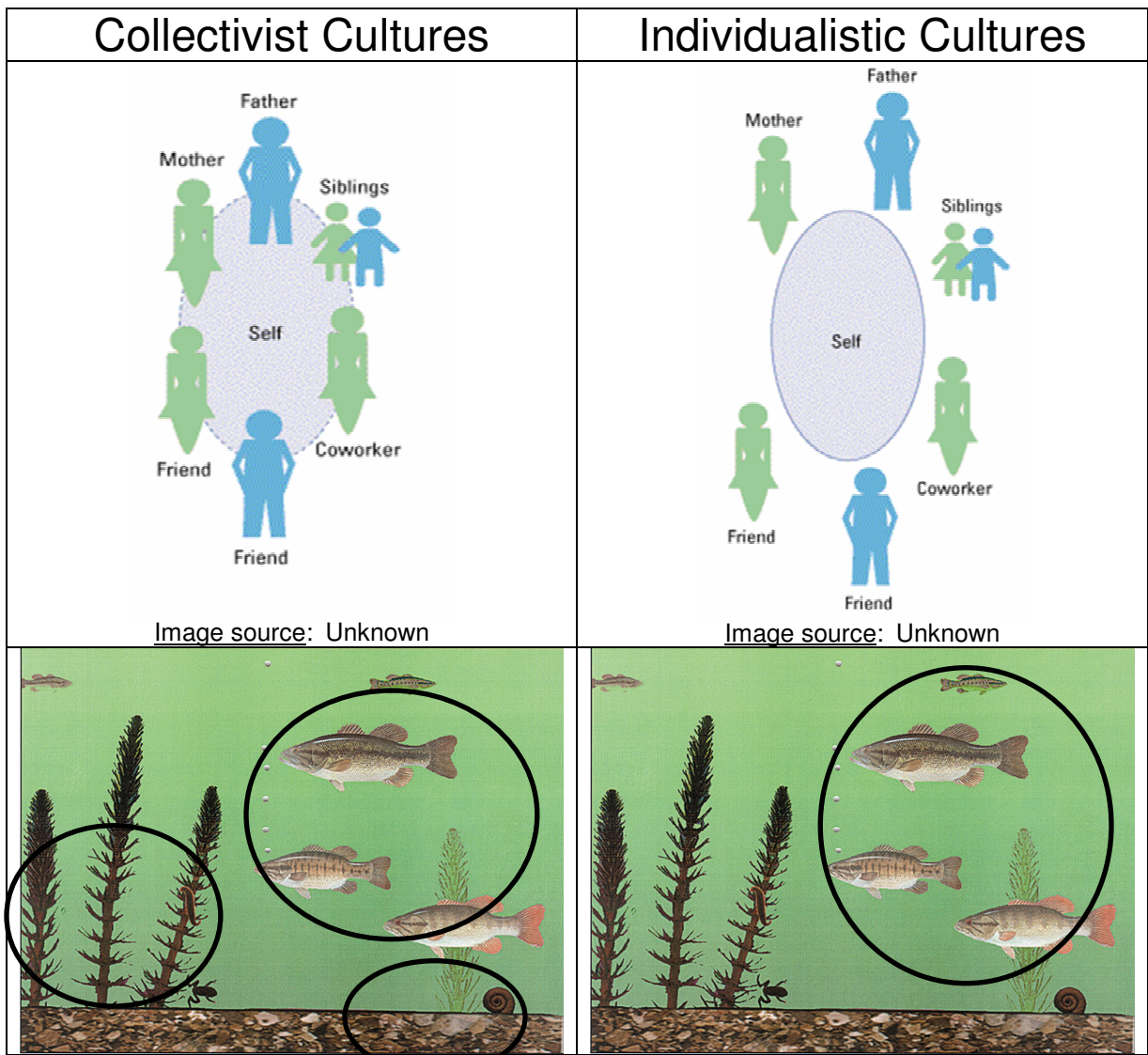


Image source: Psychology (), Grey

Collectivist Cultures



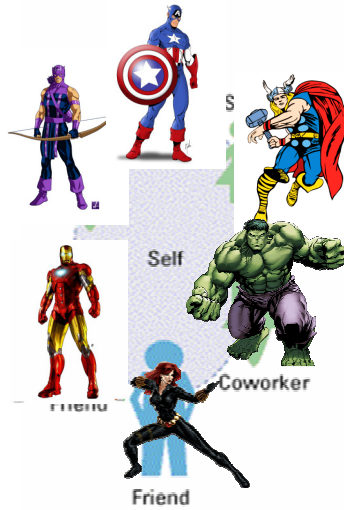
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Individualistic Cultures



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FAE

Self-serving bias

Different Cultures Interpret the World Differently

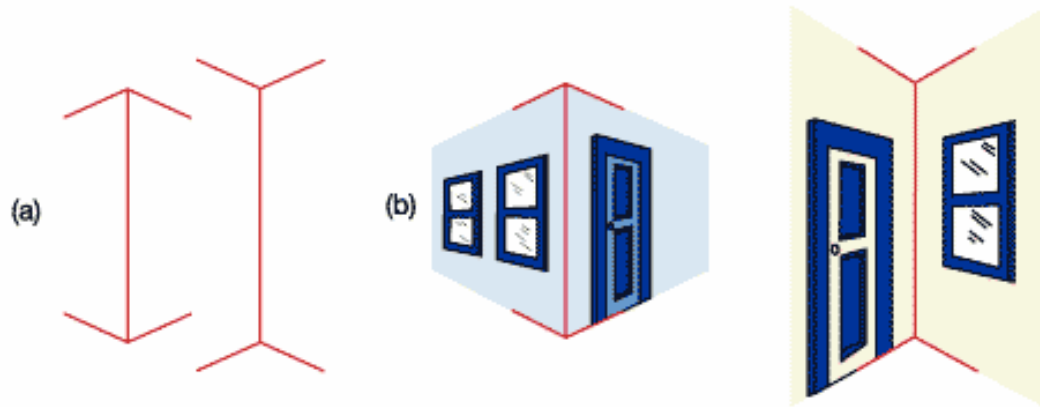
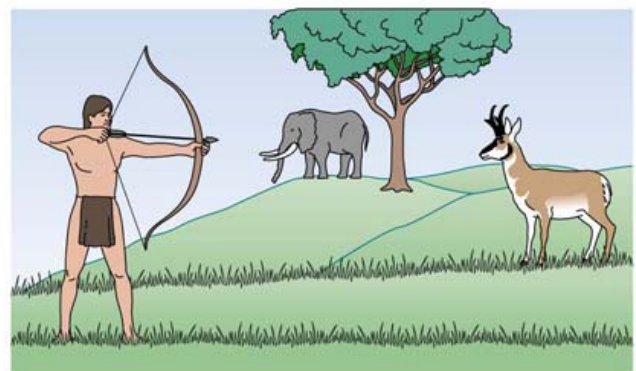


Image source: Unknown

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(a)

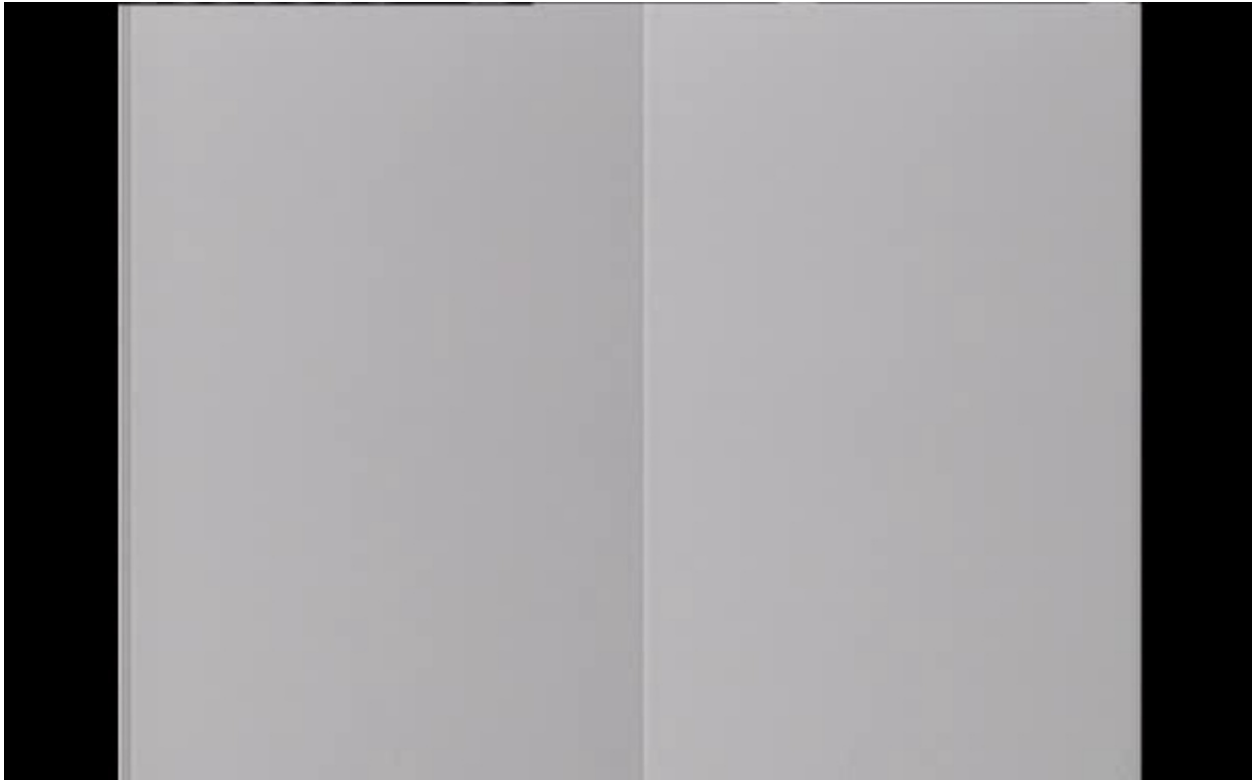


(b)

Image source: Psychology: Science and Practice (), Passer and Smith

Context affects perceptions—boundaries

Boundaries can create the perception of differences when they don't exist. The following is a visual illusion from the Discovering Psychology #7: Sensation and Perception at about 20:00 into the video



Most people see two different shades in the left and right side. Now cover up the center line.