

# A LINE ON LIFE

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## Live Long and Prosper \*

As a fan of the *Star Trek* TV series, I am familiar with the Vulcan greeting, "*Live long and prosper.*" Vulcans live much longer than humans. As humans, how long can we expect to live? What factors influence our life expectancy?

There are some areas in Russia, Pakistan and Ecuador where people supposedly live very long. It is hard to say how long, since accurate records are not available, and these people like to exaggerate their age. However, some communities do have more than their share of people over 100 years old. In fact the proportion in one Ecuadorian village is 300 times greater than that of the United States! (Although this may be partially due to long life, this statistical difference might be accentuated by the younger people leaving the village.)

Of course, hereditary factors influence everyone's life span. If your parents live to a ripe, old age, your chances of doing the same are greater. (It helps to pick the right parents.)

Most of the environmental factors that affect your life span have been mentioned repeatedly by medical experts:

- **Diet.** Long life is linked with a relatively low calorie intake of lean foods. (Does this sound familiar?) Two of our greatest killers are cardiovascular disorders and cancers. Chances of getting these diseases are significantly reduced by diets with lower amounts of red meat, fats, cured foods, refined sugar and carbohydrates. Diets high in whole grains, vegetables and fruit are also helpful.
- **Toxins.** Long life is linked to the least exposure to various toxins – pesticides, industrial and household chemicals, alcohol and tobacco. However, in contrast to total abstinence, a couple of drinks a day (1.3 ounces of alcohol) seems to be linked to longer life. A *small* amount of alcohol seems to cause the liver to produce more **HDL** – the "*good*" cholesterol that helps to prevent heart disease.
- **Stress, competition and unhappiness.** Although all three of these inevitably occur in life, minimizing them is linked to health and longer life. Researchers have related high levels of tension to faster aging.
- **Activity.** In contrast to our sedentary (sitting) life style, long life is related to strenuous activity from childhood to old age. Exercise improves the cardiovascular system and muscle tone while decreasing the probability of heart and circulatory diseases. However, this is not the "*no pain, no gain*" style promoted for athletes. For most people, it means doing something that requires

continued effort for 30 minutes at least three times a week. (Your doctor might have recommended this, but this prescription does no good unless *you* fill it.

Women currently outlive men in the United States by an average of about eight years. Why? One factor is **heredity**. Women have two large sex chromosomes (XX), while men have a large one (X) and a small one with relatively few genes (Y). If defective genes occur on a male's X-chromosome, frequently there is no dominant gene for normal functioning on the Y. In contrast, females usually have the dominant, normal-functioning gene on their other X chromosome. For example, **colorblindness** and **hemophilia** ("*bleeder's disease*") develop this way. Both of these hereditary problems are found much more in men than women.

Although there are an estimated 150 male conceptions for every 100 female conceptions, this ratio drops to about 108 to 100 at birth. In other words, many more male babies miscarry. The sex ratio is about even in the late teens. Among the elderly, we find many more widows than widowers. Biologically speaking – in every way except for upper body strength – *men* are the "*weaker sex!*" (Take care of us, ladies.)

Behavioral differences also influence this hereditary sex difference. Although men have more fatal disorders, women have higher rates of illness as a whole. This is probably because women take a greater interest in their health, monitor it more closely and are more likely to seek help when problems do arise. Men are more likely to ignore physical distress, until it is too late.

Life style is also a factor. Typically, women have less hazardous jobs, provoke fewer violent attacks, drive more carefully, smoke and drink less, and are less likely to have stress from "*pressure-cooker*" careers. In addition, women tend to have a larger social network to help them deal with their stresses.

Although the average life span is in the seventies for both sexes, many scientists believe that the *maximum* life span hovers near 100. In later years, the fundamental cause of death is an increased vulnerability to whatever comes along. Starting at the age of 30 or so, the vulnerability seems to be related to reduced **organ reserve** – the ability of organs to deal with various stresses. Something seems to slowly develop that interferes with the ability of cells to function and divide. Scientists do not understand what is happening. However, cell division seems to stop with the appearance of a particular protein, which suggests that a group of genes partially govern the final stage of life.

Regardless of your heredity, I hope you will make positive changes in your life style, so you are more likely to "*live long and prosper.*"

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\* Adapted from Linda Davidoff's *Introduction to Psychology*, McGraw-Hill, 1987, Pages 435-436.