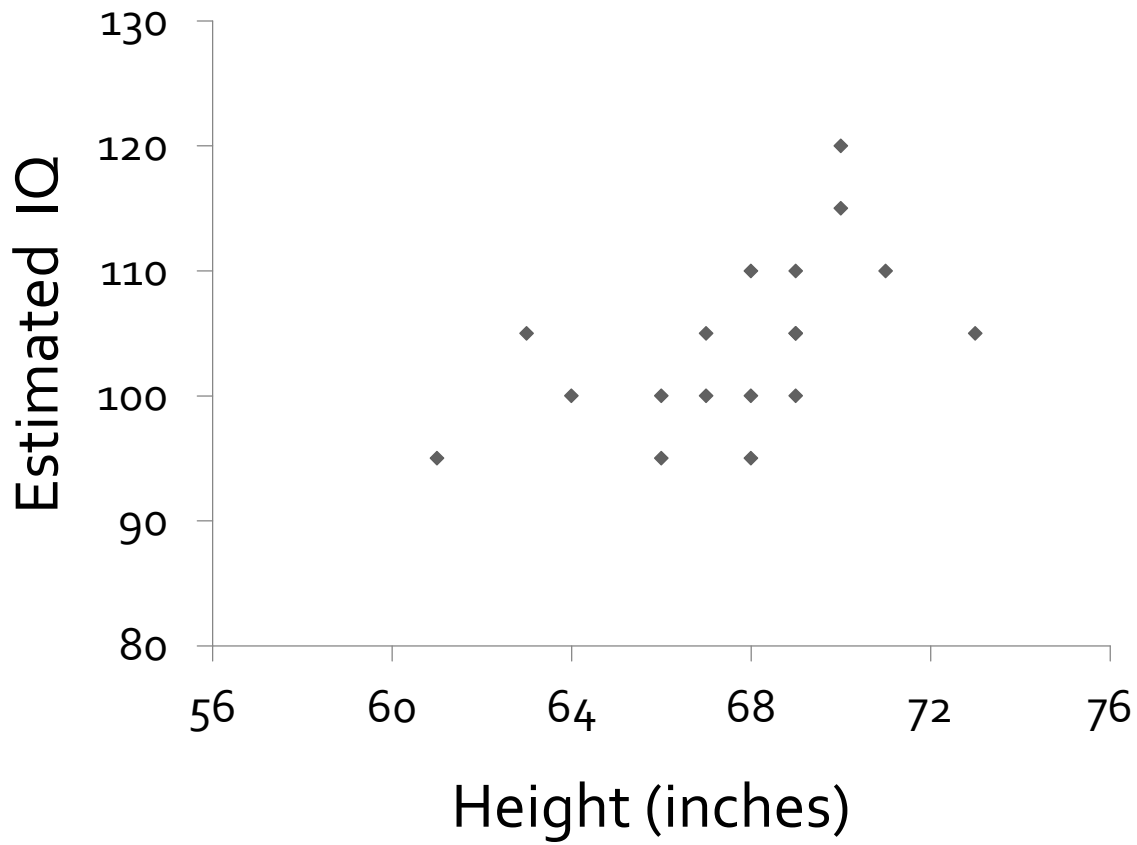
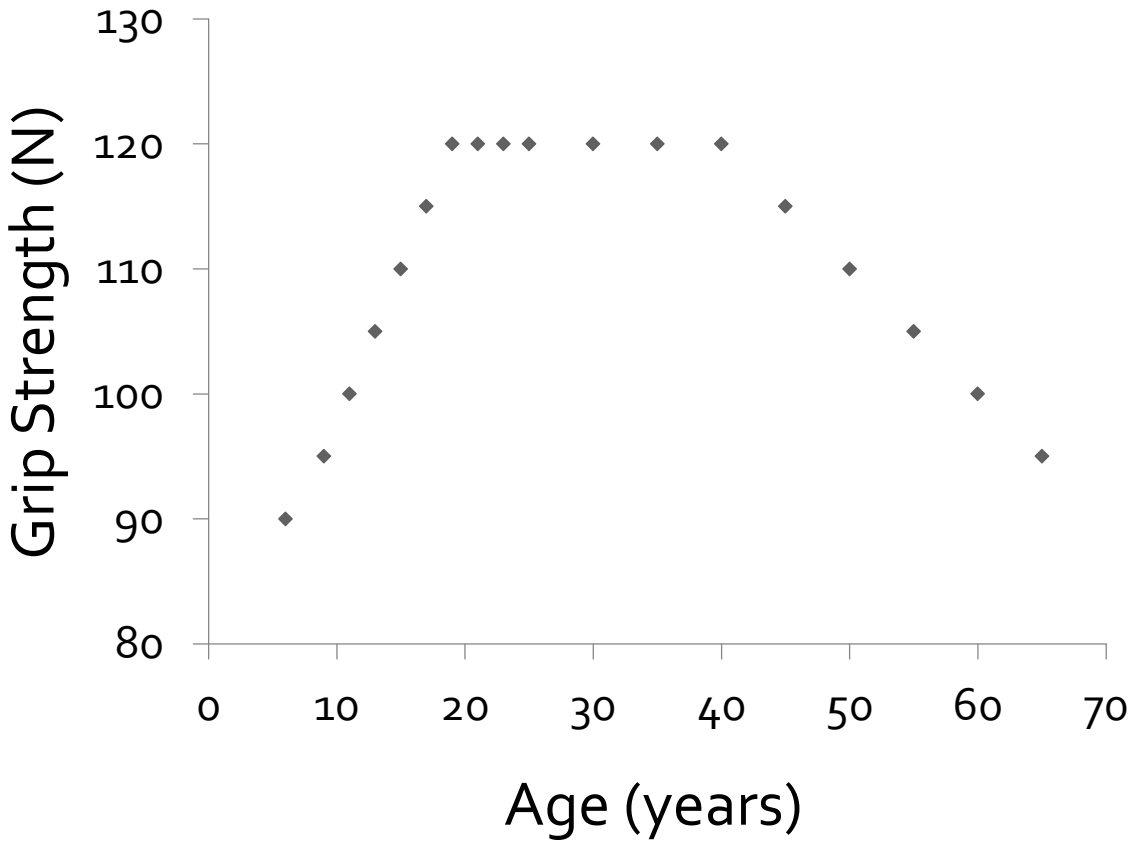
Correlations

- look at correlations using a "scatterplot"



Correlations

- only **linear** relationships are measured

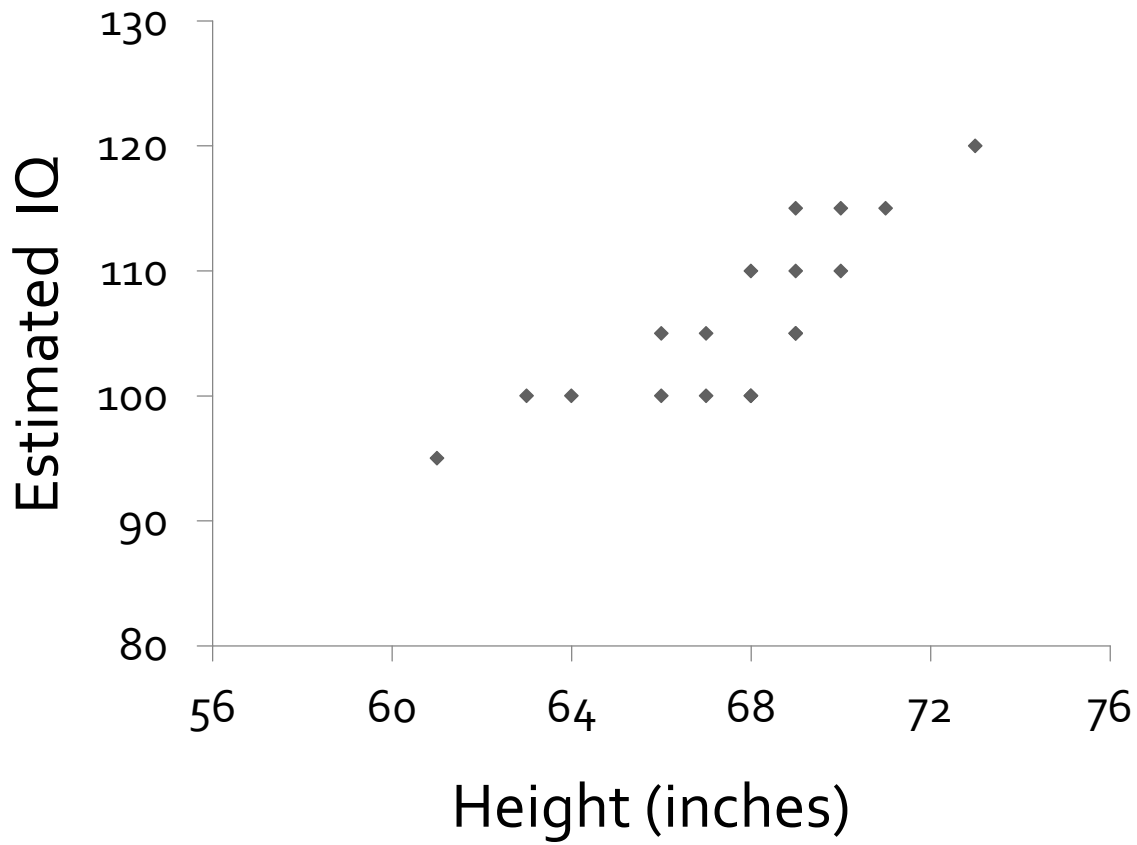


Correlations

- can be calculated between any two variables
- provide a measure of the **linear** relationship (only)
  - symbol: **r** name: "correlation coefficient"
  - varies between -1.00 and +1.00
- also provide a measure of how much of the variance in one variable is "explained" by the other variable
  - symbol: $\mathbf{r}^2$ name: "coefficient of determination"
  - varies between 0.00 and 1.00
- are greatly affected by the range of values

Correlations

- are greatly affected by the range of values



two more cool things about correlations

- correlations are unaffected by linear transformations

  e.g., assume that the correlation between height in inches and estimated IQ is +.70

  if you switch to metric units (inches→centimeters) then the variance increases by a factor of 6.45

  but the correlation remains exactly the same

two more cool things about correlations

- correlations have no units

  therefore, any two correlations may be compared

  e.g., assume you want to know which confound in the original diffusion of responsibility study is more important: density or diversity

  you can't compare density (people / foot^2) directly to diversity (bits) because the units don't match

  but you can compare the correlations

  (what you're really doing is comparing amounts of variance)

Reliability vs "Unreliability"

		subjects					
		1	2	3	4	5	… N
repeated measures	1	#	#	#	#	#	#
	2	#	#	#	#	#	#
	3	#	#	#	#	#	#
	4	#	#	#	#	#	#
	K …	#	#	#	#	#	#

Reliability

- why do most researchers prefer to use reliability, instead of something like unreliability, to estimate the quality of a measure?

  answers:

- general rule in psychology: