**Bootstrap Resampling**

Bootstrap resampling is a computer-intensive method of obtaining robust estimates of population parameters such as mean and standard deviation values. Bootstrapping is the construction of numerous resampled datasets, with the goal of exploiting the central limit theorem and the law of large numbers to allow a single dataset to mimic the values or parameters of a population. Resampling is accomplished by randomly selecting from a dataset, with replacement, a number of cases equivalent to the size of the dataset. Replacement, in resampling experiments, is the equivalent of pulling a number at random from a hat, after shaking or randomizing those numbers, and then returning each number to the hat and re-shaking or re-randomizing the numbers before selecting each subsequent number. In this way it is anticipate that some numbers might be randomly selected more than once, while others may not be selected in all. With each random case selection, the probability of selecting a case from within the normal range is dictated by the central limit theorem. Bootstrap resampling can reduce the influence of outlier or extreme values, against which mean and standard deviation statistics are non-robust, by using the trimmed mean estimates for the statistics of interest – in this case the mean and standard deviation for deceptive and truthful polygraph test results.

With the availability of high-speed computers that can accomplish repetitive tasks, such as the construction of 10,000 resampled sets of N=292, that would be arduous or impossible for humans. Large scale resampling offers the advantage of both regressing estimates towards population mean values, and providing small standard error estimates of the obtained statistics. Population estimates are obtained by taking the mean of the statistic of interest (i.e., mean, standard deviation), from the 10,000 resampled sets, in the same manner that a distribution of sample distributions has also been used to obtain estimates of population parameters (i.e., mean and standard deviation) when it is not feasible to obtain those values by testing every member of a population. Because our distribution of resampled sets is suitably large, we reasonably anticipated small standard error ranges around our population parameters, and we were no longer faced with using a single sample dataset to represent the mean and standard deviation parameters of the population.