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Preventing human error: The impact of data entry methods on data accuracy and statistical results

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Abstract

Human data entry can result in errors that ruin statistical results and conclusions. A single data entry error can make a moderate correlation turn to zero and a significant t-test non-significant. Therefore, researchers should design and use human computer interactions that minimize data entry errors. In this paper, 195 undergraduates were randomly assigned to three data entry methods: double entry, visual checking, and single entry. After training in their assigned method, participants entered 30 data sheets, each containing six types of data. Visual checking resulted in 2958% more errors than double entry, and was not significantly better than single entry. These data entry errors sometimes had terrible effects on coefficient alphas, correlations, and t-tests. For example, 66% of the visual checking participants produced incorrect values for coefficient alpha, which was sometimes wrong by more than .40. Single entry and visual checking should be replaced with more effective data entry methods, such as double entry.