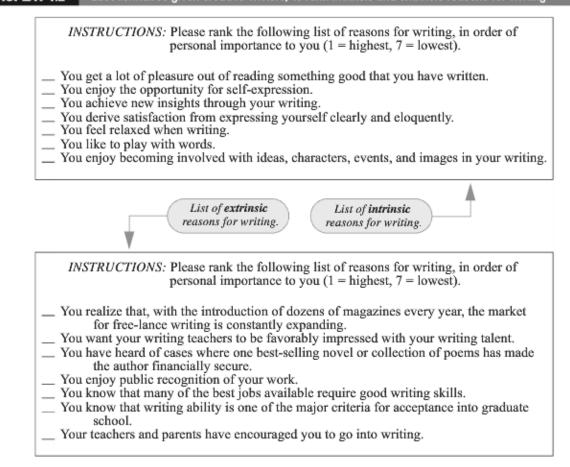
Motivation and Creativity—A Randomized Experiment

Creativity scores in two motivation groups, and their summary statistics

	Intrinsic group		Extrinsic group	
	12.0	20.5	5.0	17.4
	12.0	20.6	5.4	17.5
	12.9	21.3	6.1	18.5
	13.6	21.6	10.9	18.7
	16.6	22.1	11.8	18.7
	17.2	22.2	12.0	19.2
	17.5	22.6	12.3	19.5
	18.2	23.1	14.8	20.7
	19.1	24.0	15.0	21.2
	19.3	24.3	16.8	22.1
	19.8	26.7	17.2	24.0
	20.3	29.7	17.2	
Sample Size:	24		23	
Average:	19.88		15.74	
Sample Standard Deviation:	4.44		5.25	

After completing the questionnaire, all subjects were asked to write a poem in the Haiku style about "laughter." All poems were submitted to 12 poets, who evaluated them on a 40-point scale of creativity, based on their own subjective views. Judges were not told about the study's purpose. The average ratings given by the 12 judges are shown for each of the study subjects in Display 1.1. (Data based



on the study in T. Amabile, "Motivation and Creativity: Effects of Motivational Orientation on Creative Writers," *Journal of Personality and Social Psychology* 48(2) (1985): 393–99.) Is there any evidence that creativity scores tend to be affected by the type of motivation (intrinsic or extrinsic) induced by the questionnaires?

Statistical Conclusion

This experiment provides strong evidence that receiving the "intrinsic" rather than the "extrinsic" questionnaire caused students in this study to score higher on poem creativity (two-sided p-value = 0.005 from a two-sample t-test as an approximation to a randomization test). The estimated treatment effect—the increase in score attributed to the "intrinsic" questionnaire—is 4.1 points (95% confidence interval: 1.3 to 7.0 points) on a 0–40-point scale.

Note: The statistical conclusions associated with the case studies in each chapter use tools and, in some cases, terms that are introduced later. You should read the conclusions initially to appreciate the scientific statements that can be

drawn from the chapter's tools, without worrying about the parts you don't understand, and then return to them again after reading the chapter for a more complete understanding.

Scope of Inference

Since this was a randomized experiment, one may infer that the difference in creativity scores was *caused* by the difference in motivational questionnaires. Because the subjects were not selected randomly from any population, extending this inference to any other group is speculative. This deficiency, however, is minor; the causal conclusion is strong even if it applies only to the recruited subjects.