Figure 9-6   *F* Test of Equal Standard Deviations

Interpretation

There is sufficient evidence to warrant rejection of the claim that the two standard deviations are equal. The variation among creativity scores for those with a red background appears to be different from the variation among creativity scores for those with a blue background.

From Example 1 we can see that technology makes the *P*-value method very easy. Without technology, we must use Table A-5 to find a critical value, but the limitations of that table make this approach more difficult.

Part 2: Alternative Methods

Part 1 of this section presents the *F* test for testing claims made about the standard deviations (or variances) of two independent populations. Because that test is so sensitive to departures from normality, we now briefly describe two alternative methods that are not so sensitive to departures from normality.

Count Five

The *count five* method is a relatively simple alternative to the *F* test, and it does not require normally distributed populations. (See "A Quick, Compact, Two-Sample Dispersion Test: Count Five," by McGrath and Yeh, *American Statistician,* Vol. 59, No. 1.) If the two sample sizes are equal, and if one sample has at least five of the largest mean absolute deviations (MAD), then we conclude that its population has a larger variance. See Exercise 19 for the specific procedure.

Levene-Brown-Forsythe Test

The *Levene-Brown-Forsythe test* (or modified Levene's test) is another alternative to the *F* test, and it is much more robust against departures from normality. This test begins with a transformation of each set of sample values. Within the first sample, replace each *x* value with $|x - \text{median}|$, and do the same for the second sample. Using the transformed values, conduct a *t* test of equality of means for independent samples, as described in Part 1 of Section 9-3. Because the transformed values are