

LEARNING CHECK

Let's take another example of a presentation of a one-way, repeated-measures ANOVA. To do so, let's consider a research study that Mary Hassandra and her colleagues (2009) conducted. Specifically, Hassandra et al. assessed the effectiveness of a program called "I do not smoke, I exercise." This program was aimed at middle-school (7th grade) students to help them see exercise as a preferable behavior to smoking. Among the data that Hassandra and colleagues collected was a measure of knowledge about the health consequences of smoking. This knowledge measure contained 22 items, answering true or false to statements such as "Smoking has been demonstrated to cause breathing difficulties while playing sports." Participants got a point for each item answered correctly, so scores could range from 0 to 22.

How is this research an example of a one-way, repeated-measures ANOVA? Hassandra et al. (2009) measured the 7th graders' knowledge of smoking at three different points in time: the first time (T1) was prior to the start of the program, the second time (T2) was immediately after the program ended, and the third time (T3) was 12 months after the program ended. Therefore, each student provided data to each "point in time," which serves as the independent variable in this research. Scores on the knowledge of smoking tests serves as the dependent variable.

Here are the results of Hassandra et al.'s (2009) one-way, repeated-measures ANOVA on 7th graders' knowledge of smoking when they are put into an APA style write-up:

The repeated-measures ANOVA revealed a significant time effect, $F(2, 186) = 129.825, p < .001, \eta_p^2 = .414$. Examination of the within-subjects contrasts revealed that knowledge increased from T1 ($M = 14.33$) to T2 ($M = 18.65$), $p < .001$, and although there was a significant decrease from T2 to T3 ($M = 17.56$), $p < .001$, the differences between T1 and T3 remained significant, $p < .001$.

(Continued)