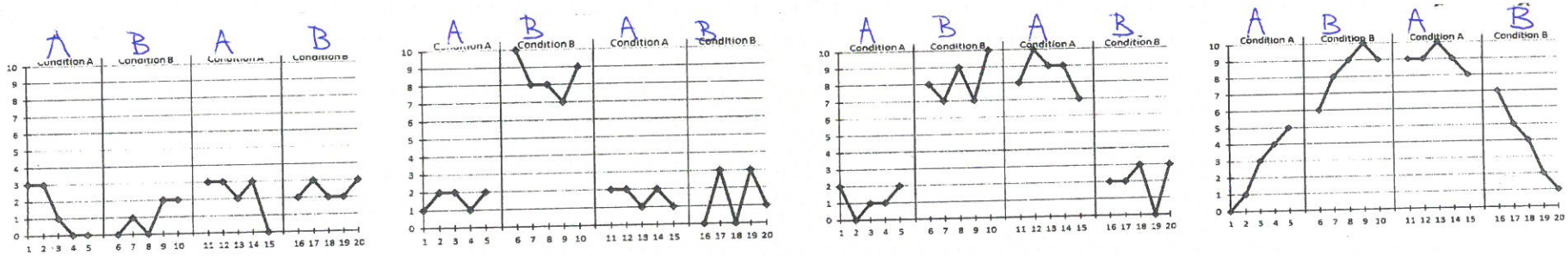
Red Flags of Functional Relations and Experimental Control

"Functional relations are demonstrated when observed variations in behavior can be attributed to specific operations imposed on the environment. Experimental control is achieved when a predictable change in behavior (the dependent variable) can be reliably and repeatedly produced by the systematic manipulation of some aspect of the subject's environment (the independent variable). To make such attributions properly, the investigator must, among other things, control two sets of environmental variables. First, the investigator must control the independent variable by presenting it, withdrawing it, and/or varying its value. Second, the investigator must control, by holding constant, all other aspects of the experimental setting—extraneous variables—to prevent unplanned environmental variation. These two operations—precisely manipulating the independent variable and maintaining the constancy of every other relevant aspect of the experimental setting—define the second meaning of experimental control" (Cooper, 07/2012, pp. 164-165).

BASICALLY, to prove a functional relation and experimental control, your data's level and/or trend should vary across different conditions **due to** the manipulation of the independent variable **ALONE**.

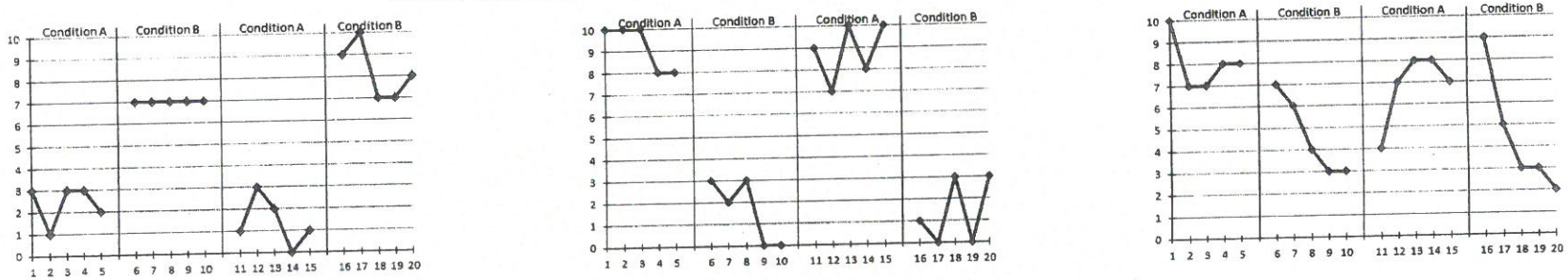
A-B-A-B Withdrawal Designs exhibiting limited functional relations

Little to no consistent change in dependent variable when the independent variable is systematically manipulated



A-B-A-B Withdrawal Designs exhibiting functional relations

Consistent change in dependent variable when the independent variable is systematically manipulated



Source: Cooper, J. O., Heron, T. E., Heward, W. L. (07/2012). Applied Behavior Analysis, 2/e [VitalSource Bookshelf version]. Retrieved from https://bookshelf.vitalsource.com/books/9781256844884