

# Understanding WWC Intervention Reports That Summarize Single-Case Design Research

Single-case design research uses experiments in which an outcome measure is assessed repeatedly within and across different phases that are defined by the presence or absence of an intervention. In these experiments, a single case, such as a student or classroom, is the unit of intervention administration and data analysis. Confidence in the validity of findings from single-case research is enhanced by replication of effects across different studies, research teams, and cases. Below is an example of a table that summarizes findings for an intervention based on single-case design research.

The WWC summarizes single-case design research for a domain only if the body of research with outcomes collectively meets a set of threshold criteria. These criteria are met if at least five studies meet WWC pilot single-case design standards with or without reservations, the studies are conducted by at least three different research teams with no overlapping authorship, and the combined number of cases totals at least 20.

These two domains meet the reporting threshold because at least five studies meet WWC pilot single-case design standards with or without reservations, the studies are conducted by at least three different research teams with no overlapping authorship, and the combined number of cases totals at least 20.

The rating of effectiveness reflects the consistency of demonstrated effects across all single-case design experiments that meet WWC standards with or without reservations. A rating is provided for these two domains, because they meet the threshold to include single-case design evidence.

This percentage is calculated by dividing the number of experiments that demonstrated a positive effect by the total number of experiments with outcomes in this domain.

This percentage is calculated by dividing the number of experiments that demonstrated a negative effect by the total number of experiments with outcomes in this domain.

**Table 1. Summary of findings from single-case design studies**

Outcome domain	Number of studies	Number of research teams	Number of cases	Rating of effectiveness	Percentage of SCD experiments demonstrating a positive effect (#)	Percentage of SCD experiments demonstrating a negative effect (#)
School engagement	15	7	32	Potentially positive effects	74% (24/34)	0% (0/34)
Problem behavior	8	5	21	Potentially positive effects	68% (17/25)	0% (0/25)
Social-emotional competence	3	2	4	na	na	na

Table Notes: SCD = single-case design. na = not applicable

One study or publication often reports findings from multiple single-case design experiments, each of which may focus on different cases (or participants).

Based on the percentages of experiments demonstrating positive and negative effects, these domains both receive a rating of potentially positive effects, which is shown in the column to the left.

This domain does not meet the threshold to summarize and report on single-case design evidence, so a rating of effectiveness is not provided.

When reviewing single-case design research, the WWC first reviews each single-case design experiment to determine whether it meets WWC single-case design standards with or without reservations. For each experiment that meets WWC single-case design standards, the WWC then uses visual analysis to review the pattern of outcome data in each experiment to determine whether the intervention led to a positive effect, a negative effect, or no effect. The overall pattern of effects is used to characterize evidence of a causal relationship. (For more details, please see the document that describes the Key Criteria Used in WWC Reviews of Single-Case Design Research as well as version 3.0 of the Procedures and Standards Handbook, Appendix E).

Below is an example of a table that summarizes information about each single-case design experiment that meets WWC standards with or without reservations, within each study, for one outcome domain.

Each row represents one experiment that meets WWC standards, and includes information about the outcome measure, case (or participant), type of single-case design experiment, and evidence level.

The total number of demonstrated and attempted intervention effects are shown here. An effect is documented when the data pattern in one phase (e.g., an intervention phase) differs more than would be expected from the data pattern observed in a previous phase (e.g., a baseline phase).

**Table C.1: Single-case design findings for the school engagement domain**

Outcome measure	Study characteristics			Evidence level	WWC summary	
	Sample size (case)	Age(s)	Design type		Intervention effects	
					Total demonstrated	Total attempted
<b>Christensen et al. (2012)<sup>a</sup></b>						
<i>Off-task behavior (reduction)</i>	1 (Amy)	Grade 4	Reversal-withdrawal	No evidence	1	3
<i>On-task behavior</i>	1 (José)	Grade 4	Reversal-withdrawal	Strong (+)	3	3
<b>Christensen et al. (2004)<sup>b</sup></b>						
<i>Time on task</i>	1 (Eduardo)	8	Reversal-withdrawal	Strong (+)	3	3
<b>Clarke et al. (1995)</b>						
<i>Desirable behavior</i>	1 (Ahmad)	5	Reversal-withdrawal	Strong (+)	3	3
<i>Desirable behavior</i>	1 (Juan)	11	Reversal-withdrawal	No evidence	2	5
<i>Desirable behavior</i>	1 (Shane)	11	Reversal-withdrawal	Moderate (+)	4	5

This column provides information about each case—including pseudonyms, where relevant—so that the evidence level can be mapped back to the correct experiment in the original study.

This column shows whether the intervention led to a positive effect (+), a negative effect (-), or if there was no evidence of an effect. If an effect was observed, the evidence level is described as Strong or Moderate.

A single-case design experiment with at least three demonstrations of an intervention effect is said to have Strong Evidence of a causal relationship if it has no demonstrations of no effect, and Moderate Evidence of a causal relationship if it has at least one demonstration of no effect. A single-case design experiment with fewer than three demonstrations of an intervention effect is said to provide No Evidence of a causal relationship.

Single-case design standards apply to a wide range of designs, including reversal-withdrawal, multiple baseline, multiple probe, alternating treatments, and changing criterion designs.