Content Components of Evidence-Based Teen Pregnancy Prevention Programs: Early Evidence About Potential Drivers of Program Effects

This brief provides a nontechnical summary of three key findings from a meta-regression analysis that examined which components of evidence-based teen pregnancy prevention (TPP) programs were predictive of program effectiveness.

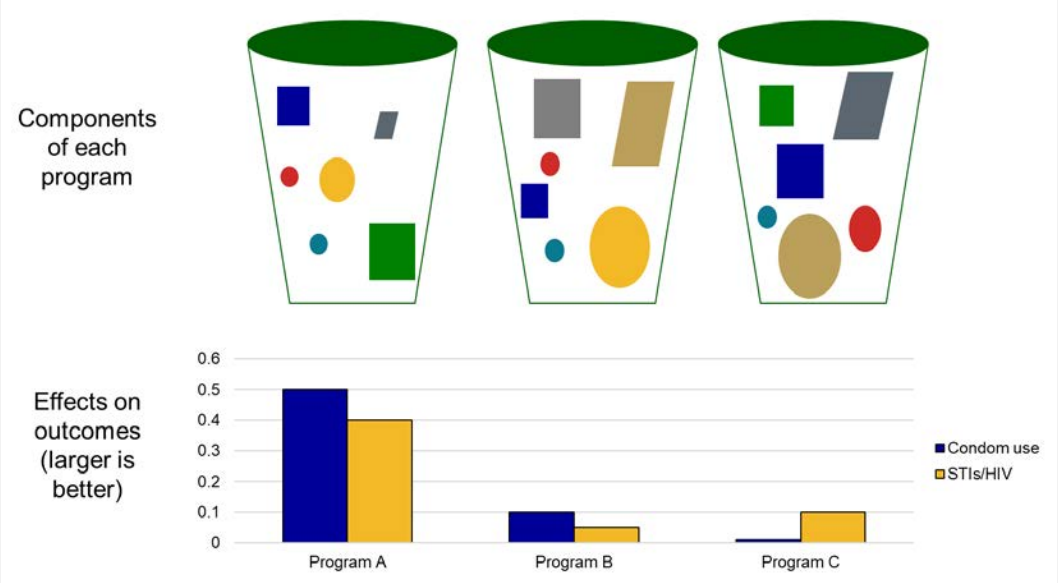
Background

A recent meta-analysis of 99 studies from the Teen Pregnancy Prevention Evidence Review (TPPER) showed that the average impacts of TPP programs differ significantly by program type (Cole et al., 2024). Certain types of programs—notably, clinic-based programs—appear to be more effective than others at improving sexual behavior outcomes.[1]

One potential reason different program types may have larger or smaller impacts on outcomes is that they are made up of different program components. See Exhibit 1 for an illustration.

In the exhibit, Program A has the largest impacts, or effects on outcomes. It is made up of different components with different dosages (shown as shapes in different colors and sizes) than Programs B and C, which have smaller observed impacts.

Exhibit 1. Illustration of variation in program effectiveness



Note: The different shapes, colors, and sizes of components shown in this figure represent differences in component types and dosages.

[1] See Streke and colleagues (2024) for details on the TPPER systematic review process and the meta-analytic approach used to summarize the evidence.

What are program components?

Program components are the elements and activities that constitute a program. Many terms in the literature describe components of programs—including, structural elements, core practices, and ingredients, among others (Blase and Fixsen 2013; Embry 2004; Dymnicki et al. 2020).

The TPP field has started highlighting program components in terms of seven **types**: (1) content, (2) delivery mechanisms (activities), (3) formats, (4) staffing, (5) dosages, (6) environments, and (7) intended population characteristics. These types are not independent. Program **content** is offered through a particular **delivery mechanism**, for a certain **dosage**, in a certain **environment**, and so on. The TPP field also differentiates **core components** as the subset of components that are critical to a program's ability to improve outcomes.

See Forrester and Cole (2023a) for more information on definitions and Forrester and Cole (2023b) for a checklist that program developers, implementers, and researchers can use to disaggregate TPP programs into their individual components.

Do TPP programs differ in terms of their components?

Forrester et al. (2024) examined the components of 51 evidence-based programs in the TPPER, when these data were available, and found that different types of programs are made up of different patterns of components. For instance, sexual health programs consistently include content on sexuality and sexual behavior, while positive youth development programs include content on individual values and academic success.

What does this brief tell us about components?

This brief examines how different categories of **content** are related to differences in observed effectiveness across evidence-based programs found in the TPPER. The findings show the potential for these data to answer questions about which components influence program impacts.

About the data used in this brief

In spring 2024, the TPPER assembled the effect size data from all studies that were currently eligible at the time. This work resulted in 618 estimates from a total of 99 studies about how 79 programs affected sexual behavior outcomes (See Streke et al. 2025 for details). The TPPER also collected detailed information about the individual components of 51 evidence-based programs (Forrester et al., 2024) that were deemed to have active evidence of effectiveness during the 2022 and 2023 rounds of review.

We linked these two data sets by program so that each program had effect size data and component data. In our analysis, we used program components as predictors of effect sizes to determine whether specific components were associated with larger or smaller effects among these evidence-based programs. Details about the data collection and analysis are available in the technical appendix (Streke et al., 2025).

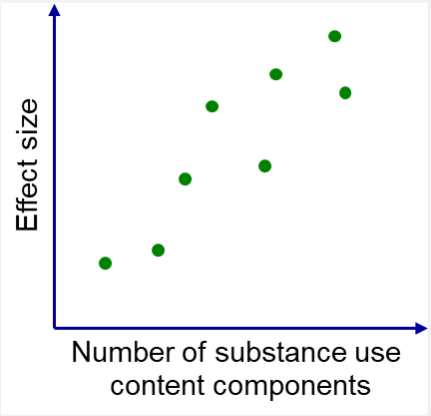
What is an effect size?

Effect sizes are a way to express program impacts in common units to compare impacts across different programs. They represent the estimated program impact—or the difference in outcomes between treatment and control groups—expressed in units of the standard deviation of the outcome. In the analysis presented in this brief, effect sizes are the outcome variable.

Programs with more substance use content have larger effects

Content on substance use addresses the avoidance of, reduction of, and risks related to using substances. Across analyses, our findings suggest that studies of programs with a higher count of components related to substance use content had larger effects on sexual behavior outcomes (see Exhibit 2 for an illustrative presentation of these findings).[2]

Exhibit 2. Illustrative relationship between effect size and substance use components (findings are represented as dots)

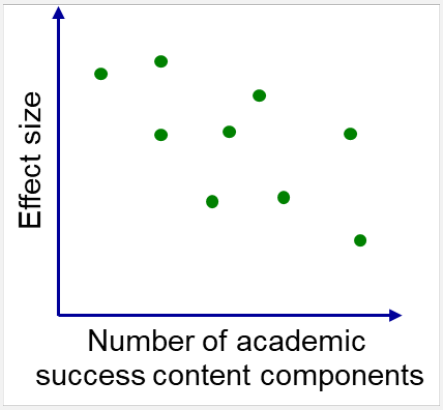


In other words, studies of programs that had larger impacts (larger effect sizes) tended to have more substance use components. This finding is consistent with a recent descriptive study of the components of the REAL Essentials Advance curriculum (Anastasio et al., forthcoming) and a systematic review of promising predictors of adolescent sexual behavior (Forrester et al., 2025) that suggested substance use was strongly predictive of sexual behavior outcomes.

Programs with more academic success content have smaller effects

Content on academic success addresses youth's options and pathways to academic success. Across analyses, results showed that studies of programs that had a higher count of components related to academic success content tended to have smaller effects on sexual behavior outcomes (see Exhibit 3 for an illustrative presentation of this finding).

Exhibit 3. Illustrative relationship between effect size and academic success components (findings are represented as dots)



In other words, having more content related to academic success may make programs relatively less effective in terms of their ability to improve sexual behavior outcomes. This finding was also consistent with the REAL Essentials Advance descriptive component study, which found that

[2] For this brief, we examined the relationship between components and effects using several different analytic approaches to understand the robustness of the findings. Our method for highlighting a finding emphasizes statistically significant results that are consistent across multiple specifications and validated through sensitivity analyses, including controls for variables identified as important in the meta-analysis. See Streke and colleagues (2025) for details on the benchmark and sensitivity analyses as well as tabular presentations of all findings.

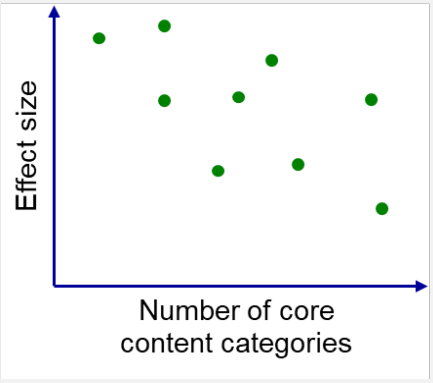
content related to academic success had unfavorable associations with short-term outcome changes (Anastasio et al., forthcoming).

However, programs that tend to have a higher number of components related to academic success may intend to move a broader set of outcomes than the narrow set of sexual behaviors examined by the TPPER. As a result, this meta-regression analysis may be highlighting this component's negative effect on sexual behavior outcomes. If outcomes in other domains were available (for example, on academic achievement or plans for the future), a different story might have emerged.

Programs with more variety in core content have smaller effects

Some programs attempt to address a broad and varied set of content topics, rather than deeply covering a smaller number of topics. Programs with a higher number of *core* content component categories (those that the developer believed were critical to the program) tended to have smaller effects on sexual behavior outcomes (see Exhibit 4 for an illustrative presentation of this finding).

Exhibit 4. Illustrative relationship between effect size and number of core content categories (findings are represented as dots)



Stated another way, having fewer content components with higher relative importance—that is, having more targeted core content—may make programs more effective. It is possible that some programs emphasize too many topics because they consider them all to be core. Given that the amount of time available for program implementation is limited, programs that attempt to address many different content areas might sacrifice some relative effectiveness on the sexual behavior outcomes that are a primary focus of the TPPER.

Next steps

The analyses reported here represent a basic exploration of one type of component (content) as a contributor to certain programs that have larger impacts on adolescent sexual behaviors than others. The findings from this initial exploration indicate that a more comprehensive examination of other program components may be warranted. For example, additional work could address the following questions about format and staffing components:

- **Format components.** Do programs that use a mix of group sizes have bigger impacts than those that use one group size consistently throughout the program? Do programs with in-person programming have bigger impacts than programs with online or app-based programming?
- **Staffing components.** Is there a difference in impacts among programs with required facilitator training, education, or credentials? Does it matter what type of professional delivers the program?

We could also explore other components, such as information about dosage, intended population characteristics, and implementation settings. In addition to exploring these component types separately, we might identify theory-driven interactive effects to examine. Interactions between components might help us understand which *combination* of components drive program impacts or whether certain components might work more effectively when implemented with certain populations.

Although this small investigation is novel and informative, the presented approach has its limitations. First, the analysis includes only evidence-based programs—that is, those programs shown to be effective (overall) for reducing or delaying risky sexual behavior.[3] It is possible that these programs are made up of mostly effective program components and thus the contrast in component experiences across programs is minimal (and perhaps less informative than if programs without evidence of effectiveness were included in the sample). With a more complete set of data, we could make a much stronger case for which components are most important.

In addition, this analysis is entirely exploratory. We pitted content components against each other to determine the components most strongly related to variation in program effectiveness. Adjusting for other variables (including other components of these programs such as population characteristics) might have led to different interpretations.

Despite these limitations, this brief highlights the utility of investigating program components to answer questions about drivers of program impacts. Our approach presents an illustrative use case for additional work to understand which components are responsible for the effectiveness of TPP programs as well as multicomponent interventions more broadly. Further work in this area will contribute to the growing body of research about the components of TPP programs.

[3] The TPPER does not collect component-level data on programs that do not have evidence of effectiveness; therefore, these programs could not be included in this meta-regression analysis.

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