



Meta-Analysis Report of Teen Pregnancy Prevention Evidence Review Studies: Technical Appendices

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INTRODUCTION

This document contains four appendices to the main brief that summarizes the average effects of the programs examined by the Teen Pregnancy Prevention Evidence Review (TPPER) by Cole, Lugo-Gil, and Streke (2024). It largely follows the same structure and uses similar approaches described in the technical appendix for a recent meta-analysis of the Pathways to Work effect size data (Streke & Rotz, 2022).

Appendix A. *TPPER Systematic Review Process* briefly outlines the four-step process used to identify and systematically review the effectiveness research on teen pregnancy prevention (TPP) programs.

Appendix B. *Technical Details* describes the calculations used to obtain the findings presented in the report. This section includes information about how we calculated the effect sizes from the original studies and conducted meta-analytic models.

Appendix C. *Supplemental Materials* provides the full results for each analysis presented in the report (Tables C.1–C.4). It also includes additional supplemental findings beyond those highlighted in the main body of the report and box and whisker plots for key variables (Figures C.1–C.8).

Appendix D. *References Included in the TPPER Meta-Analysis* lists the studies included in the meta-analysis data set.

APPENDIX A. TPPER SYSTEMATIC REVIEW PROCESS

When TPPER conducts its systematic review of the evidence, it follows a four-step procedure (see TPPER protocol version 7.0 for additional details):

- 1. Search for studies.** First, the TPPER review team systematically identifies research studies by (1) issuing a call for studies to solicit new and unpublished research, (2) conducting keyword searches of electronic databases, (3) scanning the tables of contents of academic research journals that regularly publish effectiveness studies of TPP programs, and (4) reviewing the reference lists in recently published literature reviews and meta-analyses.
- 2. Screen and select studies.** After identifying studies, the review team screens them based on an established set of eligibility criteria. These criteria specify that eligible studies must (1) focus on U.S. youth ages 19 or younger; (2) focus on programs and/or well-defined components of programs that intent to reduce rates of teen pregnancy, sexually transmitted infections (STIs), or associated sexual risk behaviors; (3) examine the effects of a program or component using a randomized controlled trial (RCT) or a quasi-experimental design (QED); (4) have follow-up data collected within the last 20 years; and (5) measure impacts on at least one outcome that can be categorized into one of five domains: sexual activity, number of sexual partners, contraceptive use, STIs or HIV, and pregnancy. Analyses of the full sample and key population groups (defined by gender or sexual experience at baseline) are eligible for review.
- 3. Assess the quality of each eligible study and extract information on estimated effects.** Studies that meet the eligibility criteria are assessed for the quality and execution of their research designs. In this assessment, the review team applies a set of prespecified standards that focus on how an assignment to study conditions was conducted, the level of attrition, whether baseline equivalence was established, and whether there are any confounding factors. The review team documents information about each study and its findings using a tool called Study Review Guide (SRG) and assigns a rating of high, moderate, or low to each finding in the study according to the risk of bias in the findings—that is, according to how credible it is that the finding provides evidence of the effectiveness of the program or component examined in the study. Only well-implemented RCTs are eligible for the high rating. QEDs and RCTs that do not meet the criteria for the highest rating are eligible for the moderate rating. Studies with findings that do not meet the standards for a high or moderate rating receive a low rating. The review team documents information on the magnitude of the program or component estimated effects (that is, the effect size) and the standard error of this estimate for findings with a high or moderate rating.
- 4. Identify programs with evidence of effectiveness.** The review team uses the information collected during the study quality assessment to identify programs that have at least one high or moderate rating impact study showing evidence of a favorable, statistically significant estimated effect on at least one outcome measure within one of the eligible domains. For such programs, the review team pools the evidence across all high- or moderate-rated studies to categorize the level of evidence for the program within each of the five outcome domains.

APPENDIX B. TECHNICAL DETAILS

This appendix provides further technical details on the meta-analysis methods used by the Teen Pregnancy Prevention Evidence Review to combine and contrast findings across studies and programs. Meta-analysis enables us to combine the findings catalogued by the TPPER into meaningful conclusions about what works, for whom, and in what context (Higgins & Green, 2011). Meta-analysis produces an average estimate of impacts, assigning greater importance to the more precise estimates typically derived from studies with larger sample sizes.

This averaging is valuable for several reasons. Some audiences might want to understand the average effect of TPP programs generally, to better understand the overall effect of the investment into TPP programs on improving outcomes. Some audiences might want a more reliable estimate of the average effect of a broad class of programs (such as positive youth development) than what a single study of a particular program can provide. Finally, the findings from this TPPER meta-analysis (both the average program effect estimates and the distributions around those average program effects) are useful for informing calculations of statistical power and Bayesian interpretation of findings (Deke and Finucane 2023; Deke et al. 2022). Researchers use a Bayesian interpretation approach to assess whether an impact estimate is credible, by calculating the probability that an impact of the size of the estimated impact is favorable (or larger than some other threshold of interest) based on information from the distribution of the impacts estimated in other evaluations of similar programs.

Meta-analysis also enables us to investigate differences in program impacts across a specific dimension of interest. For example, we used meta-analysis to assess whether studies conducted prior to 2009 showed differing effectiveness of programs compared to those conducted with more recent data collection.

A. Calculation of effect sizes, variances, and standard errors

When possible, the TPPER team calculated effect sizes as Hedges' g , the ratio between the estimated impact of the program and the standard deviation pooled across program and comparison groups. In particular, we calculated Hedges' g as

$$g = \frac{\omega(y_i - y_c)}{S},$$

where y_i and y_c are the means of the outcome for the program and comparison groups, ω is an adjustment for sample size (Hedges, 1982; Hedges & Olkin, 1985), and S is the pooled standard deviation of the outcome. ω and S may further be calculated as

$$\omega = 1 - \frac{3}{4(n_i + n_c) - 9} \text{ and}$$
$$S = \sqrt{\frac{(n_i - 1)s_i^2 + (n_c - 1)s_c^2}{n_i + n_c - 2}},$$

where n_i and n_c are the number of people in the program and comparison groups, and s_i^2 and s_c^2 are the variances of the outcome for the program and comparison groups. The inclusion of ω in the calculation of the standardized effect size used in this report is to attenuate the observed effect size statistic towards zero for studies that are particularly small—this attenuation becomes trivial as sample size becomes sufficiently large.

Furthermore, we define the variance of an effect size g as

$$\sigma^2 = \frac{1}{n_i} + \frac{1}{n_c} + \frac{g^2}{2(n_i + n_c)}.$$

Consequently, the standard error of g is defined as

$$SE(g) = \sqrt{\sigma^2} = \sqrt{\frac{1}{n_i} + \frac{1}{n_c} + \frac{g^2}{2(n_i + n_c)}}.$$

We employed this formula as the basis for computing standard errors for effect sizes when the calculated standard errors were absent from the data set.

Hedges' g is one of the most widely used effect size estimates for continuous outcomes (Hedges & Olkin, 1985); however, this meta-analysis focuses primarily on dichotomous outcomes (that is, those that take on values of 0 and 1 only). The majority of outcomes examined in TPP evaluations are indicator variables; these could be, for example, whether or not an individual has ever had sex, whether they had sex without a condom within the past 30 days, whether they had a positive STI test in the past three months, and so on.

Following the What Works Clearinghouse convention (Institute of Education Sciences 2022), we use the Cox index as the effect size for dichotomous outcomes. The Cox index generates values akin to Hedges' g if group means, standard deviations, and sample sizes are available, presuming the binary outcome measurement relies on a logistic distribution similar to a normal one. Defining p_i and p_c as the likelihood of an outcome for participants in the program and comparison groups, respectively, the effect size is derived by

$$d_{Cox} = \omega \left[\ln \left(\frac{p_i}{1 - p_i} \right) - \ln \left(\frac{p_c}{1 - p_c} \right) \right] / 1.65.$$

To ensure the meta-analysis results are consistent and interpretable, we coded all effect sizes so that positive values indicated a favorable treatment effect. For example, we transformed impacts that represented decreases in sexual activity into positive effect sizes (and similarly transformed impacts that represented increases in sexual behavior into negative effect sizes).

For the studies (total number of included studies, $k = 43$) that employed designs where clusters, such as schools, were assigned to specific conditions, we adjusted the standard error of the effect size by multiplying it with the square root of the design effect (Juras et al., 2019, 2022). In instances where trials with cluster assignment did not provide the intra-class correlation (ICC) or the ICC was unavailable in the TPPER data set, we made assumptions about the ICC values. These assumed ICC values were set at .01 for sexual activity outcomes, .003 for pregnancy outcomes, and .005 for all other outcomes. These estimations of ICC values are in line with those documented in previous reviews concerning ICCs in group-designed studies related to adolescent sexual health programs (Glassman et al., 2015).

The meta-analysis included 109 studies that met TPPER version 7.0 protocol inclusion criteria and that received a quality rating of high or moderate. This effort produced a total of 784 findings. We restricted the meta-analysis sample to findings that contained statistical information that allowed the review team to compute effect sizes and their standard errors. Subsequently, we included 99 studies in the meta-analysis, totaling a data set of 618 effect sizes. References for all studies included can be found in Appendix D.

B. Statistical analyses

1. Fixed effect and random effects models

The two most common types of models for meta-analysis are fixed effect and random effects models. A fixed effect model assumes that all studies are estimating the same (fixed) treatment effect, whereas a random effects model allows for differences in the treatment effect from study to study. That is, fixed effect models assume that the only reason effect sizes differ is because of random chance and that, in the absence of this random chance, all studies would estimate the same impact. In contrast, random effects models assume that effect sizes might differ for other reasons, such as differences in the effectiveness of different programs or differences in the characteristics of the samples where the evaluations occurred. In general, random effects models are seen as more conservative than fixed effect models because they result in wider confidence intervals (Borenstein et al., 2009).

We used random effects models for our analysis. The studies included in the TPPER estimate effects for a range of programs across a range of populations, making it likely that effect sizes differ for reasons other than random chance. As such, a random effects model is most appropriate (Borenstein et al., 2009). We suppressed results for meta-analyses when the findings could not be reliably estimated and the software package suggested caution—random effects models estimated with robust variance estimates (as described below) often produce unreliable estimates when there are fewer than 10 studies contributing to the model (Tanner-Smith & Tipton, 2012).

2. Analysis weights

In estimating random effects models, we averaged effect sizes within and across studies. We weighted the individual effect sizes being aggregated to account for the fact that some estimates are more precise than others are (Hedges & Olkin, 1985).

The random effects model weights each study by the inverse of the variance (σ_i^2) of the given effect size plus a constant (τ^2) that represents the variability across the population effects, as well as adjusting for the number of effect sizes contributed to the analysis by a study (k_i) and the correlation in those effect sizes (ρ):

$$w_{i,re} = \frac{1}{\{(\sigma_i^2 + \tau^2)[(1 + (k_i - 1)\rho)]\}}.$$

That is, the random effects weight also incorporates information about how much the effect sizes vary from one another via tau-squared (τ^2). Substantively, a small tau-squared estimate indicates that evidence is consistent across effects.

3. Handling within-study dependence of effect sizes

Our analysis accounts for the fact that effect sizes from the same study are not independent measures of program effectiveness. Because many studies reported multiple effect sizes for the same participant samples (for example, short-term and long-term measures of sexual activity, and/or outcomes that span domains), we found that it was not feasible to assume independence of the effect size estimates. Failing to account for this dependency could result in incorrect measures of estimates' precision.

The best approach to correct for within-study dependence of effect sizes is to account for the actual relationships between effect sizes from the same study when estimating the standard errors of the parameters. But, in practice, the information needed to do this is not readily available.

We used robust variance estimation techniques to account for the statistical dependencies in our analysis. *Robust variance estimation (RVE) for random effects models* account for the statistical dependencies among effect sizes in the same study, as outlined by Hedges and others (Hedges et al., 2010; Tanner-Smith & Tipton, 2012). In particular, Hedges et al. (2010) demonstrate that one can use regression results to infer the extent of the within-study dependence of effect sizes and adjust regression results accordingly. Simulation results show that when estimating the average effect size, 10 studies are sufficient for RVE to provide reasonable standard error. We implemented RVE using the Stata ROBUMETA package (Hedberg et al., 2017).

4. Testing between-group differences

In examining differences between groups (j) within a random effects model, we assessed if the variance component representing the variation among the random effects means was equal to zero. Employing a homogeneity test, we calculated group means along with their estimated variances and Q -statistics. Q_b is the between-group heterogeneity, calculated as the sum of squared deviations of the group means from the overall mean and adjusted by the random-effects model weight (w) as described previously. The formula for Q_b is

$$Q_b = \sum w_j ES_j^2 - \frac{(\sum w_j ES_j)^2}{\sum w_j},$$

where ES_j represents the weighted mean effect size for each group, w_j signifies the sum of weights within each group, and j corresponds to the number of groups (Lipsey & Wilson, 2001).

Should the calculated value of Q_b surpass the critical value from the chi-squared distribution with $j-1$ degrees of freedom, we reject the hypothesis that the group means are equal (Hedges & Olkin, 1985).

5. Variables included in meta-analyses

Our meta-analysis models included the following characteristics:

- Program characteristics
 - Program type (sexual health education, positive youth development, clinic-based, sexual risk avoidance, healthy relationships)
- Characteristics of the study sample
 - Sex or gender of the sample (young women only, young men only, all genders, other)
 - Full sample or subgroup contrast
- Program and study context
 - Study rating (high, moderate)
 - Study last data collection year (Older study: prior to 2009 and Newer study: 2009–2023)
- Outcome characteristics
 - Outcome domain (contraceptive use, number of sexual partners, pregnancy, sexual activity, STIs, or HIV)
 - Timing of measure (short-, medium-, long- or very long-term)
 - Short term (< 6 months): including measures taken within the initial 5.99 months after the end of a program
 - Medium term (6–12 months): involving measures taken within 6 and 11.99 months after the end of a program

- Long term (12–18 months): involving measures taken within 12 and 17.99 months after the end of a program
- Very long term (18+ months): encompassing measures taken 18 or more months after the end of a program

Appendix B References

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APPENDIX C. SUPPLEMENTAL MATERIALS

Table C.1. Meta-analysis results: Overall sample

Variables	Number of studies	Number of programs	Number of effect sizes	Effect size	Standard error	Standard deviation of effect size	95 percent confidence interval lower bound	95 percent confidence interval upper bound	p-value	Tau-squared
Overall effect across all studies ^a	99	79	618	0.086	0.017	0.277	0.051	0.120	<0.001	0.020
Full sample	92	76	473	0.072	0.017	0.271	0.037	0.107	<0.001	0.018
Subgroups ^a	28	22	145	0.138	0.034	0.300	0.067	0.209	0.001	0.018
Population ^{b,c}										
Young women only	28	29	190	0.104	0.025	0.239	0.052	0.155	<0.001	0.016
All genders	65	46	387	0.085	0.025	0.292	0.035	0.136	0.001	0.025
Outcome domain ^b										
Contraceptive use	64	52	229	0.084	0.02	0.238	0.045	0.124	<0.001	0.018
Number of sexual partners	22	21	69	0.076	0.053	0.325	-0.034	0.187	0.163	0.046
Pregnancy	18	16	46	0.071	0.046	0.239	-0.030	0.171	0.151	0.011
Sexual activity	76	60	244	0.071	0.019	0.292	0.033	0.108	<0.001	0.010
STIs or HIV	13	13	30	0.196	0.056	0.352	0.068	0.324	0.008	0.018
Time horizon ^b										
Short term (<6 months)	59	52	208	0.055	0.024	0.283	0.007	0.103	0.026	0.025
Medium term (6–11.9 months)	51	43	201	0.104	0.038	0.290	0.027	0.181	0.010	0.049
Long term (12–17.9 months)	37	31	157	0.080	0.026	0.249	0.027	0.133	0.005	0.010
Very long term (18+ months)	9	8	52	0.089	0.086	0.281	-0.116	0.293	0.338	0.040

Variables	Number of studies	Number of programs	Number of effect sizes	Effect size	Standard error	Standard deviation of effect size	95 percent confidence interval lower bound	95 percent confidence interval upper bound	p-value	Tau-squared
Program type^{b,d}										
Clinic based	9	9	43	0.325	0.109	0.398	0.065	0.585	0.021	0.083
Sexual health education	61	50	402	0.065	0.017	0.222	0.032	0.099	<0.001	0.015
Positive youth development	16	11	67	0.023	0.040	0.424	-0.067	0.113	0.572	0.018
Study rating										
High-quality	66	56	420	0.085	0.022	0.267	0.040	0.129	<0.001	0.022
Moderate-quality	33	28	198	0.088	0.023	0.298	0.040	0.135	0.001	0.016
Recency of data collection										
After 2009	83	69	504	0.078	0.019	0.275	0.039	0.117	<0.001	0.021
2004–2009	16	15	114	0.127	0.031	0.300	0.056	0.197	0.003	0.013

Source: TPPER database.

^a TPPER-eligible subgroups are defined by either gender or sexual experience at baseline.

^b The number of studies for this category sums to greater than 99 because several studies report findings in multiple categories.

^c Impacts for young men and other could not be reliably estimated because of small sample sizes.

^d Impacts for sexual risk avoidance and healthy relationship programs could not be reliably estimated because of small sample sizes.

Table C.2. Meta-analysis results: Program type by time horizon

Variables	Number of studies	Number of programs	Number of effect sizes	Effect size	Standard error	Standard deviation of effect size	95 percent confidence interval lower bound	95 percent confidence interval upper bound	p-value	Tau-squared
Clinic based ^a	9	9	43	0.325	0.109	0.398	0.065	0.585	0.021	0.083
Medium term (6–11.9 months)	6	6	17	0.355	0.142	0.356	-0.025	0.735	0.061	0.099
Sexual health education ^{a, b}	61	50	402	0.065	0.017	0.222	0.032	0.099	<0.001	0.015
Short term (<6 months)	32	31	125	0.060	0.023	0.269	0.013	0.107	0.014	0.026
Medium term (6–11.9 months)	33	27	142	0.084	0.031	0.235	0.020	0.147	0.012	0.025
Long term (12–17.9 months)	24	20	123	0.069	0.031	0.143	0.003	0.135	0.041	0.009
Positive youth development ^{a, b}	16	11	67	0.023	0.040	0.424	-0.067	0.113	0.572	0.018
Short term (<6 months)	13	8	31	-0.019	0.077	0.211	-0.195	0.156	0.810	0.034
Long term (12–17.9 months)	7	6	18	0.068	0.056	0.576	-0.080	0.215	0.286	0.055

Source: TPPER database.

^a Impacts for some categories of interest could not be reliably estimated because of small sample sizes.

^b The number of studies for this category sums to greater than the total because several studies report findings in multiple categories.

Table C.3. Meta-analysis results: Program type by outcome domain

Variables	Number of studies	Number of programs	Number of effect sizes	Effect size	Standard error	Standard deviation of effect size	95 percent confidence interval lower bound	95 percent confidence interval upper bound	p-value	Tau-squared
Sexual health education ^{a,b}	61	50	402	0.065	0.017	0.222	0.032	0.099	<0.001	0.015
Contraceptive use	42	36	151	0.089	0.024	0.206	0.041	0.137	0.001	0.022
Number of sexual partners	17	16	48	0.083	0.035	0.235	0.008	0.158	0.033	0.015
Sexual activity	46	38	154	0.035	0.019	0.231	-0.004	0.075	0.079	0.006
STIs or HIV	10	10	24	0.193	0.064	0.233	0.038	0.348	0.022	0.017
Positive youth development ^a	16	11	67	0.023	0.040	0.424	-0.067	0.113	0.572	0.018
Sexual activity	15	9	32	0.088	0.035	0.481	0.002	0.173	0.046	0.005

Source: TPPER database.

^a Impacts for some categories of interest could not be reliably estimated because of small sample sizes.

^b The number of studies for this category sums to greater than the total because several studies report findings in multiple categories.

Table C.4. Meta-analysis results: Outcome domain by time horizon

Variables	Number of studies	Number of programs	Number of effect sizes	Effect size	Standard error	Standard deviation of effect size	95 percent confidence interval lower bound	95 percent confidence interval upper bound	p-value	Tau-squared
Contraceptive use^{a, b}	64	52	229	0.084	0.020	0.238	0.045	0.124	<0.001	0.018
Short term (<6 months)	36	31	72	0.094	0.027	0.251	0.039	0.148	0.001	0.003
Medium term (6–11.9 months)	34	31	77	0.121	0.032	0.262	0.056	0.187	0.001	0.021
Long term (12–17.9 months)	26	24	57	0.125	0.031	0.129	0.060	0.191	0.001	0.006
Number of sexual partners^{a, b}	22	21	69	0.076	0.053	0.325	-0.034	0.187	0.163	0.046
Short term (<6 months)	14	14	24	-0.014	0.074	0.303	-0.175	0.148	0.857	0.053
Medium term (6–11.9 months)	13	13	24	0.176	0.114	0.402	-0.073	0.426	0.149	0.117
Long term (12–17.9 months)	13	12	17	0.097	0.073	0.244	-0.064	0.258	0.211	0.040
Pregnancy^b	18	16	46	0.071	0.046	0.239	-0.030	0.171	0.151	0.011
Long term (12–17.9 months)	8	7	16	-0.035	0.029	0.145	-0.112	0.043	0.293	<0.001
Sexual activity^a	76	60	244	0.071	0.019	0.292	0.033	0.108	<0.001	0.010
Short term (<6 months)	44	37	91	0.062	0.021	0.260	0.018	0.106	0.009	0.002
Medium term (6–11.9 months)	36	29	77	0.095	0.041	0.295	0.012	0.179	0.026	0.032
Long term (12–17.9 months)	27	23	57	0.075	0.031	0.353	0.008	0.141	0.029	0.007
Very long term (18+ months)	9	8	19	0.061	0.056	0.222	-0.073	0.196	0.313	0.013
STIs or HIV^b	13	13	30	0.196	0.056	0.352	0.068	0.324	0.008	0.018
Medium term (6–11.9 months)	6	6	10	0.202	0.092	0.241	-0.045	0.448	0.087	0.027

Source: TPPER database.

^a The number of studies for this category sums to greater than the total because several studies report findings in multiple categories.

^b Impacts for some categories of interest could not be reliably estimated because of small sample sizes.

Figure C.1. Overall effect size distribution

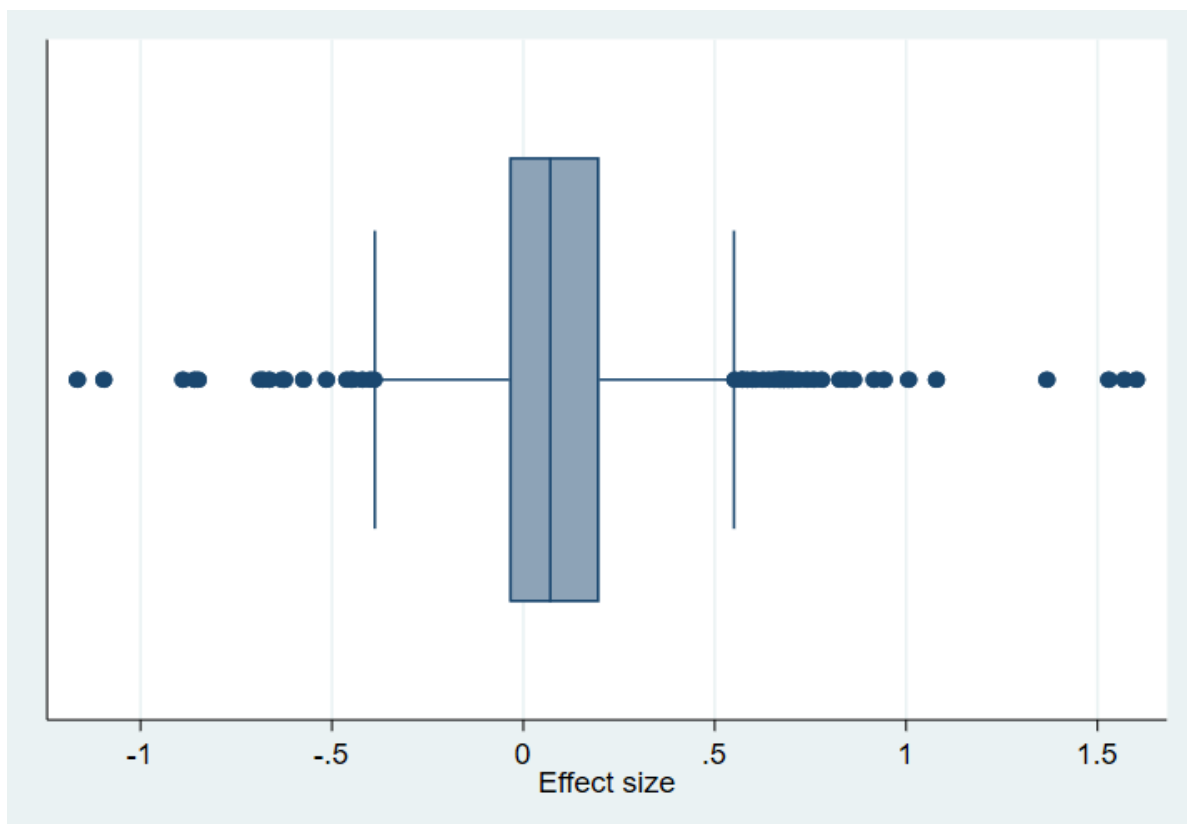


Figure C.2. Effect sizes by outcome domain: Overall sample

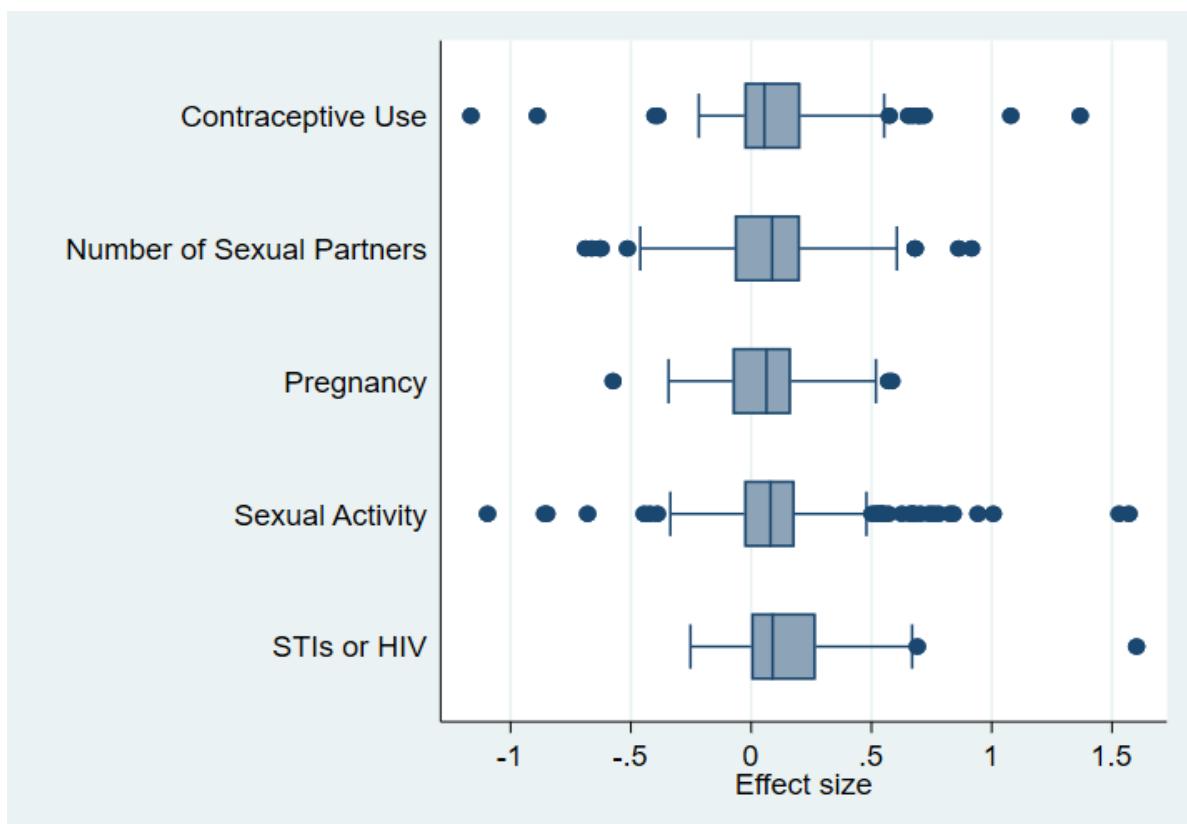


Figure C.3. Effect sizes: Full sample versus subgroup

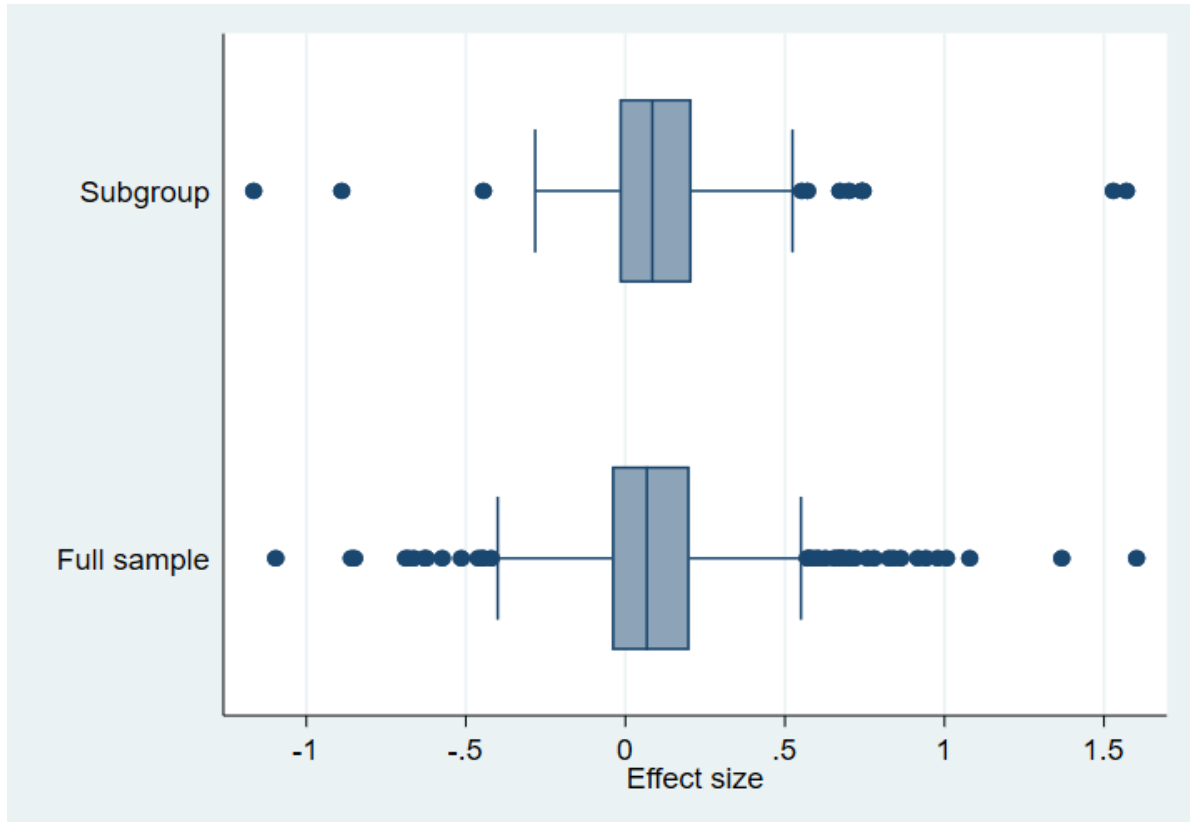


Figure C.4. Effect sizes by population sex or gender

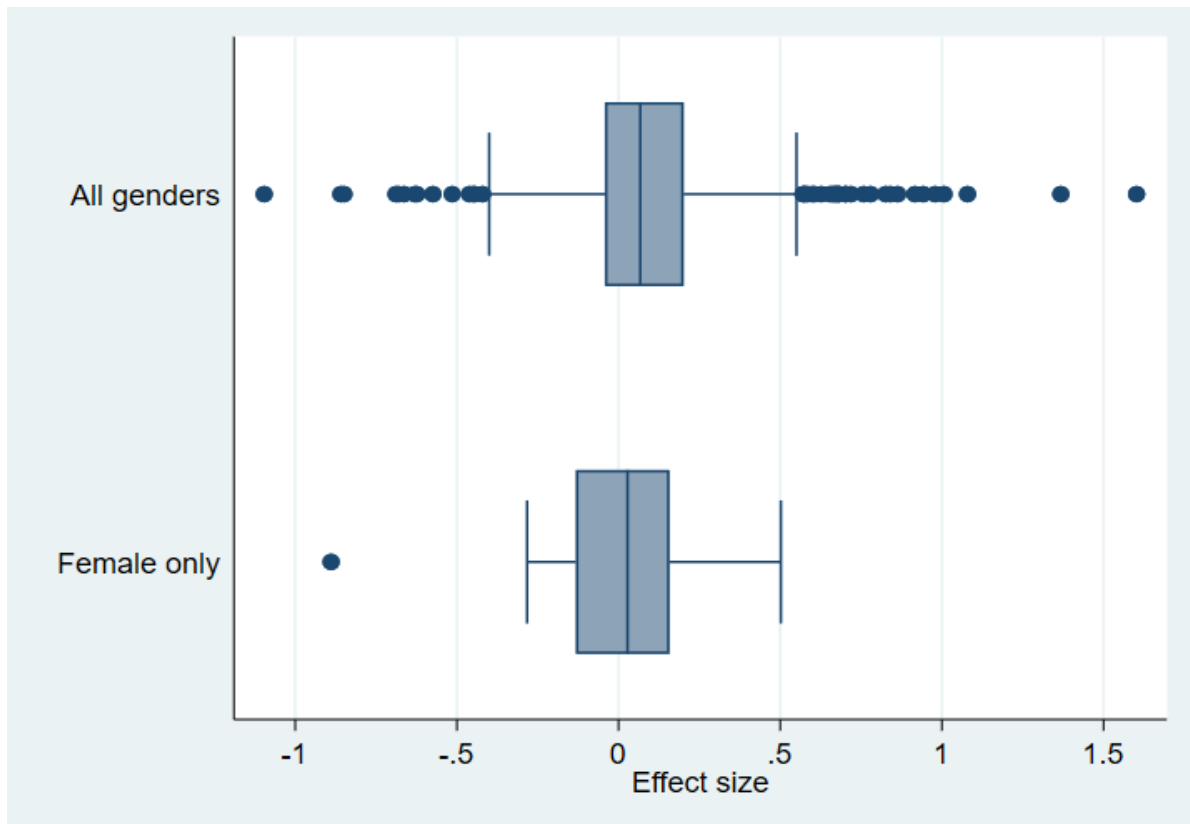


Figure C.5. Effect sizes by time horizon: Follow-up periods

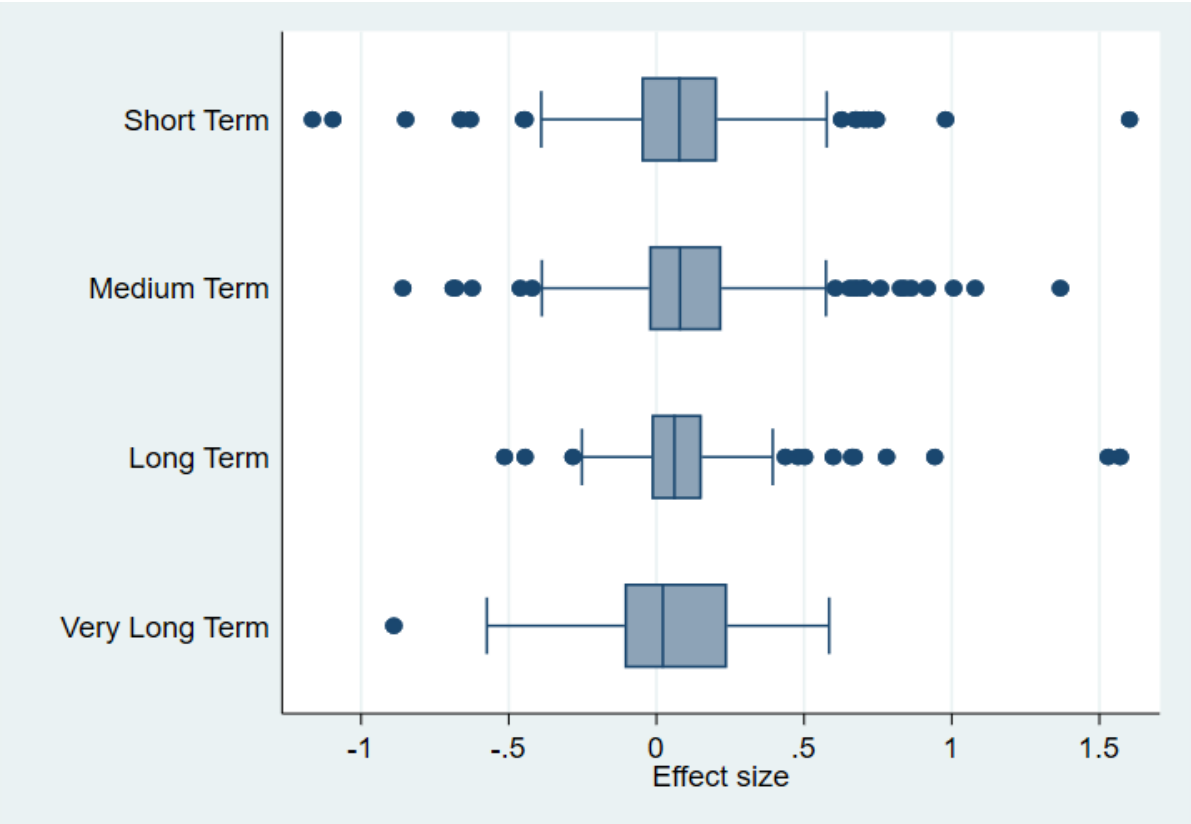


Figure C.6. Effect sizes by study rating

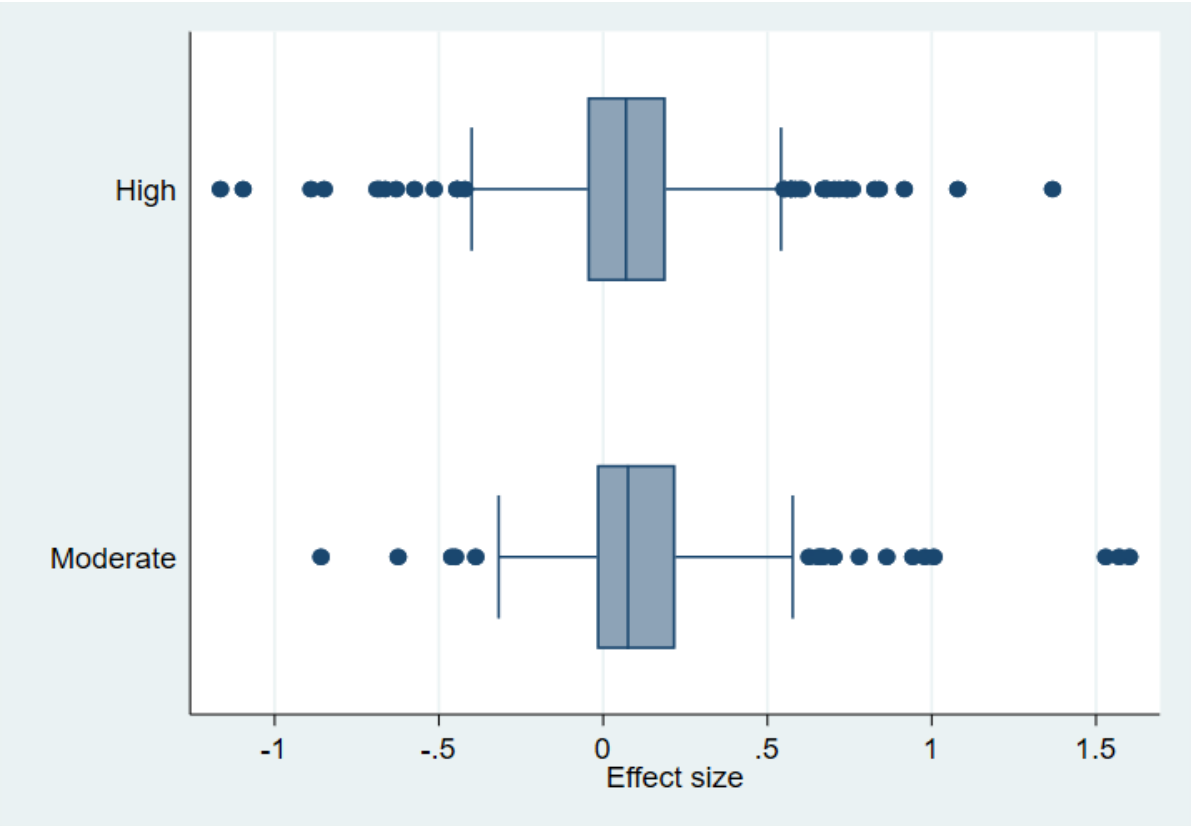


Figure C.7. Effect sizes by whether study last data collection was conducted before or after 2009

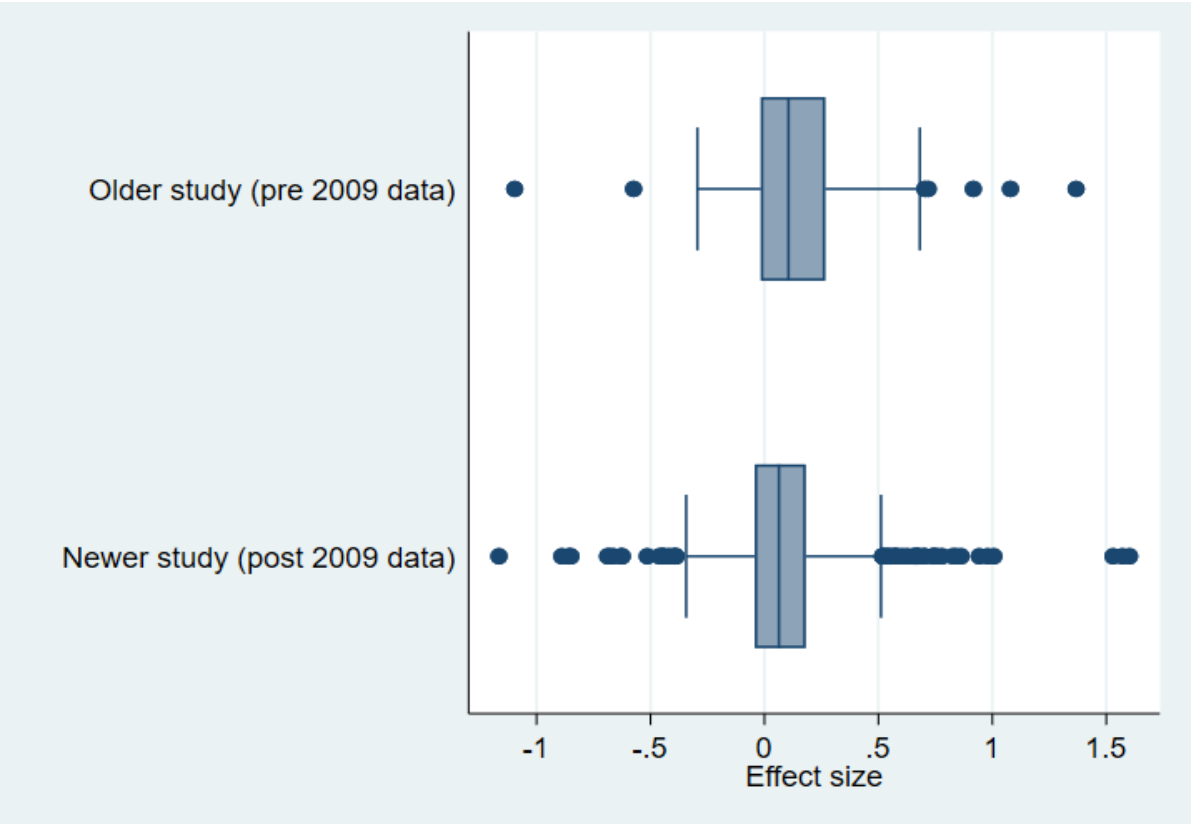
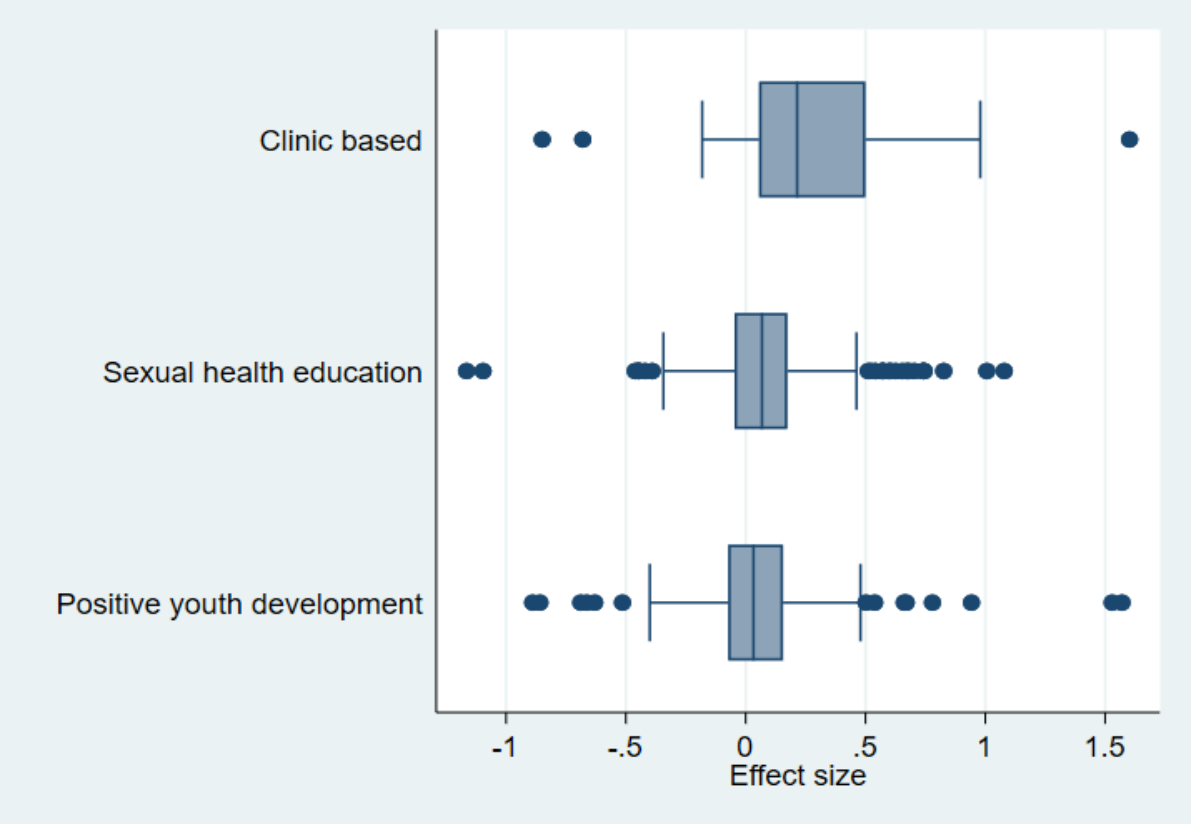


Figure C.8. Effect sizes by program type



Notes about replicating the substantive findings from the Juras et al. (2022) meta-analysis

We conducted an analysis in an attempt to replicate the meta-analytic findings for Juras et al. (2022) by estimating average effects of outcomes across the studies in common in these two effect size data sets. When we estimated impacts among the same studies, we observed small, nonsignificant average effects of TPP programs for all five outcome domains, similar to the substantive findings reported in the 2022 meta-analysis. This replication of the substance of the Juras et al. (2022) meta-analysis using the TPPER data provided confidence in the quality and comprehensiveness of the TPPER data, relative to an independent assessment of a comparable set of findings.

Although the goal of this exercise was achieved, we did want to acknowledge some of the differences in the approaches that we used, relative to Juras et al. (2022).

- TPPER has not reviewed all 52 studies reported in Juras et al. (2022), and thus, there was imperfect alignment in the set of studies included in each meta-analysis.
- Juras et al. (2022) categorized outcomes into seven domains, relative to TPPER's use of five domains.
- Juras et al. (2022) focused on a subset of outcomes examined in each study—they prioritized reviewing contrasts described as the *primary* tests of program effectiveness. The TPPER review included all eligible findings from each study that met standards with a moderate or high rating.

In sum, there were some differences in the analytic approaches and data used in the Juras et al. (2022) and our attempt to replicate those findings. However, the substantive takeaways (a collection of nonsignificant impacts in all five outcome domains) also appear in our analysis.

As noted in the main brief, we believe that the larger, statistically significant impacts observed in this 2024 meta-analysis stem from including a larger body of studies (roughly twice as many studies were included in this review). Notably, including older studies and effect sizes (which were associated with larger average effects), as well as some additional recently published studies, resulted in a substantively different story about the effectiveness of TPP programs generally, relative to the effectiveness of federally funded TPP programs.

APPENDIX D. REFERENCES FOR THE STUDIES INCLUDED IN THE TPPER META-ANALYSIS

Note: The number of listed citations does not match the number of reviewed studies because some citations include information for multiple studies and some studies are discussed across multiple citations.

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