Effects of the Family Check-Up Intervention on Child Outcomes: A Systematic Review and Meta-Analysis

by

Robyn Erika Metcalfe

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Dissertation Committee:

Elizabeth Stormshak, Co-Chair

Emily Tanner-Smith, Co-Chair

Jean Kjellstrange, Core Member

John Seeley, Institutional Representative

University of Oregon

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DISSERTATION ABSTRACT

Robyn Erika Metcalfe

Doctor of Philosophy in Counseling Psychology

Title: Effects of the Family Check-Up Intervention on Child Outcomes: A Systematic Review and Meta-Analysis

The Family Check-Up (FCU) is a brief, three-session parenting assessment and intervention designed to address child behavioral and emotional concerns by enhancing effective parenting behavior and parent motivation to change. In order to assess the impact on child outcomes, a systematic review and meta-analysis was conducted on randomized controlled trials of the FCU across all age groups to assess overall impacts on child behavior. Additionally, several variables, including both demographic factors (child age, percent of the study sample that is White, and percent of the study sample that is low-socioeconomic status) and implementation factors (sample screening, intervention dosage, the presence of implementation or fidelity concerns, percentage of the intervention group who received the intervention, study retention), were used examined as potential moderators of intervention effects on child outcomes.

Fourteen studies (reporting findings in 98 reports) were included in the final analyses, a sample that represents 4598 families. Using intent-to-treat analyses, parents who were randomly assigned to the FCU had children with lower rates of alcohol use ($\bar{g}$ = 0.15), lower rates of cannabis use ($\bar{g}$ = 0.14), lower levels of short-term externalizing behavior ($\bar{g}$ = 0.19; i.e., a one-year follow-up), lower levels of long-term externalizing behavior ($\bar{g}$ = 0.15; i.e., a two-year follow-up), higher levels of self-regulation skills ($\bar{g}$ = 0.16), lower levels of peer concerns, ($\bar{g}$ = 0.13), better health outcomes ($\bar{g}$ = 0.26), and lower body mass index ($\bar{g}$ = 0.11) relative to comparison groups that were not assigned to receive the FCU. Very weak evidence was found

for the impact of the intervention on internalizing behavior in the short term ($\bar{g}$ = 0.22) and there was no evidence of an effect of the intervention on tobacco use, long-term internalizing behavior, or school outcomes. These results may under-represent the true intervention effects given the low percentage of families assigned to the FCU who received the intervention in some samples. Moderator analyses were conducted on internalizing and externalizing outcomes. Studies where a higher percentage of the intervention group actually received the FCU had stronger effects on internalizing outcomes. There was evidence of possible publication bias for the analysis examining long-term externalizing behavior (z = 2.23, p = 0.03, b = -.10, 95% CI [-.31, .11]), but a trim and fill analysis suggested that this potential bias was minimal and unlikely to affect the conclusion of beneficial intervention effects. Children of Asian/Pacific Islander, Indigenous American, and Latino/a/e/x descent were underrepresented in the sample, as were fathers and transgender and gender non-conforming parents. This analysis suggests beneficial impacts of the FCU across a range of domains, with additional research needed addressing long-term outcomes, diverse populations, and participant-level moderators of outcomes.

CURRICULUM VITAE

NAME OF AUTHOR: Robyn Erika Metcalfe

GRADUATE AND UNDERGRADUATE SCHOOLS ATTENDED:

University of Oregon, Eugene, Oregon
Whitman College, Walla Walla, Washington

DEGREES AWARDED

Doctor of Philosophy, Counseling Psychology, 2024, University of Oregon
Master of Science, Counseling, Family, and Human Services, 2020, University of Oregon
Bachelor of Arts, Psychology, 2013, Whitman College

AREAS OF SPECIAL INTEREST

Evidence-Based Parenting Interventions
Child Maltreatment
Interventions for Adolescent Risk Behaviors including Suicide and Violence Prevention
Criminal Justice and the Family
Quantitative Research Methods

PROFESSIONAL EXPERIENCE

Predoctoral Intern, University of California, Davis Children's Hospital, CAARE (Child and Adolescent Abuse Resource and Evaluation) Diagnostic and Treatment Center, 2023 - Present

Graduate Research Assistant, University of Oregon, 2017 - Present

Graduate Research Assistant, Way Home Study, Sponsors, Inc., 2019 - Present

Clinical Extern, Adaptive Treatments for Suicidality, University of Oregon, 2021 - 2023

Clinical Responder and Dialectical Behavior Therapy Skills Trainer, Children’s Farm Home, Trillium Family Services, 2018 - 2023

Assessment Extern, HEDCO Comprehensive Diagnostic Assessment Clinic, 2020 - 2022

Clinical Extern, Integration of DBT Skills and Parent Training for Parents with a History of Substance Use, Science and Treatment of Affect Regulation Team, University of Oregon, 2022

Practicum Therapist, Oregon Health and Sciences University Doernbecher Children's Hospital, Child Development and Rehabilitation Center, Fear and Anxiety Disorders Treatment Clinic, 2021 - 2022

Practicum Therapist, Child and Family Center, Prevention Science Institute, University of Oregon, 2019 - 2021

Project Assessor, Oregon Pediatric Society, 2020 - 2021

Practicum Counselor, Counseling and Psychological Services, Oregon State University, 2018 - 2019

Early Head Start Home Visitor Specialist, Early Head Start, Children's Home Society of Washington, 2013 - 2016

Program Evaluation Intern, Friends of Children of Walla Walla, 2011 - 2013

GRANTS, AWARDS, AND HONORS

American Psychological Foundation (APF) National Register of Health Service Psychologists (NR) Internship Travel Scholarship, 2023

Society for Prevention Research Abstract of Distinction, 2022

Society for Prevention Research Sloboda and Bukowski Cup Finalist, 2022

University of Oregon College of Education Doctoral Student Conference Award, 2021

Society of Pediatric Psychology APA Scholar, 2021

Trillium Family Services Mental Health Heroes Award, 2021

Janette Gunther Drew Scholarship, 2021

Spring Whitman College Internship Grant, 2013

Distinction in Undergraduate Major Exam and Undergraduate Thesis Defense, 2013

Summer Whitman College Internship Grant, 2011

PUBLICATIONS

Piper, S., Zarate, J., Luther, S. C., Metcalfe, R. E., Bogner, J., & Todahl J. (in press). 'Protect Our Children' system-level impacts: Preventing child sexual abuse in rural populations. *Child and Family Social Work.* Advance online publication. https://doi.org/10.1111/cfs.13214

Metcalfe, R. E., Camper, M. L., Bateman, A., Low, S., & Eddy, J. M. (in press). Parent and caregiver perspectives on the Friends of the Children program. In Eddy, J. M. & Haggerty, K. P. (Eds.) *Handbook of Professional Youth Mentoring*. Springer.

Todahl, J., Piper, S., Metcalfe, R. E., Luther, S. C., Barkhurst, P. D., Cook, K., Ratcliff, M., & Gau, J. (2023). How do survivor and mandatory reporter status correlate with program outcomes for an adult-focused child sexual abuse prevention program? *Journal of Child Sexual Abuse*, *32*(8), 979-996. https://doi.org/10.1080/10538712.2023.2277325

Clark, M. G., Metcalfe, R. E., Caffrey, C., Conn, A., & Kjellstrand, J. M. (2023). Parenting through reentry: Ecologically-grounded perspectives of parents returning to the community after incarceration. *Journal of Child and Family Studies, 32*(8), 2465–2481. https://doi.org/10.1007/s10826-023-02621-0

Metcalfe, R. E., Osa, M. L., Jones, J. A., & DeGarmo, D. S. (2022). Emotion regulation, coercive parenting, and child adjustment: A serial mediation clinical trial. *Clinical Practice in Pediatric Psychology*, *10*(3), 295–306. https://doi.org/10.1037/cpp0000451

Metcalfe, R. E., Muentner, L. D., Reino, C., Schweer-Collins, M. L., Kjellstrand, J. M., & Eddy, J. M. (2022). Witnessing parental arrest as a predictor of child internalizing and externalizing symptoms during and after parental incarceration. *Journal of Child and Adolescent Trauma, 16*(2), 329-338. https://doi.org/10.1007/s40653-022-00490-1

Metcalfe, R. E., Pental, P., & Duke, D. C. (2022). Engaging preschool and early elementary school-aged children in Exposure and Response Prevention (ERP). *Journal of Health Service Psychology*, *48*(3), 117-125. https://doi.org/10.1007/s42843-022-00068-3

Metcalfe, R. E. (2022). Open science within pediatric medical and mental health systems: Practical considerations for behavioral science researchers. *Frontiers in Psychology*, *13*(856949). https://doi.org/10.3389/fpsyg.2022.856949

Stormshak, E. A., Kennedy, A. L., Metcalfe, R. E., Matulis, J. M, & Cheng, Y. (2022). Preventing risk behaviors in adolescence. In Morris, A. M. & Mendez-Smith, J. (Eds.) *The Cambridge handbook of parenting: Interdisciplinary research and application* (p. 611-631). Cambridge University Press. https://doi.org/10.1017/9781108891400.033

Metcalfe, R. E., Reino, C., Jackson, A., Kjellstrand, J. M., & Eddy, J. M. (2022). Supporting incarcerated parents prior to reentry: A gender and racial equity-oriented lens. In S. R. Maxwell & S. L. Blair (Eds.), *Police, courts, and incarceration: The justice system and*

the family (Contemporary perspectives in family research, Vol. 20) (pp. 81-104). Emerald Group Publishing. https://doi.org/10.1108/S1530-353520220000020005

Stormshak, E. A., Kennedy, A. L., Metcalfe, R. E., & Matulis, J. M. (2022). Using the Family Check-Up to support social and behavioral adjustment in early elementary school. In K. L. Bierman & S. M. Sheridan (Eds.), *Family-school partnerships during the early school years: Advancing science to influence practice* (pp. 73-90). Springer. https://doi.org/10.1007/978-3-030-74617-9_5

Metcalfe, R. E., Matulis, J. M., Cheng, Y., & Stormshak, E. A. (2021). Therapeutic alliance as a predictor of behavioral outcomes in a relationally-focused, family-centered telehealth intervention. *Journal of Marital and Family Therapy*, *47*(2), 473-484. https://doi.org/10.1111/jmft.12517

Metcalfe, R. E., Guidinger, C., & Stormshak, E. A. (2021). The Family Check-Up: Ecological family-based assessments in the context of potential child abuse or chaotic home environments. *Journal of Health Service Psychology*, *47*(1), 17-29. https://doi.org/10.1007/s42843-021-00028-3

Durand, G., Metcalfe, R. E., & Arbone, I. (2019). Affinity between us: Examining how psychopathic traits influence the stigmatization of psychiatric disorders. *Personality Disorders, 10*(6), 551-556. https://doi.org/10.1037/per0000362

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DEDICATION

This dissertation is dedicated to all of the friends and loved ones who have supported me throughout my life.

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CHAPTER I

INTRODUCTION

Family-Centered Interventions

Parenting is thought to be a primary factor in child developmental processes (Bronfenbrenner, 1986). Effective parenting behaviors are associated with a wide range of beneficial outcomes for children including improved mental health (e.g., McLeod et al., 2007), physical health (e.g., Schofield et al., 2016), lower rates of substance use and abuse (e.g., Cardenas et al., 2022; Rusby et al., 2018), improved academic outcomes (e.g., Hall et al., 2022), higher self-esteem (e.g., Perez-Gramaje et al., 2020) and increased ability to cope with adversity (e.g., Sandler et al., 2015). Skilled parents may be more able to manage their children's difficult behaviors across various stages of development (Webster-Stratton, 2005), although applications of relevant parenting skills are likely to change as children develop (Stormshak et al., 2022a). Broadly speaking, effective parenting behaviors include fostering a positive parent-child relationship, effective limit-setting, use of developmentally appropriate guidance, supporting child skill development in the context of their environment, and discouraging high-risk behaviors (Sandler et al., 2015). These parenting behaviors are of value not as ends, but as mediators of a range of positive child outcomes.

Because of the importance of parenting in fostering child development and behaviors, parenting interventions can be a particularly potent way to prevent and reduce behavioral problems in children and adolescents (Weisz & Kazdin, 2010). As a result, a range of evidence-based parenting interventions have been developed and implemented in the United States (Shah et al., 2016). These interventions typically operate by increasing parent skill in order to impact coercive family processes (Sitnick et al, 2014). However, even when using empirically-based

programs, researchers and practitioners often struggle to predict who will be most benefited by a particular intervention (Ng & Weisz, 2016).

The Family-Check-Up

The Family Check-Up (FCU) is one evidence-based, brief parenting intervention designed to prevent emotional, behavioral, and academic problems in children (Dishion & Stormshak, 2007). Although it was originally developed to address risk behavior among adolescents such as substance use and conduct problems, the empirical background of the FCU has expanded to a range of age groups, spanning from age two through to emerging adulthood, and has been used to target a variety of parenting and child behaviors diverse as school performance, self-regulation behaviors, risky sexual behavior, substance use, and eating behaviors (e.g., Garbacz et al., 2018; Mauricio et al., 2019; Smith et al., 2015b). This is possible because the intervention focuses on mechanisms of parenting that affect a range of child outcomes via assessing a family's ecological context and motivating parents to engage in family management skills relevant to the child's developmental stage, as well as providing individually tailored resources in order to promote change (Stormshak et al., 2022b; Smith et al., 2015d).

Primary research on the FCU has shown that the intervention impacts parent-level targets such as parenting skill (Stormshak et al., 2020), positive parenting behaviors (Sitnick et al., 2014), supervision and parental monitoring (Dishion et al., 2003), and improved family routines (Stormshak et al., 2020). Additionally, research has indicated that the FCU impacts secondary, parent-level targets such as involvement with the child's school (Garbacz et al., 2019), family conflict (Van Ryzin et al., 2012), parental depression (Shaw et al., 2009), and parental self-efficacy (Stormshak et al., 2019). However, the impacts on parents are primarily considered important due to their impacts on downstream, child-level outcomes. Research on the FCU has

indicated a wide range of potential child-level outcomes across various developmental stages. For young children, primary research has suggested positive impacts on inhibitory control (Lunkenheimer et al., 2008), language development (Lunkenheimer et al, 2008), risk of obesity (Smith et al, 2015), and behavioral concerns (Smith et al., 2013). For adolescents, research has examined impacts on substance use (Dishion & Kavanagh, 2003), risk of being arrested (Connell et al., 2007), high risk sexual behavior (Caruthers et al., 2014), depressive symptoms (Fosco et al., 2016), and academic outcomes (Stormshak et al, 2009).

The FCU is comprised of three components including an initial intake interview, an ecological assessment, and a feedback and motivation session (Dishion & Stormshak 2007; Metcalfe et al., 2021a). The three components are typically administered in two to three sessions.

Intake Session. During the intake interview, therapists and caregivers collaborate to establish relevant family goals and begin building rapport. Like intakes for other clinical services, clinicians use listening skills to begin building a therapeutic alliance while asking semi-structured intake questions (e.g., "What happens when the problem behavior begins? What happens before the behavior, and how do you respond? How does your response impact your child?"; Metcalfe et al., 2021a). Clinicians also use motivational interviewing strategies to enhance commitment to change and empower parents to facilitate change within their families (Stormshak et al., 2021) while assessing for client readiness to change (see Prochaska & DiClemente, 1984) and developing an initial case conceptualization.

Ecological Assessment. Next, during the ecological assessment, clinicians assess family functioning, collect questionnaire-based feedback from parents (and children or teachers as relevant), and complete a video-recorded observation session with three to five semi-structured, age-appropriate interaction tasks that are coded and compared to a normed sample. For example,

younger children may have a 'Child Directed Play' task, in which parents follow the child's lead and engage in activities of the child's choice, whereas adolescents may have a 'School Goals' task, in which parents and children discuss goals related to school and evaluate progress in this area. This session is typically completed via home visit. These information sources are integrated to provide data on family background and relationships, child adjustment, contexts such as peer environment, and other ecological factors such as financial stress using normed cutoffs for the questionnaire data and the Family Interaction Tasks (FIT) Coding Manual for the behavioral interaction tasks (Jabson et al., 2004).

Feedback and Motivation Session. Finally, during the feedback session, the clinician provides the results of the ecological assessment and obtains parental input about the feedback. Using the normed data as well as video recordings of effective parenting behaviors from the Ecological Assessment, the parents and clinician can assess both family strengths and areas that might benefit from intervention services. This is represented on a feedback form with continuums that range from "area of strength" to "needs attention" for each assessed domain. Next, the clinician helps connect the family to appropriate services and resources using a "menu" of tailored intervention options (Dishion & Stormshak, 2007). Targeted follow-up services for higher-risk families such as parent management training services are often included as a part of this "menu."

Because of the importance of parent influence on children's lives, building parenting skills is a key target for modifying child behavior. For the FCU, parenting skills are developed by improving on already existing parenting strengths and building family management strategies, such as positive behavior support, healthy limit setting, and relationship building, the domains that are thought to most influence child behavior (Sitnick et al, 2014). The FCU model also

focuses on increasing caregiver motivation to maintain effective parenting practices, which includes reducing behaviors that are damaging to the relationship, reducing behavior that reinforces maladaptive child behavior, and increasing positive parenting strategies (Dishion & Stormshak, 2007). This may help sustain intervention effects across time. The intervention particularly focuses on improvement of caregiver involvement in their child's activities, the use of positive reinforcement, and structured plans to avoid children's problem behaviors (Smith et al., 2013). Because the FCU is tailored to the individual family, the relevance for each family is likely to be high, allowing for progress on individualized goals. The ecological focus of the FCU may further allow tailoring to accommodate the needs of a diverse range of populations including varied clinical presentations (Dishion & Stormshak, 2007).

Telehealth. The majority of published studies on the FCU are delivered in a traditional, face-to-face format. Recently, the FCU Online has been developed with guidance from prior, successful eHealth interventions (see Danaher et al., 2015; Danaher et al., 2018; Milgrom et al., 2016). It can be delivered as a standalone program or with supplemental telehealth coaching via phone or secure video conferencing using Mohr and colleagues' (2011) model of supportive accountability to guide human components of the intervention. At this time, it is not clear to what extent the FCU Online is consistent with traditionally delivered, in-person FCU interventions. Thus, telehealth adaptations are outside of the scope of this review.

Importance of this Meta-Analysis

Previous Meta-Science. Although several prior reviews have examined the FCU and related brief parenting interventions, to date, no such reviews have fully meta-analyzed the FCU evidence base. Brief parenting interventions have been the topic of several prior reviews and meta-analyses. For example, Michelson and colleagues (2013) found that parent management

training (PMT) was effective at reducing child disruptive behavior relative to a waitlist control, with no differences in effectiveness depending on referral source, whether it was delivered in service or research settings, or by non-specialist or specialist therapists. Piquero and colleagues (2016) completed a meta-analysis on parent training programs that included interventions such as The Incredible Years Program, Parent–Child Interaction Therapy, and the Triple P Parenting Program and similarly found a moderate effect size of the intervention on conduct and delinquency concerns. These meta-analyses did not specifically examine the FCU intervention, however, and simply focused broadly on parenting interventions. Smedler et al. (2014) also conducted a meta-analysis of prevention programs impacts on child externalizing problems that included the FCU as a specifically-examined intervention. The authors included three trials of the FCU as a part of their review with moderate effect sizes on externalizing behavior, but did not include the broader range of FCU research nor investigate heterogeneity in FCU research. Additionally, this analysis is missing more recent research on the FCU due to its publication date as well as other potentially relevant outcomes, such as internalizing behavior. Additionally, Connell and colleagues (2021) harmonized data from three FCU studies to examine the impacts of the FCU on youth depression outcomes. They found that assignment to the FCU predicted greater declines in youth depressive symptoms over time. However, this research did not systematically include all FCU clinical trials. Finally, the Department of Health and Human Services' (HHS; 2021) Home Visiting Evidence of Effectiveness (HomVEE) review included the FCU as a reviewed program, which involved a systematic review of published research. They reported that the FCU meets HHS criteria for an evidence-based model. However, this work does include meta-analytic analysis– only reporting on factors such as study participants and outcomes measures.

Utility of The Current Review. Cost-benefit analyses are increasingly being used in the field of prevention science (Kuklinski et al., 2013). Understanding effect sizes is key in assessing the benefits of an intervention. The implementation of any large scale prevention program is a costly endeavor. While the implementation of the FCU may vary based on site characteristics, a recent budget analysis of the implementation preparation stage of Family Check-Up 4 Health, an adapted FCU model for primary care, estimated a cost of between $15,000 and $18,000 for implementation preparation (Jordan et al., 2019). Initial cost analyses supporting the FCU (e.g., Kuklinski et al., 2020) could be strengthened by meta-analytic results, which can provide more robust estimates of the magnitude of the intervention effect, and range in effects, that would be expected in a new implementation. An understanding of the overall magnitude of the effects of the intervention may help potential implementers make an informed decision before committing to implementation preparation.

Additionally, researchers have examined a wide range of settings, populations, and behavioral goals for the FCU. While the FCU was developed for adolescents, it has been used in children as young as two-years-old (Shelleby et al., 2018). Because of the lack of systematic literature synthesis focusing on the FCU, there has been relatively little evaluation of how outcomes may vary based on demographic populations such as child age, racial population-level demographics, or socioeconomic status population-level demographics. It may be helpful for both researchers and practitioners to examine whether population-level demographic factors predict FCU impacts. Notably, prior research on the FCU has found that higher risk families often net greater benefits of the intervention (e.g., Stormshak et al., 2020), whereas extant data supports similar effects of the model across racial and ethnic groups, supporting the model's cultural competence overall (Smith et al., 2014).

Intervention characteristics may also be potential moderators to consider for the FCU. Dosage, in particular, has been hypothesized as an important mediator of change, with higher dosage thought to be potentially more impactful (Leijten et al., 2015). For example, parental engagement and dosage may predict parent behavioral change and subsequent reductions in child problem behavior (Metcalfe et al., 2021b; Smith et al., 2013). Dosage and engagement rates have varied substantially across randomized trials of the FCU (Stormshak et al., 2022b). Finally, implementation and fidelity concerns are also important to consider, as challenges such as school funding cuts and staff turnover have interfered with some FCU trials and may disrupt overall intervention impacts (Smolkowski et al., 2017). Fidelity to the FCU has also been found to predict reductions in child problem behaviors (Chiapa et al., 2015).

In summary, despite initial promising evidence of the effects of FCU, important questions remain regarding variability in that effectiveness across participant, intervention, and implementation/fidelity characteristics.

Aims

This systematic review and meta-analysis intends to answer the following questions:

1. What is the average impact of FCU, relative to control, on child substance use, internalizing behavior, externalizing behavior, self-regulation, other risk behavior, school or academic outcomes, peer concerns, health outcomes, and other child behavior outcomes?
    i. *I hypothesize that the FCU will promote positive child outcomes across domains.*
2. What variables moderate FCU outcomes?

a. Does mean child age, percent of the study sample that is White, or percent of the study sample that is low-socioeconomic status moderate the effect of the FCU on child-level outcomes?
    i. *These analyses are exploratory. There is not adequate information in the literature to provide a directional hypothesis.*
b. Does the presence of screening for study participant risk level (i.e., a proxy for participant risk overall) moderate the effect of the FCU on child-level outcomes?
    i. *I hypothesize that screening for risk will be associated with a greater effect size.*
c. Is the mean number of intervention minutes delivered a significant moderator of the effect of the FCU on child-level outcomes?
    i. *I hypothesize that a larger number of intervention minutes delivered on average will be associated with a greater effect size.*
d. Is the presence of implementation or fidelity concerns a significant moderator of the effects of the FCU on child-level outcomes?
    i. *I hypothesize that implementation or fidelity concerns will be associated with a smaller effect size.*

CHAPTER II

METHODS

Ethics

This research does not meet the definition of research with human subjects according to Title 45 CFR 46.102. The University of Oregon Research Compliance Services (RCS) confirmed

that this study (STUDY00000896) does not require Institutional Review Board (IRB) approval. This review received no funding support and the author declares no conflict of interest.

Protocol

The protocol/coding manual for this study was pre-registered via the Open Science Framework (Metcalfe, 2023). In addition to the pre-registered protocol, two additional pieces of information were gathered based on researcher review of published papers: whether or not the study included booster sessions and the percentage of the study participants who were assigned to the intervention condition who received the intervention. Both pieces of information were reported as descriptive statistics and the latter was used in a post-hoc moderator analysis.

Eligibility Criteria

Eligible studies were randomized controlled trials (RCTs) of the FCU that were delivered in-person (i.e., not via telehealth) and in which no intervention, treatment as usual, or a sham intervention was used as the comparison group (i.e., not an active control group). Other experimental designs, such as quasi-experimental designs or natural experiments were not included in this review to help maintain internal validity. There were no restrictions based on the location of the study or participant demographics. For published research, searches were limited to 2003 and afterwards based on the date of the first papers published on the FCU. Coders were available in English, Spanish, and Mandarin Chinese, with a plan to secure a fluent research assistant to assist in study coding if reports in other languages were identified. Eligible outcome measures included any child-focused outcome, which were, in turn, coded by domain. As available, data were recorded for pre-test, post-test (i.e., directly after the intervention), and all follow-up periods in studies that meet inclusion criteria.

Search Strategy

Studies were identified via systematic searches of the following databases: APA PsycINFO, APA PsycARTICLES, PubMED, Applied Social Sciences Index and Abstracts, and ProQuest Dissertations & Theses A&I using the following search terms: Any Field: Family check-up AND Any Field: trial AND Year: 2003 To 2023; Any Field: Family check-up AND Any Field: random* AND Year: 2003 To 2023; Any Field: Family check-up AND Any Field: experiment* AND Year: 2003 To 2023. In order to identify "gray literature", in addition to searching ProQuest Dissertations & Theses A&I as noted above, I manually examined conference presentations from the Society for Prevention Research (SPR) for the years 2012 to 2022. I further checked the bibliographies of all identified studies to find any potentially missing publications. Finally, I consulted with content experts to identify potential missed or unpublished studies. I maintained a documentation file of all searches and search strategies that included the database name and host, the date of the search, the years of included studies, the search string used, and the number of hits. Both published and unpublished reports were included.

Study Selection and Data Extraction

Study selection was conducted by two independent coders: the author of this dissertation and a doctoral-level research assistant trained in meta-analytic coding. After completing a thorough electronic search and removing duplicate studies, these two independent coders screened potential studies by title and abstract to eliminate unambiguously irrelevant studies. Any study that was coded as potentially relevant by at least one of the two coders was then assessed for inclusion criteria using the full text. Here, the two independent coders screened potential studies for meeting inclusion criteria and reconciled differences in coding via consensus. If differences in coding were unable to be reconciled, a doctoral-level methods expert

was consulted to assist in reconciliation. Coders also determined which reports were a part of the same study sample. Next, data were extracted following a standard coding protocol (see below). All coders involved in the third round of coding coded a single test study and received feedback about their coding before being cleared to continue. The coding manual is available in Appendix A.

Effect Sizes. Standardized mean difference (*d*) effect sizes were calculated from each study, drawing on the aggregate study statistics reported by primary researchers, most typically means and standard deviations, t-tests, chi-squared values, correlation coefficients, or regression coefficients (see Lipsey & Wilson, 2001; Wilson, 2017). Effect size estimates adjusted for pre-test scores, using the following formula:

$$d = \left(\frac{\overline{X}_1 - \overline{X}_2}{s_{\text{pooled}}} \right)_{\text{POST}} - \left(\frac{\overline{X}_1 - \overline{X}_2}{s_{\text{pooled}}} \right)_{\text{PRE}}.$$

Here, the first term represents the posttest standardized mean effect size calculated with the difference in means between the intervention and control condition in the numerator and the pooled standard deviation for the posttest in the denominator. The second term repeats this process with pretest information. Effect sizes were then adjusted using the small-sample correction factor to reduce bias in the estimates (Hedges *g*; Hedges, 1981).

$$g = \left[1 - \left(\frac{3}{4N - 9} \right) \right] * d,$$

$$SE_g = \sqrt{\frac{n_1 + n_2}{n_1 * n_2} + \frac{g^2}{2\left(n_1 + n_2\right)}}$$

Here, N represents the total posttest sample size for both groups, d represents the uncorrected standardized mean difference from the previous step, n_1 is the posttest sample size for the intervention group, and n_2 is the posttest sample size for the control group. Studies were coded such that positive values indicated better outcomes for the intervention condition. Any binary outcomes were coded as risk ratios and converted to standardized mean differences using the Cox transformation (Sánchez-Meca et al., 2003; Wilson, 2013). Formulas for computing effect sizes from other commonly reported statistical information were employed when relevant (see Lipsey & Wilson, 2001; Wilson, 2017).

Due to lack of independence of effect sizes, multiple reports from a single study for the same behavior domain (internalizing or externalizing behavior) were assessed as a single effect size across relevant coded outcomes (Borenstein, 2009), using the formula:

$$\bar{Y} = \frac{1}{m}\left(\sum_{j}^{m} Y_j\right)$$

Here, $\bar{Y}$ represents the synthetic effect size, m represents the number of outcomes within a study, and Y_j represents each effect size being combined. Variance here can be represented:

$$V_{\bar{Y}} = \left(\frac{1}{m}\right)^2 \text{var}\left(\sum_{j=1}^{m} Y_i\right) = \left(\frac{1}{m}\right)^2 \left(\sum_{j=1}^{m} V_i + \sum_{j \neq k} \left(r_{jk}\sqrt{V_j}\sqrt{V_k}\right)\right)$$

with $V_{\bar{Y}}$ representing the variance of the composite.

Theory was also used to guide combinations of effect sizes, prioritizing higher quality reported outcomes based on reporting of pretest information, more complete reporting of information needed to calculate effect sizes, more complete sample data, and more appropriate measures. For example, if Study A had three reports that all reported on the Child Behavior

Checklist (CBCL; Achenbach, 1999), but only Report A reported on the full sample using the full externalizing broadband scale, only Report A was used in the final synthetic effect size. Intent-to-treat analyses were used whenever possible. Relatedly, a single synthetic mean effect size across for internalizing and externalizing behavior (as available) was calculated for each study and used in the analyses assessing effect size moderators.

Some studies also required cluster adjustments to the standard errors of their effect sizes. Based on recommendations by Hedges (2007), intraclass correlation coefficients (ICCs), as reported by the study authors, were used to make these adjustments.

Risk of Bias. Risk of bias was assessed using an abbreviated version of the Cochrane Collaboration's Risk of Bias 2 (RoB 2) tool for RCTs (Higgins et al., 2019), which assesses trial design, research conduct, and outcomes reporting. Signaling questions were used to help coders assess important aspects of research design and conduct and the assessed domains were subsequently coded as 'Low' risk of bias, 'High' risk of bias, or 'Some concerns.' Next, overall risk of bias was coded to reflect the RoB 2 overall domains.

Study Level Moderators. Study level moderators were also coded and examined. The following aggregate participant demographics were examined: child age, percent White for child race, and percent low socioeconomic status for families. The presence of screening for participant risk, intervention duration (in minutes) and presence of implementation or treatment fidelity concerns were also examined. When session numbers were reported instead of minutes received, sessions were assumed to be 45 minutes in length (per the standard FCU protocol) and the FCU without follow-up sessions was assumed to be 150 minutes in length. Percentage of families considered low socioeconomic status was based on primary study authors' reports and includes multiple operationalizations of this measure.

Other Study-Level Variables. Other relevant variables were collected and reported as descriptive statistics, including location of the study, recruitment setting, whether a specific health adaptation was used, study design, retention at first follow-up, racial demographics of the sample (outside of the percent of the sample that was White), age of parents, and proportion of families that were low-SES.

Statistical Analyses

All meta-analyses were estimated using inverse-variance weighted mixed-effects meta-regression models using the restricted maximum likelihood (REML) for between-studies heterogeneity, using the *metafor* package in R. The overall model can be represented as:

$$\hat{\theta}_k = \mu + \zeta_k + \varepsilon_k$$

Here, theta hat ($\hat{\theta}_k$) reflects the expected effect size of study *k*, mu (μ) reflects the pooled average effect across studies, zeta (ζ_k) represents the between-studies variance of true effect sizes in the population, and ε_k is the stochastic error term (Borenstein et al., 2011). Forest plots of effect sizes were also generated.

The first set of analyses were conducted separately by each outcome domain and relevant follow-up timepoint. Next, an overall synthetic effect size was calculated for both internalizing and externalizing outcomes and used for the moderator analyses. For moderator analyses, mixed-effects meta-regression models were used, which indicates random study level effects and fixed moderator effects, with a Benjamini-Hochberg correction to help correct for potential type I errors (Benjamini & Hochberg, 1995). Residual heterogeneity statistics were calculated using τ^2 and I^2, as well as 95% prediction intervals (PI). Finally, publication bias was assessed using both funnel plots and Egger regression tests (Egger et al., 1997). A post-hoc trim and fill analysis was

used to further explore outcomes that showed evidence of potential publication bias (Duval & Tweedie, 2000).

CHAPTER III

RESULTS

Study Characteristics

A Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) flow diagram was used to transparently document study screening (see Figure 1). After removing duplicate reports, a total of 341 reports were eligible for initial screening with a Cohen's kappa of .89 between the two raters, reflecting strong agreement (McHugh, 2012). 155 reports met criteria for full-text eligibility screening and 98 reports were determined to be eligible for coding. A list of reports excluded at this stage and reason for exclusion is available in Appendix B.

Studies that did not include any eligible outcomes but otherwise met inclusion criteria were coded for study characteristics but did not contribute to the total number of participants nor contribute to the quantitative meta-analysis. A total of 14 studies comprising a total of 4598 families met eligibility. Table 1 provides information about study characteristics and Table 2 provides information about participant characteristics across the included studies. There was not adequate information reported to provide data about the proportion of participants (children or parents) who had been diagnosed with or met criteria for a mental health disorder at baseline. No included study provided data about either children or parents who identified as non-binary or transgender. All included studies and reports are listed in Table 3.

Figure 1

PRISMA Flow Diagram

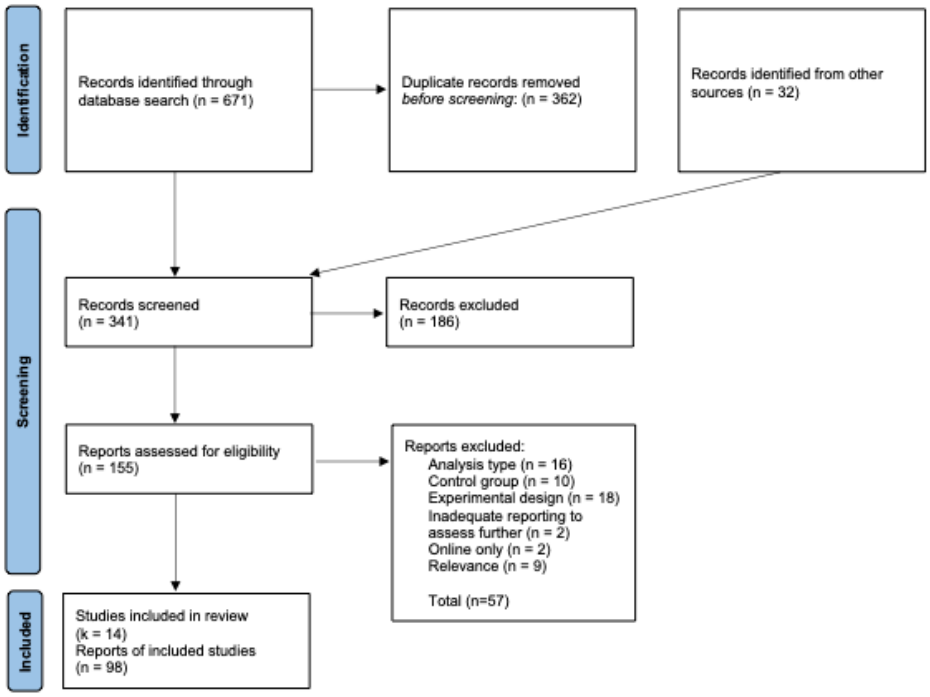


Table 1

Descriptive statistics for study characteristics (k = 14)

	k (%) studies	*n* (%) families
Location of Study		
Australia	1 (7)	909 (21)
Europe	1 (7)	17 (<1)
North America	12 (86)	3653 (79)
Recruitment Setting		
Community	3 (21)	40 (1)
Healthcare	7 (50)	2526 (55)

School	4 (29)	1973 (43)
Specific Health Adaptation		
Yes	4 (29)	766 (17)
No	10 (71)	3813 (83)
Screening		
Screened sample	9 (64)	1714 (37)
Unscreened sample	4 (29)	2865 (63)
Unclear	1 (7)	
Study Design		
Individually randomized	12 (86)	3305 (72)
Cluster randomized	2 (14)	1274 (28)
Overall Risk of Bias		
Low risk	3 (21)	1457 (32)
Some risk	8 (57)	2957 (65)
High risk	3 (21)	165 (4)
Implementation Problems		
Yes	2 (14)	1149 (25)
Possible	6 (43)	1836 (40)
Not reported or identified	6 (43)	1594 (35)
Child age group at recruitment		
Infant (Under 2)	1 (7)	909 (20)
Preschool (2-5)	6 (43)	1256 (27)
School (6-12)	2 (14)	257 (6)
Adolescent (12-18)	5 (36)	2157 (47)
Boosters		
Boosters provided	4 (29)	2562 (56)
Boosters not provided or not	3 (21)	1394 (30)

reported on (for studies that included follow-ups at two-years or later)		
No follow ups at two-years or later (N/A)	7 (50)	642 (14)
Family Engagement	Mean by study (SD)	Frequency across all participants
Retained at first follow-up	.84 (.16), Range: .39 to 1.0	83%
Assigned to FCU and received the intervention	.80 (.25), Range: .10 to 1.0	2931 (64)*
Minutes of intervention received by families assigned to the intervention condition	183.25 min (69.18), Range: 150 to 316*	187.41 min*
Percent of participants assigned to FCU who received the intervention	.71 (.09), Range: 0.1 to 1.0	32%

Note. Percentages may not add up to 100 due to rounding or incomplete reporting by primary study authors.

*Best estimation based on available reporting.

Table 2

Descriptive statistics for participant characteristics

	Range across studies	Total sample	*k* (%) studies reporting
Child Characteristics			
Mean Age of Children at Recruitment (years)	$\bar{x}$ = 0.75 - 12.75	$\bar{x}$ = 7.26	12 (86)
Proportion Female (child)	$\hat{p}$ = 0 - .52	$\hat{p}$ = .47	11 (79)
Child Racial Demographics			10 (71)

Proportion White (child)	$\hat{p}$ = .10 - 1	$\hat{p}$ = .48	
Proportion Black (child)	$\hat{p}$ = 0 - .79	$\hat{p}$ = .24	
Proportion Asian/Pacific Islander (child)	$\hat{p}$ = 0 - .05	$\hat{p}$ = .01	
Proportion Latino/a/e/x (child)	$\hat{p}$ = 0 - .75	$\hat{p}$ = .11	
Proportion Indigenous American (child)	$\hat{p}$ = 0 - .04	$\hat{p}$ = .003	
Proportion Multiracial (child)	$\hat{p}$ = 0 - .22	$\hat{p}$ = .12	
Parent Characteristics			
Mean Age of Parents at Recruitment (years)	$\bar{x}$ = 27.20 - 39.85	$\bar{x}$ = 34.10	6 (43)
Proportion Female (parent)	$\hat{p}$ = .59 - 1	$\hat{p}$ = .94	6 (43)
Family Characteristics			
Proportion Low-Socioeconomic Status	$\hat{p}$ = .19 - 1	$\hat{p}$ = .50	10 (71)

Note. Percentages may not add up to 100 due to rounding or incomplete reporting by primary study authors. All proportions for the total sample represent best estimation based on available reporting.

Table 3

Included studies

	n	Country	Coded reports
Study 1101	909	Australia	Hiscock et al. (2012); Hiscock et al. (2018); Bayer et al. (2017).
Study 1102	120	USA	Shaw et al. (2006).

Study 1103	731	USA	Brennan et al. (2013); Chang et al. (2014); Chang et al. (2015); Chang et al. (2017); Connell et al. (2008); Connell et al. (2019); Dishion et al. (2014); Dishion et al. (2015); Dishion et al. (2008); Elam et al. (2020); Feldman et al. (2022); Feldman et al. (2020); Gardner et al. (2009); Hentges et al. (2020); Hyde et al. (2013); Inyangson & Connell (2021); Jones (2003); Leijten et al. (2015a); Leijtan et al. (2015b); Lemery-Chalfant et al. (2018a); Lemery-Chalfant et al. (2018b); Lemery-Chalfant et al. (2019); Lunkenheimer et al., (2008); McEachern et al. (2013); Moilanen et al., (2009); Montaño et al. (2015); Pelham et al. (2016); Pelham et al. (2017); Reuben et al. (2015); Shaw et al. (2009); Shaw et al. (2019); Shaw et al. (2016); Shelleby et al. (2018); Shelleby et al. (2018); Sitnick et al. (2015); Smith et al. (2015a); Smith et al., (2015b); Smith et al. (2015d); Smith et al. (2014); Smith et al. (2019); Wang et al. (2019); Weaver Krug et al. (2020); Weaver Krug et al. 2019).
Study 1104	N/A*	USA	Shepard et al. (2012).
Study 1105	N/A*	USA	Berkel et al. (2020); Berkel et al. (2019).
Study 1106	365	USA	Garbacz et al. (2018); Garbacz et al. (2019); Garbacz et al (2020); Griffin et al. (2020); Stomshak et al. (2021); Stormshak et al. (2020).
Study 1107	17	Spain	Margolis (2014); Margolis & Stormshak (2013).
Study 1108	59	USA	Jones (2003); O'Leary (2001).
Study 1109	998	USA	Borriello et al. (2020); Caruthers et al. (2014); Connell et al. (2017); Connell et al. (2006); Connell et al. (2007); Connell et al. (2012); Connell et al. (2013); Connell et al. (2016); DeLay et al. (2016); Dishion et al. (2003); Elam et al. (2021); Kuo et al. (2019); Nelson et al. (2015); Rudo-Stern (2015); Stormshak et al. (2009); Stormshak et al. (2011); Van Ryzin & Dishion (2012); Van Ryzin & Nowicka (2013); Véronneau et al. (2016).
Study 1110	593	USA	Connell et al. (2018); Fosco et al. (2013); Fosco et al. (2016); Fosco et al. (2014); Stormshak et al. (2019); Stormshak et al. (2018); Stormshak et al. (2010); Van Ryzin et al. (2012).
Study 1111	240	USA	Berkel et al. (2021); Smith et al. (2021a); Smith et al. (2018); Smith et al. (2021b).

Study 1112	40	USA	Rao (1998).
Study 1113	361	USA	Galán et al. (2022).
Study 1114	165	USA	O'Rourke et al (2012); O'Rourke et al. (2011); Shaw et al. (2011).

Note. *Studies without adequate information to calculate effect sizes were still coded for other variables, such as risk of bias.

The studies included in the review generally suffered from one or more risks of bias, with the most common concerns relating to Deviations from Intended Interventions, Missing Outcomes, and Measurement of the Outcome. More specifically, for the Randomization Process (i.e., risk that may arise during the allocation sequence or randomization process), 79% were coded as Low Risk, 14% were coded as Some Concerns, and 7% were not able to be coded. For Deviation from Intended Interventions (i.e., risk that may arise due to interventions differing from what was intended), 36% were coded as Low Risk, 36% were coded as Some Concerns, 14% were coded as High Risk, and 14% were unable to be coded. For Missing Outcomes (i.e., risk that may arise due to missingness or missing data), 57% were coded as Low Risk, 21% were coded as Some Concerns, 14% were coded as High Risk, and 7% were unable to be coded. For Measurement of the Outcome (i.e., risk that may arise due to problems measuring the outcomes), 57% were coded as Low Risk, 29% were coded as Some Concerns, 7% were coded as High Risk, and 7% were unable to be coded. For Selection of the Recorded Results (i.e., risk that may arise due to incomplete reporting of the results), 71% were coded as Low Risk, 7% were coded as Some Concerns, 14% were coded as High Risk, and 7% were unable to be coded. Due to rounding, not all calculations may add up to 100%. A full table of Risk of Bias scores by each included study is available in Appendix C.

In terms of outcomes, three studies reported on at least one substance-use related outcome and two studies reported on at least one long-term (i.e., a follow-up that is more than one year from the baseline measurements) substance-used related outcome. Nine studies reported on at least one internalizing behavior-related outcome and four reported on at least one long-term internalizing behavior related outcome. Twelve studies reported on at least one externalizing behavior-related outcome and six reported on at least one long-term externalizing behavior-related outcome. Six studies reported on at least one self-regulation-related outcome and one reported on a long-term self-regulation-related outcome. Two studies reported on other risk behaviors, both of which were long-term outcomes. Three reported on academic outcomes, all of which included at least one long-term outcome. Four reported on peer-related outcomes, two of which reported on long-term outcomes. Five reported on health-related outcomes, four of which included at least one long-term outcome. Effect sizes were grouped into conceptually similar categories to maximize the data available for quantitative synthesis, resulting the following categories: Alcohol Use, Cannabis Use, Tobacco Use, Internalizing Behavior Short Term Follow-Up, Internalizing Behavior Long Term Follow-Up, Externalizing Behavior Short Term Follow-Up, Externalizing Behavior Long Term Follow-Up, Self-Regulation, School Outcomes, Peer Concerns, Health Outcomes, and Body Mass Index (BMI). Because some effect sizes were combined across different reports, a full accounting of the source of each calculated effect size for each meta-regression model is available in Appendix D.

Main Effects

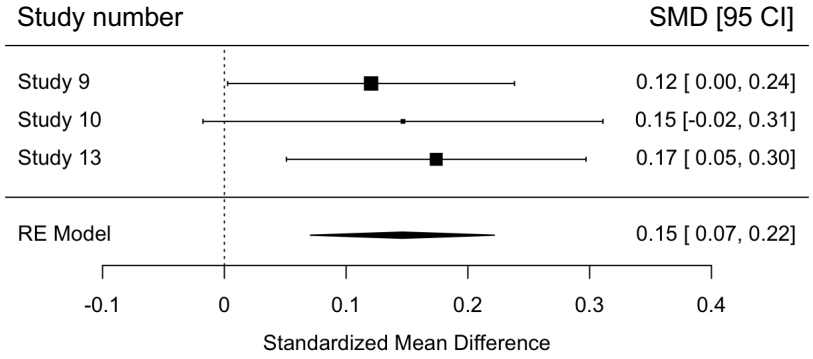
Recall that for all outcomes, a positive value (greater than 0) reflects a standardized mean difference that favors the intervention group over the control group.

Alcohol Use

Three studies reported on alcohol use outcomes, reflecting 21% of all studies and 60% of the studies focused on adolescents. Standardized mean differences (in Hedges' g) ranged from 0.12 to 0.17, with all estimates favoring the intervention group. The estimated average standardized mean difference was 0.15 (SE = 0.039, $p < .001$) with a 95% confidence interval of 0.07 to 0.22 indicating a significant beneficial impact of the FCU on adolescents' alcohol use behavior. The Q-statistic, a measure of homogeneity between studies, did not show evidence of heterogeneity across the three samples, Q(2) = 0.3791, $p = 0.8273$. The I^2 statistic suggested that 0.00% of the variance between the observed effect sizes is due to variance in true effects rather than sampling error and τ^2, the between-study variance, was also 0.00. Figure 2 shows a forest plot of alcohol use outcomes.

Figure 2

Forest plot of FCU effects on youth alcohol use outcomes.



Note: The REML estimator was used.

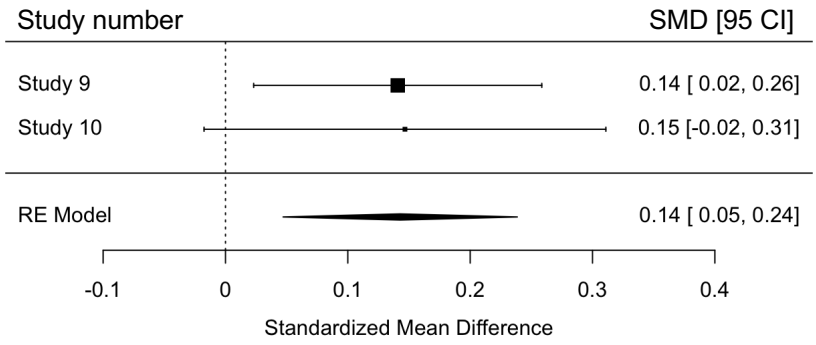
Cannabis Use

Two studies reported on codable cannabis use outcomes, reflecting 14% of all studies and 40% of studies focused on adolescents. Standardized mean differences (in Hedges' g) ranged

from 0.14 to 0.15, with all estimates favoring the intervention group. The estimated average standardized mean difference was 0.14 (SE = 0.049, $p < .01$) with a 95% confidence interval of 0.05 to 0.24, indicating a significant beneficial impact of the FCU on adolescent cannabis use behavior. The Q-statistic again did not show evidence of heterogeneity across the samples, Q(1) = 0.0033, $p = 0.9544$. The I^2 statistic suggested that 0.00% of the variance between the observed effect sizes was due to variance in true effects rather than sampling error and τ^2 was 0.00 as well. Figure 3 shows a forest plot of cannabis use outcomes.

Figure 3

Forest plot of FCU effects on youth cannabis use outcomes.



Note: The REML estimator was used.

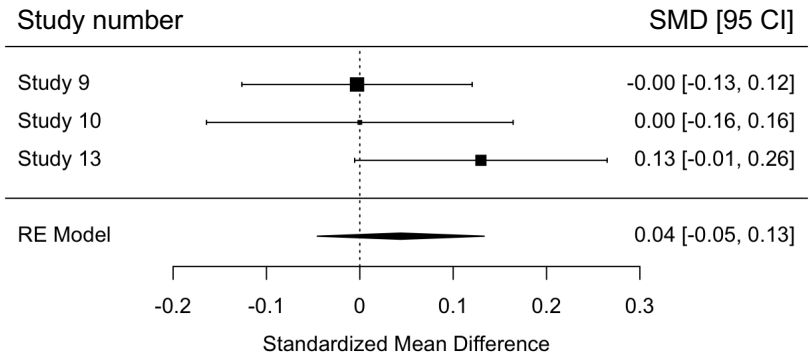
Tobacco Use

Three studies reported on tobacco use outcomes, reflecting 21% of all studies and 60% of studies focused on adolescents. Standardized mean differences (in Hedges' g) ranged from -.003 to 0.13, with two of the three estimates favoring the intervention group. The estimated average standardized mean difference was 0.04 (SE = 0.046, $p = .34$) with a 95% confidence interval of -0.05 to 0.26. Thus, it was not possible to reject the null hypothesis; there was no evidence of a reduction (or increase) in tobacco use by adolescents whose caregiver received the FCU. The Q-

statistic again did not show evidence of heterogeneity across the samples, Q(2) = 2.3762, p = 0.3048. The I^2 statistic showed that 19.47% of the variance between the observed effect sizes was due to variance in true effects rather than sampling error and τ^2 was 0.001. Figure 4 shows a forest plot of tobacco use outcomes.

Figure 4

Forest plot of FCU effects on youth tobacco use outcomes.



Note: The REML estimator was used.

Internalizing Behavior - Short-Term Follow-Up

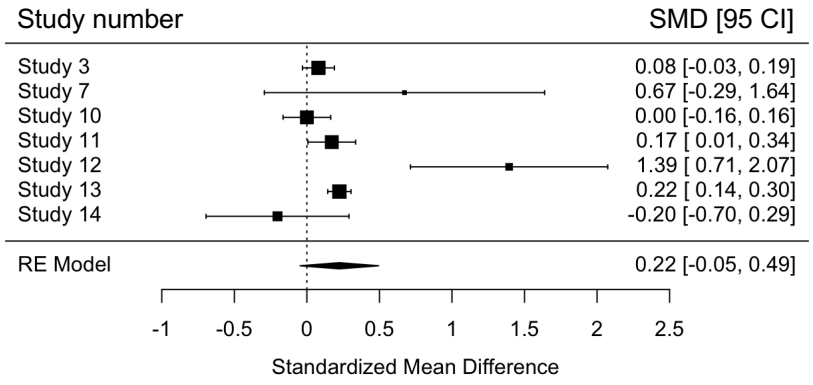
Seven studies (50%) reported on short-term (i.e., approximating one year) follow-up outcomes for internalizing behavior. Standardized mean differences (in Hedges' g) ranged from -.20 to 1.39, with five of the seven estimates favoring the intervention group. The estimated average standardized mean difference was 0.22 (SE = 0.138, p = .11) with a 95% confidence interval of -0.05 to 0.29. Again, it was not possible to reject the null hypothesis and there was very little-to-no evidence of an impact of the intervention on short-term internalizing outcomes. This time, the Q-statistic did show evidence of heterogeneity across the samples, Q(6) = 23.95, p < 0.001. The I^2 statistic indicated that 93.12% of the variance between the observed effect sizes

was due to variance in true effects rather than sampling error and τ^2 was 0.099. Figure 5 shows a forest plot of short-term internalizing behavior outcomes.

Because one study (Study 14) was an unpublished study with implementation concerns, a sensitivity analysis was then run on the short-term internalizing behavior outcomes with this study excluded. For this follow-up analysis, the estimated average standardized mean difference was 0.29 (SE = 0.160, p = .06) with a 95% confidence interval of -0.02 to 0.61.

Figure 5

Forest plot of FCU effects on child short-term internalizing outcomes.



Note: The REML estimator was used.

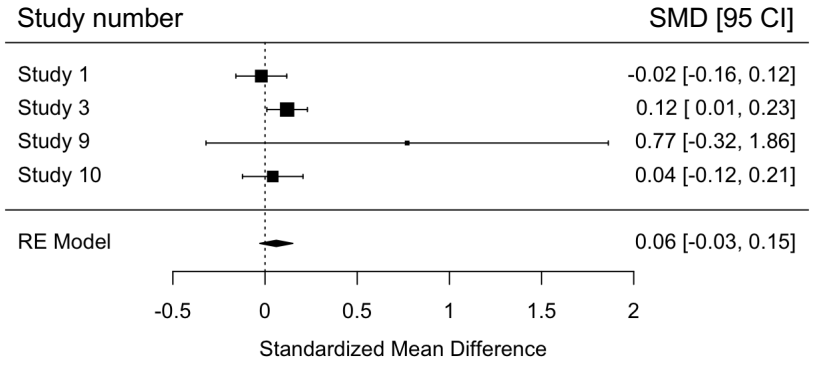
Internalizing Behavior – Long-Term Follow-Up

Four studies (29%) reported on long-term (i.e., approximating two year) follow-up outcomes for internalizing behavior. Standardized mean differences (in Hedges' g) ranged from -.02 to 0.77, with three of the four estimates favoring the intervention group. The estimated average standardized mean difference was 0.06 (SE = .046, p = .181) with a 95% confidence interval of -0.03 to 0.15. There was no evidence of an impact of the intervention on long-term internalizing behavior outcomes. The Q-statistic did not show evidence of heterogeneity across

the samples, Q(3) = 4.10, p = 0.25. The I^2 statistic suggested that 18.70% of the variance between the observed effect sizes was due to variance in true effects rather than sampling error and τ^2 was 0.002. Figure 6 shows a forest plot of long-term externalizing behavior outcomes.

Figure 6

Forest plot of FCU effects on child long-term internalizing outcomes.



Note: The REML estimator was used.

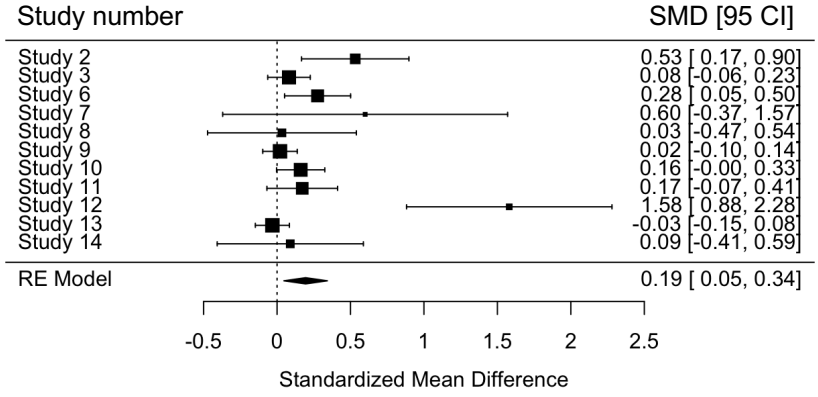
Externalizing Behavior — Short-Term Follow-Up

Eleven studies (79%) reported on short-term (i.e., approximating one year) follow-up outcomes for externalizing behavior. Standardized mean differences (in Hedges' g) ranged from -.03 to 1.58, with ten of the eleven estimates favoring the intervention group. The estimated average standardized mean difference was 0.19 (SE = 0.08, p = .01) with a 95% confidence interval of 0.05 to 0.34, indicating a significant beneficial impact of the FCU on child externalizing behavior at the one-year follow-up. The Q-statistic did show evidence of heterogeneity across the samples, Q(10) = 33.59, $p < 0.001$. The I^2 statistic indicated that 77.21% of the variance between the observed effect sizes was due to variance in true effects rather than

sampling error and τ^2 was 0.037. Figure 7 shows a forest plot of short-term externalizing behavior outcomes.

Figure 7

Forest plot of FCU effects on child short-term externalizing outcomes.



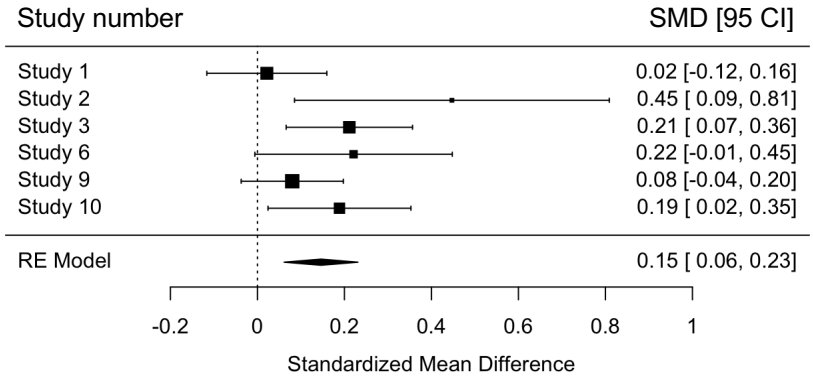
Note: The REML estimator was used.

Externalizing Behavior – Long-Term Follow-Up

Six studies (43%) reported on long-term (i.e., approximating two year) follow-up outcomes for externalizing behavior. Standardized mean differences (in Hedges' g) ranged from .02 to 0.45, with all six estimates favoring the intervention group. The estimated average standardized mean difference was 0.15 (SE = 0.043, $p < .001$) with a 95% confidence interval of 0.06 to 0.23, indicating a significant beneficial impact of the FCU on child externalizing behavior at the two-year follow-up. The Q-statistic did not show evidence of heterogeneity across the samples, Q(5) = 8.32, $p = 0.14$. The I^2 statistic suggested that 35.03% of the variance between the observed effect sizes was due to variance in true effects rather than sampling error and τ^2 was 0.004. Figure 8 shows a forest plot of long-term externalizing behavior outcomes.

Figure 8

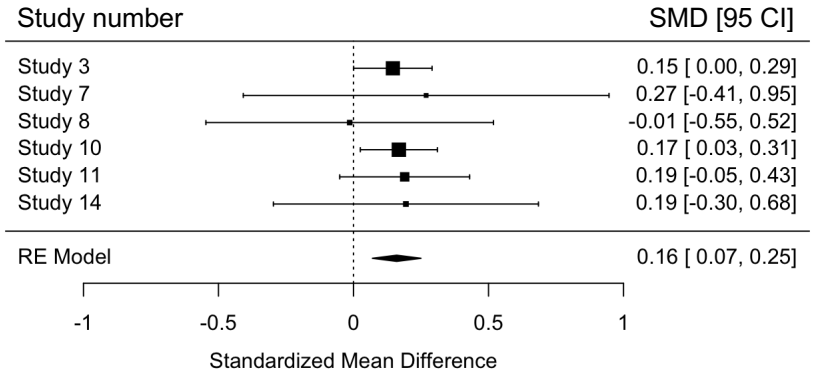
Forest plot of FCU effects on child long-term externalizing outcomes.



Note: The REML estimator was used.

Figure 9

Forest plot of FCU effects on child self-regulation outcomes.



Note: The REML estimator was used.

Self-Regulation

Six studies (43%) reported on self-regulation outcomes. Standardized mean differences (in Hedges' g) ranged from -.01 to 0.27, with five out of the six estimates favoring the intervention group. The estimated average standardized mean difference was 0.16 (SE = 0.046, *p*

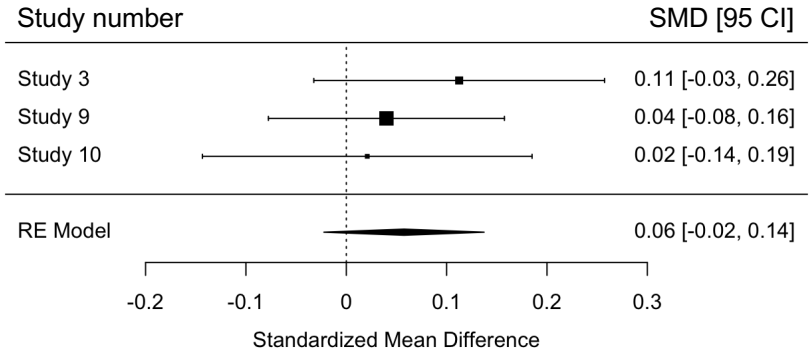
< .001) with a 95% confidence interval of 0.07 to 0.25, indicating a significant beneficial impact of the FCU on child self-regulation behavior. The Q-statistic did not show evidence of heterogeneity across the samples, Q(5) = 6.36, p = 0.99. The I^2 statistic suggested that 0.00% of the variance between the observed effect sizes was due to variance in true effects rather than sampling error and τ^2 was 0.00. Figure 9 shows a forest plot of self-regulation outcomes.

School Outcomes

Three studies (21%) reported on school outcomes. Standardized mean differences (in Hedges' g) ranged from .02 to .11, with all three studies favoring the intervention group. The estimated average standardized mean difference was 0.06 (SE = 0.041, p = .15) with a 95% confidence interval of -0.02 to 0.14, showing no evidence of an impact of the intervention on school outcomes. The Q-statistic did not show evidence of heterogeneity across the samples, Q(2) = .840, p = 0.66. The I^2 statistic suggested that 0.00% of the variance between the observed effect sizes was due to variance in true effects rather than sampling error and τ^2 was 0.00. Figure 10 shows a forest plot of self-regulation outcomes.

Figure 10

Forest plot of FCU effects on child school outcomes.



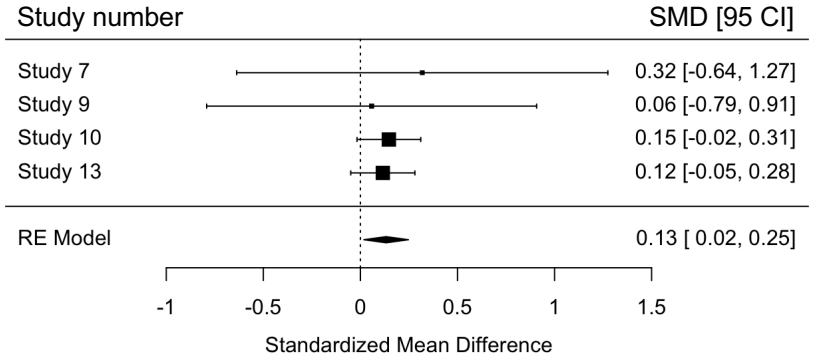
Note: The REML estimator was used.

Peer Concerns

Four studies (29%) reported on school outcomes. Standardized mean differences (in Hedges' g) ranged from .06 to .32, with all four studies favoring the intervention group. The estimated average standardized mean difference was 0.13 (SE = 0.058, p = .02) with a 95% confidence interval of 0.02 to 0.25, indicating a significant beneficial impact of the FCU on peer concerns for children. The overall effect was statistically significant even though none of the studies had statistically significant outcomes using individual intent-to-treat analyses. The Q-statistic did not show evidence of heterogeneity across the samples, Q(3) = 0.244, p = 0.97. The I^2 statistic suggested that 0.00% of the variance between the observed effect sizes was due to variance in true effects rather than sampling error and τ^2 was 0.00. Figure 11 shows a forest plot of peer concern outcomes.

Figure 11

Forest plot of FCU effects on child peer concern outcomes.



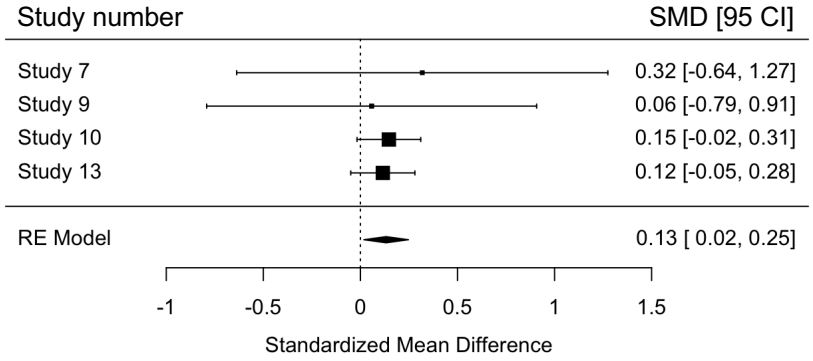
Note: The REML estimator was used.

Health Outcomes

Four studies (29%) reported on non-body weight-related health outcomes (e.g., cumulative measures reflecting child engagement in healthy behaviors; all studies reporting on these included various healthy behaviors and/or parent-reported measures reflecting overall child physical health). Standardized mean differences (in Hedges' g) ranged from .09 to .51, with all four studies favoring the intervention group. The estimated average standardized mean difference was 0.26 (SE = 0.105, p = .01) with a 95% confidence interval of 0.06 to 0.47, indicating a significant beneficial impact of the FCU on child health outcomes. The Q-statistic did show evidence of heterogeneity across the samples, Q(3) = 9.45, p = 0.02. The I^2 statistic suggested that 71.84% of the variance between the observed effect sizes was due to variance in true effects rather than sampling error and τ^2 was 0.029. Figure 12 shows a forest plot of health outcomes.

Figure 12

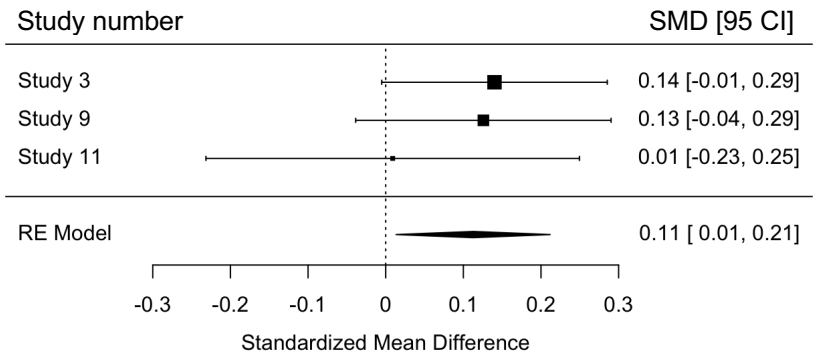
Forest plot of FCU effects on child health outcomes.



Note: The REML estimator was used.

Figure 13

Forest plot of FCU effects on child BMI outcomes.



Note: The REML estimator was used.

Body Mass Index (BMI)

Three studies (21%) reported on BMI outcomes. Standardized mean differences (in Hedges' g) ranged from .01 to .14, with all three studies favoring the intervention group. The estimated average standardized mean difference was 0.11 (SE = 0.051, p = .03) with a 95% confidence interval of 0.01 to 0.21, indicating a significant beneficial impact of the FCU on child BMI. The Q-statistic did not show evidence of heterogeneity across the samples, Q(3) = 0.875, p = 0.65. The I^2 statistic suggested that 0.00% of the variance between the observed effect sizes was due to variance in true effects rather than sampling error and τ^2 was 0.00. Figure 13 shows a forest plot of BMI outcomes.

Moderator Analyses

Due to substantive differences in intervention impacts on different variables, different variables across studies, and the lack of heterogeneity for some variables, moderator analyses were conducted on internalizing and externalizing behavior separately using the available follow-up timepoint closest to the one-year follow-up in order to more meaningfully capture

between-study differences, especially given the relatively small number of studies for a meta-regression. Due to the size of the sample, only bivariate regressions were completed. Based on post-hoc hypotheses developed during coding, two non-pre-registered moderators were also explored: percent of the intervention group who received the intervention and retention in the study.

Full results are reported in Table 4. There was no evidence of a moderating effect for child age, percent of the study population that was White, percent of the study population that was low-SES, dosage of the FCU, nor implementation or fidelity concerns for either the internalizing or the externalizing outcomes. For the internalizing outcomes, unadjusted *p* values suggested some evidence of a moderating effect for retention, with higher rates of retention predicting a stronger intervention effect, and for use of a screened sample, with higher risk samples predicting a stronger intervention effect. However, these results were attenuated to non-significance after adjusting for multiple comparisons. There was, however, evidence that a higher percentage of the sample receiving the FCU predicted larger effects for internalizing outcomes (b = .33, 95% CI [.14, .52], p = 0.013), even when adjusting for multiple comparisons. Assuming other variables were similar to what was found in this review, this model suggests that studies in which 10% of the intervention condition received the intervention (the lowest reported in this review) might expect a standardized mean difference of approximately -0.07, studies in which 50% of the intervention condition received the intervention might expect a standardized mean difference of approximately 0.07, and studies in which 100% of the sample received the intervention might expect a standardized mean difference of approximately 0.23. There was no evidence for these potential moderators being impactful for externalizing outcomes.

Table 4

Results from meta-regression moderator analyses

Moderator	Model	*B*	SE	95% CI	Unadjusted *p* value	Adjusted *p* value
Average Child Age	Internalizing	.02	.02	-.03, .08	.324	.576
	Externalizing	.00	.02	-.03, .04	.790	.843
Percent White	Internalizing	.56	.47	-.36, 1.50	.232	.576
	Externalizing	.55	.36	-.15, 1.25	.121	.467
Percent Low-SES	Internalizing	-.39	.53	-1.42, 0.64	.463	.669
	Externalizing	-.06	.30	-.65, .53	.850	.850
Screened	Internalizing	.19	.08	.02, .35	**.024**	.192
	Externalizing	.18	.18	-.17, .53	.310	.576
Dosage	Internalizing	.00	.00	-.00, .00	.585	.669
	Externalizing	.00	.00	-.00, .00	.533	.669
Implementation/ Fidelity	Internalizing	-.17	.29	-.74, .40	.564	.669
	Externalizing	-.11	.18	-.47, .24	.531	.669
Percent of intervention group who got intervention	Internalizing	.33	.10	.14, .52	**.0008**	**.013**
	Externalizing	.36	.25	-.13, .87	.146	.476
Retention	Internalizing	1.24	.62	.01, 2.46	**.047**	.250
	Externalizing	.63	.58	-.50, 1.76	.278	.576

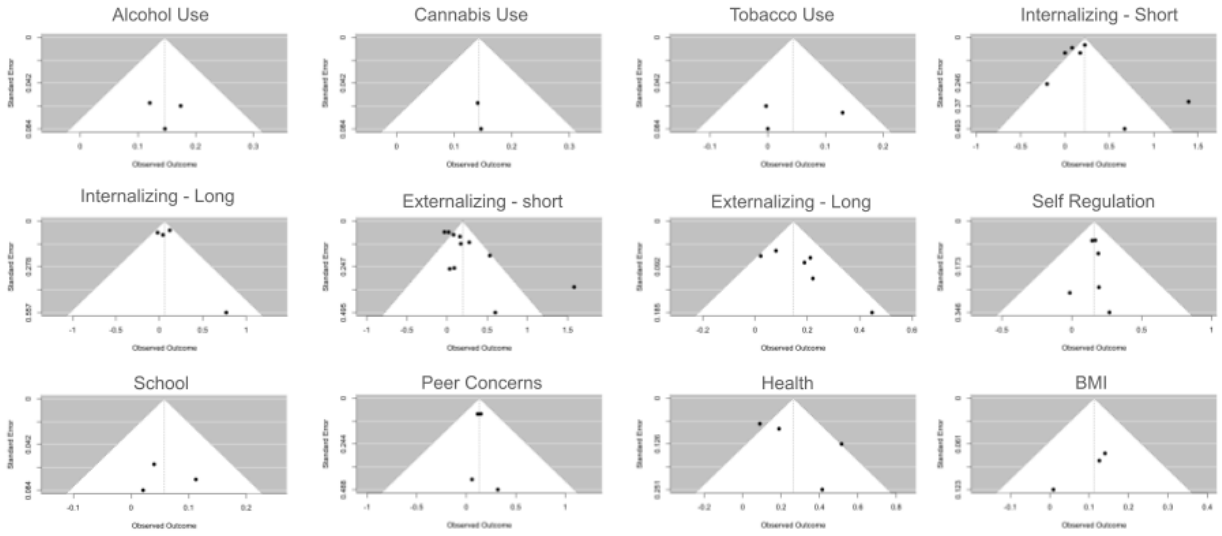
Note. *p* values adjusted Benjamini-Hochberg procedure.

Publication Bias

Next, publication bias was assessed due to the potential for exclusion of studies with negative or null results. A funnel plot was generated for each of the outcome variables (see Figure 13). Visually, Internalizing Behavior - Short Term, Externalizing Behavior - Short Term, and Externalizing Behavior - Long Term appeared to show visual signs of funnel plot asymmetry (see Figure 14). This was also assessed quantitatively for each variable using Egger's regression test to examine potential funnel plot asymmetry. Results from these regressions are available in Table 5, with similar results to the visual analysis – there was at least some evidence for funnel plot asymmetry for Internalizing Behavior - Short Term, Externalizing Behavior - Short Term, and Externalizing Behavior - Long Term.

Figure 14

Funnel plots for study outcomes



Thus, a follow-up trim and fill analysis was done for these outcomes in order to estimate potential missing studies and the effect that they might have had on effect size estimates (Duval & Tweedie, 2000). For Internalizing Behavior - Short Term, the trim and fill analysis estimated no studies (SE = 1.8203) missing from the left side of the funnel and the same was true for Externalizing Behavior - Short Term (SE = 2.1423). For Externalizing Behavior - Long Term, the trim and fill analysis estimated two studies (SE = 1.7439) missing from the left side of the funnel. The trimmed and filled analysis was similar to the main analysis, $\bar{g}$ = 0.12 CI [.04, .20], suggesting that the results of the main analysis are likely to be robust to potential reporting bias concerns.

Table 5

Egger's regression test results

Variable	*z*	*p* value	Limit Estimate *(b)*	95% Confidence Interval	
Alcohol Use	0.09	.93	.12	-.42	.67
Tobacco Use	-0.15	.88	.12	-.90	1.14
Internalizing - Short Term	1.81	.07	-.01	-.31	.30
Internalizing - Long Term	1.07	.28	-.02	-.22	.16
Externalizing - Short Term	4.15	<.001	-.11	-.22	.00
Externalizing - Long Term	2.23	.03	-.10	-.31	.11
Self Regulation	-0.02	.98	.16	-.01	.34
School Outcomes	0.07	.95	.04	-.54	.61
Peer Concerns	0.15	.88	.12	-.08	.32

Health Outcomes	1.47	.14	.01	-.35	.36
BMI	-0.93	.35	.35	-.16	.85

Note. Estimates for cannabis use are not possible due to the number of parameters to be estimated.

CHAPTER IV

DISCUSSION

Summary of Findings

This study supports previous research showing that the FCU has beneficial impacts on children. Children in the intervention condition had lower rates of alcohol use ($\bar{g}$ = 0.15), lower rates of cannabis use ($\bar{g}$ = 0.14), lower levels of short-term externalizing behavior ($\bar{g}$ = 0.19), lower levels of long-term externalizing behavior ($\bar{g}$ = 0.15), better self-regulation behavior ($\bar{g}$ = 0.16), lower levels of peer concerns, ($\bar{g}$ = 0.13), better health behaviors and outcomes ($\bar{g}$ = 0.26), and lower body mass index ($\bar{g}$ = 0.11) relative to those in the control condition. Weak evidence was found for the impact of the intervention on internalizing behavior in the short term ($\bar{g}$ = 0.22), with the sensitivity analysis reflecting slightly stronger evidence, and there was no evidence of an effect of the intervention on tobacco use, long-term internalizing behavior, or school outcomes. Moderator analyses suggested that studies where a higher percentage of the intervention group actually received the FCU had stronger effects on internalizing outcomes. There was no evidence of any differences by average child age, percent of the study that was White, percent of the study that was low-SES, sample screening (i.e., a proxy for risk), average dosage, or the presence of implementation or fidelity concerns for either internalizing or externalizing behavior.

Relative to the effect size benchmarks suggested by Cohen (1988), effect sizes were small. However, in a review of meta-analyses looking at universal prevention programs focused

on school-age youth, Tanner-Smith and colleagues (2018) highlight that these Cohen's original benchmarks are not appropriate for addressing universal prevention programs, wherein median average effects tend to fall between 0.07 and 0.16 standard deviations. The present meta-analysis should be interpreted in light of the included studies that encompass both studies that are clearly in line with the universal prevention literature as well as studies that are more similar to traditional psychotherapy research, including only screened, higher risk participants, with a much higher percentage of individuals in the intervention condition receiving the FCU (i.e., indicated prevention). Nevertheless, effect sizes are generally robust in the context of the prevention literature. Given that a large number of participants assigned to the FCU group did not receive the FCU and given that only intent-to-treat analyses were run, it is important to note that these are the estimated effects of being randomly assigned to the FCU condition and may under-represent the true effect of receiving the intervention itself.

The low evidence supporting the impact of the FCU on internalizing behavior was particularly unexpected given that internalizing behavior is a common target for parenting interventions (e.g., Cardamone-Breen et al., 2018; Morgan et al., 2018) and parenting behavior is known to predict outcomes for internalizing behavior in evidence-based treatments focused on internalizing concerns (e.g., Kendall et al., 2020). Previous research has also shown that the FCU has beneficial impacts on suicidal risk (Connell et al., 2023). The findings may, at least in part, reflect a lack of statistical power. Forehand and colleagues (2013) also emphasize that different parenting skills tend to be emphasized in interventions centered on externalizing behaviors and interventions centered on internalizing behaviors. Nevertheless, these findings underscore the importance of targeted, evidence-based support for managing internalizing behavior. Internalizing behavior was also grouped collectively, with more prior research focusing on

depressive symptoms relative to other internalizing concerns (e.g., Connell et al., 2021). In the future, separating out these concerns may allow for more specificity and account for some of the heterogeneity found among these studies.

Given that a higher percentage of families completing the FCU was associated with better outcomes for this variable, these results may also reflect parents having lower concerns or awareness related to child internalizing behaviors, meaning that parents whose children have internalizing behavior concerns are less likely to select to receive parenting support. When a higher percentage of parents receive the interventions, parents with lower awareness of their child's needs also receive targeted parenting support. Notably, the range of estimated effects based on the percentage of the intervention group who received the FCU (g = -0.07 for 10% to 0.23 for 100%) is provided for illustration but is not recommended for cost-benefit analyses, as there is no evidence that providing 10% of the intervention group the FCU would cause harm and additional research would be needed to establish predictive value. Additionally, studies in which 10% of the intervention group received the FCU and studies in which 100% of the intervention group received the FCU differed in a variety of ways that are not captured by this single variable.

Underrepresented Populations

Coding indicated that several demographic groups are notably underrepresented in the FCU literature at this time. Children of Asian/Pacific Islander, Indigenous American, and Latino/a/e/x descent were underrepresented relative to the United States (US) general population, where the majority of these studies were conducted. Indeed, children identifying as Asian/Pacific Islander or Indigenous/Native American were strikingly underrepresented, with not a single identified study having proportionate representation of these demographic groups relative to the

US population at large. This may reflect the need for a community-based participatory research approach in order to ensure that interventions are appropriately serving these groups. Adaptations such as Spanish-language translations may also be helpful in order to increase access to services and appropriately evaluate intervention effectiveness in these demographic groups.

Parental gender also showed disproportionate underrepresentation. Of studies that reported on the gender of participating parents, 94% of parents were mothers. Previous research has demonstrated that fathers are disproportionately underrepresented in the parenting intervention literature (DeGarmo et al., 2016; Davison et al., 2017), despite evidence that father participation in parenting interventions also offers substantial benefits to their children (DeGarmo & Jones, 2019). Finally, no study reported on the inclusion of any nonbinary or transgender parents, a population that is both increasingly visible and underrepresented in the literature on parenting (Stotzer et al, 2014; Pyne et al., 2015; Dierckx et al., 2016; Imrie et al., 2021). It is unclear if this is due to lack of participation by trans and gender nonconforming parents, due to lack of measurement, or due to lack of reporting. Nevertheless, this is an important population to consider explicitly in future research.

Limitations

All findings must be interpreted within the context of methodological limitations. Notably, moderators that include participant-level characteristics were gathered at the study level (in contrast with individual participant data [IPD] meta-analyses), which limits the study's ability to assess how the FCU impacts specific demographic populations. A number of previous studies have reported greater impacts of the FCU on higher risk families (e.g., Galán et al., 2022; Shaw et al., 2006; Stormshak et al., 2009). It is possible that an IPD meta-analysis might show that

individual families within studies with higher levels of risk have different impacts of the FCU or may reveal more targeted information about client-level moderators of treatment outcomes. Harmonized data research that shows an impact of the FCU on suicide risk factors, for example, was done with access to individual participant level information (Connell et al., 2023), which may partially explain the difference in conclusions between these analyses. IPD meta-analyses could also address the difference between being randomly assigned to the FCU and actually receiving the FCU using an instrumental variable approach.

Additionally, all meta-analytic research is further limited by the extant literature for the topic area, which may include issues such as publication bias or risk of bias in primary research studies. For example, the number of long-term outcomes reported in the literature was relatively low, resulting in effect sizes focused on the one- and two-year follow-up timepoints. Additional long-term research on intervention effects is likely to be helpful. Statistical power to detect moderators was also limited by a relatively low number of included studies. Finally, research on this intervention was also most frequently conducted in the United States, which may limit the generalizability of findings to implementation of the FCU in other countries.

Implications

Practice Implications

For clinicians delivering the FCU, this analysis revealed no demographic factors at the aggregate level that were more closely associated with beneficial outcomes. Because cultural tailoring is built into the FCU model, this might increase the salience of the intervention for various demographic groups. However, clinicians may be more inclined to choose an FCU approach if they work with families who tend to present with difficulties related to externalizing behavior, alcohol or cannabis use, self-regulation difficulties, difficulties with peers, and the

need for increased physical health behaviors, rather than populations that primarily present predominantly with depression and anxiety or school concerns, with few comorbid externalizing behaviors. Clinicians using the FCU may also consider more carefully evaluating whether potential internalizing behavior concerns are being referred to other best-practice interventions.

Research Implications

This analysis highlighted a number of next steps for researchers. Within North America, increasing the ecological validity of the literature on the FCU will likely involve finding strategies to connect to Asian/Pacific Islander, Indigenous American, and Latino/a/e/x families, as well as fathers, transgender parents, and nonbinary parents. Additionally, researchers may consider applying the FCU to non-United States-based populations in order to better understand international and cross-cultural implications of this intervention.

Addressing specific mental health symptoms via research might also be an important future avenue for research. For example, future studies may benefit from reporting more explicitly on mental health diagnoses, which were under-reported across studies, and which may offer additional clinically useful information about families with children who meet full diagnostic criteria for a mental health disorder. Additionally, given the results for internalizing behavior, a protocol that involves increased monitoring and services to address internalizing behavior concerns may also be warranted and could be compared to a more typical FCU procedure for internalizing behavior concerns.

Other research may address additional concerns about implementation and policy. For example, a cost analysis using meta-analytic data may also allow policy-makers to better assess the fit of the FCU at a policy level and an IPD meta-analysis may offer unique insights into the assessment of moderators. Researchers may also consider what percentage of families receiving

the FCU in a study is likely to result in clinically meaningful progress, especially for internalizing behavior outcomes. For example, in one study, as low as 10% of families assigned to the intervention condition actually received the intervention. This may not be an adequate saturation to address some clinical outcomes, such as internalizing behavior.

Finally, of course, researchers are always encouraged to engage in thorough reporting of all analyses and rigorous RCT protocols in order to aid in meta-science and increase the meaningfulness of their results.

Conclusion

In summary, this systematic review and meta-analysis suggests beneficial effects of the FCU across a range of child outcome domains. There were few differences across studies based on either aggregate demographic factors or study-related factors, although studies that had a higher percentage of families in the intervention condition actually receiving the FCU had larger effect sizes for internalizing behavior at the one-year follow-up. Additional research will help to increase the ecological validity of the research and provide additional insight into best practices for FCU providers and therapists.

Appendix A

Family Check-Up Meta-Analysis Coding Manual

Last Updated: October, 2022

ELIGIBILITY CRITERIA

1. Studies must use some form of the Family Check-Up (FCU) as their intervention that occurs in person. Adaptations of the FCU (e.g., FCU4Health) are acceptable.
2. The study design must be a randomized controlled trial (RCT). Random assignment may occur at the individual level or at the cluster level (e.g., assignment at the school level).
    a. Other designs (e.g., pretest-posttest) will be excluded.
3. The control group must be no intervention, a sham intervention, or treatment as usual. Studies that use another active condition as a comparison group are not eligible for inclusion.
4. Studies can include participants of any age or demographic information.
5. Studies must include some measure of child outcome (e.g., child behavior, child health outcome). Child mental health and behavioral health outcomes are the primary outcomes for this study.
    a. Studies that only include parent behaviors will be flagged in a separate file for the convenience of future researchers but will not be included in this meta-analysis.
6. Studies can be published in any year.
7. Studies that meet all eligibility criteria but do not include sufficient information to code all elements of the study will still be coded and included (e.g., if a study does not include enough information to calculate an effect size, all other elements of the study will be coded).

INITIAL CODING

1. Round One: Abstract coding
    a. Yes, possibly meets inclusion criteria
    b. No, clearly does not meet inclusion criteria
2. Round Two: Full publication coding
    a. Yes, meets inclusion criteria
        i. If yes, assign study ID code, group with other publications from the same study.
        ii. If no, specify:
            - Does not use the FCU
            - Not an RCT
            - Control group is an active condition
            - Does not include any measure of child outcome

FULL TEXT CODING

Study Factors

1. Study identifiers: Unique Study ID code.
2. Study name: A descriptive title for the study (e.g., Project Alliance-2).
3. All publications within the study in APA format.
4. Corresponding author name and email address.
5. Funding source.
6. Country where the intervention was delivered.
    a. If the United States: State where the intervention was delivered.
7. Setting where the intervention was delivered.
    a. School
    b. Healthcare Setting
    c. Community Mental Health Setting
    d. Other (Specify) _____
8. Screened or Unscreened Sample
    a. Universal or unscreened sample: Participants were not screened prior to enrollment in the study OR participants were screened, but it did not impact whether or not they were eligible to be enrolled.
    b. Screened or risk sample: Participants were screened prior to enrollment in the study AND this screening impacted whether or not they were eligible to participate.
        i. If screened: Screening instrument and cutoff used.
9. Study design
    a. Individually-randomized
    b. Cluster-randomized
        i. If cluster randomize, mean number of participants per cluster: ___
10. Type of design
    a. Parallel Groups: Participants in a group only receive one condition for the entirety of the trial
    b. Cross-over Groups: Patients cross between conditions over the course of the trial.

Risk of Bias

Review Signaling Questions Here:
https://drive.google.com/file/d/18Zks7k4kxhbUUlbZ51Ya5xYa3p3ECQV0/view

1. Randomization Process
    a. Low Risk
    b. Some Concerns
    c. High Risk
2. Deviations from Intended Interventions

    a. Low Risk
    b. Some Concerns
    c. High Risk
3. Missing Outcomes Data
    a. Low Risk
    b. Some Concerns
    c. High Risk
4. Measurement of the Outcome
    a. Low Risk
    b. Some Concerns
    c. High Risk
5. Selection of the Reported Results
    a. Low Risk
    b. Some Concerns
    c. High Risk
6. How did the authors handle missing data in their analysis?
    a. Listwise deletion
    b. Pairwise deletion
    c. Mean or mode imputation
    d. Single regression imputation
    e. Dummy variable approach (imputed value at zero with dummy variable)
    f. Multiple imputation
    g. Full information maximum likelihood (FIML)
    h. Other method
    i. Not applicable – no missing data
    j. Cannot tell

Quality Assessment

1. Overall attrition rate from time of random assignment to first follow up (in decimal form, where 100% is 1.0)
2. Implementation monitoring. Was implementation monitored by program personnel to assess whether it was delivered as intended?
    a. Yes. The report provides concrete evidence that implementation was monitored.
    b. The report clearly indicates that implementation was not monitored.
    c. Not reported. The authors do not provide any clear indication whether implementation was monitored or not.
3. Implementation Problems: Did the authors indicate that there was any uncontrolled variation or degradation in implementation or delivery of the intervention?
    a. Yes. The authors report problems with implementation.
    b. Possible. The author does not report any problems with implementation, but the coder identified potential issues with implementation.

    c. Not reported. The authors do not provide any indication of implementation problems, and the coder has not identified any potential issues with implementation.
4. Intent to Treat: Do the authors report the results of at least one intent-to-treat analysis?
    a. Yes. The authors explicitly report conducting an ITT analysis.
    b. Possible. Although the authors do not explicitly refer to conducting an ITT analysis, the CONSORT flow diagram or other sample size descriptions imply the use of an ITT analysis.
    c. No. There is no explicit or implicit evidence that the authors conducted an ITT analysis (e.g., the authors used an 'as-treated', 'per protocol', or 'treatment on the treated' approach.

Intervention

1. Adaptation
    a. No specific adaptations of the FCU used.
    b. Cultural adaptations used.
        i. If yes, specify: ___
    c. Content adaptations used.
        i. If yes, specify: ___
2. Minutes of intervention delivered

Population

Population: Full Sample

1. Mean Age of Children. Enter the average age of the children using numbers in years, out to two decimals. Use -9 for cannot tell.
2. Are children (select all that apply):
    a. Infant (Under 2)
    b. Preschool Age (2-5)
    c. School Age (6-12)
    d. Adolescent (12-18)
    e. Emerging Adult/Adult (18+)
3. Mean Age of Parents/Caregivers. Enter the average age of the parent/caregivers using numbers in years, out to two decimals. Use -9 for cannot tell.
4. Proportion Female for Children. Enter the proportion of female children in the study using ". XX" format (e.g., .35). Use -9 for cannot tell.
5. Proportion Transgender for Children. Enter the proportion of transgender children in the study using ". XX" format (e.g., .35). Use -9 for cannot tell.
6. Proportion Nonbinary for Children. Enter the proportion of nonbinary children in the study using ". XX" format (e.g., .35). Use -9 for cannot tell.

7. Proportion Female for Parents/Caregivers. Enter the proportion of female parents/caregivers in the study using ". XX" format (e.g., .35). Use -9 for cannot tell.
8. Proportion Transgender for Parents/Caregivers. Enter the proportion of transgender parents/caregivers in the study using ". XX" format (e.g., .35). Use -9 for cannot tell.
9. Proportion Nonbinary for Parents/Caregivers. Enter the proportion of nonbinary parents/caregivers in the study using ". XX" format (e.g., .35). Use -9 for cannot tell.
10. Proportion White. Enter the proportion of White children in the study using ". XX" format (e.g., .35). Use -9 for cannot tell.
11. Proportion Non-White. Enter the proportion of Non-White children in this study using ". XX" format (e.g., .35). Use -9 for cannot tell.
12. Proportion Asian. Enter the proportion of Asian children in this study using ". XX" format (e.g., .35). Use -9 for cannot tell.
13. Proportion Black. Enter the proportion of Black/African American children in this study using ". XX" format (e.g., .35). Use -9 for cannot tell.
14. Proportion Latino/a/e/x. Enter the proportion of Latino/a/e/x children in this study using ". XX" format (e.g., .35). Use -9 for cannot tell.
15. Proportion multitracial. Enter the proportion of multiracial children in this study using ". XX" format (e.g., .35). Use -9 for cannot tell.
16. Proportion diagnosed mental health concern for children. Enter the proportion of children in this study diagnosed with any psychiatric disorder. Enter -9 for cannot tell.
17. Proportion diagnosed mental health concern for parents/caregivers. Enter the proportion of parents/caregivers in this study diagnosed with any psychiatric disorder. Enter -9 for cannot tell.
18. Socioeconomic Status/Income. Describe the mode and range of socioeconomic status for families in this study in terms of income, education, or occupational prestige. Provide page numbers and report ID# for supporting text.

Outcomes

1. Coded outcomes: How many coded outcomes (child outcomes) are included in this study?
2. For each outcome:
    a. Outcome ID: For each study, begin with #1
    b. Outcome Name
    c. Outcome Type
        i. Continuous
        ii. Dichotomous
    d. Measure
        i. Parent Report
        ii. Child report
        iii. Teacher report

iv. Direct observation
v. Other, specify: ___

e. Outcome Category
i. Substance Use
ii. Internalizing Behavior (Depression, anxiety)
iii. Externalizing Behavior (Impulsivity, conduct, aggressive concerns)
iv. Self-Regulation
v. Other Risk Behavior (e.g. arrests)
vi. School or Academic Outcomes (including language development)
vii. Peer Concerns
viii. Health Outcomes
ix. Others

f. Direction
i. Lower is better
ii. Higher is better

Effect Sizes

General Effect Size Calculation Information

1. Order of preference for effect size calculations:

- Compute ES from regression coefficients with statistical controls for pretest measures and other potential confounding measures at baseline
- Compute ES from univariate descriptive statistics (means, sds, frequencies, proportions).
- Compute ES from test statistics (t, F, Chi square).
- If significance tests statistics are unavailable or unusable but p-values and degrees of freedom (df) are available, determine the corresponding value of the test statistic (e.g., t, chi-square) and compute ES as if that value had been reported.

2. Note that if the authors present both covariate adjusted and unadjusted means, you should use the covariate adjusted ones. If adjusted standard deviations are presented, however, they should not be used.

For each coded effect size:

1. Outcome (from coded outcomes above)
2. Page number for this effect size.
3. Type of effect size.
    a. Pretest (the difference between an intervention and comparison group before intervention or at the beginning of intervention)
    b. Posttest (the difference between two groups after intervention receipt on some outcome variable)
4. Timing of measurement.

    a. Weeks since the end of the intervention. (Divide days by 7; multiply months by 4.3.) Enter -9 if cannot tell.
5. Outcome Reporting. Were the statistical information needed for effect size calculations fully reported or partially reported?
    a. Fully reported. The report includes all necessary information needed for effect size calculations, and no approximations were needed.
    b. Partially reported. The report did not include all information needed for effect size calculations, so additional approximations and calculations were needed to estimate the effect size.
6. Which group is favored?
    a. Intervention/FCU
    b. Control group
    c. Exactly Equal
    d. Cannot Tell
7. Was adjusted data used?
    a. Unadjusted data
    b. Pretest adjusted data (or other baseline measure of an outcome variable construct)
    c. Data adjusted on some variable other than the pretest (e.g., socioeconomic status)
    d. Data adjusted on pretest plus some other variables
8. Effect size derived from what type of statistics?
    a. N successful/unsuccessful (frequencies)
    b. Proportion successful/unsuccessful (percentage successful or not)
    c. Means and SDs; means and variances; means and standard errors
    d. Independent t-test
    e. Chi-square statistic (1 degree of freedom)
    f. Effect sizes as reported directly in the study
    g. Other statistical approximation
        i. Describe: ___
9. Assigned N for the intervention group: ___
10. Assigned N for the comparison group: ___
11. Observed N for the intervention group: ___
12. Observed N for the comparison group: ___
13. Any problems coding this effect size?
    a. Yes
    b. No
14. As relevant:
    a. Mean for intervention group
    b. Mean for comparison group
    c. Standard deviation for intervention group
    d. Standard deviation for comparison group

e. N successful for intervention group
f. N successful for comparison group
g. N failed for intervention group
h. N failed for comparison group
i. Independent t-value
j. c^2 (df=1)
k. Effect size reported by authors
l. Odds ratio reported by authors
m. Hand calculated effect size
    i. Details on hand calculations: ___

Appendix B

List of Reports Excluded at Second Round of Coding

Report Citation	Reason for Exclusion
Anderson, K. E. (2019). *Parenting behaviors during adolescence and associations with emerging adult educational attainment and mental health.* [Doctoral Dissertation, University of Oregon]. Dissertation Abstracts International. https://scholarsbank.uoregon.edu/xmlui/handle/1794/24240	Analysis type
Bayer, J., Hiscock, H., Scalzo, K., Mathers, M., McDonald, M., Morris, A., Birdseye, J., & Wake, M. (2009). Systematic review of preventive interventions for children's mental health: What would work in Australian contexts? *The Australian and New Zealand Journal of Psychiatry, 43*(8), 695–710. https://doi.org/10.1080/00048670903001893	Relevance
Becker, S. J., Jones, R. N., Hernandez, L., Graves, H. R., & Spirito, A. (2016). Moderators of brief motivation-enhancing treatments for alcohol-positive adolescents presenting to the emergency department. *Journal of Substance Abuse Treatment, 69*, 28–34. https://doi.org/10.1016/j.jsat.2016.06.014	Control group does not meet criteria for inclusion
Becker, S. J., Marceau, K., Helseth, S. A., Hernandez, L., & Spirito, A. (2020). Predictors and moderators of response to brief interventions among adolescents with risky alcohol and marijuana use. *Substance Abuse, 43*(1), 83–91. https://doi.org/10.1080/08897077.2020.1742271	Control group does not meet criteria for inclusion
Becker, S. J., Marceau, K., Hernandez, L., & Spirito, A. (2019). Is it selection or socialization? Disentangling peer influences on heavy drinking and marijuana use among adolescents whose parents received brief interventions. *Substance Abuse: Research and Treatment, 13*, Article 1178221819852644. https://doi.org/10.1177/1178221819852644	Control group does not meet criteria for inclusion
Berkel, C., Mauricio, A. M., Rudo-Stern, J., Dishion, T. J., & Smith, J. D. (2020). Motivational interviewing and caregiver engagement in the Family Check-Up 4 Health. *Prevention Science, 22*(6), 737–746. https://doi.org/10.1007/s11121-020-01112-8	Analysis type

Björnsdotter, A., Ghaderi, A., & Enebrink, P. (2020). Cluster analysis of child externalizing and prosocial behaviors in a randomized effectiveness trial of the Family-Check Up and internet-delivered parent training (iComet). *Journal for Person-Oriented Research, 6*(2), 88–102. https://doi.org/10.17505/jpor.2020.22403	Control group does not meet criteria for inclusion
Borden, L. A. (2014). *Project Arches: An evaluation of a modified Family Check-Up intervention in an assessment setting* (Order No. AAI3577955). [Doctoral Dissertation, University of Missouri-Columbia]. Social Science Premium Collection. https://www.proquest.com/dissertations-theses/project-arches-evaluation-modified-family-check/docview/1567044183/se-2 ; https://mospace.umsystem.edu/xmlui/bitstream/handle/10355/39997/research.pdf?sequence=2	Experimental design
Buchanan, R., Chamberlain, P., & Smith, D. K. (2018). Treatment foster care Oregon for adolescents: Research and implementation. In J. R. Weisz & A. E. Kazdin (Eds.), *Evidence-based psychotherapies for children and adolescents* (pp. 177–196). The Guilford Press.	Relevance
Bustos, C. E. (2011). *Parent experiences of a family-centered intervention: Examining ethnocultural group differences* (Order No. 3450443). [Doctoral Dissertation, University of Oregon]. ProQuest Dissertations & Theses A&I. https://www.proquest.com/dissertations-theses/parent-experiences-family-centered-intervention/docview/864741262/se-2 ; https://scholarsbank.uoregon.edu/xmlui/handle/1794/11228	Experimental design
Cardenas, L. E., Matulis, J. M., & Stormshak, E. A. (2020). The Family Check-Up for elementary and middle school youth and families emotional/behavioral disorders. In T. W. Farmer, M. A. Conroy, E. M. Z. Farmer, & K. S. Sutherland (Eds.), *Handbook of research on emotional and behavioral disorders: Interdisciplinary developmental perspectives on children and youth* (pp. 185–199). Routledge/Taylor & Francis Group. https://doi.org/10.4324/9780429453106-13	Experimental design
Castellanos-Ryan, N., Séguin, J.,R., Vitaro, F., Parent, S., & Tremblay, R. E. (2013). Impact of a 2-year multimodal intervention for disruptive 6-year-olds on substance use in adolescence: Randomised controlled trial. *The British Journal of Psychiatry, 203*(3), 188-195. https://doi.org/10.1192/bjp.bp.112.123182	Relevance

Chiapa, A., Smith, J. D., Kim, H., Dishion, T. J., Shaw, D. S., & Wilson, M. N. (2015). The trajectory of fidelity in a multiyear trial of the family check-up predicts change in child problem behavior. *Journal of Consulting and Clinical Psychology, 83*(5), 1006–1011. https://doi.org/10.1037/ccp0000034	Analysis type
Chiapa, A., Smith, J. D., Kim, H., Dishion, T. J., Shaw, D. S., & Wilson, M. N. (2015, May 26-29). *The trajectory of fidelity in a multiyear trial of the Family Check-up predicts clinically significant change in child problem behavior* [Poster Presentation]. Society for Prevention Research Annual Meeting, Washington D.C., USA. https://www.preventionresearch.org/2015-annual-meeting/	Analysis type
Connell, A., Dishion, T. J., & Stormshak, E. A. (2013, May 28-31). *The Family Check Up and adolescent depression: An examination of treatment nonresponders* [Poster Presentation.] Society for Prevention Research Annual Meeting, San Francisco, CA, USA. https://www.preventionresearch.org/2013-annual-meeting/	Analysis type
Danaher, B. G., Seeley, J. R., Stormshak, E. A., Tyler, M. S., Caruthers, A. S., Moore, K. J., & Cardenas, L. (2018). *The Family Check-Up Online program for parents of middle school students: Protocol for a randomized controlled trial*. JMIR Research Protocols, 7(7), e11106. https://doi.org/10.2196/11106	Online Only
DeVargas, E. C., & Stormshak, E. A. (2020). Motivational interviewing skills as predictors of change in emerging adult risk behavior. *Professional Psychology: Research and Practice*, 51(1), 16–24. https://doi.org/10.1037/pro0000270	Analysis type
Dishion, T., Forgatch, M., Chamberlain, P., & Pelham, W. E. (2016). The Oregon model of behavior family therapy: From intervention design to promoting large-scale system change. *Behavior Therapy, 47*(6), 812–837. https://doi.org/10.1016/j.beth.2016.02.002	Experimental design
Dolcini-Catania, L. (2021). *Caregiver social support and engagement in the family check-up across early and middle childhood* (Order No. 29100135). [Unpublished Master's Thesis, University of Oregon]. ProQuest Dissertations & Theses A&I. https://www.proquest.com/dissertations-theses/caregiver-social-support-engagement-family-check/docview/2665126900/se-2 ; http://d-scholarship.pitt.edu/40379/	Analysis type
Galán, C.,A., Shaw, D. S., Dishion, T. J., & Wilson, M. N. (2017). Neighborhood deprivation during early childhood and conduct problems in	Relevance

middle childhood: Mediation by aggressive response generation. *Journal of Abnormal Child Psychology, 45*(5), 935-946. https://doi.org/10.1007/s10802-016-0209-x	
Ghaderi, A., Kadesjö, C., Björnsdotter, A., & Enebrink, P. (2018). Randomized effectiveness trial of the Family Check-Up versus internet-delivered parent training (iComet) for families of children with conduct problems. *Scientific Reports, 8*(1), 11486. https://doi.org/10.1038/s41598-018-29550-z	Control group does not meet criteria for inclusion
Gill, A. M., Hyde, L. W., Shaw, D. S., Dishion, T. J., & Wilson, M. N. (2008). The Family Check-Up in early childhood: A case study of intervention process and change. *Journal of Clinical Child and Adolescent Psychology, 37*(4), 893–904. https://doi.org/10.1080/15374410802359858	Experimental design
Goodman, W. B., Dodge, K. A., Bai, Y., O'Donnell, K. J., & Murphy, R. A. (2019). Randomized controlled trial of Family Connects: Effects on child emergency medical care from birth to 24 months. Development and Psychopathology, 31(5), 1863–1872. https://doi.org/10.1017/S0954579419000889	Relevance
Hails, K. A., Whipps, M. D. M., Gross, R. S., Bogen, D. L., Morris, P. A., Mendelsohn, A. L., & Shaw, D. S. (2021). Breastfeeding and responsive parenting as predictors of infant weight change in the first year. *Journal of Pediatric Psychology, 46*(7), 768–778. https://doi.org/10.1093/jpepsy/jsab049	Experimental design
King, C. A., Arango, A., & Ewell Foster, C. (2018). Emerging trends in adolescent suicide prevention research. *Current Opinion in Psychology, 22*, 89–94. https://doi.org/10.1016/j.copsyc.2017.08.037	Relevance
Kuklinski, M. R., Crowley, D. M., Dishion, T. J., Wilson, M. N., Pelham, W. E. III, & Shaw, D. S. (2020). Supporting strategic investment in social programs: A cost analysis of the Family Check-Up. *Prevention Science, 21*(2), 256–267. https://doi.org/10.1007/s11121-019-01077-3	Experimental design
Linville, D., Chronister, K., Dishion, T., Todahl, J., Miller, J., Shaw, D., Gardner, F., & Wilson, M. (2010). A longitudinal analysis of parenting practices, couple satisfaction, and child behavior problems. *Journal of Marital and Family Therapy, 36*(2), 244–255. https://doi.org/10.1111/j.1752-0606.2009.00168.x	Experimental design

Lochman, J. E., Powell, N., Boxmeyer, C., Andrade, B., Stromeyer, S. L., & Jimenez-Camargo, L. A. (2012). Adaptations to the Coping Power program's structure, delivery settings, and clinician training. *Psychotherapy, 49*(2), 135–142. https://doi.org/10.1037/a0027165	Relevance
Magee, K. E., Connell, A., Hipwell, A. E., Shaw, D., Westling, E., Keenan, K., Stormshak, E., Ha, T., & Stepp, S. (2022). Developmental models of depression, externalizing problems, and self-regulatory processes: Integrated data analysis across four longitudinal studies of youth. *Prevention Science*, Advance online publication. https://doi.org/10.1007/s11121-022-01441-w	Analysis type
Matulis, J. M., Cheng, Y., & Stormshak, E. (2021, June 2-4). *The feasibility and acceptability of the Family Check-up Online for parents of young children with substance use histories* [Poster Presentation]. Society for Prevention Research Annual Meeting, Virtual. https://www.preventionresearch.org/2021-annual-meeting/	Experimental design
Metcalfe, R. E., Matulis, J. M., Cheng, Y., & Stormshak, E. A. (2021). Therapeutic alliance as a predictor of behavioral outcomes in a relationally focused, family-centered telehealth intervention. *Journal of Marital and Family Therapy, 47*(2), 473-484. https://doi.org/10.1111/jmft.12517	Analysis type
Montaño, Z., Smith, J. D., Ciapa, A., Miloh, T., & Dishion, T. J., (2014, May 27-30). *Adaptation and implementation of the Family Check-up for the treatment of pediatric obesity within a primary care setting* [Poster Presentation]. Society for Prevention Research Annual Meeting, Washington D.C., USA. https://www.preventionresearch.org/2014-annual-meeting/	Experimental design
Portnow, S., Wilson, M. N., Dishion, T. J., Shaw, D. S., & Gardner, F (2015, May 26-29). *Assessing the efficacy of the Family-Check up on different types of ineffective parenting styles* [Poster Presentation]. Society for Prevention Research Annual Meeting, Washington D.C., USA. https://www.preventionresearch.org/2015-annual-meeting	Inadequate reporting to assess further

Roby, E., Miller, E. B., Shaw, D. S., Morris, P., Gill, A., Bogen, D. L., Rosas, J., Canfield, C. F., Hails, K. A., Wippick, H., Honoroff, J., Cates, C. B., Weisleder, A., Chadwick, K. A., Raak, C. D., & Mendelsohn, A. L. (2021). Improving parent-child interactions in pediatric health care: A two-site randomized controlled trial. *Pediatrics, 147*(3), Article e20201799. https://doi.org/10.1542/peds.2020-1799	Experimental design
Rudo-Stern, J. (2021). *Comparison of video and audio rating modalities for assessment of provider fidelity to a family-centered, evidence-based program.* [Doctoral Dissertation, Arizona State University.] Dissertation Abstracts International. https://keep.lib.asu.edu/items/158498	Analysis type
Schweer-Collins, M. L., & Stormshak, E. (2022, May 31-June 3). *A community-based implementation of the Family Check-up is associated with lower pediatric emergency room utilization: A cost analysis* [Poster Presentation]. Society for Prevention Research Annual Meeting, Seattle, WA, USA. https://www.preventionresearch.org/2022-annual-meeting/.	Experimental design
Slavet, J. D., Stein, L. A. R., Klein, J. L., Colby, S. M., Barnett, N. P., & Monti, P. M. (2005). Piloting the Family Check-Up with incarcerated adolescents and their parents. *Psychological Services, 2*(2), 123–132. https://doi.org/10.1037/1541-1559.2.2.123	Experimental design
Smith, J. D., Berkel, C., Hails, K. A., Dishion, T. J., Shaw, D. S., & Wilson, M. N. (2018). Predictors of participation in the Family Check-Up program: A randomized trial of yearly services from age 2 to 10 years. *Prevention Science, 19*(5), 652–662. https://doi.org/10.1007/s11121-016-0679-7 and Smith, J. D., Berkel, C., Hails, K. A., Dishion, T. J., Shaw, D. S., & Wilson, M. N. (2018). "Predictors of participation in the family check-up program: A randomized trial of yearly services from age 2 to 10 years": Correction. *Prevention Science, 19*(6), 848. https://doi.org/10.1007/s11121-018-0888-3	Analysis type
Smith, J. D., Dishion, T. J., Brown, K., Ramos, K., Knoble, N. B., Shaw, D. S., & Wilson, M. N. (2016). An experimental study of procedures to enhance ratings of fidelity to an evidence-based family intervention. *Prevention Science, 17*(1), 62–70. https://doi.org/10.1007/s11121-015-0589-0	Analysis type

Smith, J. D., Dishion, T. J., Moore, K. J., Shaw, D. S., & Wilson, M. N. (2013). Effects of video feedback on early coercive parent–child interactions: The intervening role of caregivers' relational schemas. *Journal of Clinical Child and Adolescent Psychology, 42*(3), 405–417. https://doi.org/10.1080/15374416.2013.777917	Analysis type
Smith, J. D., Dishion, T. J., Shaw, D. S., & Wilson, M. N. (2013). Indirect effects of fidelity to the Family Check-Up on changes in parenting and early childhood problem behaviors. *Journal of Consulting and Clinical Psychology, 81*(6), 962–974. https://doi.org/10.1037/a0033950	Analysis type
Smith, J. D., Dishion, T. J., Stormshak, E. A., Montag, S., Brown, K., Shaw, D. S., & WIlson, M. N. (2016, May 31-June 3). *Are common element therapist skills sufficient to improve behavior problems?: Family Check-Up vs. treatment as usual* [Poster Presentation]. Society for Prevention Research Annual Meeting, San Francisco, CA, USA. https://www.preventionresearch.org/2016-annual-meeting/	Inadequate reporting to assess further
Smith, J. D., Rudo-Stern, J., Dishion, T. J., Stormshak, E. A., Montag, S., Brown, K., Ramos, K., Shaw, D. S., & Wilson, M. N. (2019). Effectiveness and efficiency of observationally assessing fidelity to a family-centered child intervention: A quasi-experimental study. *Journal of Clinical Child and Adolescent Psychology*, 48(1), 16–28. https://doi.org/10.1080/15374416.2018.1561295	Experimental design
Smith, J. D., Stormshak, E. A., & Kavanagh, K. (2015). Results of a pragmatic effectiveness–implementation hybrid trial of the Family Check-Up in community mental health agencies. *Administration and Policy in Mental Health and Mental Health Services Research, 42*(3), 265–278. https://doi.org/10.1007/s10488-014-0566-0	Control group does not meet criteria for inclusion
Spirito, A., Hernandez, L., Cancilliere, M. K., Graves, H., & Barnett, N. (2015). Improving parenting and parent-adolescent communication to delay or prevent the onset of alcohol and drug use in young adolescents with emotional/behavioral disorders: A pilot trial. *Journal of Child & Adolescent Substance Abuse, 24*(5), 308–322. https://doi.org/10.1080/1067828X.2013.829013	Control group does not meet criteria for inclusion

Spirito, A., Hernandez, L., Cancilliere, M. K., Graves, H. R., Rodriguez, A. M., Operario, D., Jones, R., & Barnett, N. P. (2018). Parent and adolescent motivational enhancement intervention for substance-using, truant adolescents: A pilot randomized trial. *Journal of Clinical Child and Adolescent Psychology, 47*(Suppl 1), S467–S479. https://doi.org/10.1080/15374416.2017.1399402	Control group does not meet criteria for inclusion
Spirito, A., Hernandez, L., Marceau, K., Cancilliere, M. K., Barnett, N. P., Graves, H. R., Rodriguez, A. M., & Knopik, V. S. (2017). Effects of a brief, parent-focused intervention for substance using adolescents and their sibling. *Journal of Substance Abuse Treatment, 77*, 156–165. https://doi.org/10.1016/j.jsat.2017.02.002	Control group does not meet criteria for inclusion
Spirito, A., Sindelar-Manning, H., Colby, S. M., Barnett, N. P., Lewander, W., Rohsenow, D. J., & Monti, P. M. (2011). Individual and family motivational interventions for alcohol-positive adolescents treated in an emergency department: Results of a randomized clinical trial. *Archives of Pediatrics & Adolescent Medicine*, 165(3), 269–274. https://doi.org/10.1001/archpediatrics.2010.296	Control group does not meet criteria for inclusion
Spinks, D. W. (2007). *A solution-focused Family Checkup as a positive intervention in family therapy* (Order No. 3271428). [Doctoral Dissertation, Texas Woman's University]. ProQuest Dissertations & Theses A&I. https://www.proquest.com/dissertations-theses/solution-focused-family-checkup-as-positive/docview/304740211/se-2	Experimental design
Stormshak, E. A., Dishion, T. J., Light, J., & Yasui, M. (2005). Implementing family-centered interventions within the public middle school: Linking service delivery to change in student problem behavior. *Journal of Abnormal Child Psychology, 33*(6), 723-33. https://doi.org/10.1007/s10802-005-7650-6	Relevance
Stormshak, E. A., Seeley, J. R., Caruthers, A. S., Cardenas, L., Moore, K. J., Tyler, M. S., Fleming, C. M., Gau, J., & Danaher, B. (2019). Evaluating the efficacy of the Family Check-Up Online: A school-based, eHealth model for the prevention of problem behavior during the middle school years. *Development and Psychopathology, 31*(5), 1873–1886. https://doi.org/10.1017/S0954579419000907	Online only
Taraban, L., Feldman, J. S., Wilson, M. N., Dishion, T. J., & Shaw, D. S. (2020). Sad dads and troubled tots: Protective factors related to the stability of paternal depression and early childhood internalizing problems. *Journal*	Analysis type

of Abnormal Child Psychology, 48(7), 935–949. https://doi.org/10.1007/s10802-020-00649-0

Thompson, A. M., Herman, K. C., Reinke, W. M., Hawley, K., Peters, C., Ehret, A., Hobbs, A., & Elmore, R. (2021). Impact of the Family Access Center of Excellence (FACE) on behavioral and educational outcomes—A quasi-experimental study. School Psychology Review, 50(1), 30–35. https://doi.org/10.1080/2372966X.2020.1841545	Experimental design
Uebelacker, L. A., Hecht, J., & Miller, I. W. (2006). The Family Check-Up: A pilot study of a brief intervention to improve family functioning in adults. *Family Process, 45*(2), 223–236. https://doi.org/10.1111/j.1545-5300.2006.00092.x	Experimental design
Williams, M. E., Hoare, Z., Owen, D. A., & Hutchings, J. (2020). Feasibility study of the enhancing parenting skills programme. *Journal of Child and Family Studies, 29*(3), 686-698. https://doi.org/10.1007/s10826-019-01581-8	Relevance
Wu, Q., Krysik, J., & Thornton, A. (2022). Black kin caregivers: Acceptability and cultural adaptation of the Family Check-Up/Everyday Parenting program. *Child & Adolescent Social Work Journal, 39*(5), 607–618. https://doi.org/10.1007/s10560-022-00841-9	Experimental design
Yurasek, A. M., Brick, L., Nestor, B., Hernandez, L., Graves, H., & Spirito, A. (2019). The effects of parent, sibling and peer substance use on adolescent drinking behaviors. *Journal of Child and Family Studies, 28*(1), 73. https://doi.org/10.1007/s10826-018-1251-9	Analysis type

Appendix C

Risk of Bias Scores for Included Studies

	Randomization Process	Deviations from Intended Interventions	Missing Outcomes Data	Measurement of the Outcome	Selection of the Reported Results
Study 1101	Low Risk	High Risk	Some Concerns	Low Risk	Low Risk
Study 1102	Low Risk	Low Risk	Some Concerns	Low Risk	Low Risk
Study 1103	Low Risk	Low Risk	Low Risk	Low Risk	Low Risk
Study 1104	Unable to Code	Unable to Code	High Risk	High Risk	High Risk
Study 1105	Low Risk	Unable to Code	Unable to Code	Unable to Code	Unable to Code
Study 1106	Some Concerns	Low Risk	Low Risk	Low Risk	Low Risk
Study 1107	Low Risk	Low Risk	Low Risk	Some Concerns	Low Risk
Study 1108	Low Risk	Some Concerns	Low Risk	Low Risk	Low Risk
Study 1109	Low Risk	High Risk	Low Risk	Low Risk	Low Risk
Study 1110	Low Risk	Some Concerns	Low Risk	Some Concerns	Low Risk
Study 1111	Low Risk	Some Concerns	Low Risk	Low Risk	Low Risk
Study 1112	Low Risk	Some Concerns	Some Concerns	Some Concerns	Some Concerns
Study 1113	Low Risk	Low Risk	Low Risk	Low Risk	Low Risk
Study 1114	Some Concerns	Some Concerns	High Risk	Some Concerns	High Risk

Note. Missing data strategies not included in this table due to variability between reports for the same study.

Appendix D

Effect size sources by domain

Domain	Models	Sources of Effect Sizes
Substance Use	Alcohol Use Single Follow-Up Timepoint	Study 1109 - Véronneau et al., 2016; one year follow-up data used. Study 1110 - Fosco et al., 2013 (6th and 8th grade) Study 1113 - Galán et al., 2023
	Cannabis Use Single Follow-Up Timepoint	Study 1109 - Véronneau et al., 2016; one year follow-up data used. Study 1110 - Fosco et al., 2013 (6th and 8th grade)
	Tobacco Use Single Follow-Up Timepoint	Study 1109 - Véronneau et al., 2016; one year follow-up data used. Study 1110 - Fosco et al., 2013 (6th and 8th grade) Study 1113 - Galán et al., 2023
Internalizing Behavior	Short-Term Follow-Up	Study 1103 - Connell et al., 2008 (anxious, depressed) Study 1107 - Margolis 2013 (follow-up) Study 1110 - Connell et al., 2018 (6th and 7th grade) Study 1111 - Berkel et al., 2021 Study 1112 - Rao, 1998 Study 1113 - Galán et al., 2023 Study 1114 - O'Rourke et al., 2011 (Depression and Anxiety)
	Long Term Follow-Up	Study 1101 - Hiscock et al., 2017 (CBCL, age 3) Study 1103 - Connell et al.,

		2008 (anxious, depressed) Study 1109 - Connell & Dishion, 2017 (Last year depression) Study 1110 - Connell et al., 2018 (6th and 8/9th grade)
Externalizing Behavior	Short-Term Follow-Up	Study 1102 - Shaw et al., 2006 Study 1103 - McEachern et al., 2013 Study 1106 - Garbacz et al., 2020 Study 1107 - Margolis 2013 (follow-up) Study 1108 - Jones, 2003 (OD and CD scales) Study 1109 - Connell et al., 2007 (6th and 7th) Study 1110 - Fosco et al., 2013 (6th and 7th) Study 1111 - Berkel et al., 2021 Study 1112 - Rao, 1998 Study 1113 - Galán et al., 2023 Study 1114 - O'Rourke et al., 2011
	Long Term Follow-Up	Study 1101 - Hiscock et al., 2017 (CBCL, age 3) Study 1102 - Shaw et al., 2006 Study 1103 - McEachern et al., 2013 Study 1106 - Garbacz et al., 2020 Study 1109 - Connell et al., 2007 (6th and 8th) Study 1110 - Fosco et al., 2013 (6th and 8th)
Self-Regulation	Short-Term Follow-Up	Study 1103 - Lunkenheimer et al., 2008 Study 1107 - Margolis 2013 Study 1108 - Jones, 2003

		Study 1110 - Stormshak et al., 2010 Study 1111 - Berkel et al., 2021 Study 1114 - O'Rourke et al., 2011 (Disinhibited)
Other Risk Behavior	N/A - Risk behavior comprises a wide range of constructs.	N/A
School/Academic Outcomes	Long-Term Follow-Up	Study 1103 - Lunkenheimer et al 2008 (ages 2 and 4) Study 1109 - Stormshak et al. 2009 (GPA and absences) Study 1110 - Stormshak et al., 2010
Peer Concerns	Single Follow-Up Timepoint	Study 1107 - Margolis 2013 Study 1109 - DeLay et al., 2016 Study 1110 - Stormshak et al., 2010 (6th and 8th grade) Study 1112 - Rao, 1998 Study 1113 - Galán et al., 2023
Health Outcomes	Health Behavior and Wellness Single Follow-Up (Short)	Study 1101 - Hiscock et al., 2017 (age 3) Study 1109 - Van Ryzin & Nowicka, 2013 Study 1111 - Smith et al, 2020 (Healthy Behaviors) Study 1114 - O'Rourke et al., 2011 (Sedentary Time)
	Body Mass Index Long-Term Follow-Up	Study 1103 - Smith et al. 2015 (age 5) Study 1109 - Van Ryzin & Nowicka, 2013 Study 1111 - Smith et al, 2020

References

Achenbach, T. M. (1999). The Child Behavior Checklist and related instruments. In M. E. Maruish (Ed.), *The use of psychological testing for treatment planning and outcomes assessment* (pp. 429–466). Lawrence Erlbaum Associates Publishers.

Bayer, J. K., Shaw, D. S., Gill, A., Hiscock, H., Gerner, B., Grinter, D., Gulenc, A., Ukoumunne, O., & Wake, M. (2017, May 30-June 2). *International implementation of the Family Check-up to prevent conduct problems early in life* [Poster Presentation]. Society for Prevention Research Annual Meeting, Washington D.C., USA. https://www.preventionresearch.org/2017-annual-meeting/.

Benjamini, Y. & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society, 57*(1), 289-300. https://doi.org/10.1111/j.2517-6161.1995.tb02031.x

Berkel, C., Fu, E., Carroll, A. J., Wilson, C., Tovar-Huffman, A., Mauricio, A., Rudo-Stern, J., Grimm, K. J., Dishion, T. J., & Smith, J. D. (2021). Effects of the Family Check-Up 4 Health on parenting and child behavioral health: A randomized clinical trial in primary care. *Prevention Science, 22*(4), 464–474. https://doi.org/10.1007/s11121-021-01213-y

Berkel, C., Smith, J. D., Bruening, M. M., Jordan, N., Fu, E., Mauricio, A. M., Grimm, K. J., Winslow, E., Ray, K., Bourne, A., & Dishion, T. J. (2020). The Family Check-Up 4 Health: Study protocol of a randomized type II hybrid effectiveness-implementation trial in integrated primary care (the healthy communities 4 healthy students study). *Contemporary Clinical Trials, 96*, 106088. https://doi.org/10.1016/j.cct.2020.106088

Berkel, C., Smith, J. D., Fu, E., Bruening, M., & Dishion, T. J. (2019). NP29 The Family Check-Up 4 Health: A health maintenance approach to improve nutrition and prevent

early childhood obesity. *Journal of Nutrition Education and Behavior, 51*, S23. https://doi.org/10.1016/j.jneb.2019.05.353

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2011). *Introduction to Meta-Analysis*. John Wiley & Sons.

Borriello, G. A., Elam, K. K., Rea-Sandin, G., Lemery-Chalfant, K., Aliev, F., Dick, D., & Ha, T. (2020). Long-term effects of polygenic propensity for educational attainment on educational attainment mediated by inhibitory control and variation by a family-based intervention. Behavior Genetics Association 50th Annual Meeting Abstracts. *Behavior Genetics, 50*(6), 440-490. https://doi.org/10.1007/s10519-020-10018-8

Brennan, L. M., Shelleby, E. C., Shaw, D. S., Gardner, F., Dishion, T. J., & Wilson, M. (2013). Indirect effects of the Family Check-Up on school-age academic achievement through improvements in parenting in early childhood. *Journal of Educational Psychology, 105*(3), 762–773. https://doi.org/10.1037/a0032096

Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. *Developmental Psychology, 22*(6), 723-742. https://doi.org/10.1037/0012-1649.22.6.723

Cardamone-Breen, M. C., Jorm, A. F., Lawrence, K. A., Rapee, R. M., Mackinnon, A. J., & Yap, M. B. H. (2018). A single-session, web-based parenting intervention to prevent adolescent depression and anxiety disorders: Randomized controlled trial. *Journal of Medical Internet Research, 20*(4), e148. https://doi.org/10.2196/jmir.9499

Cardenas, L. E., Schweer-Collins, M. L., & Stormshak, E. A. (2022). Parental influences on marijuana use in emerging adulthood. *Journal of Family Psychology, 36*(2), 170–178. https://doi.org/10.1037/fam0000869

Caruthers, A. S., Van Ryzin, M. J., & Dishion, T. J. (2014). Preventing high-risk sexual behavior in early adulthood with family interventions in adolescence: Outcomes and developmental processes. *Prevention Science*, *15 Suppl 1*(01), S59–S69. https://doi.org/10.1007/s11121-013-0383-9

Chang, H., Shaw, D. S., Dishion, T. J., Gardner, F., & Wilson, M. N. (2014). Direct and indirect effects of the Family Check-Up on self-regulation from toddlerhood to early school-age. *Journal of Abnormal Child Psychology, 42*(7), 1117-28. https://doi.org/10.1007/s10802-014-9859-8

Chang, H., Shaw, D. S., Dishion, T. J., Gardner, F., & Wilson, M. N. (2015). Proactive parenting and children's effortful control: Mediating role of language and indirect intervention effects. *Social Development, 24*(1), 206–223. https://doi.org/10.1111/sode.12069

Chang, H., Shaw, D. S., Shelleby, E. C., Dishion, T. J., & Wilson, M. N. (2017). The long-term effectiveness of the family check-up on peer preference: Parent-child interaction and child effortful control as sequential mediators. *Journal of Abnormal Child Psychology, 45*(4), 705-717. https://doi.org/10.1007/s10802-016-0198-9

Chiapa, A., Smith, J. D., Kim, H., Dishion, T. J., Shaw, D. S., & Wilson, M. N. (2015). The trajectory of fidelity in a multiyear trial of the family check-up predicts change in child problem behavior. *Journal of Consulting and Clinical Psychology, 83*(5), 1006–1011. https://doi.org/10.1037/ccp0000034

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences (2nd ed.)*. Lawrence Erlbaum.

Connell, A., Bullock, B. M., Dishion, T. J., Shaw, D., Wilson, M., & Gardner, F. (2008). Family intervention effects on co-occurring early childhood behavioral and emotional problems:

A latent transition analysis approach. *Journal of Abnormal Child Psychology, 36*(8), 1211–1225. https://doi.org/10.1007/s10802-008-9244-6

Connell, A. M., & Dishion, T. J. (2017). Long-term effects of the Family Check-Up in public secondary school on diagnosed major depressive disorder in adulthood. *Journal of Youth and Adolescence, 46*(3), 570–581. https://doi.org/10.1007/s10964-016-0482-6

Connell, A. M., Dishion, T. J., & Deater-Deckard, K. (2006). Variable- and person-centered approaches to the analysis of early adolescent substance use: Linking peer, family, and intervention effects with developmental trajectories. *Merrill-Palmer Quarterly, 52*(3), 421–448. https://doi.org/10.1353/mpq.2006.0025

Connell, A., Dishion, T. J., & Klosterman, S. (2007). Family Check Up effects on adolescent arrest trajectories: Variation by developmental subtype. *Journal of Research on Adolescence, 22*(2), 367-380. https://doi.org/10.1111/j.1532-7795.2011.00765.x

Connell, A. M., Dishion, T. J., Yasui, M., & Kavanagh, K. (2007). An adaptive approach to family intervention: Linking engagement in family-centered intervention to reductions in adolescent problem behavior. *Journal of Consulting and Clinical Psychology, 75*(4), 568–579. https://doi.org/10.1037/0022-006X.75.4.568

Connell, A. M., Klostermann, S., & Dishion, T. J. (2012). Family Check Up effects on adolescent arrest trajectories: Variation by developmental subtype. *Journal of Research on Adolescence, 22*(2), 367–380. https://doi.org/10.1111/j.1532-7795.2011.00765.x

Connell, A. M., Magee, K., Stormshak, E., Ha, T., Westling, E., Wilson, M., & Shaw, D. (2021). Long-term cross-over effects of the family check-up prevention program on child and adolescent depression: Integrative data analysis of three randomized trials. *Journal of Consulting and Clinical Psychology, 89*(9), 773–782. https://doi.org/10.1037/ccp0000677

Connell, A., McKillop, H., & Dishion, T. J. (2013, May 28-31). *Family Check Up effects on high risk sexual behavior from adolescence through early adulthood* [Poster Presentation]. Society for Prevention Research Annual Meeting, San Francisco, CA, USA.

Connell, A. M., McKillop, H. N., & Dishion, T. J. (2016). Long-term effects of the family check-up in early adolescence on risk of suicide in early adulthood. *Suicide and Life-Threatening Behavior, 46*(Suppl 1), S15–S22. https://doi.org/10.1111/sltb.12254

Connell, A. M., Shaw, D., Wilson, M., Danzo, S., Weaver-Krug, C., Lemery-Chalfant, K., & Dishion, T. J. (2019). Indirect effects of the early childhood Family Check-Up on adolescent suicide risk: The mediating role of inhibitory control. *Development and Psychopathology, 31*(5), 1901–1910. https://doi.org/10.1017/S0954579419000877

Connell, A. M., Seidman, S., Ha, T., Stormshak, E., Westling, E., Wilson, M., & Shaw, D. (2023). Long-term effects of the Family Check-Up on suicidality in childhood and adolescence: Integrative data analysis of three randomized trials. *Prevention Science, 24*(8), 1558–1568. https://doi.org/10.1007/s11121-022-01370-8

Connell, A. M., Stormshak, E., Dishion, T., Fosco, G., & Van Ryzin, M. (2018). The Family Check Up and adolescent depression: An examination of treatment responders and non-responders. *Prevention Science, 19*(Suppl 1), 16–26. https://doi.org/10.1007/s11121-015-0586-3

Danaher, B. G., Seeley, J. R., Stormshak, E. A., Tyler, M. S., Caruthers, A. S., Moore, K. J., & Cardenas, L. (2018). The Family Check-up Online program for parents of middle school students: Protocol for a randomized controlled trial. *JMIR Research Protocol, 7*(e11106). https://doi.org/10.2196/11106

Danaher, B. G., Severson, H. H., Zhu, S. H., Andrews, J. A., Cummins, S. E., Lichtenstein, E., Tedeschi, G. J., Hudkins, C., Widdop, C., Crowley, R., & Seeley, J. R. (2015). Randomized controlled trial of the combined effects of web and quitline interventions for smokeless tobacco cessation. *Internet Interventions, 2*(2), 143–151. https://doi.org/10.1016/j.invent.2015.02.005

Davison, K. K., Charles, J. N., Khandpur, N., & Nelson, T. J. (2017). Fathers' perceived reasons for their underrepresentation in child health research and strategies to increase their involvement. *Maternal and Child Health Journal, 21*(2), 267–274. https://doi.org/10.1007/s10995-016-2157-z

DeGarmo, D. S., & Jones, J. A. (2019). Fathering Through Change (FTC) intervention for single fathers: Preventing coercive parenting and child problem behaviors. *Development and Psychopathology, 31*(5), 1801–1811. https://doi.org/10.1017/S0954579419001019

DeGarmo, D. S., Nordahl, K. B., & Fabiano, G. A. (2016). Fathers and coercion dynamics in families. In T. Dishion & J. Snyder (Eds.), *Oxford handbook of coercive dynamics in close relationships: Implications for development, psychopathology and intervention science* (pp. 114–128). Oxford University Press.

DeLay, D., Ha, T., Ryzin, M., Winter, C., & Dishion, T. J. (2016). Changing friend selection in middle school: A social network analysis of a randomized intervention study designed to prevent adolescent problem behavior. *Prevention Science, 17*(3), 285–294. https://doi.org/10.1007/s11121-015-0605-4

Department of Health and Human Services (2021). *Family Check-Up for children*. Home Visiting Evidence of Effectiveness. https://homvee.acf.hhs.gov/effectiveness/Family%20Check-Up%C2%AE%20For%20Children/In%20Brief

Dierckx, M., Motmans, J., Mortelmans, D., & T'sjoen, G. (2016). Families in transition: A literature review. *International Review of Psychiatry, 28*(1), 36–43. https://doi.org/10.3109/09540261.2015.1102716

Dishion, T. J., Brennan, L. M., Shaw, D. S., Mceachern, A. D., Wilson, M. N., & Jo, B. (2014). Prevention of problem behavior through annual Family Check-Ups in early childhood: Intervention effects from home to early elementary school. *Journal of Abnormal Child Psychology, 42*(3), 343-54. https://doi.org/10.1007/s10802-013-9768-2

Dishion, T. J., Mun, C. J., Drake, E. C., Tein, J. Y., Shaw, D. S., & Wilson, M. (2015). A transactional approach to preventing early childhood neglect: The Family Check-Up as a public health strategy. *Development and Psychopathology, 27*(4 Pt 2), 1647–1660. https://doi.org/10.1017/S0954579415001005

Dishion, T. J., Mun, C. J., Tein, J. Y., Kim, H., Shaw, D. S., Gardner, F., Wilson, M. N., & Peterson, J. (2017). The validation of macro and micro observations of parent-child dynamics using the relationship affect coding system in early childhood. *Prevention Science, 18*(3), 268–280. https://doi.org/10.1007/s11121-016-0697-5

Dishion, T. J., Nelson, S. E., & Kavanagh, K. (2003). The Family Check-Up with high-risk young adolescents: Preventing early-onset substance use by parent monitoring. *Behavior Therapy, 34*(4), 553–571. https://doi.org/10.1016/S0005-7894(03)80035-7

Dishion, T. J., Shaw, D., Connell, A., Gardner, F., Weaver, C., & Wilson, M. (2008). The Family Check-Up with high-risk indigent families: Preventing problem behavior by increasing parents' positive behavior support in early childhood. *Child Development*, *79*(5), 1395–1414. https://doi.org/10.1111/j.1467-8624.2008.01195.x

Dishion, T. J., & Stormshak, E. A. (2007). *Intervening in children's lives: An ecological, family-centered approach to mental health care*. American Psychological Association.

Duval, S., & Tweedie, R. (2000). Trim and fill: A simple funnel-plot-based method of testing and adjusting for publication bias in meta-analysis. *Biometrics*, *56*(2), 455–463. https://doi.org/10.1111/j.0006-341x.2000.00455.x

Egger, M., Davey Smith, G., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. *British Medical Journal, 315*, 629–634. https://doi.org/10.1136/bmj.315.7109.629

Elam, K. K., Clifford, S., Ruof, A., Shaw, D. S., Wilson, M. N., & Lemery-Chalfant, K. (2020). Genotype–environment correlation by intervention effects underlying middle childhood peer rejection and associations with adolescent marijuana use. *Development and Psychopathology, 34*(1), 171-182. https://doi.org/10.1017/S0954579420001066

Elam, K. K., Mun, C. J., Jodi, K., & Thao, H. (2021). Polygenic risk for aggression predicts adult substance use disorder diagnoses via substance use offending in emerging adulthood and is moderated by a family-centered intervention. *Behavior Genetics, 51*(5), 607-618. https://doi.org/10.1007/s10519-021-10070-y

Feldman, J. S., Wilson, M. N., & Shaw, D. S. (2022). Relations between early childhood paternal depression and preschool- and school-age psychosocial functioning. *Journal of Clinical Child and Adolescent Psychology, 51*(1), 97–111. https://doi.org/10.1080/15374416.2020.1723600

Feldman, J. S., Zhou, Y., Krug, C. W., Wilson, M. N., & Shaw, D. S. (2020). Indirect effects of the Family Check-Up on youth extracurricular involvement at school-age through

improvements in maternal positive behavior support in early childhood. *Social Development, 30*, 311-328. https://doi.org/10.1111/sode.12474

Forehand, R., Jones, D. J., & Parent, J. (2013). Behavioral parenting interventions for child disruptive behaviors and anxiety: what's different and what's the same. *Clinical Psychology Review, 33*(1), 133–145. https://doi.org/10.1016/j.cpr.2012.10.010

Fosco, G. M., Frank, J. L., Stormshak, E. A., & Dishion, T. J. (2013). Opening the "Black Box": Family check-up intervention effects on self-regulation that prevents growth in problem behavior and substance use. *Journal of School Psychology, 51*(4), 455–468. https://doi.org/10.1016/j.jsp.2013.02.001

Fosco, G. M., Van Ryzin, M. J., Connell, A. M., & Stormshak, E. A. (2016). Preventing adolescent depression with the family check-up: Examining family conflict as a mechanism of change. *Journal of Family Psychology*, *30*(1), 82–92. https://doi.org/10.1037/fam0000147

Fosco, G. M., Van Ryzin, M., Stormshak, E. A., & Dishion, T. J. (2014). Putting theory to the test: examining family context, caregiver motivation, and conflict in the Family Check-Up model. *Development and Psychopathology, 26*(2), 305–318. https://doi.org/10.1017/S0954579413001004

Galán, C. A., Shaw, D. S., O'Rourke, F., Reynolds, M. D., Gill, A., Bogen, D. L., & Ridenour, T. A. (2023). Substance use screening and prevention for adolescents in pediatric primary care: A randomized clinical trial using the Family Check-Up. *Research on Child and Adolescent Psychopathology, 51*(2), 151–163. https://doi.org/10.1007/s10802-022-00978-2

Garbacz, S. A., McIntyre, L. L., Stormshak, E. A., & Kosty, D. B. (2018). The efficacy of the Family Check-Up on children's emotional and behavior problems in early elementary school. *Journal of Emotional and Behavioral Disorders*, 0(00), 1-13. https://doi.org/10.1177/1063426618806258

Garbacz, A., Stormshak, E., & McIntyre, L. L. (2020, July 21-23). *Examining the efficacy of the Family Check-Up during early elementary school* [Poster Presentation]. Society for Prevention Research Annual Meeting, Virtual. https://www.preventionresearch.org/2020-annual-meeting/

Garbacz, S. A., Stormshak, E. A., McIntyre, L. L., & Kosty, D. (2019). Examining family-school engagement in a randomized controlled trial of the family check-up. *School Psychology, 34*(4), 433–443. https://doi.org/10.1037/spq0000284

Gardner, F., Connell, A., Trentacosta, C. J., Shaw, D. S., Dishion, T. J., & Wilson, M. N. (2009). Moderators of outcome in a brief family-centered intervention for preventing early problem behavior. *Journal of Consulting and Clinical Psychology, 77*(3), 543–553. https://doi.org/10.1037/a0015622

Griffin, A. M., Stormshak, E., & Leve, L. (2020, July 21-23). *Family Check-Up: Testing an ecological prevention model* [Poster Presentation]. Society for Prevention Research Annual Meeting, Virtual. https://www.preventionresearch.org/2020-annual-meeting/

Hall, G. J., Garbacz, S. A., Jordan, P., Zahn, M., Smolkowski, K., Stormshak, E. A., & Seeley, J. R. (2022). Examining links between parental monitoring and school engagement among middle school students with and without elevated behavior ratings. *School Psychology, 37*(3), 259–272. https://doi.org/10.1037/spq0000500

Hedges, L. V. (1981). Distribution theory for Glass's estimator of effect size and related estimators. *Journal of Educational Statistics, 6*(2), 107–128. https://doi.org/10.2307/1164588

Hedges, L. V. (2007). Effect sizes in cluster-randomized designs. *Journal of Educational and Behavioral Statistics, 32*(4), 341–370. https://doi.org/10.3102/1076998606298043

Hentges, R. F., Weaver Krug, C. M., Shaw, D. S., Wilson, M. N., Dishion, T. J., & Lemery-Chalfant, K. (2020). The long-term indirect effect of the early Family Check-Up intervention on adolescent internalizing and externalizing symptoms via inhibitory control. *Development and Psychopathology, 32*(4), 1544–1554. https://doi.org/10.1017/S0954579419001482

Higgins, J. P. T., Savović, J., Page, M. J., Elbers, R. G., & Sterne, J. A. (2019). Assessing risk of bias in a randomized trial. In Higgins, J. P. T. & Chandler J. (Eds.) *Cochrane Handbook for Systematic Reviews of Interventions version 6.0 (updated July 2019)*. Cochrane. www.training.cochrane.org/handbook

Hiscock, H., Bayer, J. K., Lycett, K., Ukoumunne, O. C., Shaw, D., Gold, L., Gerner, B., Loughman, A., & Wake, M. (2012). Preventing mental health problems in children: The Families in Mind population-based cluster randomised controlled trial. *BMC Public Health, 12*, 420. https://doi.org/10.1186/1471-2458-12-420

Hiscock, H., Gulenc, A., Ukoumunne, O. C., Gold, L., Bayer, J., Shaw, D., Le, H., & Wake, M. (2018). Preventing preschool mental health problems: Population-based cluster randomized controlled trial. *Journal of Developmental and Behavioral Pediatrics, 39*(1), 55–65. https://doi.org/10.1097/DBP.0000000000000502

Hyde, L. W., Shaw, D. S., Gardner, F., Cheong, J., Dishion, T. J., & Wilson, M. (2013). Dimensions of callousness in early childhood: Links to problem behavior and family intervention effectiveness. *Development and Psychopathology, 25*(2), 347–363. https://doi.org/10.1017/S0954579412001101

Imrie, S., Zadeh, S., Wylie, K., & Golombok, S. (2020). Children with trans parents: Parent-child relationship quality and psychological well-being. *Parenting, Science and Practice, 21*(3), 185–215. https://doi.org/10.1080/15295192.2020.1792194

Inyangson, J., & Connell, A. (2021, June 2-4). *Examining long-term cross-over effects of the Family Check-up prevention program on depression across racial/ethnic groups* [Poster Presentation]. Society for Prevention Research Annual Meeting, Virtual. https://www.preventionresearch.org/2021-annual-meeting/.

Jabson, J. M., Dishion, T. J., Gardner, F. E. M., & Burton, J. (2004). Relationship Process Code v-2.0. training manual: A system for coding relationship interactions. The Child and Family Center; 160 East 4th Avenue, Eugene, OR, 97401. Unpublished coding manual.

Jones, L. M. (2003). *The Family Check-Up for families of high-risk preschoolers: The moderating effect of children's temperament* (Order No. 3102170). [Doctoral Dissertation, University of Oregon]. ProQuest Dissertations & Theses A&I. Retrieved from https://www.proquest.com/dissertations-theses/family-check-up-families-high-risk-preschoolers/docview/305303975/se-2

Jordan, N., Graham, A. K., Berkel, C., & Smith, J. D. (2019). Costs of preparing to implement a family-based intervention to prevent pediatric obesity in primary care: a budget impact analysis. *Prevention Science,* 20(5), 655–664. https://doi.org/10.1007/s11121-018-0970-x

Kendall, P. C., Norris, L. A., Rabner, J. C., Crane, M. E., & Rifkin, L. S. (2020). Intolerance of uncertainty and parental accommodation: Promising targets for personalized intervention for youth anxiety. *Current Psychiatry Reports, 22*(9), 49. https://doi.org/10.1007/s11920-020-01170-3

Kuklinski, M. R., Briney, J. S., Hawkins, J. D., & Catalano, R. F. (2012). Cost-benefit analysis of communities that care outcomes at eighth grade. *Prevention Science, 13*(2), 150–161. https://doi.org/10.1007/s11121-011-0259-9

Kuklinski, M. R., Crowley, D. M., Dishion, T. J., Wilson, M. N., Pelham, W. E., & Shaw, D. S. (2020), Supporting strategic investment in social programs: A cost analysis of the Family Check-Up. *Prevention Science*, 21, 256-267. https://doi.org/10.1007/s11121-019-01077-3

Kuo, S. I-C., Salvatore, J. E., Aliev, F., Ha, T., Dishion, T. J., & Dick, D. M. (2019). The Family Check-Up intervention moderates polygenic influences on long-term alcohol outcomes: Results from a randomized intervention trial. *Prevention Science, 20*(7), 975–985. https://doi.org/10.1007/s11121-019-01024-2

Leijten, P., Shaw, D. S., Gardner, F., Wilson, M. N., Matthys, W., & Dishion, T. J. (2015a). The family check-up and service use in high-risk families of young children: A prevention strategy with a bridge to community-based treatment. *Prevention Science, 16*(3), 397–406. https://doi.org/10.1007/s11121-014-0479-x

Leijten, P., Shaw, D. S., Gardner, F., Wilson, M. N., Matthys, W., & Dishion, T. J. (2015b). "The family check-up and service use in high-risk families of young children: A prevention strategy with a bridge to community-based treatment": Erratum. *Prevention Science, 16*(3), 407. https://doi.org/10.1007/s11121-015-0547-x

Lemery-Chalfant, K., Clifford, S., Dishion, T. J., Shaw, D. S., & Wilson, M. N. (2018a). Genetic moderation of the effects of the Family Check-Up intervention on children's internalizing symptoms: A longitudinal study with a racially/ethnically diverse sample. *Development and Psychopathology, 30*(5), 1729–1747. https://doi.org/10.1017/S095457941800127X

Lemery-Chalfant, K., Clifford, S., Dishion, T., Shaw, D., & Wilson, M. (2018b). Genetic influences on socio-cultural sensitivity: Moderation of effects of the Family Check-Up intervention on symptoms of child psychopathology. Behavior Genetics Association 48th Annual Meeting Abstracts. *Behavior Genetics, 48*(6), 454-526. https://doi.org/10.1007/s10519-018-9929-8

Lemery-Chalfant, K., Elam, K., Tien, J., Clifford, S., Oro, V., Rea-Sandin, G., Galan, C., Wilson, M., & Shaw, D. (2019). Polygenic environmental sensitivity predicts growth in internalizing symptoms in early childhood. Behavior Genetics Association 49th Annual Meeting Abstracts. *Behavior Genetics, 49*(6), 487-557. https://doi.org/10.1007/s10519-019-09973-8

Lipsey, M. W. & Wilson, D. B. (2001). *Practical meta-analysis (2nd ed.)*. Sage Publications.

Lunkenheimer, E. S., Dishion, T. J., Shaw, D. S., Connell, A. M., Gardner, F., Wilson, M. N., & Skuban, E. M. (2008). Collateral benefits of the family check-up on early childhood school readiness: Indirect effects of parents' positive behavior support. *Developmental Psychology, 44*(6), 1737–1752. https://doi.org/10.1037/a0013858

Margolis, K. L. (2014). *A pilot feasibility and effectiveness trial of the Family Check-Up parenting intervention with Spanish preadolescents and their families: A cultural adaptation and feasibility study to enhance evidence-based intervention research in Spain.* [Doctoral Dissertation, University of Oregon]. Dissertation Abstracts

International: Section B: The Sciences and Engineering, 74(11-B(E)). Retrieved from: https://scholarsbank.uoregon.edu/xmlui/handle/1794/13219

Margolis, K., & Stormshak, E. A. (2013, May 28-31). *A pilot feasibility and effectiveness trial of the Family Check-up parenting intervention with Spanish preadolescents and their families: A cultural adaptation and feasibility study to enhance evidence-based intervention research in Spain* [Poster Presentation]. Society for Prevention Research Annual Meeting, San Francisco, CA, USA. https://www.preventionresearch.org/2013-annual-meeting/

Mauricio, A. M., Rudo-Stern, J., Dishion, T. J., Letham, K., & Lopez, M. (2019). Provider readiness and adaptations of competency drivers during scale-up of the Family Check-Up. *The Journal of Primary Prevention*, *40*(1), 51-68. https://doi.org/10.1007/s10935-018-00533-0

McEachern, A. D., Fosco, G. M., Dishion, T. J., Shaw, D. S., Wilson, M. N., & Gardner, F. (2013). Collateral benefits of the Family Check-Up in early childhood: Primary caregivers' social support and relationship satisfaction. *Journal of Family Psychology, 27*(2), 271–281. https://doi.org/10.1037/a0031485

McHugh M. L. (2012). Interrater reliability: the kappa statistic. *Biochemia Medica, 22*(3), 276–282.

McLeod, B. D., Weisz, J. R., & Wood, J. J. (2007). Examining the association between parenting and childhood depression: A meta-analysis. *Clinical Psychology Review, 27*(8), 986–1003. https://doi.org/10.1016/j.cpr.2007.03.001

Metcalfe, R. (2023). Meta-analysis of the Family Check-Up. Retrieved from osf.io/uxae6

Metcalfe, R. E., Guidinger, C., & Stormshak, E. A. (2021a). The Family Check-Up:

Ecological family-based assessments in the context of potential child abuse or chaotic home environments. *Journal of Health Service Psychology*, *47*(1), 17-29. https://doi.org/10.1007/s42843-021-00028-3

Metcalfe, R. E., Matulis, J. M., Cheng, Y., & Stormshak, E. A. (2021b). Therapeutic alliance as a predictor of behavioral outcomes in a relationally-focused, family-centered telehealth intervention. *Journal of Marital and Family Therapy*, *47*(2), 473-484. https://doi.org/10.1111/jmft.12517

Michelson, D., Davenport, C., Dretzke, J., Barlow, J., & Day, C. (2013). Do evidence-based interventions work when tested in the "real world?" A systematic review and meta-analysis of parent management training for the treatment of child disruptive behavior. *Clinical Child and Family Psychology Review, 16*(1), 18–34. https://doi.org/10.1007/s10567-013-0128-0

Milgrom, J., Danaher, B. G., Gemmill, A. W., Holt, C., Holt, C. J., Seeley, J. R., Tyler, M. S., Ross, J., & Ericksen, J. (2016). Internet Cognitive Behavioral Therapy for women with postnatal depression: A randomized controlled trial of MumMoodBooster. *Journal of Medical Internet Research, 18*(3), e54. https://doi.org/10.2196/jmir.4993

Mohr, D. C., Cuijpers, P., & Lehman, K. (2011). Supportive accountability: A model for providing human support to enhance adherence to eHealth interventions. *Journal of Medical Internet Research, 13*(1), e30. https://doi.org/10.2196/jmir.1602

Moilanen, K. L., Shaw, D. S., Dishion, T. J., Gardner, F., & Wilson, M. (2009). Predictors of longitudinal growth in inhibitory control in early childhood. *Social Development, 19*(2), 326–347. https://doi.org/10.1111/j.1467-9507.2009.00536.x

Montaño, Z., Smith, J. D., Dishion, T. J., Shaw, D. S., & Wilson, M. N. (2015). Longitudinal relations between observed parenting behaviors and dietary quality of meals from ages 2 to 5. *Appetite, 87*, 324–329. https://doi.org/10.1016/j.appet.2014.12.219

Morgan, A. J., Rapee, R. M., Salim, A., Goharpey, N., Tamir, E., McLellan, L. F., & Bayer, J. K. (2017). Internet-delivered parenting program for prevention and early intervention of anxiety problems in young children: Randomized controlled trial. *Journal of the American Academy of Child and Adolescent Psychiatry, 56*(5), 417–425.e1. https://doi.org/10.1016/j.jaac.2017.02.010

Nelson, S. E., van Ryzin, M. J., & Dishion, T. J. (2015). Alcohol, marijuana, and tobacco use trajectories from age 12 to 24 years: Demographic correlates and young adult substance use problems. *Development and Psychopathology, 27*(1), 253–277. https://doi.org/10.1017/S0954579414000650

Ng, M. Y., & Weisz, J. R. (2016). Annual research review: Building a science of personalized intervention for youth mental health. *Journal of Child Psychology and Psychiatry, 57*, 216–236. https://doi.org/10.1111/jcpp.12470

O'Leary, C. C. (2001). *The early childhood family check-up: A brief intervention for at-risk families with preschool -aged children* (Order No. 3018385). [Doctoral Dissertation, University of Oregon]. ProQuest Dissertations & Theses A&I. Retrieved from https://www.proquest.com/dissertations-theses/early-childhood-family-check-up-brief/docview/304714965/se-2

O'Rourke, F., Shaw, D., Dahl, R., Rofey, D., Goldsten, T., & Gill, A. (2012, May 29-June 1). *Testing an adaptation of the Family Check Up to promote sleep, physical activity and emotion regulation skills among emerging adolescents* [Poster Presentation]. Society for

Prevention Research Annual Meeting, Washington D.C. USA. https://www.preventionresearch.org/2012-annual-meeting/

O'Rourke, F., Schleiden, L., Shaw, D., Dahl, R.E., Welsh, B., Cianni, L.C., Goldstein, T., Rofey, D., & Gill, A. (2011, April). *Testing an adaptation of the family check up to promote sleep, physical activity, and emotion regulation skills.* Poster presented at the Society for Research in Child Development, Montreal, Canada.

Pelham, W. (2016). *Predicting variation in responsiveness to the Family Check-Up in early childhood: A mixture model approach (Order No. 10107125)*. [Doctoral Dissertation, University of Oregon]. ProQuest Dissertations & Theses A&I. Retrieved from https://www.proquest.com/dissertations-theses/predicting-variation-responsiveness-family-check/docview/1791132497/se-2

Pelham, W. E., Dishion, T. J., Tein, J.-Y., Shaw, D. S., & Wilson, M. N. (2017). What doesn't work for whom? Exploring heterogeneity in responsiveness to the Family Check-Up in early childhood using a mixture model approach. *Prevention Science, 18*(8), 911–922. https://doi.org/10.1007/s11121-017-0805-1

Perez-Gramaje, A. F., Garcia, O. F., Reyes, M., Serra, E., & Garcia, F. (2020). Parenting styles and aggressive adolescents: Relationships with self-esteem and personal maladjustment. The *European Journal of Psychology Applied to Legal Context, 12*(1), 1–10. https://doi.org/10.5093/ejpalc2020a1

Piquero, A. R., Jennings, W. G., Diamond, B., Farrington, D. P., Tremblay, R. E., Welsh, B. C., & Gonzalez, J. M. R. (2016). A meta-analysis update on the effects of early family/parent training programs on antisocial behavior and delinquency. *Journal of Experimental Criminology, 12*(2), 229–248. https://doi.org/10.1007/s11292-016-9256-0

Prochaska, J. Q. & DiClemente, C. C. (1984). *The transtheoretical approach: Crossing traditional boundaries of change.* Dorsey Press.

Pyne, J., Bauer, G., & Bradley, K. (2015). Transphobia and other stressors impacting trans parents. *Journal of GLBT Family Studies, 11*(2), 107–126. https://doi.org/10.1080/1550428X.2014.941127

Rao, S. A. (1998). *The short-term impact of the family check-up: A brief motivational intervention for at-risk families* (Order No. 9900304). [Doctoral Dissertation, University of Oregon]. ProQuest Dissertations & Theses A&I. Retrieved from https://www.proquest.com/dissertations-theses/short-term-impact-family-check-up-brief/docview/304473398/se-2

Reuben, J. D., Shaw, D. S., Brennan, L. M., Dishion, T. J., & Wilson, M. N. (2015). A family-based intervention for improving children's emotional problems through effects on maternal depressive symptoms. *Journal of Consulting and Clinical Psychology, 83*(6), 1142–1148. https://doi.org/10.1037/ccp0000049

Rudo-Stern, J. (2015). *Collateral effects of a family-focused behavioral intervention on physical activity* (Order No. 1588232). [Master's Thesis, Arizona State University]. ProQuest Dissertations & Theses A&I. Retrieved from https://www.proquest.com/dissertations-theses/collateral-effects-family-focused-behavioral/docview/1682266384/se-2

Rusby, J. C., Light, J. M., Crowley, R., & Westling, E. (2018). Influence of parent–youth relationship, parental monitoring, and parent substance use on adolescent substance use onset. *Journal of Family Psychology, 32*(3), 310–320. https://doi.org/10.1037/fam0000350

Sánchez-Meca, J., Marín-Martínez, F., & Chacón-Moscoso, S. (2003). Effect-size indices for dichotomized outcomes in meta-analysis. *Psychological Methods*, 8(4), 448–467. https://doi.org/10.1037/1082-989X.8.4.448

Sandler, I., Ingram, A., Wolchik, S., Tein, J., & Winslow, E. (2015). Long-term effects of parenting-focused preventive interventions to promote resilience of children and adolescents. *Child Development Perspectives, 9*(3), 164-171. https://doi.org/10.1111/cdep.12126

Schofield, T. J., Conger, R. D., Gonzales, J. E., & Merrick, M. T. (2016). Harsh parenting, physical health, and the protective role of positive parent-adolescent relationships. *Social Science & Medicine, 157*, 18–26. https://doi.org/10.1016/j.socscimed.2016.03.027

Shah, R., Kennedy, S., Clark, M. D., Bauer, S. C., & Schwartz, A. (2016). Primary care–based interventions to promote positive parenting behaviors: A meta-analysis. *Pediatrics*, *137*(5), 1-16. https://doi.org/10.1542/peds.2015-3393

Shaw, D. S. (2011). Health promotion in early adolescence: Sleep, activity, and emotion regulation. Identifier NCT01289197. https://clinicaltrials.gov/ct2/show/NCT01289197

Shaw, D. S., Connell, A., Dishion, T. J., Wilson, M. N., & Gardner, F. (2009). Improvements in maternal depression as a mediator of intervention effects on early childhood problem behavior. *Development and Psychopathology, 21*(2), 417–439. https://doi.org/10.1017/S0954579409000236

Shaw, D. S., Dishion, T. J., Supplee, L., Gardner, F., & Arnds, K. (2006). Randomized trial of a family-centered approach to the prevention of early conduct problems: 2-year effects of the Family Check-Up in early childhood. *Journal of Consulting and Clinical Psychology, 74*(1), 1–9. https://doi.org/10.1037/0022-006X.74.1.1

Shaw, D. S., Galán, C. A., Lemery-Chalfant, K., Dishion, T. J., Elam, K. K., Wilson, M. N., & Gardner, F. (2019). Trajectories and predictors of children's early-starting conduct problems: Child, family, genetic, and intervention effects. *Development and Psychopathology, 31*(5), 1911–1921. https://doi.org/10.1017/S0954579419000828

Shaw, D. S., Sitnick, S. L., Brennan, L. M., Choe, D. E., Dishion, T. J., Wilson, M. N., & Gardner, F. (2016). The long-term effectiveness of the Family Check-Up on school-age conduct problems: Moderation by neighborhood deprivation. *Development and Psychopathology, 28*(4, Part 2), 1471–1486. https://doi.org/10.1017/S0954579415001212

Shelleby, E. C., Shaw, D. S., Cheong, J., Chang, H., Gardner, F., Dishion, T. J., & Wilson, M. N. (2012). Behavioral control in at-risk toddlers: The influence of the family check-up. *Journal of Clinical Child and Adolescent Psychology, 41*(3), 288–301. https://doi.org/10.1080/15374416.2012.664814

Shelleby, E. C., Shaw, D. S., Dishion, T. J., Wilson, M. N., & Gardner, F. (2018). Effects of the Family Check-Up on reducing growth in conduct problems from toddlerhood through school age: An analysis of moderated mediation. *Journal of Consulting and Clinical Psychology, 86*(10), 856-867. https://doi.org/10.1037/ccp0000337

Shepard, S., Armstrong, L. M., Silver, R. B., Berger, R., & Seifer, R. (2012). Embedding the Family Check-Up and evidence-based parenting programmes in Head Start to increase parent engagement and reduce conduct problems in young children. *Advances in School Mental Health Promotion, 5*(3), 194–207. https://doi.org/10.1080/1754730X.2012.707432

Sitnick, S. L., Shaw, D. S., Gill, A., Dishion, T., Winter, C., Waller, R., Gardner, F., & Wilson, M. (2014). Parenting and the Family Check-Up: Changes in observed parent-child

interaction following early childhood intervention. *Journal of Clinical Child & Adolescent Psychology, 44*(6), 970-984. https://doi.org/10.1080/15374416.2014.940623

Smedler, A. C., Hjern, A., Wiklund, S., Anttila, S., & Pettersson, A. (2015). Programs for prevention of externalizing problems in children: Limited evidence for effect beyond 6 months post intervention. *Child & Youth Care Forum, 44*, 251–276. https://doi.org/10.1007/s10566-014-9281-y

Smith, J. D., Berkel, C., Carroll, A. J., Fu, E., Grimm, K. J., Mauricio, A. M., Rudo-Stern, J., Winslow, E., Dishion, T. J., Jordan, N., Atkins, D. C., Narayanan, S. S., Gallo, C., Bruening, M. M., Wilson, C., Lokey, F., & Samaddar, K. (2021a). Health behaviour outcomes of a family based intervention for paediatric obesity in primary care: A randomized type II hybrid effectiveness-implementation trial. *Pediatric Obesity, 16*(9), Article e12780. https://doi.org/10.1111/ijpo.12780

Smith, J. D., Dishion, T. J., Shaw, D. S., & Wilson, M. N. (2013). Indirect effects of fidelity to the Family Check-Up on changes in parenting and early childhood problem behaviors. *Journal of Consulting and Clinical Psychology, 81*(6), 962–974. https://doi.org/10.1037/a0033950

Smith, J. D., Dishion, T. J., Shaw, D. S., & Wilson, M. N. (2015a). Negative relational schemas predict the trajectory of coercive dynamics during early childhood. *Journal of Abnormal Child Psychology, 43*(4), 693–703. https://doi.org/10.1007/s10802-014-9936-z

Smith, J. D., Dishion, T. J., Shaw, D. S., Wilson, M. N., Winter, C. C., & Patterson, G. R. (2014). Coercive family process and early-onset conduct problems from age 2 to school entry. *Development and Psychopathology, 26*(4), 917–932. https://doi.org/10.1017/S0954579414000169

Smith, J. D., Berkel, C., Jordan, N., Atkins, D. C., Narayanan, S. S., Gallo, C., Grimm, K. J., Dishion, T. J., Mauricio, A. M., Rudo-Stern, J., Meachum, M. K., Winslow, E., & Bruening, M. M. (2018). An individually tailored family-centered intervention for pediatric obesity in primary care: study protocol of a randomized type II hybrid effectiveness-implementation trial (Raising Healthy Children study). *Implementation Science, 13*(1), 11. https://doi.org/10.1186/s13012-017-0697-2

Smith, J. D., Carroll, A. J., Fu, E., & Berkel, C. (2021b). Baseline targeted moderation in a trial of the family check-up 4 health: Potential explanations for finding few practical effects. *Prevention Science, 24*, 226-236. https://doi.org/10.1007/s11121-021-01266-z

Smith, J. D., Knoble, N. B., Zerr, A. A., Dishion, T. J., & Stormshak, E. A. (2014). Family check-up effects across diverse ethnic groups: Reducing early-adolescence antisocial behavior by reducing family conflict. *Journal of Clinical Child and Adolescent Psychology, 43*(3), 400–414. https://doi.org/10.1080/15374416.2014.888670

Smith, J. D., Mauricio, A., & Stormshak, E., A. (2015b). Assessment-intervention for youth and families in community service delivery systems. In B. L. Mercer, T. Fong & E. Rosenblatt (Eds.), *Assessing children in the urban community.* Routledge.

Smith, J. D., Montaño, Z., Dishion, T. J., Shaw, D. S., & Wilson, M. N. (2015c). Preventing weight gain and obesity: Indirect effects of the Family Check-Up in early childhood. *Prevention Science*, *16*(3), 408-419. https://doi.org/10.1007/s11121-014-0505-z

Smith, J. D., Montaño, Z., Dishion, T. J., Shaw, D. S., & Wilson, M. N. (2015d). "Preventing weight gain and obesity: Indirect effects of the family check-up in early childhood": Erratum. *Prevention Science, 16*(3), 420. https://doi.org/10.1007/s11121-015-0548-9

Smith, J. D., Wakschlag, L., Krogh-Jespersen, S., Walkup, J. T., Wilson, M. N., Dishion, T. J., & Shaw, D. S. (2019). Dysregulated irritability as a window on young children's psychiatric risk: Transdiagnostic effects via the Family Check-Up. *Development and Psychopathology, 31*(5), 1887–1899. https://doi.org/10.1017/S0954579419000816

Smolkowski, K., Seeley, J. R., Gau, J. M., Dishion, T. J., Stormshak, E. A., Moore, K. J., Falkenstein, C. A., Fosco, G. M., & Garbacz, S. A. (2017). Effectiveness evaluation of the Positive Family Support intervention: A three-tiered public health delivery model for middle schools. *Journal of School Psychology, 62*, 103–125. https://doi.org/10.1016/j.jsp.2017.03.004

Stormshak, E., Caruthers, A., Chronister, K., DeGarmo, D., Stapleton, J., Falkenstein, C., DeVargas, E., & Nash, W. (2019). Reducing risk behavior with family-centered prevention during the young adult years. *Prevention Science, 20*(3), 321–330. https://doi.org/10.1007/s11121-018-0917-2

Stormshak, E. A., Connell, A., & Dishion, T. J. (2009). An adaptive approach to family-centered intervention in schools: Linking intervention engagement to academic outcomes in middle and high school. *Prevention Science*, *10*(3), 221–235. https://doi.org/10.1007/s11121-009-0131-3

Stormshak, E. A., Connell, A. M., Véronneau, M.-H., Myers, M. W., Dishion, T. J., Kavanagh, K., & Caruthers, A. S. (2011). An ecological approach to promoting early adolescent mental health and social adaptation: Family-centered intervention in public middle schools. *Child Development, 82*(1), 209–225. https://doi.org/10.1111/j.1467-8624.2010.01551.x

Stormshak, E., DeGarmo, D., Chronister, K., & Caruthers, A. (2018). The impact of family-centered prevention on self-regulation and subsequent long-term risk in emerging adults. *Prevention Science, 19*(4), 549–558. https://doi.org/10.1007/s11121-017-0852-7

Stormshak, E. A., DeGarmo, D., Garbacz, S. A., McIntyre, L. L., & Caruthers, A. (2021). Using Motivational Interviewing to improve parenting skills and prevent problem behavior during the transition to Kindergarten. *Prevention Science, 22*(6), 747–757. https://doi.org/10.1007/s11121-020-01102-w

Stormshak, E. A., Fosco, G. M., & Dishion, T. J. (2010). Implementing interventions with families in schools to increase youth school engagement: The Family Check-Up model. *School Mental Health, 2*(2), 82–92. https://doi.org/10.1007/s12310-009-9025-6

Stormshak, E. A., Kennedy, A. L., Metcalfe, R. E., & Matulis, J. M. (2022b). Using the Family Check-Up to support social and behavioral adjustment in early elementary school. In K. L. Bierman & S. M. Sheridan (Eds.), *Family-school partnerships during the early school years: Advancing science to influence practice* (pp. 73-90). Springer. https://doi.org/10.1007/978-3-030-74617-9_5

Stormshak, E. A., Kennedy, A. L., Metcalfe, R. E., Matulis, J. M, & Cheng, Y. (2022a). Preventing risk behaviors in adolescence. In Morris, A. M. & Mendez-Smith, J. (Eds.) *The Cambridge handbook of parenting: Interdisciplinary research and application*. Cambridge University Press.

Stormshak, E. A., McIntyre, L. L., Garbacz, S. A., & Kosty, D. B. (2020). Family-centered prevention to enhance parenting skills during the transition to elementary school: A randomized trial. *Journal of Family Psychology, 34*(1), 122–127. https://doi.org/10.1037/fam0000570

Stormshak, E. A., Seeley, J. R., Caruthers, A. S., Cardenas, L., Moore, K. J., Tyler, M. S., Fleming, C. M., Gau, J., & Danaher, B. (2019). Evaluating the efficacy of the Family Check-Up Online: A school-based, eHealth model for the prevention of problem behavior during the middle school years. *Development and Psychopathology, 31*(5), 1873–1886. https://doi.org/10.1017/S0954579419000907

Stotzer, R. L., Herman, J. L., & Hasenbush, A. (2014). *Transgender parenting: A review of existing research*. The Williams Institute. https://williamsinstitute.law.ucla.edu/wp-content/uploads/Trans-Parenting-Review-Oct-2014.pdf

Tanner-Smith, E. E., Durlak, J. A., & Marx, R. A. (2018). Empirically based mean effect size distributions for universal prevention programs targeting school-aged youth: A review of meta-analyses. *Prevention Science, 19*(8), 1091–1101. https://doi.org/10.1007/s11121-018-0942-1

Van Ryzin, M. J., & Dishion, T. J. (2012). The impact of a family-centered intervention on the ecology of adolescent antisocial behavior: Modeling developmental sequelae and trajectories during adolescence. *Development and Psychopathology, 24*(3), 1139–1155. https://doi.org/10.1017/S0954579412000582

Van Ryzin, M. J., & Nowicka, P. (2013). Direct and indirect effects of a family-based intervention in early adolescence on parent−youth relationship quality, late adolescent health, and early adult obesity. *Journal of Family Psychology, 27*(1), 106–116. https://doi.org/10.1037/a0031428

Van Ryzin, M. J., Stormshak, E. A., & Dishion, T. J. (2012). Engaging parents in the Family Check-Up in middle school: Longitudinal effects on family conflict and problem

behavior through the high school transition. *Journal of Adolescent Health, 50*(6), 627–633. https://doi.org/10.1016/j.jadohealth.2011.10.255

Véronneau, M.-H., Dishion, T. J., Connell, A. M., & Kavanagh, K. (2016). A randomized, controlled trial of the Family Check-Up model in public secondary schools: Examining links between parent engagement and substance use progressions from early adolescence to adulthood. *Journal of Consulting and Clinical Psychology, 84*(6), 526–543. https://doi.org/10.1037/a0040248

Wang, F. L., Feldman, J. S., Lemery-Chalfant, K., Wilson, M. N., & Shaw, D. S. (2019). Family-based prevention of adolescents' co-occurring internalizing/externalizing problems through early childhood parent factors. *Journal of Consulting and Clinical Psychology, 87*(11), 1056–1067. https://doi.org/10.1037/ccp0000439

Weaver Krug, C. M., Hails, K. A., Shaw, D. S., Dishion, T. J., & Wilson, M. N. (2020). Child birth order as a moderator of intervention effectiveness for the early childhood version of the Family Check-Up. *Prevention Science, 21*(4), 456–466. https://doi.org/10.1007/s11121-020-01096-5

Weaver Krug, C. M., Taraban, L., Shaw, D. S., Dishion, T. J., & Wilson, M. N. (2019). Romantic partner satisfaction among low-income mothers: Links to child-peer and teacher relationships via mother-child conflict. *Social Development, 28*(3),674-688. https://doi.org/http://dx.doi.org/10.1111/sode.12358

Webster-Stratton, C. (2005). *The Incredible Years: A trouble-shooting guide for parents of children aged 2-8 years*. Incredible Years.

Weisz, J. R., & Kazdin, A. E. (2010). *Evidence-based psychotherapies for children and adolescents* (2nd ed.). Guilford Press.

Wilson, D. B. (2017). *Formulas used by the practical meta-analysis effect size calculator*. Retrieved from: https://mason.gmu.edu/~dwilsonb/downloads/esformulas.pdf

Wilson, D. B. (2013). *Practical meta-analysis effect size calculator*. Retrieved from: http://www.campbellcollaboration.org/escalc/html/EffectSizeCalculator-Home.php