Harnessing Implementation Science to Reform Juvenile Services: A Roadmap for Change

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ABSTRACT

The research-to-practice gap in juvenile services is substantial, as it is in most other fields. This gap contributes to adverse psychosocial outcomes for youth that are juvenile-legal service and system-involved, such as mental health concerns. Implementation science emerged to reduce discrepancies between research and practice. This article introduces implementation science and explains how it may be harnessed to enhance youth outcomes and bring about systemic change in the juvenile-legal services sector. An overview of implementation science is provided, with a particular emphasis on accelerating the adoption of evidence-based practices, like restorative justice as a diversionary tactic and graduated response as an alternative approach towards probationary youth, within the juvenile-legal system. Given the field's focus on implementation, we emphasize opportunities for researchers and practitioners to incorporate implementation science into practice and research, and we offer helpful examples and suggestions for juvenile services practitioners looking to integrate evidence-based methods in their contexts.

INTRODUCTION

The juvenile-legal system has been in place for over one hundred years and has changed quite a bit over that time. At first the juvenile-legal system focused on out-of-home placement for kids (i.e., placing youth in institutions) to provide targeted treatment for youth who were at risk for delinquent behavior (Pisciotta, 1984; Randall et al., 1999; Teeters, 1960).

During this time, the goal was to provide the safest possible housing for youth to prevent future delinquency. Next, with the establishment of a dedicated juvenile court in Chicago in 1899, the focus expanded to include punishment of delinquent behaviors through specialized social service referrals for youth (Bishop & Decker, 2008; Fox, 1970). Soon after, the system transitioned from focusing on youth safety to the safety of society (i.e., the "tough on crime" era in policies), which led to system-involved youth being incarcerated at increasing rates (Tanenhaus & Drizin, 2002; Trulson et al., 2016). Between 1993 and 1999, a span of just six years, the number of incarcerated youths in America doubled from approximately 4,300 to 9,500 per year (Aimes, 2024). Just 20 years later, in 2019, that number had rapidly quadrupled to 36,479 youths incarcerated per year (Anne E. Casey Foundation, 2021), which is just a portion of the total number of youths who interact with the juvenile-legal system on an annual basis.

These rates are troubling, as youth involvement in the juvenile-legal system has a known association with adverse psychosocial outcomes (Gilman et al., 2021). These outcomes include increased mental health concerns (Krupa, 2024; Sugie & Turney, 2017; Turney et al., 2022), unemployment (Apel & Sweeten, 2010; Padgaonkar et al., 2021; Silver et al., 2024), housing instability (Geller & Curtis, 2011), and vulnerability to complex trauma (Fox et al., 2015; Duron et al., 2021). As one example of mental health outcomes, adjudicated youth report higher rates of depression and suicidal ideation compared to both youth who are arrested (but not adjudicated) and youth who have no legal system contact (Krupa, 2024). A historical study on legal system involvement's impact on employment status found that system involvement forced youth to be removed from the workforce, and disrupted their school completion (which later impacts employment opportunities) (Apel & Sweeten, 2010). Regarding vulnerability to trauma, 90% of youth who are system-involved have experienced at least one form of childhood trauma before their involvement, and

Abbreviations

SIM: Sequential Intercept Model

JDAI: Juvenile Detention Alternatives Initiative

OJJDP: Office of Juvenile Justice and Delinquency Prevention

EPIS: Exploration Preparation Implementation Sustainment Framework

ASPIRE: Adapting Strategies to Promote Implementation Reach and Equity

ERIC: Expert Recommendations for Implementing Change Taxonomy

PISRT: Pragmatic Implementation Strategy Reporting Tool

CBPR: Community-Based Participatory Research

PDSA: Plan-Do-Study-Act

POABB: Probation Officers' Attitudes, Beliefs, and Behaviors

FGC: Family Group Counseling

96.8% of youth who are subsequently incarcerated experience additional traumatic events (e.g., physical abuse, denial of food, solitary confinement) during incarceration (Dierkhising et al., 2014; Owen et al., 2020). This can contribute to youth experiencing posttraumatic stress and depressive symptoms (Dierkhising et al., 2014; Owen et al., 2020). Similar negative outcomes like these have pushed researchers and practitioners to identify ways to prevent youth involvement in the legal system.

The Sequential Intercept Model (SIM; Heilbrun et al., 2017; Munetz & Griffin, 2006) was originally developed to elucidate opportunities to divert adults away from the carceral system, but was later adapted to highlight potential intercepts or touchpoints for diversion among youth (Heilbrun et al., 2017). Within the SIM for youth, there are six intercepts. In

recent years, Intercept 0 emerged to underscore that communities can divert youth from ever engaging in the juvenile-legal system by offering quality community-based services (e.g., resource-rich schools, summer camps) that focus on the prevention of delinquent behaviors (Abreu et al., 2017; Bonfine & Nadler, 2019; Comartin et al., 2021). Intercept 1 typically involves law enforcement and emergency services and represents the initial point of contact when a youth is arrested. Intercept 2 occurs when the youth is detained. This is followed by Intercept 3, where a youth has an initial hearing or trial. Intercept 4 occurs when a youth re-enters the community, which may involve returning to their family home or being placed in a community-based carceral setting (e.g., a residential treatment center). Lastly, Intercept 5 consists of any form of community corrections, such as probation. Each of these intercepts is an opportunity to identify the root causes of a youth's behavior and provide effective services rather than pushing the youth further into the juvenile-legal system. Diversion programs across the SIM have been found to be effective at reducing recidivism above traditional judicial interventions (Wilson & Hoge, 2013b). While the degree of effectiveness is program-dependent (Wilson & Hoge, 2013a), youth who are provided alternatives to carceral settings are less likely to re-offend (Muñoz et al., 2022; NeMoyer et al., 2020; Wilson & Hoge, 2013a; Wright et al., 2020) and, therefore, have a lower likelihood of experiencing negative psychosocial outcomes.

Ensuring this effectiveness is particularly important for Black and Brown youth, who are overrepresented in the juvenile-legal system across all intercepts and are therefore disproportionately affected by the juvenile-legal system's iatrogenic effects (Desai et al., 2012; Leiber et al., 2011; Leiber & Fox, 2005; Leiber & Rodriguez, 2011; Rodriguez, 2010; Sickmund et al., 2021). At Intercept 1,

communities of color are over-policed compared to predominantly white communities, as communities of color are more often the target of police activity and surveillance (Brunson & Miller, 2006; Brunson & Weitzer, 2009; Campos-Manzo et al., 2020; Solis et al., 2009). For instance, the use of stop, question, and frisk practices implemented in New York from 1964 through 2014 primarily targeted young minoritized people (Weisburd et al., 2016), which in turn contributed to higher levels of psychological distress and increased feelings of nervousness and worthlessness (Sewell et al., 2016). The most recent analysis of contacts between the police and the public demonstrated that 86% of Black citizens experienced threats or force, while only 2% of white citizens had a similar experience when in contact with the police (Bureau of Justice Statistics, 2018).

At Intercept 2, Black and Brown youth are placed in juvenile detention centers at disproportionate rates, with Black youth four times as likely to be detained than white youth (Desai et al., 2012; Leiber et al., 2011; Leiber & Fox, 2005; Leiber & Rodriguez, 2011; Rodriguez, 2010; Sickmund et al., 2021). Together, the data point to youth of color having less opportunity in their environment than their white peers (Intercept 1) and, as a result, becoming involved in the legal system at unequal rates, further perpetuating racial inequities. This inequity is conceptualized as structural racism, as it occurs at the structural level (e.g., access to services, neighborhood environments) and not solely at the individual level (Adkins-Jackson et al., 2022; Dragomir & Tadros, 2020; Groos et al., 2018). Many research and practice efforts have attempted to address these and similar inequities (e.g., gender inequity) by adopting diversion programs.

To date, there has been great success in reducing the number of youths placed in carceral settings with

research aimed at Intercept 2: juvenile detention. In particular, the Anne E. Casey Foundation's Juvenile Detention Alternatives Initiative (JDAI) developed and implemented a model of detention reform in several pilot detention centers (JDAI Progress Report, 2014). The model relies on a collaboration across the local juvenile courts, probation agencies, legal experts, and community organizations to assess this reform effort, and intensely monitors the conditions of confinement for youth who are detained (JDAI Progress Report, 2014). The model was initially implemented in the 1990s and is now utilized across 250 U.S. counties due to its success, with efforts resulting in a 65% reduction in youth detention rates (JDAI Progress Report, 2014). See the 'Transforming Juvenile Probation: A Vision for Getting it Right' for explicit highlights of counties who have adopted the model with great success (link; Mendel, 2018).

While these and similar efforts have been successful, there is a need to focus research and practice at Intercept 1. This shift is critical to youth outcomes, because diversion at Intercept 1 provides the rare opportunity to divert youth away from the juvenile-legal system altogether, ultimately eliminating the staggering iatrogenic effects of becoming system-involved. One such approach is through the use of restorative justice at Intercept 1. Restorative justice is a framework that advocates for meaningful relational repair between the offender, victim, and surrounding community, ideally through non-carceral mechanisms (Menkel-Meadow, 2007). This approach has three primary foci: (1) the healing of the victim, (2) the behavioral transformation of the offender, and (3) the empowerment of the surrounding community to address the current offense and prevent future harm (Zehr, 1990). Restorative justice theory emphasizes that the adversarial, punitive nature of the current criminal-legal system (including its juvenile-legal arm) prevents authentic correction of wrongdoing (Zehr, 1997). This theory holds that offenders should engage in restitution, reflection, and behavioral

transformation outside the carceral context whenever possible. Thus, we argue that restorative justice as a framework is inherently oriented toward diversion and may represent a liberatory alternative to how the current juvenile-legal system operates.

The utility of restorative justice as a diversionary tactic at Intercept 1 has been demonstrated in existing research. For instance, the recent installment of pre-file restorative justice programs in Colorado reduced juvenile filing rates across the state (Sliva & Plassmeyer, 2021). However, these effects varied across judicial districts due to differences in implementation. Researchers found that implementation of a pre-file restorative justice program contributed to an immediate decline in juvenile filing rates across all districts, but the decline was sustained for districts that continued to receive ongoing funding, suggesting that funding is a particularly important implementation factor in such programs. There is also strong evidence that restorative justice-based diversion programs reduce later youth recidivism, which benefits the individual youth (April et al., 2023; Bergseth & Bouffard, 2007, 2013; Kimbrell et al., 2023; Rodriguez, 2007; Sawin et al., 2023).

While the current research supports the application of restorative justice as a diversionary program, the formal implementation and evaluation of such programs are limited. In 2016, the Office of Juvenile Justice and Delinquency Prevention (OJJDP) conducted a series of roundtables and interviews to better understand why there is a gap when translating evidence-based research into practice, particularly in legal system settings (Love & Harvell, 2016). The researchers found that providers often face barriers when accessing the research, either due to limitations in the practitioner's capacity to seek out new research or because of the complicated way the research findings are presented to practitioners. Additionally, the researchers identified barriers related to how legal-system leaders perceive the research, which can lead to a

lack of funds allocated to implementing the evidence-based practice in their setting or inadequate training given to providers to execute the evidence-based practice. Given these barriers, the field of implementation science could accelerate the implementation of restorative justice and other diversionary models within the juvenile-legal system by addressing the barriers identified by practitioners.

In this paper, we aim to further introduce juvenile legal practitioners and researchers to implementation science theories, models, and frameworks so they can incorporate it into their ongoing implementation work to successfully implement diversionary approaches. While the juvenile services field is very focused on implementation, research in legal settings often fails to pull from extant implementation science literature (Van Deinse et al., 2023). To ground this introduction, we will build upon the example of restorative justice, which has emerging evidence as a successful diversionary tactic at Intercept 1. We first provide an overview of existing implementation science theories, models, and frameworks which can be employed as a specific methodology to achieve successful implementation of restorative justice. We then propose a potential application of these implementation science tools using a fictitious yet feasible example of a diversionary strategy being adopted, implemented, and sustained in one county. Finally, we will highlight potential considerations of using implementation science as a methodological approach within juvenile services.

IMPLEMENTATION PRACTICE AND RESEARCH AS A METHODOLOGICAL APPROACH

Introduction to Implementation Science and Practice

One way to bridge the gap between research findings and practice is to harness implementation science methods. The formal definition of implementation science is the "scientific study of methods to promote the systematic uptake of proven clinical treatments, practices, organizational, and management interventions into routine practice" (Eccles et al., 2012). Clinical research is often conceptualized as a stepwise approach and visualized as a "subway schematic," such that each "subway stop" is an opportunity to build upon the previous step (Figure 1; adapted from Lane-Fall et al., 2019). When scientists develop a new intervention, the first "stop" on the subway is to evaluate its safety and efficacy (e.g., does the intervention work in a controlled setting; Bauer & Kirchner, 2020). Once success is shown, the following "stop" is studying the impact or effectiveness of the intervention in a real-world setting (e.g., does the intervention work outside of a controlled setting?). Finally, the last "stop" is studying how to ensure the intervention is adopted and implemented widely to make certain the public benefits.

Figure 1. *Subway Schematic of Clinical Research*

developed the ADAPT guidance, which includes a
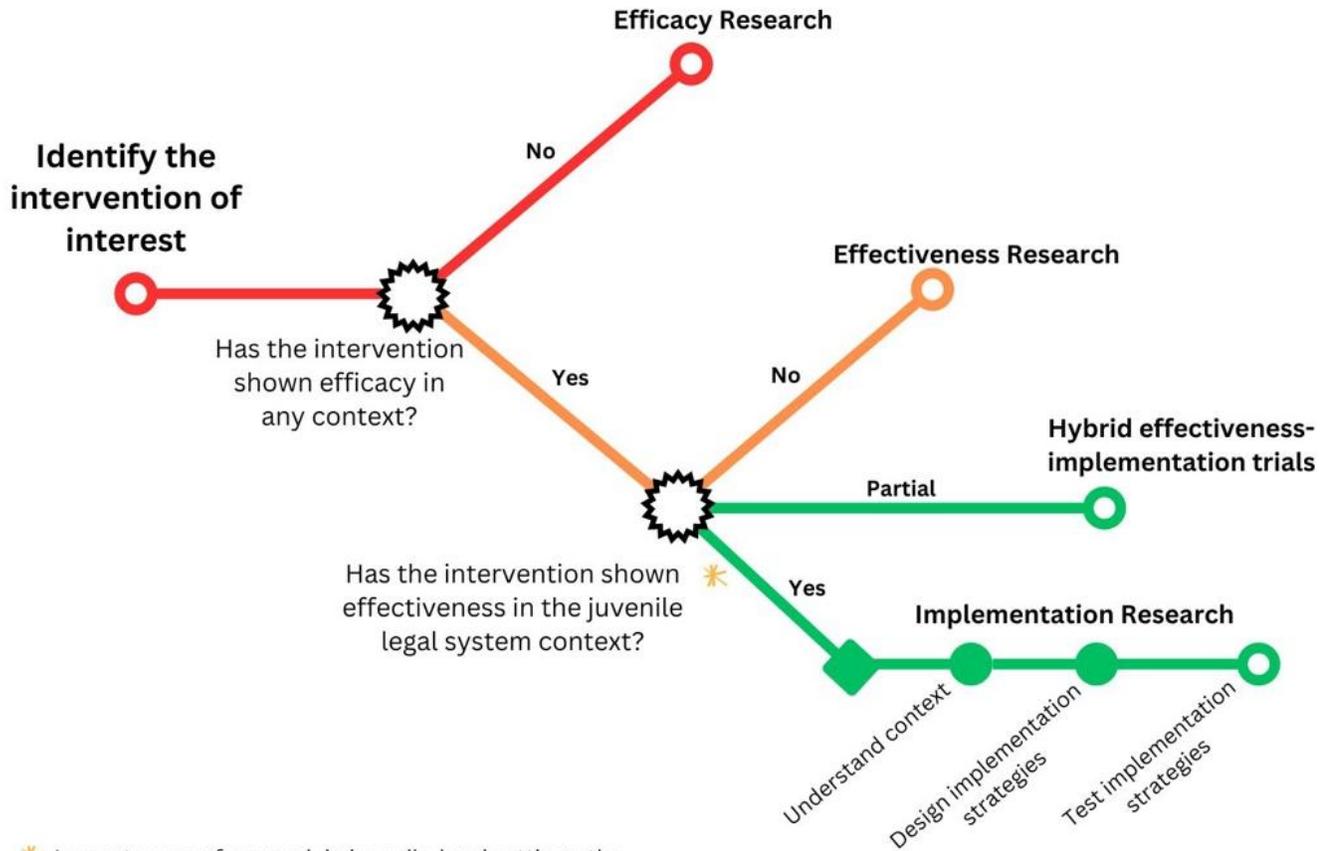
Adapted from Lane-Fall et al., 2019 and Moore et al., 2021

We are quickly derailed when applying the subway schematic to the juvenile-legal context. That is because researchers and practitioners in this context are primarily interested in adapting interventions for use in juvenile-legal settings that were previously shown to be effective for a different population and context (Aarons et al., 2017; Fagan et al., 2019). In juvenile-legal contexts, it is less common to start at stop 1 (i.e., to develop an intervention specifically for juvenile-legal context). Instead, we often start at stop two and engage in a process called "scaling-out," which involves adapting and delivering an intervention that has previously shown efficacy in one setting and testing it in a new setting or with a new population (Aarons

et al., 2017; Lucas-Thompson et al., 2024; G. Moore et al., 2021). To guide this process, researchers have

flowchart and checklist of questions to ask to determine how to adapt and deliver an existing intervention to fit the new setting (Moore et al., 2021). Some questions within this checklist include: "What is the problem that an intervention seeks to improve in the target population?" or "How similar and different are original and new contexts, in terms of issues likely to affect implementation and effectiveness?" to support choosing the most appropriate intervention. Another question includes "What adaptations need to be made to intervention materials, to capture changes made to the intervention?" to support adaptations to the intervention (see Figure 2; Moore et al., 2021). Further, the ADAPT guidance offers a process model (see Moore et al., 2021) that provides step-by-step guidance for intervention adaptation.

An existing example of the subway line of science and intervention adaptation in the juvenile-legal context can be seen in a program of research led by Dr. Naomi Goldstein regarding juvenile probation staff (Intercept 5) using developmentally appropriate approaches (or "graduated responses") when interacting with youth (Goldstein et al., 2015). Graduated responses are predictable and tailored responses to youths' behavior as an alternative to punishment as the first response (Goldstein et al., 2015). These responses to youth behavior were not invented in

to manage behavior (O'Leary & O'Leary, 1977; Skinner, 1937). Further, research in real-world (albeit not juvenile-legal) settings demonstrated that operant conditioning is successful at leading to more positive behaviors from youth in a variety of contexts, including at home with parents (e.g., using words to communicate needs, transitioning from tasks) (Kazdin & Rotella, 2009) and in classrooms with teachers (e.g., staying on task, maintaining focus) (Altman & Linton, 1971; Becker et al., 1969; MacPherson, 1972).

Figure 2. *ADAPT Guidance Process Model for Adapting Interventions to New Contexts.*
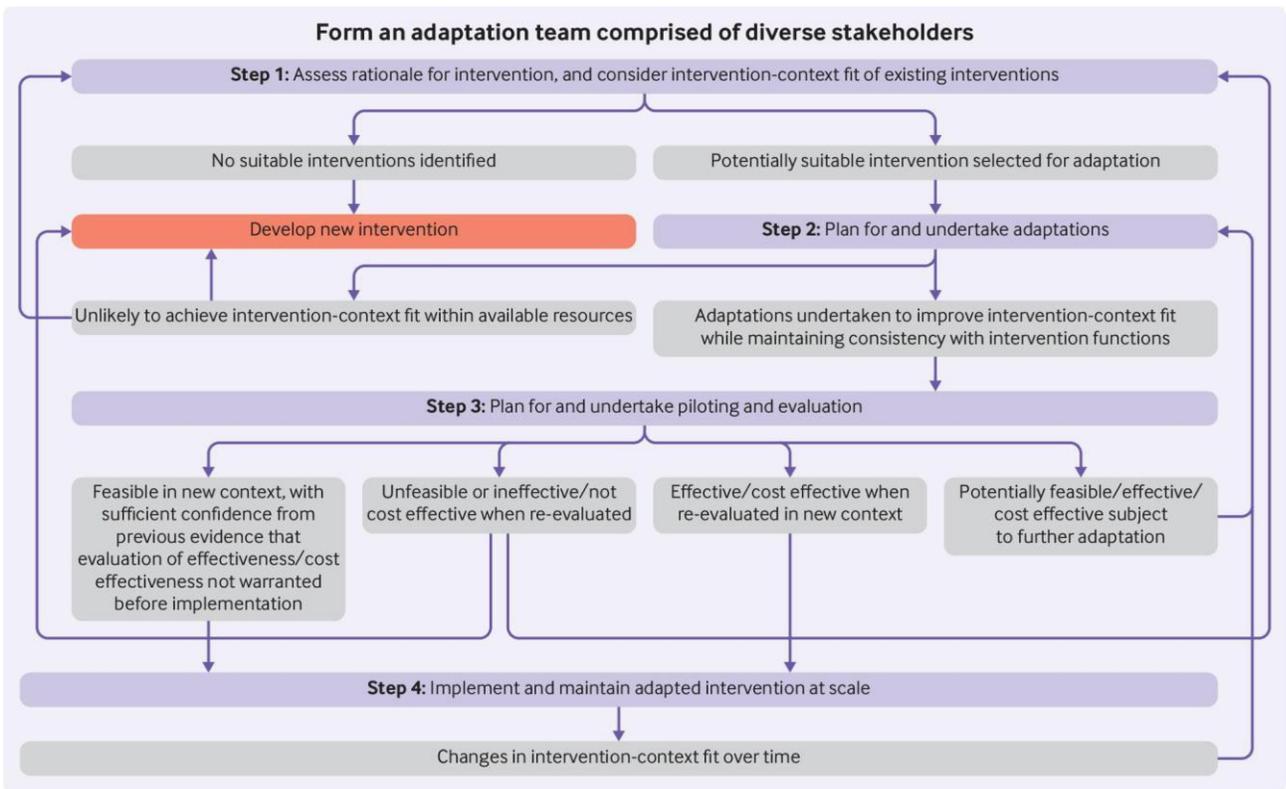
Graham Moore et al. BMJ 2021;374:bmj.n1679

probation departments, but are backed by decades of research (dating back to the 1930s) supporting the efficacy of using this operant conditioning technique

Given the success of these approaches at changing youth behavior in the classroom and at home, scientists hypothesized that it might have the same success

with youth on probation. Thus, additional effectiveness research tested the real-world impact of graduated response (i.e., the second stop on the subway line) for this population. Specifically, the research sought to understand if graduated response helps youth on probation maintain compliance, mainly using incentives for each compliant behavior (Goldstein et al., 2015). Indeed, many states have adopted graduated response approaches successfully and demonstrated that these approaches result in higher successful probation completion rates (Wodahl et al., 2015), lower recidivism rates (Farrell et al., 2020; Seigle et al., 2014), and long-term positive behavior change (Tuell et al., 2016) compared to traditional punitive approaches. Building on this foundational evidence that graduated response approaches are efficacious and effective, we can move on to the third and final subway stop: implementation in probation departments. Below, we use the example of a graduated response to highlight the implementation process and how implementation science can be used to execute the adoption and implementation of a research-backed practice.

The Process of Implementation

Moving from studying the effectiveness of an intervention to studying and promoting its adoption and implementation is a step-by-step process. Implementation science frameworks can help inform implementation execution. One such framework is the Exploration, Preparation, Implementation, Sustainment (EPIS) Framework, which was explicitly designed for use by public sector systems such as the juvenile-legal system (Aarons et al., 2011). It proposes that the implementation process follows four phases and that distinct types of research commonly occur in each phase.

The first phase is exploration. During this phase, the service system, organization, practitioners, and/or scientists (i.e., the group in charge of the implementation effort) identify research-to-practice gaps in the service context and determine which interventions are needed in the service setting. For example, probation department leaders may notice that many of the approaches they use rely on punishment despite graduated response being supported by science as more helpful to youth, highlighting a large gap between the research and the practice at hand. Research in this phase is often aimed at understanding the organization's needs and beginning to identify innovations that might address that specific need.

The second phase is preparation. During this phase, the individuals involved in the implementation effort identify the factors in their service context that might influence the implementation of the chosen intervention and then plan for implementation. For example, the same probation department leaders mentioned above might ask questions to understand what would prevent graduated response approaches from being adopted in their department and what would support the approach being adopted. Based on those factors, these leaders would then plan how they will implement graduated response approaches in their departments. Research in this phase is often aimed at understanding the context of the organization that will ultimately implement the intervention, including identifying factors in the organization that will influence implementation and then designing specific strategies that target or promote the identified factors.

The third phase is implementation. During this phase, the innovation is deployed in the service context, and the group in charge of the implementation effort observes whether the implementation plan resulted in the desired implementation outcome (e.g., adoption of the intervention, use of the intervention with fidelity), as well as how implementation in their service setting can be improved. For example, the same probation department leaders mentioned above would implement graduated response approaches in their

department, observe how they are being used, and make improvements over time. Research in this phase is often focused on studying and/or evaluating specific strategies used to improve the implementtation process.

The final phase is sustainment. During this phase, usually time has passed since the intervention was introduced into the system (typically two or more years), and the group in charge of the implementation effort evaluates whether the intervention is still being used (and used well) in their service setting. If not, the group in charge then designs and tests new strategies to improve sustainment. For example, after a couple of years, probation department leaders might evaluate the use of graduated response approaches in their department and make further changes so that the approach continues to be used successfully. In this phase, research is often focused on evaluating whether the strategies used in the previous phase helped the organization utilize the intervention in the long term.

Implementation Research Goals

Three goals underpin the phases of implementation explained above. These are to (1) understand the implementation context, (2) develop specific strategies to promote implementation, and (3) evaluate implementation outcomes. These goals are further explored below, using our graduated response example.

Understanding the Implementation Context

The key to implementation work is understanding the implementation context. As noted above, this is particularly important during the exploration and preparation phases, when we need to understand the context to choose which interventions to implement and the factors that might pose a barrier or facilitator to implementation. However, this type of

investigation can also be important during the implementation and sustainment phases to help researchers and providers understand whether the approaches are sufficient for the service context or need to be adapted. Ideally, all implementation work to understand the context is informed by relevant theories, frameworks, and models (Bauer, 2014; Huybrechts et al., 2021). When attempting to understand the factors that might determine implementation, the data you choose to collect can be informed by determinant frameworks (Aarons et al., 2011; Damschroder et al., 2009; Greenhalgh et al., 2017; Nilsen & Bernhardsson, 2019). Though many determinant frameworks are available, the EPIS framework (referenced above) can again be used for this goal and is an excellent resource for implementation work in legal settings (Knight et al., 2015). The same framework that provides the stages of implementation, EPIS, also proposes that a service system's context includes factors both from within a specific organization (inner context) and outside the organization (outer context) (Aarons et al., 2011). Examples of inner context factors include organizational leadership, characteristics of the organization (e.g., organizational culture and climate), and characteristics of individual adopters of the practice within the organization (Moullin et al., 2019). Examples of factors in the outer context include funding and contracting, policies, characteristics of clients, and relationships between organizations (Moullin et al., 2019). The framework also urges researchers to consider "innovation factors," or factors of the practice being implemented (e.g., specific components unique to the inter-vention), stressing the "fit" of the practice to the inner and outer contexts. Finally, EPIS recognizes "bridging factors," or factors that link the inner and outer contexts (e.g., relationships between leaders that are inside and those outside of the organization; Lengnick-Hall et al., 2021). The authors propose that

the factors that matter most may differ depending on which of the four phases of implementation you are in (Aarons et al., 2011).

Recent work has emphasized the importance of equity when studying the context and preparing for implementation, to provide people with what they need to enjoy healthy and meaningful lives (Loper et al., 2021). In particular, implementation science has been called to action via three main avenues (Baumann, 2021). First, scientists have been called to engage with community members to produce research prioritizing equity, especially for historically underserved communities. Snell-Rodd and colleagues (2021) push implementation science to incorporate critical theories, such as theories of postcoloniality and reflexivity, theories of structural violence and intersectionality, and theories of policy and governance, all of which have been adopted by other lines of research (i.e., anthropology) to promote equity (Snell-Rood et al., 2021). Second, the interventions selected for implementation and implementation outcomes chosen to measure success should include an examination of their relationship to social determinants of health (e.g., housing and food access). In particular, Woodward and colleagues (2019, 2021) have created a specific framework called the Health Equity Implementation Framework that is dedicated to assessing implementation and equity barriers at the same time. This research has further informed existing implementation science frameworks to guide how equity can be infused throughout the implementation process (Allen et al., 2021; Shelton, et al., 2021a). Additionally, researchers recommend conceptualizing structural racism and other threats to equity as an explicit factor of, and potential barrier to, implementation (further described below; Shelton, et al., 2021a; 2021b). Lastly, novel implementation strategies should focus on equity within systems. For example, Gaias and colleagues (2022) proposed an implementation process framework, the Adapting Strategies to Promote Implementation Reach and Equity (ASPIRE), which is used to adapt implementation strategies so that the strategy can be used to reduce disparities in implementation within school settings (Gaias et al., 2022).

This shifting focus on equity includes measuring what resources and partnerships are necessary for implementation. It also entails considering any current or possible racial, financial, and social inequities that individuals within these communities' experience to avoid exacerbating these inequities (Kerkhoff et al., 2022; Brownson et al., 2021).

When attempting to understand the implementation context deeply, another important consideration is who are the key implementers, decision-makers, and consumers who will be involved in or impacted by the innovations. They need to be included in the contextual inquiry process to ensure their perspectives are considered to support implementation. When it comes to the implementation of graduated response approaches, for instance, there are many partners: probation department leaders, youth on probation, probation officers, and more. One way to identify these relevant partners is to engage in a process known as stakeholder mapping (heretofore called key collaborator mapping), which involves creating a visual representation of all of the relevant decision-makers, their roles, and their relationships with one another (Aligica, 2006; Bernstein et al., 2020). When creating a key collaborator map, it is crucial to consider how different collaborators may be critical across all four stages of implementation, understand their roles, and then capitalize on their knowledge and experiences (Moullin et al., 2019). This process is just another example of a framework that is helpful for implementation success.

To build upon our graduated response example, the first step to support implementing this practice in a probation department would be to develop a comprehensive understanding of all the implementation barriers and facilitators based on information from all relevant key collaborators and decision-makers. When probation department leaders determined that these approaches were not

being used despite the evidence regarding their safety, efficacy, and effectiveness, they began by first understanding the factors that contribute to the use and non-use of these practices in their specific context (Love & Harvell, 2016; Mendel, 2018). One barrier identified from this research is judicial leaders being hesitant to replace existing traditionally punitive compliance monitoring practices with graduated response approaches (Weber et al., 2018). This barrier, and any others identified by examining the context, are addressed in the next step: developing implementation and sustainment strategies.

Developing Implementation, De-implementation, and Sustainment Strategies

Implementation strategies are the "systematic interventions" used to integrate an evidence-based practice into an organization's usual practices, usually targeting a specific implementation barrier (Powell et al., 2012). Using the graduated response example, they are the strategies to increase the probationary staff's use of graduated response approaches when working with youth. On the flip side, some strategies are used for de-implementation, which aims to discontinue a practice that should no longer be provided, either because the practice is ineffective, inefficient, or harmful (McKay et al., 2018; Niven et al., 2015; Walsh-Bailey et al., 2021). Additionally, there are sustainment strategies, which are a subset of strategies intended to ensure the practice's long-term success once it has been integrated (Nathan et al., 2022). A given strategy can target any layer of the context (e.g., compelling jurisdictional leadership to replace existing practices, encouraging probationary staff to gain familiarity with graduated response approaches) (Rudd & Beidas, 2021) and should focus on the areas identified as potential targets during the contextual inquiry. Strategies can be discrete (i.e., single

components) or multifaceted (i.e., combining two or more discrete strategies; Powell et al., 2019). Investigations into implementation strategy usage have found that organizations use between 11 and 39 discrete implementation strategies to have a practice be adopted successfully (Karabukayeva et al., 2022; Perry et al., 2019; Rogal et al., 2017).

To facilitate consistent terms and definitions in the field, Powell et al. (2015) introduced the Expert Recommendations for Implementing Change (ERIC) Taxonomy, a compilation of 73 discrete implementation strategy terms and definitions refined by expert consensus that has informed implementation across various community settings (Cook et al., 2019). Additional research has been dedicated to identifying factors specific to de-implementation (Augustsson et al., 2021; Grimshaw et al., 2020; Montini & Graham, 2015) and the corresponding implementation strategies to target those factors (Norton & Chambers, 2020). Unique to de-implementation, the actions taken to de-implement a practice are broadly categorized into four groups: removing a practice (i.e., stopping the delivery of a practice entirely), replacing a practice (i.e., stopping the delivery of the inappropriate practice while starting a new practice that targets the same outcome), reducing a practice (i.e., change the frequency or intensity of the practice), or restricting a practice (i.e., the scope of a practice is narrowed); and the selected action taken is dependent on the desired outcome (Norton & Chambers, 2020; Prusaczyk et al., 2020).

Strategies such as those in the ERIC Taxonomy should be carefully selected, tailored to the context, and operationalized to address the specific implementation barriers, facilitators, and desired outcomes to maximize their impact on implementation. The Pragmatic Implementation Strategy Reporting Tool (PISRT; Rudd et al., 2020) can help with this opera-

tionalization. Typically, implementation strategies are used across the phases of implementation, including the exploration, preparation, and implementation phases, as they allow for successful implementation of the intervention (Powell et al., 2019). Continuing with our graduated response example, if the probation department leaders discovered that the main barrier to implementing graduated response approaches in their department was that probationary staff were not comfortable or familiar with the approach, a possible implementation strategy to address this barrier would be targeted training. The leaders would create tailored training that provides details about graduated response approaches and allows probationary staff to gain familiarity in using the approach. Alternatively, if these leaders discover that the primary barrier to implementation was hesitancy from judicial leadership, this tailored training for probationary staff would not be an appropriate strategy because it would not help overcome the barrier, and a different strategy would need to be selected. In Table 1, we present an example of how barriers can be linked to implementation strategies to leverage and create sustainable implementation of graduated response. The table includes two potential barriers, the linked implementation strategies that can be used to target the barrier (Damschroder et al., 2022), the associated pragmatic category of the implementation strategy (Powell et al., 2015), the implementation strategy definition (Waltz et al., 2015), and an example of its use in this context. These two examples of barriers, Policies & Laws and Available Resources, are presented as examples as they are particularly influential on the implementation of any given innovation (Ashok et al., 2018; Greenhalgh et al., 2004).

The first barrier, Policies & Laws, is defined as legislation, regulations, professional group guidelines and recommendations, or accreditation standards that may hinder the innovation's implementation and/or delivery (i.e., graduated response) (Damschroder et al., 2022). When Policy & Laws are mentioned as a barrier to implementation, it may be due to a local governmental agency requiring the organization to abide by practices that hinder the implementation of the innovation. We previously mentioned that existing research has identified jurisdictional leaders as hesitant to replace existing traditionally punitive compliance monitoring practices with graduated response approaches (Weber et al., 2018). If the compliance monitoring practices are a part of the local legislation, they would be deemed a barrier to the implementation of graduated response under the determinant of Policies & Laws.

The second barrier, Available Resources, is defined as resources, which can include available funding, space, materials, and equipment that are key to the implementation and delivery of the innovation (i.e., graduated response) (Damschroder et al., 2022). When Available Resources are mentioned as a barrier to implementation, it may be due to a specific resource or entity not being attainable by the organization. To implement graduated response approaches in a new environment, the organization may need to acquire funding to provide training materials or ongoing equipment. If funding is not available to the organization or creates challenges for them to attain the materials needed to implement graduated response, then the lack of funding would be deemed a barrier to the implementation of graduated response under the determinant of Available Resources.

Table 1. *Barriers and Implementation Strategies Used to Target Identified Barriers*

Barrier	Pragmatic Category	Implementation Strategy (IS)	IS Definition	Example of the IS Application
Policies & Laws	Develop stakeholder interrelationships	Identify and prepare champions	Identify and prepare individuals who dedicate themselves to supporting, marketing, and driving through an implementation, overcoming indifference or resistance that the intervention may provoke in an organization	Identify a well-respected leader within the organization to help support implementation
		Recruit, designate, and train for leadership	Recruit, designate, and train leaders for the change effort	Assemble organizational leadership who are supportive of graduated response for key leadership roles
	Use evaluative and iterative strategies	Assess for readiness and identify barriers and facilitators	Assess various aspects of an organization to determine its degree of readiness to implement, barriers that may impede implementation, and strengths that can be used in the implementation effort	An implementer uses qualitative and quantitative methods to understand barriers and facilitators to implementation of graduated response to determine if the organization is ready for adoption and to inform adaptation of graduated response and tailoring of other implementation strategies prior to implementation
Available Resources	Utilize financial strategies	Access new funding	Accessing new funding sources could involve new uses of existing money, accessing block grants, shifting funding from one program to another, cost-sharing, passing new taxes, raising private funds, or applying for grants. These monies may be used to fund the delivery of a clinical innovation, or to support other time-limited actions needed for initial implementation, such as purchasing material or logistical support, training, and consultations.	Apply for a grant to cover the costs of graduated response approaches

	Fund and contract for clinical innovation	Governments and other payers of services issue requests for proposals to deliver the innovation, use contracting processes to motivate providers to deliver the clinical innovation, and develop new funding formulas that make it more likely that providers will deliver the innovation	Work with a government agency, such that they issue a contract with other agencies to provide all graduated response approaches (i.e., outsource some components of care)
Change infrastructure	Change physical structure and equipment	Evaluate current configurations and adapt, as needed, the physical structure and/or equipment (e.g., changing the layout of a room, adding equipment) to best accommodate the targeted innovation	Change the physical structure of the probation department to support graduated response approaches

Despite the need for and power of tailored strategies, little evidence exists regarding the best way to match implementation strategies to the identified determinants (Lewis et al., 2020). This process may begin by simply compiling a list of the ERIC strategies that might apply, given the results of the first investigation focused on the context, or by reviewing the literature to see what strategies have been used in similar contexts. From there, however, systematic processes can be used to refine the selection of strategies. For example, Waltz and colleagues (2019) created a determinant-implementation strategy matching tool that provides the percentage of experts that endorse using a particular implementation strategy for a specific barrier (Waltz et al., 2019). This determinant-implementation strategy tool was used to generate potential implementation strategies in Table 1. Although widely used, the determinant-implementation strategy tool is not the only approach to identify implementation strategies. One approach to ensuring the strategies selected apply to the target community is through collaboration with the decision-makers identified through the key collaborator mapping process (mentioned above).

An additional collaborative process that can be used to refine the selection of implementation strategies is using Community-Based Participatory Research (CBPR) methods, which entails a collaboration between community partners and academic researchers to conduct research on systems change (Fleming et al., 2023; McFarlane et al., 2024; Shalowitz et al., 2009; Shulz et al., 2005; Wallerstein & Duran, 2006). The guiding principles in CBPR emphasize involvement and collaboration between the community partner and the academic researcher throughout the entire research process versus relying exclusively on the knowledge base of the research team (as in traditional research processes). This approach has been successfully used when selecting and designing implementation strategies (Kang & Foster, 2022; Villalobos et al., 2023), such that the implementation strategy is tailored to the specific barrier identified by the community partner in the first investigation.

Pulling from our graduated response example, Brogan and colleagues used a CBPR approach to develop an implementation strategy to shift probation staff members' knowledge, attitudes, and beliefs about graduated response effectiveness when used with youth on probation (Brogan et al., 2021). Through a community-academic partnership and guided by CBPR methods, the research team co-developed an implementation strategy with community partners. Specifically, they designed a training that included educational topics focused on graduated response (e.g., neuro- and psychosocial development of adolescence and effective behavior change principles, graduated response's fit with statewide initiatives), group discussion about probation officers' role, real-life case examples to highlight the application of graduated response, role-plays, and interactive activities (Brogan et al., 2021). The collaborative design process, such as in

this example, can lead to a greater likelihood of adoption and sustainment of graduated response. Once an implementation strategy has been identified, tailored, and implemented, its outcomes can be evaluated, leading to the next goal of implementation research: evaluation of implementation outcomes.

Evaluating Implementation Outcomes

Once implementation strategies have been co-designed with the key decision-makers (e.g., via CBPR) or taken from previous literature regarding a similar context (via a determinant-implementation strategy matching tool), the goal shifts to evaluating the chosen implementation strategies' impact on implementation outcomes. Like the other goals of implementation research, this process is also guided by frameworks, theories, and models. Most notably, Proctor et al. (2011) proposed eight distinct implementation outcomes that are the key outcomes to measure: acceptability, adoption, appropriateness, implementation cost, feasibility, fidelity, penetration, and sustainability. In Table 2, for each outcome, we provide a definition, the appropriate level of analysis, and an example research question related to our graduated response example.

Academic researchers and providers have traditionally used many kinds of evaluative methods and approaches to understand the effects of an implementation strategy on implementation outcomes. Reviewing the merits of various methodological approaches to implementation trial designs to achieve this goal is outside of the scope of this paper. However, there are many resources available to learn more (see Hwang et al., 2020 and Wolfenden et al., 2021). Regardless, it is important to point out that implementation scholars have mainly advocated for the use of hybrid effectiveness-implementation designs as a way to learn about the effectiveness and implementation needs of an intervention at the same time, which aims to speed research-to-practice implementation (Curran et al., 2012, 2022). Hybrid effectiveness-implementation designs are specific research trial designs that evaluate an innovation's effectiveness and the implementation outcomes in a single study (Curran et al., 2012; Landes et al., 2019). This type of research design, the hybrid effectiveness-implementation design, is particularly useful and important in research focused on juvenile-legal services, as this design allows researchers to further adapt an innovation to this unique context.

There are three types of hybrid effectiveness-implementation designs, each with a dedicated focus. A type 1 hybrid effectiveness-implementation design primarily focuses on testing the innovation and focuses second on exploring the implementation of the same innovation (Landes et al., 2019). A type 2 hybrid effectiveness-implementation design balances both testing the innovation and the implementation of the innovation equally (Landes et al., 2019). A type 3 hybrid effectiveness-implementation design has the opposite focus of a type 1 design, where the primary focus is on the impact of the implementation and there is a secondary focus on clinical outcomes related to the innovation (Landes et al., 2019). All three hybrid designs allow researchers to focus the research on the aims that will have the most impact on the innovation of focus (Curran et al., 2022).

Table 2. *Implementation Outcomes with Examples Relevant to Graduated Response in Probation Departments*

Outcome	Definition	Example Research Question Related to Graduated Response
Acceptability	Perceptions among implementation collaborators that a given treatment, intervention, or practice is agreeable or satisfactory	How acceptable is graduated response compared to regular practices for probation staff and youth involved?
Adoption	The intention, initial decision, or action to try or employ a given treatment or evidence-based practice	How likely are youth and probation staff to use graduated response?
Appropriateness	Perceived fit, relevance, or compatibility of the treatment or evidence-based practice to address a particular issue or problem	How appropriate is graduated response for the youth involved, and for this target setting?
Feasibility	Extent to which a new treatment or evidence-based practice can be successfully carried out within a given organization or setting	Is it possible to use graduated response in this target setting?
Fidelity	Degree to which a treatment or evidence-based practice was implemented as it was intended by the program or treatment developers	How similar is graduated response in this probation department, compared to the original model?
Implementation Cost	The cost of implementing a given treatment or evidence-based practice	What is the cost of implementing and sustaining graduated response in this setting?
Penetration	Integration of a treatment or evidence-based practice within a service setting and its subsystems	How many probation staff are likely to use graduated response in this target setting?
Sustainability	Extent to which a newly implemented treatment or practice is maintained or institutionalized within a service setting or organization's ongoing, table operations	Will probation staff and the youth involved continue to use graduated response over time?

In addition to the design of the research study, particular research methods are useful for evaluation and often used by practitioners, such as those who work in juvenile-legal services focused on changing the system above contributing to research literature. One approach is to use principles from quality improvement research to evaluate the success of an implementation effort (Leeman et al., 2021; Rohweder et al., 2019). A helpful technique is to follow the Plan-Do-Study-Act (PDSA) method, a quality improvement process that provides a roadmap for how to evaluate, adapt, and improve implementation strategies so that they are useful for innovation (Taylor et al., 2013). This method has been successfully used to improve implementation of interventions in juvenile-legal settings (Rudd et al., 2020).

To demonstrate this technique, we continue to build upon Brogan et al. (2021) implementation of graduated response as an example. In the planning phase, a plan is created regarding how to best implement the developed strategy. Brogan et al. (2021) used the planning phase of this method to co-design the implementation strategy (i.e., graduated response training for probationary staff) alongside key collaborators and decision-makers. Next, during the doing phase, the strategy is rolled out. For Brogan et al. (2021), this phase involved the actual implementation of the training with 559 probation staff across 129 different counties throughout three states. This is followed by the study phase, where specific data is collected to determine if the strategy accomplished what was outlined in the plan. Brogan et al. (2021) collected quality assurance survey data from participating probation staff at the end of each training session to measure whether the training changed their attitudes, beliefs, and behaviors and whether the training was acceptable to the officers. Lastly, in the acting phase, improvements are made, and the cycle begins again. For example, Brogan et al.'s (2021) results can be shared with the workgroup

that initially developed the implementation strategy to make improvements collaboratively. The cycle continues until the strategy is refined and optimized for the setting.

When trying to understand implementation success, it is often helpful to collect multiple types of data to understand and answer various research questions, such as whether it worked, why it worked, and how it worked. To understand if an intervention was successful, a quantitative survey could be used to collect participant responses to measure a behavior change that occurred because of the intervention. To understand why or how an intervention worked, an individual interview or focus group could be used to collect participant responses to measure and understand their experience receiving the intervention. Combining quantitative and qualitative data (such as a survey and interviews) as a form of measurement is called mixed methods. This approach allows for the data to be comprehensive and maximizes the benefits of qualitative and quantitative data. Traditionally, qualitative data collection prioritizes the *depth* of information, while quantitative data collection prioritizes the *breadth* of information. Mixed methods data collection allows for both approaches to be prioritized and can provide a broader range of results.

Brogan and colleagues' study sought to understand if training could be an effective way to impact organizational culture and if it could shift probation officers' knowledge, attitudes, and beliefs about graduated response, and collected survey data regarding probation officers' attitude, beliefs, and intended behaviors using a validated measure (POABB; Goldstein et al., 2017) from hundreds of probation officers (Brogan et al., 2021). Had the researchers been interested in the probation officers' individual experiences or wanted to understand their experience in their own words, they could have selected probation officers for an interview. That interview data could have then been integrated with

the survey results to capture more nuance about the experience of probation officers. This latter approach would be a mixed method approach to data collection and analysis and would provide an answer to both research questions (e.g., was there a knowledge shift, and what was the experience of participating in this training).

Application of Implementation Science to Implement and Evaluate Restorative Justice as a Diversionary Innovation

To further illustrate the utility of implementation research in creating systems change in juvenile-legal settings, we return to restorative justice and provide a fictitious yet feasible example to generate ideas about how implementation science could be leveraged to increase the adoption, implementation, and sustainment of restorative justice as a diversionary strategy at Intercept 1. For this example, we imagine a fictional county in California, Judi County, is interested in implementing "Family Group Conferencing" model (FGC; Braithwaite, 2002; Braithwaite & Mugford, 1994; Gaffney et al., 2024; Sapp, 2024) of restorative justice. The FGC model was initially developed in New Zealand in the early 1990s and involves several people (i.e., the young person who has admitted to an offense, their parents or caregivers, the victim and their supporters, a facilitator, any other relevant parties to the offense) coming together to discuss an offense in the form of a conference (Hayes & Daly, 2003). Unique to this model, it is the responsibility of the conference facilitators to ensure that participants are treated with respect, that the process is viewed as fair and equitable, and that both families come together to develop a plan for the future (Jeong et al., 2012; Mutter et al., 2008). The following is the process Judi County could take to implement such a program.

Contextual Inquiry of Restorative Justice

First, the people spearheading this effort in Judi County would work to understand the implementation context as they explore and prepare for implementing the FGC model. These personnel select the FGC model because it has been successfully implemented in many youth justice courts (Liebmann, 2011; Mutter et al., 2008; Van Ness et al., 2022) and has demonstrated an ability to prevent future legal system involvement for the youth that participate (Hayes & Daly, 2003; Islam et al., 2023; Jeong et al., 2012). As part of this process, they could partner with implementation scientists who could assist them in the remainder of this process or execute the process independently, using the tools described in this paper. The project team first works to identify the key collaborators that are influential to the program's implementation. They do this by completing the key collaborator mapping process. In Judi County, the collaborators that emerge as most influential are the community leaders (i.e., facilitators of the conference), court personnel (e.g., judges), youth who have previously been involved in the juvenile-legal system, and their parents. Together, Judi County and these identified collaborators compose the implementation team.

The implementation team begins to meet regularly to work towards implementation together. The team selects the EPIS framework in the first meeting to inform their work. They decided that it would be helpful to conduct a series of town halls to understand from the public and other practitioners in the community what they think will influence the implementation of the FGC model within their youth justice courts. From these discussions, the team uses the EPIS framework to help them look for any factors that will support or impede the implementation of the FGC model (i.e., facilitators and barriers). Across these town halls, the team learns that adequate

funding will be critical for success, suggesting that lack of funding is currently a barrier. They also learn that hiring enough coordinators to provide the key elements of the FGC model conferences will be important, which aligns with one of the EPIS determinants (i.e., "Organizational Staffing Processes"). The team learned that some of the community members are passionate about the changes this program may generate and that many feel it would be an excellent fit for the youth in their community, which the team believes are two additional factors to implementation. While most community members believe the program will be a good fit for their community, the team learns that a couple of members are resistant to the changes the program may generate. These community members continue to express negative attitudes towards the program, with one person stating that they do not believe there is a need to implement a new program. While these few voices of dissent are in the minority, the team ultimately decides that these mixed attitudes towards the program align with one of the EPIS determinants (i.e., "Attitudes Towards the Innovation"). Now that funding and organizational staffing processes have been identified as potential barriers, the team meets to select what implementation strategies they can use to target these two barriers using the ERIC Taxonomy (Powell et al., 2012, 2014). Similarly, the team discusses strategies to further support the two key factors they identified: attitudes toward evidence-based practices and practice fit. To target funding, the implementation team decides to try to access new funding by writing a new grant, and they also decide to revise the existing organizational roles to target the barrier related to staffing processes. To continue supporting people's attitudes and opinions about the FGC model, the team decides to select and prepare staff, whom they label as "champions within the organization," who can fuel these positive attitudes about the model during implementation. The team also decided to develop tools related to quality monitoring of the FGC model so that they can

continue to ensure the program fits the needs of the kids in their community and that not too many changes are made to the program.

Keeping these strategies in mind and all the information the implementation team gathered at the town halls, they meet again to develop a detailed implementation plan. In this implementation planning meeting, they use the Pragmatic Implementation Strategy Reporting Tool (PISRT; Rudd et al., 2020) to decide who will be involved in each of these implementation strategies, the timeline for implementing both the FGC model and these specific strategies, and how the team plans to test out the FGC model to see if it was successful. They decide to slowly roll out the FGC model over the next 18 months in just two of their county's eight youth justice courts. See additional materials for this specific example of the Pragmatic Implementation Strategy Reporting Tool being used by Judi County in their implementation.

Now, the team moves into executing the plan. The team continues to meet to monitor the progress of implementing the program and the implementation strategies and discuss any changes that need to be made to the FGC model. After the first 16 months, the team moved on to measuring if the program was successful. To do this, the team decides they want to measure both implementation and clinical outcomes simultaneously. The team decided they were mainly interested in whether the program was feasible (i.e., implementation outcome) and if the program reduced rates of future arrests for kids that were involved in the program (i.e., clinical outcome). Lastly, the team also decided that they are interested in measuring the sustainability of the FGC model within these courts to see whether program staff, the kids who participated, and the judges within the youth justice courts plan to continue using the FGC model in the future. The team decided to model their evaluation after existing research (Proctor et al., 2023), which leads them to decide that youth and staff are the best source of information to understand the feasibility of the program. In contrast, staff and

judges can provide helpful information related to the sustainability of the program (i.e., the implementation outcomes). For the clinical outcome (i.e., future arrests of kids), this information must be gathered by conducting a de-identified record review of all youth arrest data in the county. To measure feasibility, they administer quantitative surveys and conduct qualitative interviews with all kids and the program staff involved. To measure sustainability, they ask additional questions during the qualitative interview with program staff and then ask the same interview questions with judges. Once all the identified outcome data (i.e., survey results, interview questions, record review) has been collected, the court staff then analyzes this data. The team invites the court staff to present the analysis results at the next team meeting.

The team learns from this presentation on the results that the kids who participated rate the FGC model as feasible and the staff and judges rate the program as sustainable. Themes from the interviews support these high ratings of feasibility and sustainability, and these themes provide more information about what makes the program both feasible and sustainable. Further, the researchers share that the kids who participated in the FGC model were found to have lower arrest rates than their peers who did not participate in the program. Despite the high praise of the program, some staff members mention that they had difficulty understanding what was expected of them at the beginning of the program's implementation process and they wish they had some sort of manual that outlined the different elements of the model. Additionally, one judge mentioned during an interview that he now better understood the importance of the program, significantly since it helped reduce arrest rates. However, he was still unclear what exactly was involved in the program. Considering all this information, the implementation

team in Judi County adapts the models to include more educational materials; they create a formal manual for FGC providers and distribute these materials to all involved (e.g., judges and program staff). These changes lead to the creation of FGC version 2.0 and re-ignite the implementation and evaluation process again — at least in this fictitious example!

DISCUSSION

Considerations

Although evidence-based practices are often used and implemented in the youth-legal system, the theories and tools that make up implementation science are not always applied in research efforts in legal setting (Van Deinse et al., 2023). The reasons for this are likely multifactorial. This under-utilization may be due to the newness of implementation science. Implementation science emerged in the early 2000s (Bauer & Kirchner, 2020). Since then, the field has exponentially grown, with various degrees of adoption across contexts. There are now over 300 theories, models, and frameworks that can be used to support the implementation and sustainment of a practice (Nilsen, 2015; Walsh-Bailey et al., 2021; Wang et al., 2023). While this breadth of infrastructure allows for many options, it can create confusion and difficulty when deciding which theory, model, or framework is most appropriate. This confusion is an additional factor that may hinder implementing science. For one implementation science training program, many participants reported being aware that these concepts existed, yet they were unfamiliar with how to apply them to their work (Moore et al., 2018; Strifler et al., 2020). Additionally, implementation researchers have struggled to

appropriately and effectively communicate the lessons learned to practitioners and service providers (Papoutsi et al., 2016), leading to barriers for non-implementation researchers to access these findings and apply this knowledge to relevant settings (Beidas et al., 2022; Chambers & Emmons, 2024). These specific barriers may contribute to the underutilization of implementation science across contexts, but there are also considerations for the use of implementation science methods in Juvenile Service settings.

Recently, Van Deinse and colleagues (2023) examined all instances of implementation science methods usage within adult correctional health settings and discovered that it was underutilized and that there were unique considerations in this context likely apply to the juvenile-legal space as well (Van Deinse et al., 2023). First, unique to correctional health settings, there is a need to consider policy-level factors and how they impact multi-disciplinary implementation, such as when evidence-based practice is identified as effective within a private service context but will be implemented within a county-based detention center – the factors to consider become cross-sectoral (i.e., private and public sector) and multi-level (i.e., both the mental health service system and the criminal-legal system). Second, there is a need to identify implementation strategies that target these multi-level factors and how they should be tailored to the juvenile-legal context to implement an innovation. Specifically, there is a call to meaningfully identify, justify, operationalize, and then integrate implementation strategy frameworks throughout their use to understand how they are used in the juvenile-legal context (Proctor et al., 2013; Rudd et al., 2020). Third, there is a need to identify implementation outcomes uniquely relevant to this context to appropriately conduct process evaluations (i.e., measure implementation strategies) and program evaluations (i.e., measure innovation success) to ensure successful implementation is achieved. While acceptability and feasibility are most commonly measured in correctional settings, there is an emergent need to additionally measure appropriateness and sustainability to ensure the evidence-based innovation is relevant to the target setting and/or population and can be continuously utilized over time (Proctor et al., 2023; Van Deinse et al., 2023).

To increase the use of implementation science to transform the youth legal system, there is a need for interdisciplinary collaboration and cross-training. A limited number of people have expertise in implementation science (e.g., theories, frameworks) and juvenile services. For juvenile service researchers and practitioners interested in further developing such expertise, there are avenues through the Society for Implementation Research Collaboration that provide training opportunities to all interested (link). The opportunities include formal online certificate programs, degree-granting institutions with mentorship programs, training institutes, and regularly occurring conferences. Additionally, the National Institutes of Health supports translational science centers that are focused on translating research into treatment centers (link). This directory is updated quarterly and provides a list of institutes dedicated to furthering translational science alongside practitioners. Specific to juvenile services, the Office of Juvenile Justice and Delinquency Prevention maintains a Model Programs Guide that provides a resource for practitioners and researchers to identify evidence-based juvenile programs (link), which can then be implemented. The Model Programs Guide includes implementation guides, which can be accessed and adapted to fit future implementation.

Additionally, the theories, models, and frameworks that compose implementation science can also be applied in areas outside of the youth legal system (e.g., health care, education, global health). The same principles have been applied in many other areas. While this article focuses on the application of implementation science to Juvenile Services, there is

a wealth of existing research that applies the same implementation science theories, models, and frameworks in other areas. In our supplemental materials, we present a table that highlights existing examples of how implementation science has been applied. Although not exhaustive, we believe the highlighted research may be of interest to researchers and practitioners curious about the broad applications of implementation science.

CONCLUSION

Given the high rates of youth incarceration, there is a growing and urgent need to implement and sustain solutions to reduce the iatrogenic effects of system involvement for youth – particularly minoritized youth, who bear the brunt of these effects. This paper offers a roadmap for using implementation science in juvenile-legal systems. By harnessing implementation science and the associated principles, there is the potential to reduce the involvement of the juvenile-legal system in youth and allow for improvements in psychosocial and material outcomes for youth.

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