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Personalizing Youth Psychotherapy: A Scoping Review of Decision-Making in Modular Treatments

Katherine E. Venturo-Conerly, Rachel Reynolds, Malia Clark, Olivia M. Fitzpatrick, and John R. Weisz
Department of Psychology, Harvard University

Modular youth psychotherapies are increasingly popular, in part because their flexibility facilitates personalizing, but the clinician decision-making required can be complex. We investigated decision guidance in 20 modular youth psychotherapies, described in 67 articles identified via a systematic search. Decision guidance was limited. Clinical judgment was recommended in all therapies; 95% recommended using baseline assessment, 65% measurement-based care, and 25% prior research. Most commonly, guidance involved module descriptions (90%); some therapies provided decision flow diagrams (35%); one provided an online decision tool. Only 40% proposed seeking client input. Despite evidence that statistical models outperform clinical judgment, no modular psychotherapy used statistical models. Maximizing therapy effectiveness may require building decision supports that incorporate client perspectives and balance clinical judgment with statistical methods.

Public Health Significance Statement

Modular youth psychotherapies may offer advantages for clinical practice because of their potential to be personalized to fit individual youths; however, the clinician decision-making required for such personalizing can be complex. In this scoping review, we gathered relevant protocols of modular psychotherapies published to date, finding that decision-making in modular psychotherapies often relies on clinical judgments, and rarely involves input from clients, statistical models, or algorithms. Future research focused on associations between decision-making procedures and clinical outcomes may improve the implementation and effectiveness of modular youth psychotherapies in clinical practice.

Keywords: youth psychotherapy, modular psychotherapy, clinical decision-making, personalized treatment, scoping review

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Psychotherapy with children and adolescents (herein "youths") requires decision-making by therapists throughout episodes of care. The decision-making may be especially significant in therapies designed to support personalizing via modular design (e.g., Anderson et al., 2021; B. Chorpita & Weisz, 2009; Weisz & Bearman, 2020; Wood et al., 2015). Modular therapies provide menus of treatment procedures from which therapists select a distinctive subset and sequence for each individual youth. That

Katherine E. Venturo-Conerly https://orcid.org/0000-0003-3559-2491

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Correspondence concerning this article should be addressed to Katherine E. Venturo-Conerly, Department of Psychology, Harvard University, 33 Kirkland Ave., Cambridge, MA 02138, United States. Email: kventuroconerly@g.harvard.edu

selection may depend on a complex array of variables, including clinician expertise and experience, treatment setting, conceptual approach to treatment, youth and parent characteristics and preferences, and which presenting problems are being addressed in treatment. Decisions must also be made regarding the match between problem focus and module, how long each module should be used, and when and how treatment should end.

To date, there has been relatively little documentation of how clinicians make these and other decisions in practice, or about whether or how procedures for making these decisions are formalized in psychotherapy manuals and protocols (Magnavita, 2016). Documenting and applying these decision-making procedures are particularly important to inform evidence-based practice, which requires flexible integration of clinical expertise, patient characteristics and preferences, and scientific evidence when making decisions throughout clinical care (American Psychological Association Task Force on Evidence-Based Practice for Children and Adolescents, 2008). Another key aspect of evidence-based psychotherapy practice is using evidence-based methods for treatment personalization; while many promising methods exist for personalization of youth psychotherapies (e.g., modular psychotherapies, adapted treatments, and data-mining decision trees), most of these methods are relatively new in the literature (Ng & Weisz, 2016). As interest in evidence-based use of flexible, modular, and personalized psychotherapies grows (Cohen et al., 2021), it becomes increasingly important for clinical scientists to understand decision-making in structured youth psychotherapies, and ultimately how decision-making structures and procedures may influence treatment outcomes.

Observational data have indicated that clinicians typically use an eclectic approach, flexibly applying a variety of treatment strategies (Garland et al., 2010), but less is known about how they decide which strategies to use with which clients and at what points in treatment. Other evidence suggests that decision-making in clinical practice is sometimes, though infrequently (Jensen-Doss et al., 2018), informed by weekly process or outcome measures (i.e., measurement-based care; Scott & Lewis, 2015). In youth psychotherapy, balancing fidelity to evidence-based treatment elements with flexibility when providing treatments may improve therapy outcomes; one report indicates that clinicians who show flexible deviations from a manual-based treatment produce better client engagement and posttreatment outcomes than those who rigidly adhere to the manual (Chu & Kendall, 2009).

Of course, balancing flexibility and fidelity in youth psychotherapy requires considerable decision-making by the clinician (Kendall et al., 2008), and personal preferences and even biases may influence clinical judgment (Magnavita, 2016), potentially reducing the effectiveness of personalization. Indeed, clinical decisions guided only by clinician judgment are generally outperformed by decisions based on analyses of actuarial data (Magnavita & Lilienfeld, 2016; Scott & Lewis, 2015); a meta-analysis comparing the accuracy of clinical predictions made by mental health professionals to that of statistical prediction methods found that the statistical prediction outperformed clinical judgment (Ægisdóttir et al., 2006), consistent with findings from an earlier era in psychotherapy research (Meehl, 1954, 1986). Of course, the superiority of statistical methods over clinical judgment does not mean that clinical judgment lacks utility and must be abandoned; in fact, clinical judgment continues to be highly valued as one element of treatment decision-making (Ægisdóttir et al., 2006; Dana & Thomas, 2006). In 10% of studies, clinical judgment outperformed statistical prediction, and 38% of studies found no significant difference between the two, so under some conditions, clinical judgment may add usefully to statistical predictions (Ægisdóttir et al., 2006). From that perspective, a useful objective for research will be to discern how to combine clinical judgment with statistical data to optimize decision-making (Cohen et al., 2021; Marchette & Weisz, 2017).

Recent research has begun to classify decision-making methods in psychotherapy and has identified at least four different ways in which these methods may be classified. First, research has focused on different *structures* (i.e., the level of standardization or replicability) by which treatment may be personalized (Cohen et al., 2021). These include idiosyncratic approaches (i.e., no decision-making guidance or structure), guidelines (e.g., narrative recommendations of what may work for whom), decision aids (e.g., rule- or tree-based aids with replicable processes but variable outputs), decision rules (e.g., algorithms with replicable processes and outputs), and statistical models (e.g., machine learning analyses of actuarial data to build replicable processes and outputs; or using idiographic client data to build models that inform module selection such as in The Dynamic Assessment Treatment Algorithm [DATA]; Fernandez et al., 2017; Fisher et al., 2019). Second, research has described how psychotherapy personalization decisions may be made at different times (i.e., before, during, or after treatment). Third, research has classified different forms of evidence that may inform decision-making guidance, including intuition, theory, and data (Cohen et al., 2021). Fourth, research has identified several different aspects of psychological care that may be personalized, including level of care (e.g., outpatient and inpatient), psychotherapy protocol or type, targets and elements within a psychotherapy protocol, and adaptation of delivery style including within-session moment-to-moment decisions (Cohen et al., 2021). A recent review of existing research on personalized approaches to treatment selection, termination, and inclusion and ordering of therapeutic skills suggested that modular approaches to psychotherapy show promise for selecting and ordering therapeutic skills; however, relatively little is known about how this process of selecting and ordering psychotherapeutic skills is or should optimally be structured in modular psychotherapies (Stumpp & Sauer-Zavala, 2021).

In this study, we focus on decision-making related to psychotherapy elements in modular youth psychotherapies (e.g., Anderson et al., 2021; B. Chorpita & Weisz, 2009; Weisz & Bearman, 2020; Weisz et al., 2012; Wood et al., 2015) defined as flexible psychotherapies consisting of multiple separate, specific, and self-contained modules (i.e., intervention elements) with ongoing opportunities for decision-making (see the "Methods" section). We chose to focus on modular psychotherapies for several reasons: first, flexibility is a defining feature of modular psychotherapies (Lyon et al., 2014); modular psychotherapies formalize flexible decision-making processes by requiring personalized selection of intervention elements (Cohen et al., 2021). Second, given that most practicing clinicians follow flexible, eclectic treatment approaches drawing from their own internal menu of therapeutic techniques (Schottenbauer et al., 2007), modular psychotherapies may provide a formalized representation of decision-making in clinical practice. Third, the effectiveness of flexible and modular psychotherapies may improve with continued research to optimize decision-making. In some trials, modular youth psychotherapies have outperformed usual care and nonmodular psychotherapies on clinical outcomes (B. F. Chorpita et al., 2017; Weisz et al., 2012; Wood et al., 2021). However, in

other trials, modular psychotherapies have not outperformed even usual care (e.g., Merry et al., 2020; Weisz et al., 2020).

The effectiveness of modular youth psychotherapies may depend in part on the decisions made by clinicians, and perhaps upon the decision-making support provided for clinicians (Bearman & Weisz, 2015). Generally, decision-making is considered a major challenge in modular psychotherapies (Weisz et al., 2015), making it particularly important to understand and improve decision-making processes. Finally, as interest in psychotherapy personalization continues to grow (Cohen & DeRubeis, 2018) studying decision-making in modular youth psychotherapies may help optimize approaches to selecting among the "menu" of treatment options in modular psychotherapies to build effective personalized treatments (Marchette & Weisz, 2017).

Of note, research on modular and flexible psychotherapies, and on personalized treatment decision-making, has only begun to grow in popularity during the past decade or so (Cohen et al., 2021). In this study, we contribute to research on processes for selecting and ordering treatment elements by identifying the decision points that arise in modular youth psychotherapy protocols and assessing the tools, structure, and evidence that inform decision-making at these points. We describe current decision-making methods in modular youth psychotherapies and provide language to classify and characterize different forms of decision-making timing, forms of evidence, and structures. We focus specifically on personalization at the level of treatment targets and elements within a psychotherapy protocol. With this review, we hope to inform future research on the effectiveness of various decision-making structures and forms of guidance, relevant to both clinical research and clinical practice. Decisions made about treatment targets and content very likely influence a range of outcomes (e.g., engagement, alliance, retention, and symptom reduction), yet varying forms of decision-making structures and guidance have rarely been formally studied as they relate to client and clinician outcomes (Cohen et al., 2021).

To help address this gap, we conducted a scoping review focused on decision-making in modular youth psychotherapy. We began with a systematic search of published articles, to identify all those that included descriptions of modular youth protocols. We then reviewed these to identify and classify sources and types of decision-making support, critically examining the evidence base behind them, and offering recommendations for future research on decision-making in modular psychotherapies for young people.

Methods

Protocol and Preregistration

This scoping review was preregistered on the Open Science Forum (https://osf.io/c3dva/) before finalizing and applying the study codebook. The study was conducted in accordance with the guidelines for scoping reviews outlined by PRISMA (Tricco et al., 2018) and by Arksey and O'Malley (2005).

Defining Modular Psychotherapy

For this scoping review, modular youth psychotherapies were defined as those that are (a) broken into several component parts, in which these parts are specific, clearly defined individual elements (e.g., principles and therapeutic skills), (b) most component parts can stand on their own (i.e., are not dependent on other component parts), (c) each component part serves a specific function, and (d) most of these component parts can be both rearranged and omitted within the treatment (B. F. Chorpita et al., 2005; Lucassen et al., 2015). Finally, modular therapies were required to allow flexibility in decision-making (i.e., some elements or decisions could be required for all clients, but most need to be flexible or to be allowed to differ across clients). To operationalize this flexibility, each psychotherapy was also required to involve decision-making (by a human, a personalizing algorithm, or both) among multiple possible modules for at least half of the sessions of treatment, and to have as many optional modules as required modules (for those psychotherapies with five or fewer modules) or at least three optional modules.

Of note, modular psychotherapies did not have to only rely on clinician judgment for decisions; they could also use prescriptive decision rules, so long as these decision rules allowed for creation of highly personalized sequences of modules that differed across families and met all criteria for modularity. A psychotherapy did not need to be described by the authors as modular to meet our definition (e.g., psychotherapies could be described as "flexible" or as containing "common elements"); however, each included psychotherapy was required to meet the operational definition of "modular youth psychotherapies" described above.

Search Strategy

PsycINFO and PubMed were searched to identify peer-reviewed articles reporting on modular youth psychotherapies published between January 1960 and May 2021. Although modular youth psychotherapies have only grown in popularity more recently, a comprehensive search was conducted to ensure no early flexible psychotherapies met the criteria for modularity. Search terms included those related to psychological disorders (e.g., mental disorders) and modular youth psychotherapies (e.g., psychotherapy and flexible), and limiters related to age and language. See the online supplemental materials for full search protocol and search terms. Additionally, studies were identified through reference lists of youth psychotherapy systematic reviews and meta-analyses, articles referenced in included studies, a forward referencing search of all included studies, and recommendations by youth psychotherapy researchers.

Inclusion and Exclusion Criteria

Broadly, included studies were those that focused on a modular youth psychotherapy. Included articles were all used to identify modular youth psychotherapy protocols, manuals, or intervention descriptions containing sufficient information to assess how decision-making about therapy targets and elements was structured for clinicians, and therefore allow included interventions to be coded using the codebook described below. Criteria for inclusion were: (a) youth participants (mean age between 0 and 18.4 years); (b) youths being treated for one or more mental health disorders listed in the Diagnostic and Statistical Manual of Mental Disorders or International Classification of Diseases, or symptoms of these disorders (Eckshtain et al., 2020; Venturo-Conerly et al., 2022); (c) the article is available in English; (d) the article addresses a research question about a modular youth psychotherapy protocol, as defined above. Full details of inclusion and exclusion criteria applied to all studies are in the online supplemental materials.

Data Extraction and Synthesis

For each included modular youth psychotherapy, two authors independently applied a codebook to record intervention decision-making characteristics. The codebook applied to each was developed through an iterative process involving all the study authors, in which the authors reviewed relevant literature on psychotherapy decision-making and personalization (B. F. Chorpita et al., 2005; Cohen et al., 2021; Ng & Weisz, 2016; Stumpp & Sauer-Zavala, 2021; Weisz & Chorpita, 2012), trialed the codebook on a subset of included psychotherapies, then revised the codebook accordingly. Once this codebook was finalized, the first author (KEV) coded all included modular youth psychotherapies, along with one of the other authors (RR, MC, OMF, or JRW), and discrepancies were resolved via discussion among all the authors. Whenever possible, we coded the published intervention manual or full clinical protocol intended to be used by practitioners, to code modular youth psychotherapies as they have been formalized for use by clinicians. When these documents were not available, we coded detailed intervention descriptions from protocol manuscripts, study outcomes manuscripts, or other documents. The full codebook applied to each study is available in the online supplemental materials.

Variables coded included: (a) study and intervention authors and publication year; (b) intervention name; (c) primary and secondary target mental health problem(s) of the intervention; (d) intervention target age range; (e) clients who participated in the intervention, including who was the primary contact, or the individual who participated most in therapy sessions (e.g., youth and caregiver); (f) type of study document (e.g., intervention manual, clinical protocol, study protocol manuscript, and study outcomes manuscript with detailed intervention description); (g) timing of decision-making about treatment content (e.g., all at the beginning of treatment, primarily at the beginning with adaptations throughout, or throughout treatment); (h) decision points mentioned within the treatment (e.g., which problem to target first, which treatment module to select first, whether to target secondary problems, when to end treatment, etc.); (i) the order in which these decisions occur; (j) parties involved in decision-making (e.g., child, guardian, clinician, supervisor, algorithms, and school personnel); (k) forms of data used to make decisions about treatment content (e.g., clinical judgment, baseline assessment, preferences of client and family, measurement-based care, and empirical evidence from past research; see Cohen et al., 2021); (l) types of decision tools (e.g., decision trees or flowcharts, presentations, videos, narrative descriptions, and online tools); (m) decision sequencing constraints (i.e., required treatment elements or decisions); (n) module characteristics (i.e., number of total modules, groupings of modules into broader treatment technique categories when applicable); (o) evidence behind decision guidelines and recommendations (e.g., comparative study, review of the literature, established theory, conjecture, and clinical experience); and (p) structure of guidance provided to make decisions.

Structures of decision-making guidance were coded as (a) idiosyncratic/artisanal approaches, or unstructured approaches with no formalized process or outputs, (b) guidelines, or a documented but relatively unstructured process with considerable flexibility and no replicable outputs, (c) decision aids, or a fairly replicable process, such as use of decision flowcharts, but only somewhat replicable outputs, such that if different clinicians used the same flowcharts they might select different treatment modules even for the same clients, (d) decision rules, or formalized and replicable decision processes, with replicable outputs based on an algorithm, or (e) statistical models, or formalized, replicable decision processes and outputs based on a statistical model (Cohen et al., 2021).

Results

Study Selection and Inclusion

After searching and screening for duplicate articles, 4,510 abstracts were obtained, and 1,034 full-text articles passed prescreening criteria and were evaluated by two authors independently. Eighty-two articles were selected for inclusion. Twenty unique therapy protocols, discussed in 67 articles, were included in the present analyses. See Figure 1 for details of the screening and inclusion process.

The characteristics of included protocols varied, with a wide array of age ranges (from kindergarten/age 5–18 years old). Included protocols targeted a variety of primary and secondary problem domains; all but three therapies targeted multiple problem domains (e.g., depression, anxiety, and autism), and all therapies, even those targeting only one problem domain, targeted multiple diagnoses (e.g., multiple anxiety disorders). For most therapies, intervention manuals (60.00%) and/or intervention protocols (20.00%) were available for coding, though a few therapies were coded using only other materials such as study manuscripts or book chapters describing the intervention (20.00%). A summary of the characteristics of each included intervention and associated citations can be found in Table 1. Additionally, a detailed table with all assessed characteristics of each included intervention can be found in the online supplemental materials.

Primary Contacts and Decision-Makers

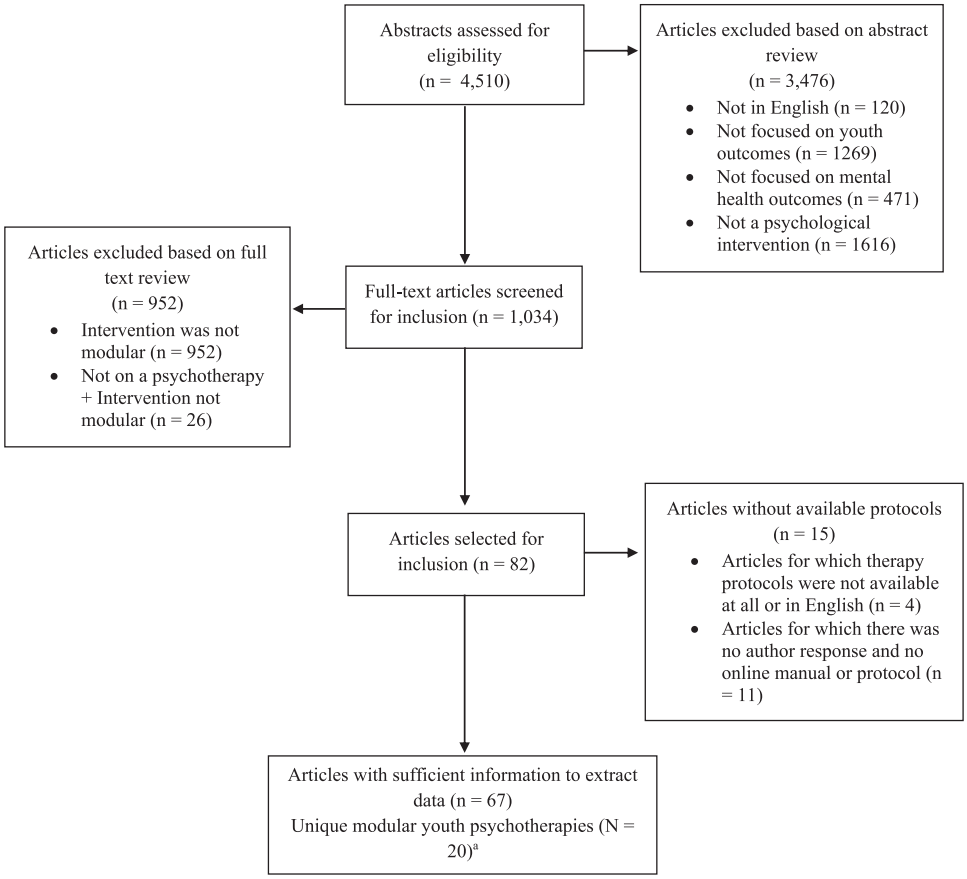
As presented in Table 2, all youth modular psychotherapies involved the youth in therapy sessions at least to some extent, and in 55% of interventions, the youth was the primary contact or the individual who participated most in therapy sessions. In 40% of interventions, both the youth and caregiver had moderate involvement in the intervention, with neither being a clear primary contact. In one intervention, the youth's teacher was the primary contact, and in another four interventions (22.2%), either school personnel or other family members were involved in the intervention but were not primary contacts. For all 20 interventions, the primary clinician acted as the primary decision-maker for selecting modules. In 65.00% of interventions, others were also involved to a lesser degree in module decision-making; these included the supervisor (in 40.00% of interventions; e.g., Chiu et al., 2013), the youth (40.00%; e.g., Girio-Herrera & Ehrenreich-May, 2014), the caregiver (20.00%; e.g., Heyne et al., 2014), and in one intervention each, other family (Santisteban & Mena, 2009), an algorithmic decision rule (Wood et al., 2021), or teachers and other stakeholders (Anderson et al., 2021).

Timing and Nature of Decisions to be Made

Additionally, we investigated the timing of decision-making, and which treatment elements or decisions were highly recommended or required (see Table 3). Most protocols encouraged decision-making about modules throughout the treatment process (70.00%). However, 25.00% of interventions featured decision formulations made primarily at the beginning of treatment, with the ability to

Figure 1

Study and Youth Modular Psychotherapy Inclusion Flowchart



Note. Articles excluded based on not focusing on a psychological intervention were often articles on biological treatments or articles focused on mental health, but not on psychotherapy (e.g., articles focused on predictors of depression onset). [a]Two protocols were very slight deviations from other included protocols with no clear differences in decision-making procedures, so were not considered unique, and were instead grouped together.

flexibly shift these decisions throughout therapy (e.g., Dorsey et al., 2016) – for example, with a meeting to set personalized modules before treatment begins, followed by adaptations throughout depending on client progress. Only one modular intervention recommended making all treatment decisions at the beginning of treatment, with no possible changes mentioned after this initial decision-making period (Anderson et al., 2021).

Although we defined modular psychotherapies to involve flexibility in decision-making, some treatment elements or decisions related to modules were highly recommended or required by certain interventions. Most commonly, modular youth psychotherapies featured a required/recommended assessment (95.00%) or introductory module (95.00%); a treatment wrap-up module (70.00%), and a set of several core modules (e.g., exposure and relaxation) intended to be received by all participants (60.00%) were quite common as well.

Data Used and Guidance Provided for Decision-Making

As presented in Table 4, each modular therapy was coded to assess the types of data intended to be used by clinicians when making decisions (Cohen et al., 2021), the structure of decision-making guidance (Cohen et al., 2021), and tools intended to be used by clinicians, and the evidence behind recommendations outlined in the intervention protocol related to module choice. All modular youth psychotherapies mentioned that clinician judgment could be used by clinicians when making decisions about treatment content. Several specific kinds of clinician judgment were mentioned: 40.00% of interventions explicitly mentioned considering which problem was most urgent or severe, and 35.00% which problem was at the core of the client's concerns; 20.00% of interventions mentioned considering which problem might be most tractable or respond best to intervention. Baseline assessment (95.00%), measurement-based care (65.00%), and theories behind optimal module choice (55.00%) were also commonly used to inform module selection.

Empirical evidence from prior research was presented to clinicians to inform decisions in only 25.00% of included protocols (e.g., Grassetti et al., 2015). All the interventions included at least one type of tool used to guide decision-making, with all but two including narrative descriptions (e.g., a description of each module with some information bearing on the problems it could be used to treat),

Table 1
Descriptions of and Citations for Each Included Modular Intervention

Intervention name	Citations	Coded document type	Target age range	Main target problems	Secondary target problems	Number of modules	Decision-making description
MAAPS (Modular Approach for Autism Programming in Schools)	Anderson et al. (2018, 2021)	Study outcomes manuscript, other (intervention development and description manuscript)	Grade K-8	Autism	Peer problems, academic or vocational problems	36 (e.g., conversation, reinforcement strategies, rituals)	Teams (made up of a coach or primary clinician, and usually a combination of teachers, parents, and even sometimes youth) select intervention components by answering a standardized series of questions revealing key areas that can use improvement. The order and frequency of modules are flexible and selected using clinical judgment.
CETA (Common Elements Treatment Approach)	Murray et al. (2018)	Clinical protocol, study outcomes manuscript	7–18 years (flexible)	Anxiety, depression, substance use	Conduct, crisis management	12 (e.g., encouraging participation, relaxation, and safety)	Clinicians decide which problems to target first, second, third, etc. A recommended sequence is then used based on those target problems and adapted as needed by the clinician and supervisor upfront – further changes may be made to the sequence and number of sessions as needed.
MATCH-ADTC (Modular Approach to Therapy for Children with Anxiety, Depression, Trauma, or Conduct Problems)	Bennett, Au, et al. (2021*), Bennett, Cross, et al. (2021*), Bennett et al. (2016*, 2017*), Bennett, Heyman, Coughtrey, et al. (2021*), Bennett, Heyman, Varadkar, et al. (2021*), Chorpita et al. (2013, 2017), I. Evans (2007), S. C. Evans et al. (2020), Hollinsaid et al. (2020), Lucassen et al. (2015), Merry et al. (2020), A. Park et al. (2014), A. L. Park et al. (2016), Schley et al. (2019), Shafran et al. (2020), Thomassin et al. (2019), Weisz (2012), Weisz et al. (2018)	Intervention manual	6–15 years	Anxiety, depression, conduct	Low treatment motivation	33 (e.g., rewards, giving effective instructions, getting acquainted)	Clinicians are given a series of flowcharts and detailed module descriptions to help them target a child's primary problem, selected baseline assessment. They then can choose modules based on this information or change decisions based on ongoing monitoring in order to target secondary/comorbid problems and resolve problems that get in the way during treatment.
UP-A (Unified Protocol for the Trans-diagnostic Treatment of Emotional Disorders in Adolescents)	Ehrenreich-May et al. (2017, 2020) and Girio-Herrera and Ehrenreich-May (2014)	Intervention manual	12–17 years (flexible)	Anxiety, depression	Low treatment motivation	9 (e.g., building and keeping motivation, parenting the emotional adolescent)	Clinicians are provided with a recommended module sequence and number of sessions per module. They are also given strategies to interact with clients based on client personality, symptom presentation, and motivations. Clinicians are free to choose the order and frequency of modules; the sources of guidance for these deviations from the recommended order are narrative descriptions and clinical judgment.

FIRST (Principle-Guided Psychotherapy for Children and Adolescents)	Cho, Bearman, et al. (2021), Cho, Strawhun, et al. (2021) and Weisz et al. (2017)	Intervention manual, study outcomes manuscript	6–15 years (flexible)	Anxiety, depression, conduct	Tic disorders, low treatment motivation	8 (e.g., feeling calm, trying the opposite, repairing thoughts)	Protocol is characterized by flexible decision trees to guide decision-making, based on each child's primary problem, any problems that may be disrupting their readiness for the treatment, and whether their goals are met as per ongoing monitoring.
M CBT (Modular Cognitive Behavior Therapy for Childhood Anxiety Disorders)	Chorpita (2007), Chorpita et al. (2004), Ebesutani et al. (2016), Ginsburg et al. (2008*), Lang et al. (2016*), Nakamura et al. (2006*), Ordaz et al. (2018), Reissner et al. (2019) and Reuther et al. (2011)	Intervention manual, study outcomes manuscript	7–17 years	Anxiety	Depression, conduct, peer problems, low treatment motivation	8 (e.g., practice, working with parents, cognitive restructuring)	Protocol is characterized by fairly structured module sequence and content – intro, final, and core modules are required, along with more flexible modules for addressing interfering problems, assessment and ongoing monitoring to guide decisions, and flexibility in module ordering.
SEBASTIEN (Schema, Emotion, and Behavior-Focused Therapy for Children with Autism)	Wood et al. (2021)	Online interactive manual (MEYA Website)	6–17 years	Autism	Anxiety, depression, conduct, peer problems, low treatment motivation, other (self-care)	9 (e.g., child core skills, assessment, conversation, and friendship)	Protocol is characterized by identifying the client's target problems and prioritizing clinical areas recommended by an algorithm; algorithm is based on the ongoing assessment of youth target problems throughout treatment.
BIACA (Behavioral Interventions for Anxiety in Children with Autism)	Green and Wood (2013), McBride et al. (2020), Nadeau et al. (2014), Storch et al. (2013, 2015), Sze and Wood (2007), and Wood et al. (2009, 2015)	Study outcomes manuscript, other (decision-making algorithm manuscript)	7–15 years (modified version for over age 11)	Autism, anxiety	Depression, conduct, peer problems, low treatment motivation, other (self-care)	9 (e.g., Intro & psycho-education, self-help skills, relaxation)	Protocol provides a decision flowchart with a clear sequence of modules to follow depending on a youth's presenting problems. The total number of sessions and use of several modules is prescribed, but many remain flexible. A flowchart is intended to be followed largely sequentially, without much deviation.
Modular approach to CBT	Friedberg and Paternostro (2019)	Intervention manual	Youth (unspecified)	N/A[a]	Autism, anxiety, depression, conduct, eating disorders, ADHD, tic disorders	6 (e.g., psycho-education, rational analysis, exposure, or experiential avoidance)	Protocol presents numerous techniques within six main intervention types (modules) appropriate for several different youth disorders. The narrative descriptions provide most guidance about decision-making – there is a flowchart without decision rules. Modules are generally sequenced by complexity/difficulty.
Living with Tics: A Modular Cognitive-Behavioral Approach to Helping Youth with Tics	McGuire et al. (2015) and Storch et al. (2012)	Clinical protocol, study outcomes manuscript	8–17 years	Tic disorders	Anxiety, conduct, peer problems, academic or vocational problems, other (self-esteem, emotion regulation)	9 (e.g., habit reversal training, overcoming tic-related avoidance, wrap-up, and relapse prevention)	Protocol includes some elements at the beginning and end of the protocol that are required, while others for specific areas of life affected by tics are assigned based on clinical judgment and an initial assessment of tic-related difficulties.

(*table continues*)

Table 1 (*continued*)

Intervention name	Citations	Coded document type	Target age range	Main target problems	Secondary target problems	Number of modules	Decision-making description
TGCT-A (Trauma and Grief Component Therapy for Adolescents)	Grassetti et al. (2015)	Intervention manual, study outcomes manuscript	Adolescents (12+)	Anxiety, other (grief)	N/A[b]	4 categories (e.g., processing traumatic experiences, exploring major losses), 22 sessions (e.g., monitoring and managing strong feelings, learning coping skills)	Protocol includes broader modules serving as categories, with several sessions within each. The first and last categories are highly recommended for everyone, while the other two categories are optional. Additionally, every session within these categories is optional and can be expanded on or skipped. Clinicians select modules by assessing patient trauma/grief experiences and current needs and symptoms.
@school	Heyne et al. (2014)	Book chapter (full protocol, manuscript presenting a protocol, and case illustration)	Children and adolescents (9–16 years, flexible)	Other (school refusal)	Anxiety, depression, conduct, peer problems, family problems, academic or vocational problems, low treatment motivation	30 (e.g., solving problems – youth, responding to behavior – parents, emotional issues – school)	Clinicians work with children, parents, and school staff to address school refusal. Clinicians are given a chart of recommended module sequencing; some modules are required, while others are optional. Evidence from the literature is presented in the module descriptions to assist clinicians in making decisions about whether to utilize a module or not.
TORDIA (Treatment of SSRI-Resistant Depression in Adolescents)	Kennard et al. (2009)	Intervention manual	Teenagers (12–18 years)	Depression	Anxiety, conduct, eating disorders, substance use, peer problems, family problems, academic or vocational problems, low treatment motivation, crisis management, and other (cluster B personality symptoms)	19 (e.g., emotion regulation supplement, psycho-education, problem-solving)	Protocol includes several required modules, as well as a few recommended sequences for module ordering. Treatment is largely flexible, especially for crisis and secondary concern modules.
CBT+ Common Elements Initiative	Dorsey et al. (2016)	Online intervention manual, other (training paper intervention description)	Children and adolescents broadly	Anxiety, depression, conduct	Substance use, peer problems, family problems, low treatment motivation, crisis management, other (child sexual behaviors)	N/A[c]	Clinicians first decide about broad target problem(s), then follow recommended flowcharts to guide decisions about module selection best suited for those problems. The protocol includes several core modules intended to be received per problem area, with opportunities to also target secondary problems or comorbid disorders.
Building Confidence	Fujii et al. (2013) and Galla et al. (2012)	Intervention manual, study outcomes manuscript	Children (5–12 years)	Anxiety	N/A[b]	13 (e.g., playdate/ friendship, exposure, termination)	Protocol includes a default sequence of modules that can be flexibly reordered for the needs of particular families. Therapists are encouraged to use clinical judgment to deviate from this sequence with several optional modules that can be added in as challenges arise.

STARS (School-Based Treatment of Anxiety Research Study)	Becker et al. (2012) and Ginsburg et al. (2012)	Clinical protocol, study outcomes manuscript	Youth (6–17 years)	Anxiety	N/A[b]	7 (e.g., psycho-education, exposure, parent module)	In this protocol, two modules are required while all other modules are optional and flexible in ordering. Module decisions are up to the clinician's judgment, based on the child's perceived needs and progress with exposures.
PUP (Power Up Program)	Chiu et al. (2013)	Intervention manual, study outcomes manuscript	Children (5–13 years)	Anxiety	N/A[b]	25 (e.g., playdate/ friendship, exposure, termination)	Protocol includes a default sequence of modules for parents and children, with several optional modules that can be added in as challenges arise (or for specific anxiety problems). Clinicians are provided a number of decision rules to guide who should receive which modules and are encouraged to use their judgment to deviate from this default.
CIFFTA (Culturally Informed and Flexible Family-Based Treatment for Adolescents)	Santisteban et al. (2006, 2011, 2013, 2017) and Santisteban and Mena (2009)	Intervention manual (not yet published), study outcomes manuscript	Adolescents (approx. 11–18 years)	All; substance use, conduct, broad externalizing, family problems, and depression are especially emphasized	Anxiety, depression, conduct, substance use, ADHD, peer problems, family problems, crisis management, externalizing, other (identity-related concerns, discrimination-related distress, acculturation-related distress/conflict, emotion regulation, risky sexual behaviors, understanding legal and school systems)	N/A[c]	Protocol includes an initial assessment informing the selection of modules, combined with collaborative decision-making with the youth/ family and supervisor. Decisions for modules are based on a wide range of factors, including symptoms, patient preferences, and cultural, family, or legal stressors.
Mind My Mind (MMM)	Jeppesen et al. (2021)	Outcomes manuscript	6–16 years	Anxiety, depression, conduct	Low treatment motivation, crisis management	35 (e.g., anxiety psycho-education, trans-diagnostic problem solving, relaxation techniques for depression)	In this protocol, a single Top Problem is decided upon in collaboration with the client and parents. This specific Top Problem determines the recommended module set to follow (e.g., anxiety, depressive symptoms, or behavioral problems), in addition to a number of generic modules received by all clients. These problem-specific modules can be delivered in a flexible order and with the incorporation of other elements as appropriate.
Multimodal Anxiety and Social Skills Intervention (MASSI)	White et al. (2010, 2013)	Clinical protocol; other (intervention development and description manuscript)	Adolescents (12–17 years)	Anxiety, autism	Peer problems	12 (e.g., psycho-education, exposure, conversational skills)[d]	In this protocol, all youth receive several core introductory modules, followed by 2+ anxiety modules then 2+ autism/social skills modules. Modules are selected based on individual needs and the development of a Case Conceptualization document that guides the content and ordering of modules.

Note. *Articles discuss psychotherapies highly similar to and based on other included protocols, so are grouped together rather than listed as unique interventions. [a]Intervention features no specified primary target problem; can be used for a variety of primary target problems. [b] Intervention has no other secondary target problems outside of primary target problems. [c] Some, but not all modules are clearly defined; the total number of modules is therefore not clear. [d] Intervention has seven group therapy modules in addition to the 12 individual modules; however, these do not appear to have a modular format.

Table 2
Who Is Involved in Treatment and Decision-Making?

Participants involved	Yes, primary *n* (%)	Yes, moderate *n* (%)	None *n* (%)
Who directly receives/participates in the intervention?			
Child	11 (55.0%)	9 (45.0%)	0 (0%)
Guardian	0 (0%)	19 (95.0%)	1 (5.0%)
Other	1 (5.0%)	4 (20.0%)	15 (75.0%)
Who/what parties are involved in the process of selecting modules?			
Child	0 (0%)	8 (40.0%)	12 (60.0%)
Guardian	0 (0%)	4 (20.0%)	16 (80.0%)
Other family	0 (0%)	1 (5.0%)	19 (95.0%)
Primary clinician	20 (100%)	0 (0%)	0 (0%)
Supervisor	0 (0%)	8 (40.0%)	12 (60.0%)
Algorithm	0 (0%)	1 (5.0%)	19 (95.0%)
Other	0 (0%)	1 (5.0%)	19 (95.0%)

seven including decision trees or flowcharts (e.g., diagrams suggesting which modules might be used for which presenting problems and interfering concerns; e.g., B. Chorpita & Weisz, 2009), and only one including an online decision tool (i.e., a website using client data to recommend modules, along with a video (Wood et al., 2021). Five interventions included a recommended ordering of modules from which clinicians could deviate if they wished (e.g., Fujii et al., 2013).

Evidence Used to Produce Module Selection Recommendations

In addition to analyzing the decision-making guidance presented in clinician-facing youth modular psychotherapy protocols and manuals, we assessed the evidence reported to have guided module selection recommendations, whether or not that evidence was presented in the coded clinician-facing protocols. When analyzing all intervention-related documents to assess the protocol authors' reasoning behind decision-making guidance, most interventions and associated documents discussed some form of evidence that was used to support decision-making guidance, with two not mentioning any such evidence (Anderson et al., 2021; Ginsburg et al., 2012). The most common forms of evidence supporting protocol authors' decision-making guidance were: literature review (90.00%) or well-educated conjecture – that is, the judgment of the authors without mention of any supporting empirical evidence (65.00%), and established theory (45.00%). Only one included intervention used an empirical comparison of different decisions (in a dismantling trial) to inform decision-making guidance (Grassetti et al., 2015), and no studies used statistical analyses of archival data to inform protocol authors' decision recommendations.

Table 3
When Are Decisions Made About Treatment Content, and Which Are Highly Recommended or Required?

Decisions about treatment targets and content	Yes, *n* (%)	No, *n* (%)
When are decisions made about treatment targets and content?		
All at beginning of treatment	1 (5.0%)	19 (95.0%)
Primarily at the beginning of treatment, with regular adaptations made throughout	5 (25.0%)	15 (75.0%)
Throughout treatment	14 (70.0%)	6 (30.0%)
Are any treatment elements/decisions highly recommended or required by the treatment?[a]		
Set of several core modules intended to be received by all participants	12 (60.0%)	8 (40.0%)
Specific core module(s) intended to be received per problem domain	4 (20.0%)	16 (80.0%)
Assessment (e.g., diagnostic interview)	19 (95.0%)	1 (5.0%)
Introductory module	19 (95.0%)	1 (5.0%)
Treatment wrap-up module	14 (70.0%)	6 (30.0%)
Specific number of sessions in total	8 (40.0%)	12 (60.0%)
Certain modules that should immediately follow or happen in the same session as others	3 (15.0%)	17 (85.0%)
Certain modules that should happen in a particular order[b]	7 (35.0%)	13 (65.0%)
Other (e.g., involving a parent)	6 (30.0%)	14 (70.0%)

Note. Although assessment is not typically an intervention module, it was very often presented in detail as a required or highly recommended precursor to treatment target and/or module selection. [a]Those elements that are required leave no room for decision-making, but those that are highly recommended may still involve a decision, as there is room for deviation. [b]These do not necessarily have to happen at the same time or immediately after each other.

Degree of Structure in Decision-Making Guidance

Finally, we assessed the degree of structure of decision-making guidance in each included intervention, using a framework classifying the replicability of decision processes (i.e., how decisions are made) and decision outputs (i.e., what decision is made). Only one intervention was classified as having idiosyncratic/artisanal guidance, involving no formalized decision processes or replicable outputs (Ginsburg et al., 2012); different clinicians using this approach would be unlikely to make decisions in the same way or to make the same decisions. Guidelines, which are another flexible form of decision guidance, were most common (60.00%; e.g., McGuire et al., 2015). Guidelines provide somewhat flexible decision processes with no replicable decision outputs, but some suggestions as to what decisions might be appropriate; different clinicians might use somewhat similar processes for making decisions but would often ultimately make different decisions. For example, guidelines might consist of narrative descriptions of each module mentioning which problems might be targeted by each.

Decision aids, which provide a moderate amount of structure, were also common (40.00%; e.g., Dorsey et al., 2016). Decision aids offer a replicable decision-making process, but do not produce fully replicable decision outputs; different clinicians using the same decision aid would follow very similar decision-making processes and would sometimes make different decisions. For example, a decision aid might be a flexible decision flowchart suggesting what decisions to make based on primary and interfering problems, but without clear rules for how each primary and interfering problem is defined or when to make which decision using the flowchart. Only one intervention employed decision rules, which are a relatively structured form of decision-making guidance (Wood et al., 2021). Decision rules provide formalized, replicable decision processes with replicable decision outputs based on an algorithm; different clinicians using the same decision rules would use the same decision processes and make the same decisions using those algorithms (though they could elect to deviate from those algorithm-recommended decisions). For example, a decision rule might dictate that, based on a standardized symptom measure, problem areas should be targeted in order of severity by designated modules (e.g., if anxiety scores are highest, exposure should be used first).

Table 4
What Forms of Data and Guidance Are Present in This Modular Therapy Protocol?

Data and guidance for decisions	Yes *n* (%)	No *n* (%)
What forms of data are intended to be used by providers when selecting modules?[a]		
None/no inputs explicitly mentioned	0 (0%)	20 (100%)
Clinical judgment	20 (100%)	0 (0%)
Which problem is the most tractable?	4 (20.0%)	16 (80.0%)
Which problem is the most severe/urgent?	8 (40.0%)	12 (60.0%)
What is the "core" or source of other problems?	7 (35.0%)	13 (65.0%)
Preferences/comfort of the client	8 (40.0%)	12 (60.0%)
Baseline data/assessment, usually comprehensive at the beginning of treatment	19 (95.0%)	1 (5.0%)
Measurement-based care – tracking symptoms throughout treatment	13 (65.0%)	7 (35.0%)
Empirical evidence or data from prior research	5 (25.0%)	15 (75.0%)
Available theories or concepts behind module selection	11 (55.0%)	9 (45.0%)
What structure of guidance is provided to make decisions about module selection?[b]		
Idiosyncratic/artisanal approaches	1 (5.0%)	19 (95.0%)
Guidelines	12 (60.0%)	8 (40.0%)
Decision aids	8 (40.0%)	12 (60.0%)
Decision rules	1 (5.0%)	19 (95.0%)
Statistical models	0 (0%)	20 (100%)
Which of the following decision tools are included to assist in module selection?		
None/NA	0 (0%)	20 (100%)
Decision trees/flowcharts	7 (35.0%)	13 (65.0%)
Recommended module orders	5 (25.0%)	15 (75.0%)
Online decision tools	1 (5.0%)	19 (95.0%)
Narrative descriptions	18 (90.0%)	2 (10.0%)
Videos	1 (5.0%)	19 (95.0%)
Presentations	1 (5.0%)	19 (95.0%)
Other	3 (15.0%)	17 (85.0%)
Do any intervention-related documents discuss evidence that certain modules should be selected for certain clients?[c]		
What kind of evidence do they provide?		
Evidence provided?	18 (90.0%)	2 (10.0%)
From an empirical study quantitatively comparing the effects of individual elements	1 (5.0%)	19 (95.0%)
Analysis of archival data (such as a machine learning analysis)	0 (0%)	20 (100%)
From a review of the literature on what works well for whom	18 (90.0%)	2 (10.0%)
Based on established theory	9 (45.0%)	11 (55.0%)
Based on well-educated conjecture (i.e., expert opinion not supported by established theory)	13 (65.0%)	7 (35.0%)
Based on anecdotal clinical experience	5 (25.0%)	15 (75.0%)
Other	0 (0%)	20 (100%)

Note. [a]Because this question is about the information available to providers when making decisions, the same materials used as the primary documents for coding (i.e., primarily intervention manuals and protocols) were used to assess the information available to providers. [b]Different methods, with varying levels of structure, by which treatment can be personalized, as outlined by Cohen et al. (2021). See also the "Results" section text and the Supplemental Codebook in the online supplemental materials for full definitions of these levels of structure and examples. Two therapies (FIRST and SEBASTIEN) had two different structures of guidance for different layers in the decision-making process, so were coded as having both structures of guidance. [c]To answer this question, which was about not just the information available to providers when making decisions, but also the intervention developers' reasons behind decision recommendations for providers, all intervention-related documents including those unlikely to have been used by providers (e.g., outcome manuscripts) were assessed by the coders.

No included interventions used statistical models, which, like decision rules, would involve formalized, replicable decision processes and outputs, but based on a statistical model instead of an algorithm to guide decision-making. For example, an intervention using a statistical model to guide decision-making might use archival data on the effectiveness of elements of the intervention to assess which modules worked best for whom and when, then use results from those analyses to recommend decisions for others receiving the intervention. Of note, all included interventions explicitly allowed for deviations from the guidance provided (e.g., if, based on clinical judgment, a provider thought it best to deviate from a suggested decision).

Decision Points and Pathways

Finally, we captured the decision points related to module choice that were mentioned in each intervention protocol and the order in which they occurred. See Table 5 for counts of how often each decision point arose, and Figure 2 for a flowchart representing common decision point ordering and the decision ordering for each included intervention protocol. Figure 2 presents decision points grouped in four phases: the beginning, middle, and end of treatment, and those decisions that may happen at any time throughout treatment. Based on the decision points and orderings documented, all 20 therapies followed one of three observed decision pathways for the middle of therapy, although not all decision elements in these pathways were present for each therapy (e.g., many therapies did not involve selecting a category of modules prior to selecting a specific module or therapeutic technique).

In Figure 2, each of the 20 included intervention protocols is represented by a letter. When a protocol mentions a decision point, that letter is placed in the box labeled with the decision point. If a letter (i.e., protocol) is not listed under a certain decision point, that means that decision point was not mentioned in the therapy protocol or that there was no decision at that point since a particular choice was

Table 5
Which Decision Points Are Explicitly Mentioned in This Modular Therapy Protocol?

Decision points	Yes *n* (%)	No *n* (%)
Primary/initial target problem (broad)	8 (40.0%)	12 (60.0%)
Primary/initial target problem (specific)	14 (70.0%)	6 (30.0%)
[a]Category of modules among which to select a module	2 (10.0%)	18 (90.0%)
First module to apply	10 (50.0%)	10 (50.0%)
Whether a module is effective/is working	12 (60.0%)	8 (40.0%)
If it is working – decision about when to move on from a module/whether to repeat or keep using a module	11 (55.0%)	9 (45.0%)
If it isn't working – decision about when to move on from a module/whether to repeat or keep using a module	12 (60.0%)	8 (40.0%)
Category of modules among which to select a module next[a]	5 (25.0%)	15 (75.0%)
Which module to select next	19 (95.0%)	1 (5.0%)
Readiness for certain core/challenging modules	11 (55.0%)	9 (45.0%)
Use of modules specifically for solving problems getting in the way of treatment	13 (65.0%)	7 (35.0%)
Whether to target secondary problems and if so which ones to target (broad)	12 (60.0%)	8 (40.0%)
Whether to target secondary problems (specific)	10 (50.0%)	10 (50.0%)
When to omit a module	2 (10.0%)	18 (90.0%)
When to terminate treatment/whether the client is ready to terminate treatment	17 (85.0%)	3 (15.0%)
How to terminate treatment	9 (45.0%)	11 (55.0%)
How/when to plan for the future/follow up with participants	9 (45.0%)	11 (55.0%)
Modules that might be used at a follow-up point	2 (10.0%)	18 (90.0%)
Whether it is advisable to include a family member or caregiver in treatment and if so, which modules to use with that caregiver	18 (90.0%)	2 (10.0%)
Step out of the modules and use something else	7 (35.0%)	13 (65.0%)
Because of an emergency or crisis/safety issue	5 (25.0%)	15 (75.0%)
Whether there is a module that can be used for a crisis/unexpected situation	3 (15.0%)	17 (85.0%)
If and when the clinician should resume using the modules	1 (5.0%)	19 (95.0%)
Other	2 (10.0%)	18 (90.0%)

Note. [a]This was coded when selection was based on something other than target problems; target problem selection is a separate decision point.

required by the manual and not left up to the clinician. All protocols involved cycles of decision-making, almost always taking place during the middle phase of treatment, in which the clinician would make several decisions multiple times until ending treatment. For example, clinicians would often decide each week whether to move on to a new module and if so, which problem to target with that module and which module to select.

Discussion

Modular psychotherapy is defined in part by the many decisions it requires of therapists. In this scoping review, we sought to identify all available modular youth psychotherapy protocols, and we analyzed the decision points evident in these protocols, the guidance and structures provided for making these decisions, and the evidence relevant to the decision recommendations provided in these protocols. We aimed to describe and critically analyze existing decision-making processes in youth modular psychotherapies, and thereby to inform future efforts relevant to decision-making in both research and clinical practice.

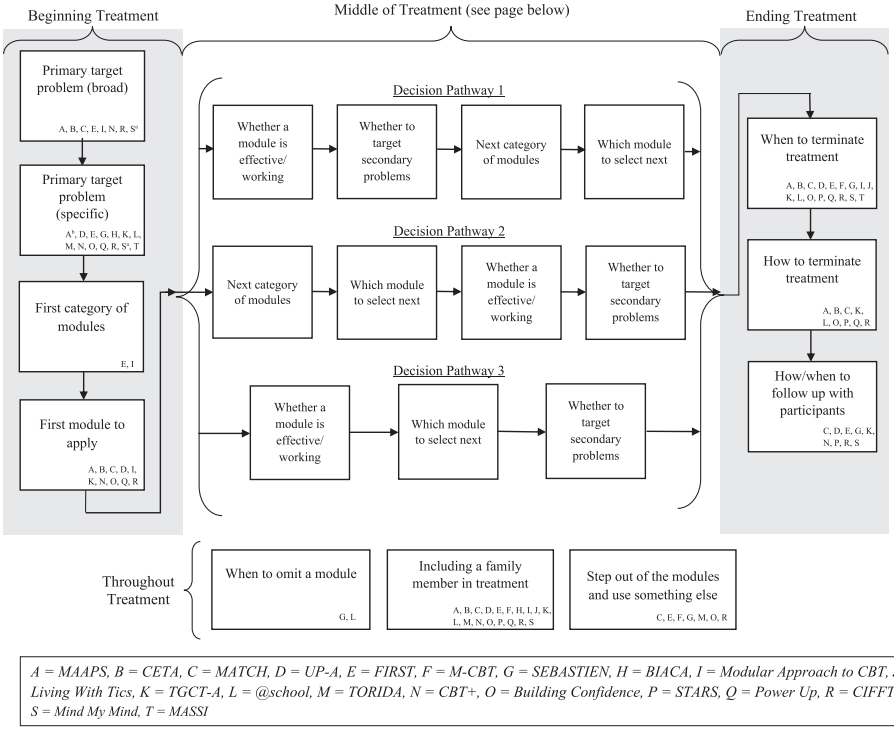
Our analysis identified numerous decisions for which the guidance provided in protocols was quite limited – highlighting directions for future treatment development and research. For example, all the included psychotherapies allowed for clinician judgment to be used in combination with recommendations provided in the psychotherapy protocol when making decisions about treatment content, but few offered guidance as to how these should be combined or when clinician judgment should overrule protocol recommendations. Most protocols suggested using baseline assessment data and measurement-based care when making treatment decisions, but guidance for how to use such data in decision-making was sparse. Decision recommendations in most psychotherapies were informed to some extent by treatment developers' review of the literature or expert opinion; however, relatively few provided empirical evidence or data from prior research to inform practitioner decision-making. Additionally, although almost all psychotherapies involved both the youth and caregiver in treatment, few recommended involving input from the youth and caregiver in the decision-making process, and those that did provide little guidance on how to do so.

In analyzing the order of decisions throughout modular youth psychotherapies, we identified three general types of decision sequences in the middle phase of treatment, each of which typically occurred cyclically until the decision to end treatment and involved the following three decision points in varied orders: (a) deciding whether a previous module was effective enough that therapy could proceed to another module, (b) deciding whether to target secondary problems, and (c) selecting the next module. Of note, guidance was generally quite limited for all three decisions. Additionally, within some decision points lay several related micro-decisions for which little guidance was provided. For example, choosing what to do in the next treatment session could involve deciding whether to persist with a module that has not worked thus far, deciding whether to address interfering problems and if so which ones and *how* to address them, or deciding on readiness for certain modules such as exposure. The numerous limitations in decision guidance are completely understandable for such a recently developed approach to therapy; but because the modular approach inherently requires extensive therapist decision-making, mapping the decision space and identifying gaps may usefully inform future research and practice.

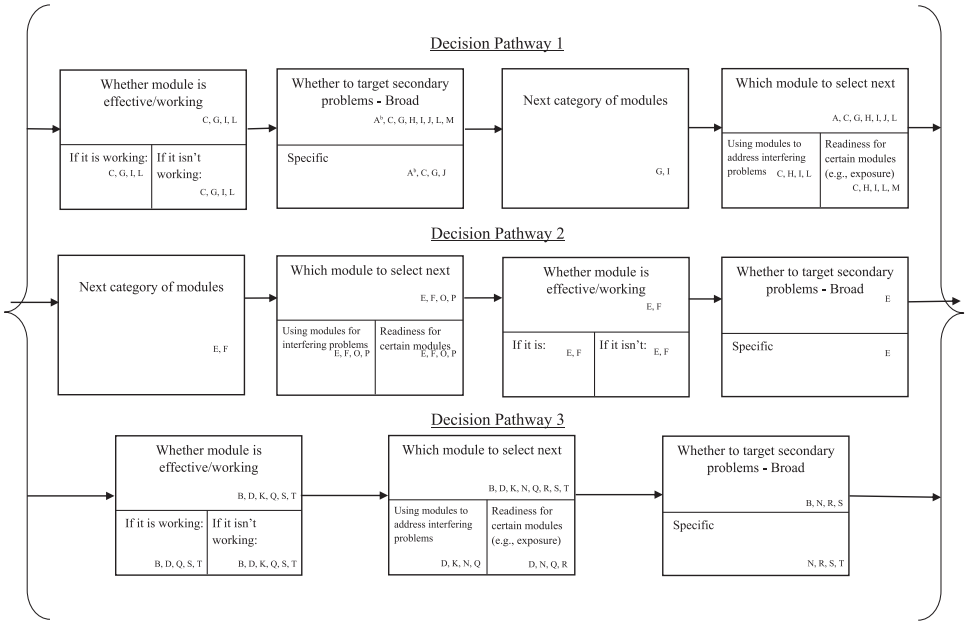
The structure of guidance overall tended to be flexible rather than prescriptive. For more than half of the protocols, decision guidelines consisted of narrative descriptions of each module, including

Figure 2

Decision Points and Their Order in Modular Youth Psychotherapies



A = MAAPS, B = CETA, C = MATCH, D = UP-A, E = FIRST, F = M-CBT, G = SEBASTIEN, H = BIACA, I = Modular Approach to CBT, J = Living With Tics, K = TGCT-A, L = @school, M = TORIDA, N = CBT+, O = Building Confidence, P = STARS, Q = Power Up, R = CIFFTA, S = Mind My Mind, T = MASSI



A = MAAPS, B = CETA, C = MATCH, D = UP-A, E = FIRST, F = M-CBT, G = SEBASTIEN, H = BIACA, I = Modular Approach to CBT, J = Living With Tics, K = TGCT-A, L = @school, M = TORIDA, N = CBT+, O = Building Confidence, P = STARS, Q = Power Up, R = CIFFTA, S = Mind My Mind, T = MASSI

Note. These decision pathways were built based on coded decisions and their orderings described in the included modular intervention protocols, and not created a priori by authors. In several cases, a "broad" and "specific" level of decision-making is both present. In these cases, there are two layers to the decision, the first broader, and the second more specific. For example, in the case of selecting secondary target problems, a clinician might be asked to select first whether to target anxiety problems broadly, then to select a specific type of anxiety problem to target (e.g., school avoidance, panic problems). [a]In Mind My Mind, the order of decision points diverts in one way from these pathways. The decision about the primary specific target problem occurs before the decision about a broad target problem for treatment to follow (e.g., anxiety, depressive symptoms, or behavioral problems). [b]In one therapy, MAAPS, the order of decision points diverts in one way from these pathways. The decision about whether to target secondary problems occurs after the decision about primary target problems, but before selecting the first module.

recommendations related to for whom some modules might be used (e.g., McGuire et al., 2015). Decision aids, providing a moderate amount of structure while still relying heavily on clinician judgment about when, how, and which problems should be addressed, were also common (e.g., Dorsey et al., 2016); these most often took the form of decision flow diagrams suggesting module selection sequences depending on initial primary problems and interfering problems. A prescriptive set of decision rules with a replicable process and outputs was only used in one psychotherapy protocol (Wood et al., 2021), and no psychotherapy protocol used statistical models based on archival data (e.g., analyses of outcomes after use of each module, or of moderators of module–outcome associations) to inform decision-making recommendations.

This finding that no protocols used statistical models based on archival data to inform decision-making may warrant attention because studies across several decades have shown that statistical prediction generally outperforms clinical judgment in psychotherapy-related decisions (Ægisdóttir et al., 2006; Meehl, 1954, 1986). This suggests that the use of algorithms and statistical models to inform decision recommendations in modular youth psychotherapies may be a particularly fruitful area for future research.

However, this past research demonstrating the superiority of statistical prediction over clinical judgment does not necessarily indicate that clinical judgment should not be an important part of decision-making in psychotherapies. First, the previous evidence showing the superiority of statistical over clinical prediction has not involved the kind of session-by-session decision-making that is the most prominent part of modular therapy. Additionally, and particularly when low base rate events or client characteristics may influence decision-making, clinical judgment and client input may provide predictive value beyond that of statistical models (Magnavita & Lilienfeld, 2016). Indeed, it would be difficult to identify, measure, and capture in a statistical model all the variables that could possibly influence the impact of decisions about treatment targets and elements, and this would make it difficult to build a statistical model that provides optimal prescriptions for all clients.

As an example, consider a young client who has social anxiety, obsessive–compulsive disorder, a history of trauma, bullying at school, a heart condition, and a single parent who holds a stigmatizing attitude toward psychotherapy. All these variables might impact optimal treatment selection, but some occur at much lower base rates than others, limiting detection of their impact within a database and thus the utility of including them in predictive models. Adding to the complexity, client problems and preferences often change; multiple real-life events that occur unpredictably throughout treatment could affect which module may be most needed when.

The considerable number of variables that may influence which decisions to make for whom, and when, highlights the potential need for a balance between the use of statistical prediction and clinical judgment to enhance client outcomes. For instance, statistical models might be used to generate a list of several recommended treatment targets and elements (and potentially also several *not* recommended treatment targets and elements) based on client characteristics. When presented with that information, clinicians could then apply their clinical judgment to select a module using those lists combined with their deep and detailed knowledge of the individual client, including recent events and current conditions in the client's life. Additionally, the clinician might consider which conceptual approach and principles of change they believe would be most effective for each client and use this to inform their clinical judgment when selecting modules (David et al., 2018). Whether this balance of statistical models and clinical judgment would outperform clinical judgment alone, statistical models alone, or the existing methods of decision-making most common in modular youth psychotherapies, seems an important empirical question with important implications for clinical practice.

In addition to clinical judgment and statistical models derived from archival data, empirical evidence from prior research may be useful when developing modular youth psychotherapy decision recommendations. Although empirical evidence from prior research, most often in the form of a literature review, was quite often cited as a basis for intervention authors' module recommendations in existing protocols (e.g., which modules they highly recommended for use, which should be used with whom, in which order certain subsets of modules might be implemented), this evidence was relatively rarely conveyed to clinicians in the intervention protocol to help inform their decisions. Empirical evidence from prior research was relatively rarely discussed in intervention protocols themselves, cited as a basis for recommendations in only about a quarter of included protocols. When evidence behind decision recommendations was discussed, the discussion was usually not extensive, with a few exceptions (e.g., Weisz & Bearman, 2020, which provided a table describing studies supporting the use of each module type). This finding is somewhat surprising because presenting research on treatment options is generally considered an important element of mental health decision aids (Wills & Holmes-Rovner, 2006).

Relatedly, empirical studies of the effectiveness and moderators of specific modules and module combinations were very rarely used to guide decision-making in existing modular youth psychotherapies. Only one modular intervention used a dismantling trial of possible choices to inform decision-making guidance (Grassetti et al., 2015), and none used analyses of archival data to inform decision recommendations. This may be because most modular psychotherapies are quite new, with most studies included having been published after 2010 and none prior to 2004. Thus, there has been little time to dismantle existing modular youth psychotherapies or to build up and analyze a large body of archival data. That said, there has been some past research on the effectiveness of specific psychotherapy elements (Leijten et al., 2021). Additionally, one adult modular psychotherapy has used idiographic client data to inform module selection: The DATA used fine-grained data to model within-person relationships between symptoms and behaviors in order to build personalized module sequences (Fernandez et al., 2017; Fisher et al., 2019). Interestingly, a pilot nonrandomized trial of this algorithm compared to module sequences selected by an expert clinician panel found generally nonsignificant differences between the participants receiving modules selected by the algorithm and those selected by an expert panel (Fisher et al., 2019), consistent with the idea that there may be contexts in which both statistical methods and clinical judgment contribute usefully to decision-making.

Another finding of note is that few modular youth psychotherapy protocols mentioned consulting with youth and caregiver clients about which treatment targets and elements might be most appropriate and effective, even though inclusion of both in psychotherapy was common. Of those protocols that *did* mention client consultation related to decision-making (e.g., Heyne et al., 2014), most framed

this as an infrequent method, rather than as one that might be used throughout the psychotherapy protocol. Accumulating evidence, largely in the shared decision-making literature (e.g., Langer & Jensen-Doss, 2018), suggests that consultation with youths and caregivers may be helpful in making clinical decisions, including determining which therapy targets should be prioritized and which stakeholders should be involved in treatment. Although shared decision-making in youth psychotherapy has been relatively understudied to date, seminal work highlights the potential value of this approach in enhancing therapeutic benefits (Edbrooke-Childs et al., 2016; Langer et al., 2022).

Finally, clinical training may be used in addition to improved guidance in psychotherapy manuals to improve clinical decision-making (Baker-Ericzén et al., 2015). However, clinical training may or may not improve decision-making, as evidence for positive effects of increased training and expertise on clinical outcomes is equivocal (Magnavita & Lilienfeld, 2016; Oddli & Halvorsen, 2014; Okiishi et al., 2003). Furthermore, without more empirical research investigating optimal decision-making processes in modular psychotherapies, designing training to optimize clinical decision-making might be challenging. Therefore, while it will be valuable to test whether increased training leads to more optimal decisions, such research may need to follow research on optimal decisions, which may be defined in different ways (e.g., decisions that optimize client retention; decisions that optimize symptom outcomes).

Our effort to begin mapping decision processes seems a useful step toward understanding and improving modular therapies, but our approach has a combination of strengths and limitations. The fact that we were limited to the descriptions provided in modular protocols and studies that used them could be viewed as both a strength and a limitation. It is a limitation in that there are likely more steps and data used in practical decision-making than are explicitly identified in the intervention protocols, so this analysis may not fully capture every detail regarding use of these protocols to make decisions. That said, decision procedures that may be used in practice but not documented in the protocols or articles about them, would not be accessible to most users. Thus, there is a clear logic to focusing on the information relevant to decision-making that is available to all providers via published works. Additionally, as some research raises questions about whether or how strongly therapist treatment adherence relates to treatment outcomes (Southam-Gerow et al., 2021; Webb et al., 2010), it is at least theoretically possible that decisions about treatment content do not strongly relate to outcomes. However, much of the research to date has focused on adherence to the prescribed content of standardized, linear psychotherapies. Future research should test whether adherence to optimal decisions (which could be defined in multiple ways) in modular psychotherapies influences treatment outcomes and whether there may be additional benefits of decision guidance for therapists (e.g., Nehrig et al., 2019).

A clearer limitation of this study is that the relatively small number of included modular interventions and highly varied methodologies of identified studies precluded a well-powered evaluation of the relationship between modular intervention characteristics (e.g., degree of structure of decision-making guidance) and clinical outcomes. Illuminating which forms of decision-making guidance and structure may be associated with the best clinical outcomes will be an important objective for future research. Another limitation of this study is that, even after requesting information from study authors, we were unable to acquire sufficient information in English about certain youth psychotherapies to code their content for this review (see Figure 1), so this article does not fully represent the landscape of modular youth psychotherapies.

Additionally, the findings of this study may hold less relevance for therapies that emphasize the therapeutic relationship over specific cognitive or behavioral treatment procedures (e.g., psychodynamic psychotherapies). Nevertheless, therapies involving relational dynamics could potentially be broken into different relational techniques (e.g., validation, clarification, reflection), among which a therapist may choose each session – in this way, decision-making about modules may have potential relevance to decision-making about relational techniques (Castonguay & Beutler, 2006). Finally, our focus on youth psychotherapies may have eliminated some adult modular psychotherapies with different forms of decision-making guidance and structure than those we identified (e.g., Fisher et al., 2019). For example, it seems likely that adult modular psychotherapies would include less parent involvement and less focus on parenting skills than youth modular psychotherapies (Wetherell et al., 2009) and might target different problems (e.g., adult modular psychotherapies might be more likely to target substance use problems; Timmons, 2012). However, future research will be necessary to fully understand to what extent the findings of this study are relevant to adult modular psychotherapies.

Improving the tailoring of treatments to fit individual youths has been proposed as one broad strategy for improving benefits, to counter the rather flat trajectory in youth psychotherapy effect size across previous decades (Weisz et al., 2019). However, effective personalizing will likely require much future research on which modules, in which combinations and permutations, work best for various youths, along with research on which decision-making supports are associated with optimal decisions and client outcomes. Research on youth modular psychotherapies to date provides a picture of existing methods of treatment personalization and suggests particularly promising directions for future research. Existing youth modular psychotherapies seem to rely mainly on clinical judgment, often combined with some flexible guidance based on literature review, theory, or conjecture, to guide decision-making about treatment targets and elements. Decision-making in these protocols appears complex and ongoing, with decisions occurring at the beginning of treatment, throughout the middle phase of treatment, and at treatment termination. Future research should focus on developing decision recommendations based on statistical models of archival data and testing whether and if so, how, to blend those recommendations with clinician judgment and client preferences, to produce optimal client outcomes.

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