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## Community-guided measurement-based care for autistic youth and adults receiving psychotherapy: A conceptual overview and pilot implementation study of MBC-AUT

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### Abstract

Measurement-based care is an approach to clinical care that involves systematically evaluating patient-reported outcomes to guide clinical decision making with a strong evidence base in the general population; however, its use in autism is limited. As autistic people are more likely to be diagnosed with psychiatric disorders (e.g. depression, anxiety) and to use psychiatric services (e.g. psychotherapy) than the general population, efforts to enhance clinical care for this population are critical. The current proof-of-concept study presents the development and pilot administration of an autism-adapted measurement-based care (MBC-AUT) system for psychotherapy designed for and with autistic people, as well as preliminary data on the feasibility, acceptability, benefits, and barriers to the adoption of the system for clients and clinicians. Findings from the first 18 youth and adult clients to use the system suggest that the MBC-AUT system is feasible and acceptable. Important benefits of the MBC-AUT system for clients and clinicians were identified through semi-structured interviews, and some barriers to the use of the MBC-AUT system were raised. Potential solutions are presented to address these barriers and to reduce the client and clinician burden. As autistic clients continue to seek psychological services, efforts to enhance the delivery and quality of psychotherapy for this population are essential.

### Lay abstract

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#### Supplemental material

Supplemental material for this article is available online.





settings have been identified across the U.S., with continued efforts to close this research-to-practice gap (Kruk et al., 2017; Pincus et al., 2016). Although MBC has been established as an evidence-based approach to optimizing psychotherapy for non-autistic clients, limited research has been conducted on MBC with autistic clients. Thus, given that adaptations to standard-of-care mental health treatments are often necessary to maximize efficacy in autistic children and adults (see Bal et al., 2022; Brosnan & Adams, 2022; Cooper et al., 2018), additional work specifically examining MBC in autistic people is warranted to potentially determine the need for autism-specific modifications and protocols that optimize care delivery in this population.

## MBC for autistic clients

Limited research on MBC systems with autistic clients has been conducted, which is surprising as autism prevalence rates are on the rise (Maenner et al., 2021), psychiatric disorders are commonly experienced by autistic people (Joshi et al., 2010), and treatment personalization is a preferred approach for this population (Georgiades et al., 2013; Sherer & Schreibman, 2005). Complicating matters, the majority of mental health providers report greater uncertainty in treating autistic clients compared to non-autistic clients (Jager-Hyman et al., 2020; Maddox et al., 2019, 2020). As the use of MBC has been linked to a higher sense of efficacy among mental health providers (Scott & Lewis, 2015), a better understanding of MBC with autistic clients may be one avenue to increase provider certainty.

To date, only one retrospective study compared outcomes (i.e. weekly MBC use, psychotherapy course and trajectory) between 20 autistic and 20 non-autistic clients receiving psychotherapy in a community-based psychology training clinic (McFayden et al., 2021). Important differences between autistic and non-autistic clients were observed including lower weekly MBC compliance among autistic clients relative to non-autistic clients (60% vs 78% compliance), more therapy sessions among autistic clients (31.7 sessions) than non-autistic clients (20.2 sessions) for the same presenting problem, and smaller treatment gains among autistic clients (10.4% average symptom reduction) than non-autistic clients (22.4% average symptom reduction; McFayden et al., 2021). Client experiences in using the MBC system were not measured, which may highlight barriers to use and lower compliance in autistic clients than in non-autistic clients. Initial findings from McFayden and colleagues (2021) suggest that MBC can be used to track outcomes and to understand psychotherapy processes in autism.

As autistic clients spent more time in therapy and made less progress than non-autistic clients (McFayden et al., 2021), continued efforts to develop and implement MBC systems are needed in autism. Additional information on feasibility (e.g. user experience, provider utility) and acceptability of MBC from clients and providers alike may improve our understanding and implementation for autistic clients. Furthermore, it is likely that a system designed both for and with autistic people may increase feasibility, acceptability, and efficacy. The importance of participatory design in research and clinical projects will be presented in the next section, including specific methods used in the present study to

co-design a psychotherapy MBC system for autistic people (MBC-AUT) alongside members of the autistic community.

## Participatory design for MBC

Participatory research enables researchers to connect with community members (i.e. self-advocates, caregivers, professionals) to design programs and deliver results in alignment with shared goals (Cornwall & Jewkes, 1995). In autism research, a growing emphasis is placed on participatory research methods to understand implementation challenges, address community dissatisfaction, and deliver a high standard of research to enhance clinical translation and overall outcomes for autistic people (Fletcher-Watson et al., 2019; Keating, 2021). Importantly, participatory methods have become more prevalent in autism research; however, such methods in *clinical care* for autistic clients are limited. Theoretical examples of participatory clinical care in autism have been proposed and include components such as incorporating autistic perspectives on intervention development and implementation (Schuck et al., 2022). Translation of this theoretical approach into clinical services for autistic people is an important next step. Though opportunities to develop more effective health and social care services in partnership with the autism community is a key area of interest among autistic people (Fletcher-Watson et al., 2019; Shaw et al., 2022), efforts to design clinical systems for and with autistic people have not advanced.

## Present study

The current study presents a psychotherapy MBC system (i.e. MBC-AUT) designed for and with autistic people and preliminary data on the feasibility, acceptability, benefits, and barriers of the MBC-AUT system to a pilot sample of clients and clinicians. Three autistic adults of the Neurodivergent Advisory Team at Vanderbilt University Medical Center guided the development of the MBC-AUT including design, measurement selection, and review of implementation in clinical practice. Additional feedback on the initial design of the MBC-AUT system was collected from six members of the broader autism community (i.e. psychologists, psychiatrists, researchers). Data on the feasibility, acceptability, benefits, and barriers to the MBC-AUT were collected from the first 18 autistic youth and adult clients to use the system. Given community-guided design and the known benefits of MBC in improving clinical care, we hypothesized that the MBC-AUT would be feasible and acceptable to autistic clients and that the benefits of the MBC-AUT to both clients and clinicians would be greater than the barriers.

## Methods

### Participants

The MBC-AUT was designed and implemented in a psychiatry outpatient clinic at the Vanderbilt University Medical Center that provides multidisciplinary psychiatric care to youth (9–17 years old) and adults (18 years and older). This care included individual and group cognitive behavioral therapy (CBT; Beck, 1991). Preliminary data on the feasibility, acceptability, benefits, and implementation barriers of the MBC-AUT were collected from the first 10 autistic clients receiving individual CBT (five adolescent clients and their

caregivers, as well as five adult clients), and the first group of autistic adolescents ( $n = 8$ ) participating in a 12-week CBT group program. Demographic information on the adolescent and adult clients is provided in Table 1. Although the sample was not racially diverse, it reflected the demographics of the general region of the outpatient clinic.

Clients were referred for individual or group psychotherapy from providers at the Vanderbilt University Medical Center, local schools, and regional autism/disability organizations. The first iteration of MBC-AUT uses caregiver- and self-report questionnaires to measure various domains of client functioning (see the next section) and thus, inclusion criteria included clients: (a) 11–17 years old (youth) or 18–60 years (adult), (b) without an intellectual disability, (c) with a third-grade reading level or higher for comprehension of survey items, (d) who are English speaking, and (e) who can complete measures online (i.e. access to computer, smartphone, tablet). The assessment battery of the current iteration of the MBC-AUT system includes measures not validated for individuals with intellectual disabilities; however, potential suggestions for this population are included in section “Discussion.” Additional inclusion criteria for psychotherapy in the clinic included some willingness/buy-in to participate in therapy and appropriateness of outpatient care for presenting problems (i.e. youth with severe suicidal intent and plan referred to higher-level care). For the current iteration of the MBC-AUT system, the following exclusion criteria were applied to clients: (a) with an intellectual disability, (b) with a reading level lower than the third grade, (c) who were not confident in their English-language reading abilities, and (d) who were not able to complete measures online. To preserve the safety of adolescents in group therapy, an additional exclusion criterion included adolescents with aggression toward others in the past 6 months. Informed consent and assent for psychotherapy and the use of the MBC-AUT to guide clinical care were collected in writing from caregivers and clients during the intake appointment. To utilize de-identified clinical data for research purposes, the first author completed an application to the Institutional Review Board (IRB) at the Vanderbilt University Medical Center (#211870), and all procedures were approved by the IRB in accordance with the 1964 Helsinki Declaration and its later amendments.

**Community involvement statement.**—To design the MBC-AUT, three autistic adults (including an autistic parent) provided feedback on various aspects (e.g. functionality, implementation) of the MBC-AUT. Specifically, autistic adults were engaged in the project as part of the Neurodivergent Advisory Team at the Vanderbilt University Medical Center given their interests in participatory research and clinical service, as well as personal and/or family experiences of psychiatric disorders and psychotherapy. On several occasions, the Neurodivergent Advisory Team provided feedback on various domains of the MBC-AUT including administration, measure selection, and/or considerations of benefits and barriers to the system for autistic clients. All members of the Neurodivergent Advisory Team were compensated financially for their feedback, participated in the writing and review of the present article, and are included as co-authors. In addition, the first author collected feedback on the initial design of the MBC-AUT system from six other members (i.e. two psychologists, three psychiatrists, one researcher) in the autism community with familiarity of outpatient systems and services at the Vanderbilt University Medical Center.

## Procedures

The present section will review a series of procedures used in the current study to design and implement the MBC-AUT with autistic clients. Although MBC systems can be applied to other psychiatric services (e.g. psychopharmacology), the first iteration of MBC-AUT presented here was designed for measuring psychotherapy processes.

## Construction of the MBC-AUT

The MBC-AUT was built in REDCap (Research electronic data capture; Harris et al., 2009), which is an online metadata-drive methodology and workflow process developed at Vanderbilt University for providing translational research informatics support. Some of the measures (e.g. Patient Health Questionnaire-9; (Kroenke et al., 2001) selected for the MBC-AUT battery were available in REDCap, whereas other measures (e.g. Comprehensive Autistic Trait Inventory; (English et al., 2021) were not and had to be created by the first author. To reduce risks to confidentiality, all data collected in the MBC-AUT were de-identified and only the treating clinicians had access to client email addresses used to administer the surveys. Community members suggested the following modifications to ease clients' burden of completion: (1) "save and return" capability to allow clients to complete surveys in multiple attempts, (2) automatic, one-time email reminders to complete surveys, and (3) an open text box at the end of each measure for clients to write additional notes or clarifications as desired (i.e. to make the system more user-friendly).

## Measure selection for the MBC-AUT

**Measure criteria.**—Measurement challenges in autism research and clinical practice are common (Loth et al., 2016) as many measures have not been carefully validated in autistic people. Therefore, a review of the existing literature was used to develop the following criteria for measures of the MBC-AUT: (a) validated in autistic people (e.g. Revised Children's Anxiety and Depression Scale, RCADS; Chorpita et al., 2005), when available, (b) brief, when possible, to reduce client burden (e.g. PHQ-9 in lieu of the BDI-II), and (c) free and publicly-available to reduce clinic costs. As needed, permission from measure authors was obtained (e.g. author permission to use the RCADS). In particular, the use of free and publicly available measures may enhance the generalization and feasibility of the MBC-AUT to other clinical settings with limited funds and/or resources available.

**Domains of interest.**—Although psychotherapy is a dynamic, multifaceted process, the following five domains were consistently measured to inform case conceptualization and treatment planning: symptom severity, client safety, risk and protective factors, therapeutic alliance, and functional outcomes. A list of the measures administered in the MBC-AUT to clients is available in Supplemental Tables 1 and 2. *Symptom severity* measures provide information about symptom type (e.g. depression, anxiety) and severity (i.e. average, mild, moderate, severe), and are often included in treatment plans as an index of therapeutic progress (i.e. decreased symptom severity). *Client safety* measures monitor potential harms to self (e.g. suicidal thoughts, self-injurious behaviors) or others (e.g. homicidal thoughts, aggression) and provide data for crisis assessments and safety planning. *Risk and protective factor* questionnaires assess risk (e.g. substance use, bullying, insomnia) and protective (e.g.

social connectedness, family cohesion) factors to monitor as clients engage in therapy and/or identify additional areas for intervention. *Therapeutic alliance* measures determine client–therapist fit and can pinpoint any barriers to a client’s therapeutic progress, an essential component of therapeutic change (Horvath & Luborsky, 1993). *Functional outcome* indices assess global functioning in various domains (e.g. quality of life, daily activity, social engagement).

Despite a robust evidence base of risk and protective factors to psychiatric disorders in the general population, the evidence base in autism is limited. Several risk factors were measured in the MBC-AUT based on a review of literature and feedback from community members: cognitive rigidity (Zimmerman et al., 2017), low social connectedness (Diendorfer et al., 2021), poor sleep quality (Jovevska et al., 2020), emotion dysregulation (Mazefsky et al., 2014), distress intolerance (Boulter et al., 2014), negative self-esteem (Cooper et al., 2017), and camouflaging (i.e. behavioral and cognitive strategies by autistic people to adapt to or cope within the predominately non-autistic social world; see review by Cook et al., 2021). These risk factors are not specific to autistic people but have been endorsed more frequently by autistic people than non-autistic people. Although these eight risk factors are comprehensive, they are not an exhaustive list and thus, clinicians, community members, and researchers may consider other risk/protective factors in designing and implementing a system of MBC for a given setting. In autistic youth, inter-rater discrepancies between youth and their caregivers on adolescent psychiatric symptoms have been documented (Schwartzman & Corbett, 2020). Therefore, the MBC-AUT included caregiver- and self-report versions of several measures (e.g. Revised Children’s Anxiety and Depression Scale, Caregiver and Youth Versions) to obtain multiple perspectives of an adolescent’s symptoms and severity.

**Caregiver-specific measures.**—Community members suggested the inclusion of several caregiver-specific measures in the MBC-AUT to understand and monitor caregiver experiences as youth participate in therapy. Certain caregiver factors (e.g. depressive symptoms, anxiety) have been associated with youth psychopathology and may be critical to monitor as youth engage in psychotherapy (Marmorstein & Iacono, 2004; Schwartzman et al., 2021; Zhou & Yi, 2014). In addition, caregivers are critical treatment partners who often increase the efficacy of therapy (e.g. generalization of skills, safety monitoring). Therefore, a consideration of caregiver-specific measures is critical to understanding treatment engagement and progress among autistic youth. In the MBC-AUT, the following measures were administered to caregivers once a month: depression symptoms (PHQ-9; Kroenke et al., 2001), anxious distress (GAD-7; Spitzer et al., 2006), stress (10-item Cohen Perceived Stress Scale; Cohen et al., 1994), and quality of life (PROMIS Global-10; Hays et al., 2009).

**Clinical caution.**—It is important to note that measures of some client experiences (e.g. gender dysphoria, trauma exposure) may be stressful and potentially harmful to clients if administered in a MBC system (Machtinger et al., 2019). To protect client safety, careful consideration of measures in collaboration with clients is needed. Therefore, certain experiences that have been found to occur more frequently among autistic people (Corbett



et al., 2023; Lai et al., 2019) were not selected in the MBC-AUT. Instead, measures were available to clinicians for use during sessions. Similarly, additional measures of suicide risk (e.g. Columbia Suicide Severity Rating Scale; Posner et al., 2011) were administered in person, and answers were entered into the REDCap system during sessions. Of note, clinicians, community members, and researchers may consider other client experiences to monitor sensitively to uphold client confidentiality, safety, and well-being in a given setting.

### **MBC-AUT implementation in clinical practice**

**Establishing care.**—For new clients to the Vanderbilt University Medical Center, clients were asked to arrive 30 min early to complete consent and assent forms for psychotherapy. Clients were not charged for their time in completing consent/assent processes and MBC-AUT surveys. In the consent/assent process, clients received brief psychoeducation about the role of the MBC-AUT in clinical care and were provided with opportunities to ask questions. Following consent/assent, clients completed the online surveys of the MBC-AUT. For clients established at the Vanderbilt University Medical Center with completed consent/assent on file, clients were contacted over the phone and notified that they would receive an online survey approximately 3–4 days before their intake appointment. Clients and caregivers were provided with psychoeducation about the role of the MBC-AUT in clinical care over the phone and during the intake appointment, and clients and caregivers were provided with opportunities to ask questions.

**Intake appointments and diagnostic decisions.**—During the intake appointment, clinicians used a computer to review survey responses with clients (and caregivers) including symptom endorsement, any safety risks, and initial diagnostic impressions. By doing so, clients and caregivers clarified their responses (if desired) and contributed to diagnostic decisions. In addition, a review of responses enabled clinicians to provide clients with psychoeducation about psychiatric symptoms (e.g. loss of interest in activities is a symptom of depression). For youth clients, a review of responses often highlighted caregiver-youth discrepancies in ratings and provided an opportunity for group discussion and consensus. Although the focus of discussions was on diagnostic clarity, it also afforded opportunities for youth and caregivers to learn about each other’s perspectives and to discuss ways to monitor symptoms throughout treatment.

**Treatment planning.**—Following diagnostic decision making, clinicians used client responses to discuss initial treatment goals with clients and to collaboratively develop an initial treatment plan. Data from the MBC-AUT were used to inform a client’s progress toward their treatment goals and to adapt treatment plans over time.

**Individual psychotherapy.**—In alignment with feedback from community members, surveys were emailed to clients once a month throughout treatment to reduce client burden. A consistent battery of measures (see Supplemental Tables 1 and 2) was sent each month, with opportunities to customize certain measures (e.g. Columbia Suicide Severity Rating Scale; Posner et al., 2011). For patients with significant safety risks, clinicians administered some measures (e.g. C-SSRS; Posner et al., 2011) during each session to monitor safety and to review and reinforce safety plans. Once per month, clinicians reviewed the MBC-AUT

data with clients in session to facilitate discussions about symptom severity, safety (if applicable), risk and protective factors, and functional outcomes (e.g. quality of life). By doing so, clients directly engaged in their care to identify progress and barriers to be addressed in session. In addition, clients and clinicians could discuss areas for potential referrals to other providers to enhance care (e.g. referral to neurology for chronic migraines). Clinicians discussed data on therapeutic alliance in an open, curious, and collaborative manner with clients to isolate areas of clinician adaptation needed to support client progress toward treatment goals. Furthermore, discrepancies in caregiver-youth ratings could be identified and discussed in session.

The decision to administer measures monthly was influenced by previous studies on MBC systems and feedback from autistic community members. Weekly administration is a common, but not required, format for MBC systems that is associated with certain advantages (e.g. frequent estimates of psychiatric symptoms) and disadvantages (e.g. significant time, lower compliance, diluted responses; Scott & Lewis, 2015). Community guidance in developing and implementing a system of MBC is a critical component of this work (Lewis et al., 2019), and thus, we relied on feedback from community members to guide the default frequency of assessment used in the MBC-AUT system (i.e. monthly administration). Of note, measures were available to administer more frequently if clinicians noted substantial changes in client presentation and/or changes or concerns were reported by clients or caregivers that may warrant additional assessment.

**Group therapy.**—Although group-based therapy is associated with benefits (e.g. increased access to care, reduced clinic costs; Churchill et al., 2001), it provides a less tailored approach than individual therapy. To address this challenge, the MBC-AUT was used to monitor symptom severity, patient safety, risk and protective factors, therapeutic alliance, and functional outcomes of all clients throughout the 12-week CBT group program. At the midpoint (week 6) session, each family received a report of youth and caregiver scores from the MBC-AUT to summarize symptom severity and to provide recommendations (e.g. individual therapy) for discharge planning. Reports were provided to families directly and families were encouraged to contact the clinicians with any questions or concerns. At the graduation (week 12) session, each family received an updated report of additional scores from the MBC-AUT to summarize the youth's engagement in treatment, areas of continued intervention, and recommendations for future care. Families were again encouraged to contact the clinicians with any questions or concerns and to share the reports with other providers to guide continued care.

For clients in individual or group therapy, the MBC processes were identical in the intake appointment (e.g. case conceptualization, treatment planning). In lieu of monthly score review, group therapy clients received several reports of MBC-AUT scores with clinical summaries and recommendations, and were repeatedly encouraged to contact clinicians with any questions or concerns. While this approach may not be as individualized as individual therapy, it nevertheless afforded some opportunity to personalize the group therapy approach for clients.

**Treatment decisions.**—The MBC-AUT guided treatment decisions between clients and providers including session frequency, therapy graduation, and additional services that may be beneficial to clients. Individual therapy clients who demonstrated consistent progress toward their selected goals often chose to reduce session frequency over time to increase independence and to advance toward therapy graduation. The individualized approach of the MBC-AUT enabled clients and clinicians to personalize benchmarks for therapy graduation and to visualize client changes over time. Clients who demonstrated limited progress toward their selected goal and/or exhibited worsening symptoms based on scores in the MBC-AUT typically elected for more frequent sessions, greater caregiver involvement (if applicable), and/or alternative care options (e.g. medication management, intensive outpatient program).

### **Measures of the feasibility, acceptability, benefits, and barriers to the MBC-AUT**

A questionnaire assessing the feasibility and acceptability of the MBC-AUT was administered to the 18 autistic clients at three timepoints: at the end of the intake appointment (T1), after 6 weeks of using the system (T2), and after 12 weeks of using the system (T3). The questionnaire included the following items: (1) “*Completing the surveys was difficult for me*”; (2) “*Completing the surveys was a good use of my time*”; (3) “*Completing the surveys was helpful to my experience in therapy*”; and (4) “*Completing the surveys interfered with my experience in therapy.*” Items were rated on a 7-point Likert-type scale from 1 = *Very Much Disagree* to 7 = *Very Much Agree*. For youth clients, an identical questionnaire was administered to caregivers. As another index of feasibility, the consistency of MBC-AUT completion throughout therapy was monitored for each client.

To assess the benefits and barriers of the MBC-AUT, clients and their caregivers participated in a brief, semi-structured interview at T3. The following questions were asked of clients and caregivers: (1) “Are there benefits to completing the surveys and reviewing them with your therapist? If so, what are the benefits?”; (2) “Are there difficulties in completing the surveys and reviewing them with your therapist? If so, what are the difficulties?”; and (3) “Is there anything else that you would like to share about your experience with the surveys throughout therapy?” Notes were taken as clients provided answers to these questions, and the main points were recorded in REDCap.

## **Results**

### **Feasibility and acceptability**

Client ratings of the feasibility and acceptability of the MBC-AUT are presented in Table 2. Average ratings from adolescent clients reflected neutral attitudes about the difficulty of completing surveys and their use of time at T1; however, ratings in both areas improved over time at T2 and T3. On average, ratings from adolescent clients indicated slight agreement about the helpfulness of the MBC-AUT to therapy at T1, with ratings improving over time at T2 and T3. Importantly, average ratings from adolescent clients indicated that the use of the MBC-AUT did not interfere with therapy across the three timepoints.

On average, caregivers endorsed slight disagreement about the difficulty of completing surveys at T1; however, caregiver ratings improved across timepoints. Average ratings from

caregivers indicated that the MBC-AUT was a good use of time and helpful to therapy at T1, with improved ratings in both areas across timepoints. Importantly, caregivers did not report that the MBC-AUT interfered with therapy.

Average ratings from autistic adult clients indicated slight disagreement about the difficulty of completing surveys at T1; however, ratings improved over time at T2 and T3. Autistic adults reported that the MBC-AUT was a good use of time and helpful to therapy at T1, with ratings in both areas increasing across the timepoints. On average, autistic adults did not report that the MBC-AUT interfered with therapy.

Of all 18 clients, 14 clients (77.7%) completed the MBC-AUT consistently and on-time throughout the course of psychotherapy. Of the remaining four clients, three clients (16.7%) did not complete one administration of the MBC-AUT due to illness or forgetting, and only one client (5.6%) did not complete two administrations of the MBC-AUT.

### Benefits of MBC-AUT for clients and clinicians

Implementation of the MBC-AUT in an outpatient setting highlighted benefits to clients and clinicians (see Table 3).

**Benefits for clients: Diagnostic decisions and treatment planning.**—First, the theme of *Communication of Internal Experiences* emerged across multiple youth and adult clients who shared that self-report measures were “easier to do” than semi-structured, clinician-administered interviews. Second, the theme of *Psychoeducation and Normalization* was identified as a review of responses in the intake appointment provided clients with a better understanding of their symptoms and some normalization (e.g. “I realized there isn’t something wrong with me...depression makes me less interested in things”). Third, the theme of *Treatment Collaboration* was mentioned by multiple clients as a review of responses with clinicians fostered collaborative discussions of treatment goals and plans (e.g. “I knew what we would work on and why, like it made sense to me”). Fourth, for caregivers, the theme of *New Family Perspectives of Youth Mental Health* emerged as a review of responses/scores highlighted youth-caregiver rating discrepancies (e.g. “I never realized that he (child) thought so negatively of himself”). Finally, caregivers noted the theme of *Caregiver Needs During Youth Therapy* as they identified benefits to monitoring their own experiences (e.g. “I could see that my stress was really high at times when my son was also really stressed—we affect each other”).

**Benefits for clients: Individual psychotherapy.**—First, the theme of *Enhanced symptom tracking* emerged as clients noted that multiple datapoints of symptom severity, rather than their subjective opinion each week, clarified their progress toward treatment goals (e.g. “I knew my sadness was getting better, but it really helped to see it go down (in the surveys)”). Second, the theme of *Highlighting risk/protective factors* was mentioned by several clients who commented that data on risk/protective factors fostered open discussions of ways to problem solve for risk factors (e.g. “I needed help with bullying—it was making me sad”) or consider ways to increase protective factors (e.g. “I realized that spending time with friends is really important for me and my mental health stuff”). Third, the theme of *Improved communication about therapeutic process* was identified as many clients

commented on the benefits of openly discussing components of therapy (e.g. therapeutic alliance, therapy modality; “My therapist didn’t get mad or something when I told her that some things she taught didn’t work for me”).

Fourth, the theme of *Optimizing treatment dosage* was identified as a review of responses fostered conversations about modifying session frequency (e.g. weekly to bimonthly, monthly to bimonthly) or care options (e.g. initiating medication management). Finally, the theme of *Preparing for graduation* emerged as clients noted that ongoing data collection improved confidence in therapy graduation (e.g. “I could pause or stop therapy and probably continue to do well”), and facilitated discussions of relapse prevention (e.g. “Good sleep is something that I need to continue to focus on for my mental health”).

**Benefits for clients: Group psychotherapy.**—First, the theme of *Service selection and fit* emerged as the review of data facilitated families’ decisions to join the group program or not (e.g. “If other kids also have depression stuff on these questions then we might understand each other or something”). Second, the theme of *Facilitating psychoeducation* was identified as a review of data that provided clients with a better understanding of their symptoms (e.g. “I was not excited about my future, but it wasn’t my fault—just a depression thing”). At the midpoint (week 6; T2), the theme of *Treatment planning* emerged as caregivers commented that a review of scores guided families’ treatment decisions in anticipation of group graduation (e.g. “It was clear that her depression was getting better, but that getting more therapy would help her”). The theme of *Individualization* emerged as several families noted that the MBC-AUT provided a more personalized approach to group care than typical group therapy formats (e.g. “I could see how they were doing even if they were in a group with other kids”). In the final summary report (week 12; T3), the theme of *Care coordination* was identified as caregivers shared that the report was helpful in guiding future care (e.g. “I can take his scores to the next therapist to give us a starting point”).

**Benefits for clinicians.**—In addition to the benefits reported by clients, the use of the MBC-AUT was associated with added benefits to clinicians. First, the theme of *Comprehensive screening* emerged as clinicians screened for additional psychiatric symptoms (e.g. OCD symptoms, separation anxiety) and/or safety risks (e.g. substance use), many of which were not mentioned by clients, in the intake appointment and throughout therapy. Second, the theme of *Case conceptualization* was identified as clinicians obtained a comprehensive and multifaceted understanding of clients (e.g. psychiatric symptoms, quality of life, safety concerns). Third, the theme of *Improved therapeutic process* emerged as clinicians received feedback on the quality of therapeutic techniques and/or alliance, which was reviewed and adjusted collaboratively with clients as needed. Fourth, the theme of *Safety Monitoring* was identified as clinicians consistently and routinely monitored safety (e.g. suicidal thoughts, substance use), and data could inform crisis assessments and safety planning. For example, routine data collection was leveraged to monitor for any changes in types (e.g. change from previous passive suicidal thoughts to current thoughts of a plan, alcohol consumption to cope) and severity (e.g. passive vs active suicidal thoughts, intent vs no intent, increased number of alcoholic drinks) of safety risks. This updated information could be used to review and reinforce existing safety plans, adapt safety plans (e.g. increase

caregiver supervision), or implement greater safety measures (e.g. voluntary hospitalization). Finally, as needed and permitted by clients, clinicians shared data with outside providers (e.g. psychiatrists, primary care physicians, individual therapists) to guide additional care—a theme of *Care Coordination*.

Of note, the MBC-AUT collects a substantial amount of data from clients that can be de-identified and available for research purposes (e.g. longitudinal risk/protective factors to depression in autism, caregiver-child rating discrepancies throughout therapy). Although contribution to the research was not a primary objective of developing the MBC-AUT, it may enable researchers to advance the study of mental health and psychotherapy for autistic clients.

### MBC-AUT barriers for clients and clinicians

Implementation of the MBC-AUT in an outpatient setting highlighted barriers to clients and clinicians (see Table 4).

**Barriers for clients.**—First, the theme of *Survey fatigue* emerged as multiple youth clients reported weariness in completing the surveys (e.g. “I got pretty bored sometimes,” or, “Doing the questions made me sleepy and tired”). Some fatigue was reported by caregivers and autistic adults, but this was less in amount than fatigue reported by youth clients. Second, the theme of *Item confusion* was identified as some youth and adult clients endorsed confusion or uncertainty at the meaning of questions or particular item wording (e.g. “Some questions were confusing like when it said I feel shaky or restless—I don’t know what those mean”). Third, the theme of *Item irrelevance* emerged as some clients perceived certain questionnaires to be irrelevant (e.g. “I always saw questions about drinking, but I never drink”). Finally, the theme of *Survey Burden* was identified as some caregivers conveyed some difficulties in completing surveys (e.g. “I get that it is helpful for my kid—but sometimes it was still one more thing on the to-do list”). A similar challenge was reported by a few autistic adults.

**Barriers for clinicians.**—First, the theme of *Clinician time for startup* emerged as a barrier, as a substantial amount of clinician time was required to initially learn and adopt the MBC-AUT system into routine clinical practice, as well as become familiar with certain measures (e.g. item content, clinical cutoff scores). Second, the theme of *Clinician time for survey administration* was identified as some clinician time (10–15 min total) was needed once a month to administer online surveys to clients and review responses before sessions. Third, the theme of *Clinician time for documentation* emerged as clinicians spent some time integrating data from the MBC-AUT into each client’s chart/medical record. Finally, the theme of *Survey limitations* emerged as the current iteration of the MBC-AUT system was not available for clients with intellectual disability, language barriers, or other disabilities (e.g. blindness).

## Discussion

In the present study, we sought to design and implement a MBC-AUT for and with autistic people to enhance psychotherapy services, and to investigate the preliminary feasibility,

acceptability, benefits, and barriers to this system. Initial findings suggest that the MBC-AUT is a feasible and acceptable system for autistic youth, their caregivers, and autistic adults that may be associated with greater benefits than costs to clients and clinicians. Client ratings of feasibility and acceptability improved over the course of treatment, and the majority of clients consistently engaged with the MBC-AUT at all timepoints. Data from semi-structured interviews revealed important benefits of the MBC-AUT to clients in enhancing diagnostic decisions, treatment planning, and experiences in individual and group psychotherapy, as well as benefits to clinicians. Importantly, some barriers of the MBC-AUT were identified by clients and clinicians, and proposed solutions (see Table 4) will be provided to advance efforts in MBC for autistic clients.

Prior to this study, only preliminary findings from one study of a standard MBC with autistic and non-autistic clients were available to suggest that the MBC is an important area of investigation for this population (McFayden et al., 2021). The present study expanded upon these findings by co-designing an autism-adapted MBC system with a group of autistic adults and investigating user experiences across clients and clinicians (i.e. feasibility, acceptability, benefits, barriers) to modify practices and to propose a model for future use in clinical settings. Following initial use of the MBC-AUT during the intake appointment, the majority of autistic youth, their caregivers, and autistic clients reported the system to be feasible and acceptable. Importantly, over the course of therapy, client and caregiver ratings improved across the four domains and may suggest that clients perceive the system to be easier to engage with and/or experience greater familiarity with the questions. Improvements in ratings may also encourage clinicians to spend more time during intake appointments discussing the value of MBC to case conceptualization and treatment planning and decisions. An important next step in this line of research is to understand mechanisms of change in acceptability over time in larger and more controlled samples.

The majority of clients and caregivers perceived the system to be a good use of time and helpful to the therapeutic process, which highlights the initial promise of the MBC-AUT system as a critical tool to improve psychotherapy for autistic clients. In the general population, MBC has been associated with direct benefits to clients (e.g. symptom improvement), clinicians (e.g. empirically-based decision making), and organizations/clinics (e.g. quality improvement efforts; Bickman et al., 2011; Carlier et al., 2012; Kearney et al., 2015). It is critical to test whether these benefits can also be realized in autistic clients. A comparison of client experiences with a standard or autism-adapted MBC system is an important next step to advance this line of research, as well as the utilization of the system with other therapy modalities (e.g. family therapy) and/or psychiatric services (e.g. medication management).

The majority of clients completed the MBC-AUT consistently and on-time throughout therapy, which adds support to the preliminary feasibility of the system for autistic clients. The compliance rate among autistic clients in this study (77%) was higher than that reported by McFayden and colleagues (2021; 60%). Potential explanations for these differences may include a smaller sample in the present study, a system designed for and with autistic people in the present study, and/or fewer administrations of surveys in the present study (i.e. once a month compared to weekly). With a limited sample size, it is difficult to robustly investigate

differences between clients who did (i.e. responders) or did not (i.e. nonresponders) complete surveys consistently. It would be important to investigate the feasibility and acceptability of the MBC-AUT system with larger samples to identify differences between responders and nonresponders to propose solutions to increase compliance.

Many autistic youth and adults identified important benefits to the MBC-AUT system that may be leveraged to enhance psychotherapy for this population. For some autistic clients, self-report measures of internal experiences were a favored assessment method over clinical interviews. Social interactions and/or generic, open-ended questions (e.g. “How are you feeling?” or, “Describe your mood most days”) inherent to clinical interviews may be interpreted as ambiguous and stressful by some clients. Though some challenges occurred with self-report measures (e.g. confusing item wording), this methodology lacks a social interaction component and is more structured in nature, and thus, it may be a more comfortable assessment method for some clients than clinical interviews. The inclusion of open text boxes at the end of measures to clarify item selection and/or pose questions to clinicians may also facilitate clients’ ease of use. Self-report measures alone do not supersede clinician observation and judgment, but they may nevertheless be a beneficial addition to the assessment of emotional experiences in autistic clients due to their ability to circumvent certain social communication differences between clients and clinicians. Questionnaire scores, particularly in conjunction with an opportunity to review and understand their meaning with clinical judgment, may afford a more concrete and digestible approach to diagnostic decision-making for autistic clients than clinical interviews alone.

Improved client understanding of symptoms and normalization have been associated with the use of MBC in psychotherapy (Bickman et al., 2011; Carlier et al., 2012) and appear to be an important benefit for autistic clients. Similarly, client–clinician collaboration on diagnostic decisions and treatment planning has been documented in non-autistic clients receiving MBC (Fortney et al., 2017), and our findings suggest that client–clinician collaboration is important to autistic clients. Collaboration in therapy to identify effective strategies may be exceptionally valuable to autistic clients who are more likely to be misunderstood, experience miscommunications, and/or engage in masking. A study of client and clinician experiences in therapy collaboration is a critical next step to advance this research. In addition, the benefits of identifying and resolving youth-caregiver rating discrepancies through the MBC-AUT system may be particularly salient in autism as rating discrepancies of adolescent mental health are more common in autism than the general population (Kalvin et al., 2020; Schwartzman & Corbett, 2020).

The caregiver-specific measures of the MBC-AUT system provided clinicians and caregivers alike with information about caregiver well-being, some insights into family history, and potential areas to support caregivers in their role as treatment partners for their child. For example, many caregivers reported depressive symptoms and shared family histories of depression that may contribute to a youth’s depression. Similarly, caregivers acknowledged the role of their own stress, anxiety, or depressive symptoms in interactions with their child. Increased awareness and open conversations about caregiver well-being afforded a more holistic perspective of the family and opportunities to share resources for caregivers



themselves. On several occasions, these realizations encouraged caregivers to pursue their own individual therapy. A focus on caregiver well-being in the MBC-AUT system may be a critical benefit for autistic clients, particularly as caregivers of autistic youth frequently endorse higher stress (Bonis, 2016) and more psychiatric symptoms (e.g. depression, anxiety) than caregivers of non-autistic youth (Corbett et al., 2021; Giallo et al., 2013; Schwartzman et al., 2021; Zhou & Yi, 2014).

Of note, adolescent clients were informed that survey responses would be reviewed with caregivers in the intake appointment and in developing treatment plans, which adolescent clients agreed to. However, it is important to consider that a review of responses with caregivers, and/or knowledge that caregivers have access to minors' health information, may have affected adolescents' responses to questions (e.g. under-reporting, worry about disappointing caregivers, masking). To address this, suggestions for clinicians include: (a) the option for families to do separate survey reviews with adolescents and caregivers, (b) additional discussions with adolescents about the role of the MBC system in care (e.g. improve care, target distress experienced by clients, not to get youth in trouble), and (c) the option to opt out of completing surveys. If clients elect for the third option, clinicians could qualitatively assess the critical domains of the MBC (e.g. symptom severity, risk/protective factors) in session with the adolescent client, while not reporting scores.

Clinicians reported many benefits to the MBC-AUT system in enhancing clinical care for autistic clients, which supports the feasibility and acceptability of this intervention for clinicians and clients alike. Enhanced screening, case conceptualization, safety monitoring, and care coordination have been associated with MBC systems for non-autistic clients (Bickman et al., 2011), and may be important benefits for clinicians serving autistic clients. Clinicians in the present study were experienced in treating autistic clients and, thus, may not have reported a benefit of increased certainty in treating autistic clients. As many clinicians report uncertainty in treating autistic clients and often refer out (Maddox et al., 2019, 2020), it is possible the systematic administration of the MBC-AUT intervention may increase provider certainty and/or retention of referrals. To test this, it would be important to measure clinician attitudes toward, and certainty in treating, autistic clients before and after the implementation of the MBC-AUT system.

Barriers to implementing MBC systems in healthcare settings are documented in the general population (Carlier et al., 2012) and occur for autistic clients and clinicians alike. Fatigue in completing surveys, confusion about item wording and/or importance, and client burden in completing surveys are challenges to MBC that are noted in non-autistic clients (Bickman et al., 2011; Kearney et al., 2015), and occurred for autistic clients and caregivers in the current pilot study as well. Proposed solutions to the barriers identified by clients are presented in Table 4 and may provide an initial starting point for addressing these barriers. Although these barriers are not specific to our institution and are likely to apply across multiple clinical settings, it is notable that we only explored the potential for implementation barriers to occur at our specific clinical site (i.e. a specialized outpatient psychotherapy clinic within an academic medical center). With the potential adoption of the MBC-AUT system into other clinical settings (e.g. community mental health, partial hospitalization programs), additional barriers may arise for clients and clinicians alike. In order for the

MBC to be incorporated into routine clinical practice more widely within the autism field, continued investigations of user experiences (i.e. feasibility, acceptability, benefits, barriers) are essential. Further large-scale data demonstrating the feasibility, acceptability, and cost-effectiveness of MBC-AUT and similar MBC systems are therefore needed to support autism-specific MBC as a truly evidence-based practice within this field of mental health care. However, the preliminary data from our MBC-AUT system and many years of research on MBC in other psychiatric services support this practice in the autistic population and encourage additional research and quality improvement efforts in parallel. As noted previously, it will also be important to design and implement an MBC system that is inclusive of autistic clients with intellectual disability, language disability, or other disabilities (e.g. blindness) to enhance clinical care for the broader spectrum of autistic individuals served at mental health clinics, including our clinic (see Fitzpatrick et al., 2022; Nicolaidis et al., 2020) for examples of adaptations for individuals with more limited cognitive or language abilities).

Importantly, administrative barriers (i.e. clinician time for startup, survey administration, and documentation) were the most common for clinicians using the MBC-AUT system in psychotherapy and point to the importance of support and resources (e.g. protected time, clinician training) from clinics and organizations to adopt this system. It is important to note that researchers, clinicians, and autistic adults dedicated time in the startup phase of MBC-AUT to closely review the literature and select the measures included in the battery. While this effort produced a battery of robust measures that may be used by other clinics, this process highlights the need for more freely available and brief measures to be created and/or validated for autistic people. In the general population, similar barriers are frequently reported by clinicians and healthcare systems attempting to implement MBC into routine clinical care (Fortney et al., 2017). Greater support and resources are needed in the startup phase of MBC (Aboraya et al., 2018; Lewis et al., 2019; Scott & Lewis, 2015), but over time, less support is needed as clinicians become familiar with the system. The initial investment in MBC contributes to long-term benefits to clients (e.g. reduced symptom severity, fewer treatment sessions), clinicians (e.g. empirically-based decision making), and organizations or clinics (e.g. quality improvement efforts; Bickman et al., 2011; Carlier et al., 2012; Kearney et al., 2015) over time and may be important for autistic clients who are more likely to seek psychiatric services than the general population (Joshi et al., 2010). A systematic investigation of the short-term costs and long-term benefits of the MBC-AUT system to clients, clinicians, and organizations is an important extension of this research.

As different clients and clinicians engage with the MBC-AUT system in real-time at the Vanderbilt University Medical Center, the system is constantly being improved and iterated to meet client and clinician needs. Opportunities to personalize the system for clients are underway, including optional add-on modules that are disorder-specific (e.g. OCD, social anxiety) and iterations for clients who cannot complete self-report measures for various reasons (e.g. language barriers, intellectual disability).

## Limitations

The present study was the first to design and implement an MBC system for psychotherapy for and with autistic clients; however, there are several limitations that warrant a discussion and may constitute future directions. First, the study included a small sample of autistic clients and caregivers attending one of two psychotherapy services at a single clinic, which limits the generalizability of findings and/or consideration of additional benefits or barriers to the system that may be identified by a greater number of autistic people in multiple environments or accessing a wider range of therapeutic interventions. In addition, between-group differences in adolescent, caregiver, and adult acceptability ratings were not tested given the small sample; however, this is an important area of future investigation. Relatedly, we did not investigate changes in acceptability ratings over time due to the small sample and conceptual focus of the article; however, this may be an important next step in this line of research, particularly in a larger controlled trial. Second, clients in the study were able to access therapy and utilize insurance to pay for sessions, which are two challenges (i.e. access to care, insurance coverage) faced by many autistic people and limit the generalizability of these findings. Third, the clinicians included in the study had expertise in autism and may not represent the majority of clinicians in other settings (e.g. community mental health, general psychiatry clinic). Fourth, the MBC-AUT system was implemented in an outpatient setting, and thus, the feasibility and acceptability of the system may change across settings (e.g. partial hospitalization program, residential care setting) and clients (e.g. significant safety concerns and/or functional impairments that warrant higher-level care). Fifth, the feasibility and acceptability of the MBC-AUT system were not compared to a control condition (e.g. standard MBC or treatment as usual), which limits conclusions. Sixth, the parameters of the MBC-AUT system may still not be optimal as we have not tested all possible iterations of the assessment battery. Seventh, modified approaches to reviewing responses with clients in individual and group therapy were used given the distinct treatment modalities. It may therefore be important to investigate associations between system modifications and client experiences for clients receiving individual or group therapy in larger more controlled trials. Finally, as noted, the MBC-AUT system was implemented within the psychotherapy clinic that primarily serves clients presenting with depressive disorders, anxiety disorders, and/or suicidal thoughts and behaviors and thus, the current iteration of the system does not cover additional psychiatric problems common in autistic people (e.g. PTSD, eating disorders).

## Conclusion

With many autistic clients pursuing psychotherapy for psychiatric symptoms, research into MBC to enhance therapeutic processes is critical for this population. Participatory research methods may improve the quality of research projects and clinical services, but the extent to which an MBC system designed for and with autistic people may be feasible and acceptable is unclear. The current findings from autistic clients suggested that the MBC-AUT system was a feasible and acceptable system associated with many benefits to various therapeutic processes. Clinicians also noted the benefits of the implementation of the MBC-AUT system in clinical practice. Notably, important barriers to the use of the MBC-AUT system were raised by clients and clinicians, although several potential solutions were presented to

address these barriers and reduce client and clinician burden. As autistic clients continue to seek psychological services amid social landscapes of increasing complexity (e.g. the COVID-19 pandemic), efforts to enhance the delivery of psychotherapy for this vulnerable population are critical.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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## References

- Aboraya A, Nasrallah HA, Elswick DE, Elshazly A, Estephan N, Aboraya D, Berzingi S, Chumbers J, Berzingi S, Justice J, Zafar J, & Dohar S (2018). Measurement-based care in psychiatry—Past, present, and future. *Innovations in Clinical Neuroscience*, 15(11–12), 13–26.
- American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders: DSM-5-TR*.
- Bal VH, Wilkinson E, Glascock V, Hastings RP, & Jahoda A (2022). Mechanisms of change in behavioral activation: Adapting depression treatment for autistic people. *Cognitive and Behavioral Practice*. Advance online publication. 10.1016/j.cbpra.2022.03.006
- Beck AT (1991). Cognitive therapy: A 30-year retrospective. *American Psychologist*, 46(4), 368–375. 10.1037/0003-066X.46.4.368 [PubMed: 2048795]
- Bickman L (2008). A measurement feedback system (MFS) is necessary to improve mental health outcomes. *Journal of the American Academy of Child and Adolescent Psychiatry*, 47(10), 1114–1119. 10.1097/CHI.0b013e3181825af8 [PubMed: 20566188]
- Bickman L, Kelley SD, Breda C, de Andrade AR, & Riemer M (2011). Effects of routine feedback to clinicians on mental health outcomes of youths: Results of a randomized trial. *Psychiatric Services*, 62(12), 1423–1429. [PubMed: 22193788]
- Blanchard A, Chihuri S, Diguseppi CG, & Li G (2021). Risk of self-harm in children and adults with autism spectrum disorder: A systematic review and meta-analysis. *JAMA Network Open*, 4, e2130272. 10.1001/jamanetworkopen.2021.30272 [PubMed: 34665237]
- Bonis S (2016). Stress and parents of children with autism: A review of literature. *Issues in Mental Health Nursing*, 37(3), 153–163. 10.3109/01612840.2015.1116030 [PubMed: 27028741]
- Bottema-Beutel K, Kapp SK, Lester JN, Sasson NJ, & Hand BN (2021). Avoiding ableist language: Suggestions for autism researchers. *Autism in Adulthood*, 3(1), 18–29. 10.1089/aut.2020.0014 [PubMed: 36601265]
- Boulter C, Freeston M, South M, & Rodgers J (2014). Intolerance of uncertainty as a framework for understanding anxiety in children and adolescents with autism spectrum disorders. *Journal of*

- Autism and Developmental Disorders, 44(6), 1391–1402. 10.1007/s10803-013-2001-x [PubMed: 24272526]
- Brosnan M, & Adams S (2022). Adapting drug and alcohol therapies for autistic adults. *Autism in Adulthood*, 4(3), 214–223. [PubMed: 36606157]
- Carlier IV, Meuldijk D, van Vliet IM, van Fenema EM, van der Wee NJ, & Zitman FG (2012). Empirical evidence for the effectiveness of routine outcome monitoring: A study of the literature. *Tijdschrift voor Psychiatrie*, 54(2), 121–128. [PubMed: 22331532]
- Chorpita BF, Moffitt CE, & Gray J (2005). Psychometric properties of the Revised Child Anxiety and Depression Scale in a clinical sample. *Behaviour Research and Therapy*, 43(3), 309–322. 10.1016/j.brat.2004.02.004 [PubMed: 15680928]
- Churchill R, Hunot V, Corney R, Knapp M, McGuire H, Tylee A, & Wessely S (2001). A systematic review of controlled trials of the effectiveness and cost-effectiveness of brief psychological treatments for depression. *Health Technology Assessment*, 5(35), 1–173. 10.3310/hta5350
- Cohen S, Kamarck T, & Mermelstein R (1994). Perceived stress scale. In Cohen S, Kessler RC, & Gordon LU (Eds.), *Measuring stress: A guide for health and social scientists* (pp. 1–2). Oxford University Press.
- Cook J, Hull L, Crane L, & Mandy W (2021). Camouflaging in autism: A systematic review. *Clinical Psychology Review*, 89, 102080. 10.1016/j.cpr.2021.102080 [PubMed: 34563942]
- Cooper K, Smith LGE, & Russell A (2017). Social identity, self-esteem, and mental health in autism. *European Journal of Social Psychology*, 47(7), 844–854. 10.1002/ejsp.2297
- Cooper K, Loades ME, & Russell A (2018). Adapting psychological therapies for autism. *Research in Autism Spectrum Disorders*, 45, 43–50. [PubMed: 30245739]
- Corbett BA, Muscatello RA, Klemencic ME, & Schwartzman JM (2021). The impact of COVID-19 on stress, anxiety, and coping in youth with and without autism and their parents. *Autism Research*, 14(7), 1496–1511. 10.1002/aur.2521 [PubMed: 33913261]
- Corbett BA, Muscatello RA, Klemencic ME, West M, Kim A, & Strang JF (2023). Greater gender diversity among autistic children by self-report and parent-report. *Autism*, 27(1), 158–172. 10.1177/13623613221085337 [PubMed: 35363085]
- Cornwall A, & Jewkes R (1995). What is participatory research? *Social Science & Medicine*, 41(12), 1667–1676. 10.1016/0277-9536(95)00127-S [PubMed: 8746866]
- de Beurs E, den Hollander-Gijsman ME, van Rood YR, van der Wee NJA, Giltay EJ, van Noorden MS, van der Lem R, van Fenema E, & Zitman FG (2011). Routine outcome monitoring in the Netherlands: Practical experiences with a web-based strategy for the assessment of treatment outcome in clinical practice. *Clinical Psychology & Psychotherapy*, 18(1), 1–12. 10.1002/cpp.696 [PubMed: 20238371]
- Diendorfer T, Seidl L, Mitic M, Mittmann G, Woodcock K, & Schrank B (2021). Determinants of social connectedness in children and early adolescents with mental disorder: A systematic literature review. *Developmental Review*, 60, 100960. 10.1016/j.dr.2021.100960
- English MCW, Gignac GE, Visser TAW, Whitehouse AJO, Enns JT, & Maybery MT (2021). The Comprehensive Autistic Trait Inventory (CATI): Development and validation of a new measure of autistic traits in the general population. *Molecular Autism*, 12(1), Article 37. 10.1186/s13229-021-00445-7 [PubMed: 34001225]
- Fitzpatrick R, McGuire BE, & Lydon HK (2022). Improving pain-related communication in children with autism spectrum disorder and intellectual disability. *Paediatric and Neonatal Pain*, 4(1), 22–32.
- Fletcher-Watson S, Adams J, Brook K, Charman T, Crane L, Cusack J, Leekam S, Milton D, Parr JR, & Pellicano E (2019). Making the future together: Shaping autism research through meaningful participation. *Autism*, 23(4), 943–953. 10.1177/1362361318786721 [PubMed: 30095277]
- Fortney JC, Pyne JM, Mouden SB, Mittal D, Hudson TJ, Schroeder GW, Williams DK, Bynum CA, Mattox R, & Rost KM (2013). Practice-based versus telemedicine-based collaborative care for depression in rural federally qualified health centers: A pragmatic randomized comparative effectiveness trial. *American Journal of Psychiatry*, 170(4), 414–425. 10.1176/appi.ajp.2012.12050696 [PubMed: 23429924]

- Fortney JC, Unutzer J, Wrenn G, Pyne JM, Smith GR, Schoenbaum M, & Harbin HT (2017). A tipping point for measurement-based care. *Psychiatric Services*, 68(2), 179–188. 10.1176/appi.ps.201500439 [PubMed: 27582237]
- Georgiades S, Szatmari P, & Boyle M (2013). Importance of studying heterogeneity in autism. *Neuropsychiatry*, 3(2), 123–125. 10.2217/npv.13.8
- Giallo R, Wood CE, Jellett R, & Porter R (2013). Fatigue, wellbeing and parental self-efficacy in mothers of children with an autism spectrum disorder. *Autism*, 17(4), 465–480. 10.1177/1362361311416830 [PubMed: 21788255]
- Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, & Conde JG (2009). Research Electronic Data Capture (REDCap)—A metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics*, 42(2), 377–381. 10.1016/j.jbi.2008.08.010 [PubMed: 18929686]
- Hays RD, Bjorner JB, Revicki DA, Spritzer KL, & Cella D (2009). Development of physical and mental health summary scores from the Patient-Reported Outcomes Measurement Information System (PROMIS) global items. *Quality of Life Research*, 18(7), 873–880. 10.1007/s11136-009-9496-9 [PubMed: 19543809]
- Hedley D, & Uljarević M (2018). Systematic review of suicide in autism spectrum disorder: Current trends and implications. *Current Developmental Disorders Reports*, 5(1), 65–76. 10.1007/s40474-018-0133-6
- Hollocks MJ, Lerh JW, Magiati I, Meiser-Stedman R, & Brugha TS (2019). Anxiety and depression in adults with autism spectrum disorder: A systematic review and meta-analysis. *Psychological Medicine*, 49(4), 559–572. 10.1017/S0033291718002283 [PubMed: 30178724]
- Horvath AO, & Luborsky L (1993). The role of the therapeutic alliance in psychotherapy. *Journal of Consulting and Clinical Psychology*, 61(4), 561–573. 10.1037/0022-006x.61.4.561 [PubMed: 8370852]
- Hudson CC, Hall L, & Harkness KL (2019). Prevalence of depressive disorders in individuals with autism spectrum disorder: A meta-analysis. *Journal of Abnormal Child Psychology*, 47(1), 165–175. 10.1007/s10802-018-0402-1 [PubMed: 29497980]
- Jager-Hyman S, Maddox BB, Crabbe SR, & Mandell DS (2020). Mental health clinicians' screening and intervention practices to reduce suicide risk in autistic adolescents and adults. *Journal of Autism and Developmental Disorders*, 50(10), 3450–3461. 10.1007/s10803-020-04441-3 [PubMed: 32240486]
- Joshi G, Petty C, Wozniak J, Henin A, Fried R, Galdo M, Kotarski M, Walls S, & Biederman J (2010). The heavy burden of psychiatric comorbidity in youth with autism spectrum disorders: A large comparative study of a psychiatrically referred population. *Journal of Autism and Developmental Disorders*, 40(11), 1361–1370. 10.1007/s10803-010-0996-9 [PubMed: 20309621]
- Jovevska S, Richdale AL, Lawson LP, Uljarević M, Arnold SRC, & Trollor JN (2020). Sleep quality in autism from adolescence to old age. *Autism in Adulthood*, 2(2), 152–162. 10.1089/aut.2019.0034 [PubMed: 36601570]
- Kalvin CB, Marsh CL, Ibrahim K, Gladstone TR, Woodward D, Grantz H, Ventola P, & Sukhodolsky DG (2020). Discrepancies between parent and child ratings of anxiety in children with autism spectrum disorder. *Autism Research*, 13(1), 93–103. 10.1002/aur.2220 [PubMed: 31643143]
- Kearney LK, Wray LO, Dollar KM, & King PR (2015). Establishing measurement-based care in integrated primary care: Monitoring clinical outcomes over time. *Journal of Clinical Psychology in Medical Settings*, 22(4), 213–227. [PubMed: 26645091]
- Keating CT (2021). Participatory autism research: How consultation benefits everyone. *Frontiers in Psychology*, 12, Article 713982. 10.3389/fpsyg.2021.713982 [PubMed: 34504463]
- Kenny L, Hattersley C, Molins B, Buckley C, Povey C, & Pellicano E (2016). Which terms should be used to describe autism? Perspectives from the UK autism community. *Autism*, 20(4), 442–462. 10.1177/1362361315588200 [PubMed: 26134030]
- Kroenke K, Spitzer RL, & Williams JBW (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16(9), 606–613. 10.1046/j.1525-1497.2001.016009606.x [PubMed: 11556941]

- Lai MC, Kassee C, Besney R, Bonato S, Hull L, Mandy W, Szatmari P, & Ameis SH (2019). Prevalence of co-occurring mental health diagnoses in the autism population: A systematic review and meta-analysis. *The Lancet Psychiatry*, 6(10), 819–829. 10.1016/S2215-0366(19)30289-5 [PubMed: 31447415]
- Kruk ME, Kelley E, Syed SB, Tarp F, Addison T, & Akachi Y (2017). Measuring quality of health-care services: What is known and where are the gaps? *Bulletin of the WorldHealth Organization*, 95(6), 389–401.
- Lewis CC, Boyd M, Puspitasari A, Navarro E, Howard J, Kassab H, Hoffman M, Scott K, Lyon A, Douglas S, Simon G, & Kroenke K (2019). Implementing measurement-based care in behavioral health: A review. *JAMA Psychiatry*, 76(3), 324–335. 10.1001/jamapsychiatry.2018.3329 [PubMed: 30566197]
- Machtinger EL, Davis KB, Kimberg LS, Khanna N, Cuca YP, Dawson-Rose C, Shumway M, Campbell J, Lewis-O'Connor A, Blake M, Blanch A, & McCaw B (2019). From treatment to healing: Inquiry and response to recent and past trauma in adult health care. *Women's Health Issues*, 29(2), 97–102. [PubMed: 30606467]
- Loth E, Murphy DG, & Spooren W (2016). Defining precision medicine approaches to autism spectrum disorders: Concepts and challenges. *Frontiers in Psychiatry*, 7, Article 188. 10.3389/fpsy.2016.00188 [PubMed: 27965598]
- Maddox BB, Crabbe SR, Beidas RS, Brookman-Frazee L, Cannuscio CC, Miller JS, Nicolaidis C, & Mandell DS (2020). “I wouldn't know where to start”: Perspectives from clinicians, agency leaders, and autistic adults on improving community mental health services for autistic adults. *Autism*, 24(4), 919–930. 10.1177/1362361319882227 [PubMed: 31674198]
- Maddox BB, Crabbe SR, Fishman JM, Beidas RS, Brookman-Frazee L, Miller JS, Nicolaidis C, & Mandell DS (2019). Factors influencing the use of cognitive-behavioral therapy with autistic adults: A survey of community mental health clinicians. *Journal of Autism and Developmental Disorders*, 49(11), 4421–4428. 10.1007/s10803-019-04156-0 [PubMed: 31385175]
- Maenner MJ, Shaw KA, Bakian A, v Bilder DA, Durkin MS, Esler A, Furnier SM, Hallas L, Hall-Lande J, Hudson A, Hughes MM, Patrick M, Pierce K, Poynter JN, Salinas A, Shenouda J, Vehorn A, Warren Z, Constantino JN, ...Cogswell ME (2021). Prevalence and characteristics of autism spectrum disorder among children aged 8 years—Autism and developmental disabilities monitoring network, 11 sites, United States, 2018. *MMWR Surveillance Summaries*, 70(11), 1–16. 10.15585/MMWR.SS7011A1
- Marmorstein NR, & Iacono WG (2004). Major depression and conduct disorder in youth: Associations with parental psychopathology and parent-child conflict. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 45(2), 377–386. 10.1111/j.1469-7610.2004.00228.x [PubMed: 14982250]
- Mazefsky CA, Borue X, Day TN, & Minshew NJ (2014). Emotion regulation patterns in adolescents with high-functioning autism spectrum disorder: Comparison to typically developing adolescents and association with psychiatric symptoms. *Autism Research*, 7(3), 344–354. 10.1002/aur.1366 [PubMed: 24610869]
- McFayden TC, Gatto AJ, Dahiya AV, Antezana L, Miyazaki Y, & Cooper LD (2021). Integrating measurement-based care into treatment for autism spectrum disorder: Insights from a community clinic. *Journal of Autism and Developmental Disorders*, 51(10), 3651–3661. 10.1007/s10803-020-04824-6 [PubMed: 33387241]
- Mutluer T, Genc HA, Morey AO, Eser HY, Ertinmaz B, Can M, & Munir K (2022). Population-based psychiatric comorbidity in children and adolescents with autism spectrum disorder: A meta-analysis. *Frontiers in Psychiatry*, 13, Article 856208. [PubMed: 35693977]
- Narendorf SC, Shattuck PT, & Sterzing PR (2011). Mental health service use among adolescents with an autism spectrum disorder. *Psychiatric Services*, 62(8), 975–978. 10.1176/appi.ps.62.8.975 [PubMed: 21807842]
- Nicolaidis C, Raymaker DM, McDonald KE, Lund EM, Leotti S, Kapp SK, Katz M, Beers LM, Kripke C, Maslak J, Hunter M, & Zhen KY (2020). Creating accessible survey instruments for use with autistic adults and people with intellectual disability: Lessons learned and recommendations. *Autism in Adulthood*, 2(1), 61–76. [PubMed: 32355908]

- O'Halloran L, Coey P, & Wilson C (2022). Suicidality in autistic youth: A systematic review and meta-analysis. *Clinical Psychology Review*, 93, 102144. 10.1016/j.cpr.2022.102144 [PubMed: 35290800]
- Pincus HA, Scholle SH, Spaeth-Rublee B, Hepner KA, & Brown J (2016). Quality measures for mental health and substance use: Gaps, opportunities, and challenges. *Health Affairs*, 35(6), 1000–1008. [PubMed: 27269015]
- Posner K, Brown GK, Stanley B, Brent DA, Yershova K, v Oquendo MA, Currier GW, Melvin GA, Greenhill L, Shen S, & Mann JJ (2011). The Columbia-suicide severity rating scale: Initial validity and internal consistency findings from three multisite studies with adolescents and adults. *The American Journal of Psychiatry*, 168(12), 1266–1277. 10.1176/appi.ajp.2011.10111704 [PubMed: 22193671]
- Roy-Byrne P, Craske MG, Sullivan G, Rose RD, Edlund MJ, Lang AJ, Bysritsky A, Welch SS, Chavira DA, Golinelli D, Campbell-Sills L, Sherbourne CD, & Stein MB (2010). Delivery of evidence-based treatment for multiple anxiety disorders in primary care: A randomized controlled trial. *Journal of the American Medical Association*, 303(19), 1921–1928. 10.1001/jama.2010.608 [PubMed: 20483968]
- Schuck RK, Tagavi DM, Baiden KMP, Dwyer P, Williams ZJ, Osuna A, Ferguson EF, Jimenez Muñoz M, Poyser SK, Johnson JF, & Vernon TW (2022). Neurodiversity and autism intervention: Reconciling perspectives through a naturalistic developmental behavioral intervention framework. *Journal of Autism and Developmental Disorders*, 52, 4625–4645. 10.1007/s10803-021-05316-x [PubMed: 34643863]
- Schwartzman JM, & Corbett BA (2020). Higher depressive symptoms in early adolescents with autism spectrum disorder by self- and parent-report compared to typically-developing peers. *Research in Autism Spectrum Disorders*, 77, 101613. 10.1016/j.rasd.2020.101613 [PubMed: 32802155]
- Schwartzman JM, Hardan AY, & Gengoux GW (2021). Parenting stress in autism spectrum disorder may account for discrepancies in parent and clinician ratings of child functioning. *Autism*, 25(6), 1601–1614. 10.1177/1362361321998560 [PubMed: 33691519]
- Schwartzman JM, Williams ZJ, & Corbett BA (2022). Diagnostic- and sex-based differences in depression symptoms in autistic and neurotypical early adolescents. *Autism*, 26, 256–269. 10.1177/13623613211025895 [PubMed: 34180264]
- Scott K, & Lewis CC (2015). Using measurement-based care to enhance any treatment. *Cognitive and Behavioral Practice*, 22(1), 49–59. 10.1016/j.cbpra.2014.01.010 [PubMed: 27330267]
- Shaw SCK, Doherty M, McCowan S, & Eccles JA (2022). Towards a neurodiversity-affirmative approach for an over-represented and under-recognised population: Autistic adults in outpatient psychiatry. *Journal of Autism and Developmental Disorders*, 52, 4200–4201. [PubMed: 35816244]
- Sherer MR, & Schreibman L (2005). Individual behavioral profiles and predictors of treatment effectiveness for children with autism. *Journal of Consulting and Clinical Psychology*, 73(3), 525–538. 10.1037/0022-006X.73.3.525 [PubMed: 15982150]
- Spitzer RL, Kroenke K, Williams JBW, & Löwe B (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, 166(10), 1092–1097. 10.1001/archinte.166.10.1092 [PubMed: 16717171]
- Wang PS, Simon G, & Kessler RC (2003). The economic burden of depression and the cost-effectiveness of treatment. *International Journal of Methods in Psychiatric Research*, 12(1), 22–33. 10.1002/mpr.139 [PubMed: 12830307]
- White SW, Oswald D, Ollendick T, & Scahill L (2009). Anxiety in children and adolescents with autism spectrum disorders. *Clinical Psychology Review*, 29(3), 216–229. 10.1016/j.cpr.2009.01.003 [PubMed: 19223098]
- Zhou T, & Yi C (2014). Parenting styles and parents' perspectives on how their own emotions affect the functioning of children with autism spectrum disorders. *Family Process*, 53(1), 67–79. 10.1111/famp.12058 [PubMed: 24400727]
- Zimmerman D, Ownsworth T, O'Donovan A, Roberts J, & Gullo MJ (2017). Associations between executive functions and mental health outcomes for adults with autism spectrum disorder. *Psychiatry Research*, 25(3), 360–363. 10.1016/j.psychres.2017.04.023



Table 1.

Demographic statistics.

	Adolescent Clients (N = 13)		Adult Clients (N = 5)	
	M	(SD)	M	(SD)
Age	14.38	(2.1)	30.40	(9.1)
Biological sex	6 males/7 females		3 males/2 females	
Gender	6 cisgender males 5 cisgender females 2 gender nonbinary		2 cisgender males 2 cisgender females 1 gender nonbinary	
Ethnicity	2 Hispanic/Latinx 11 Not Hispanic/Latinx		1 Hispanic/Latinx 4 Not Hispanic/Latinx	
Race	8 White/2 Mixed race 3 Black		3 White/2 Mixed race	
Depressive symptoms Self-report	66.92 (12.5)		13.80 (4.4)	
	<i>High average</i>		<i>Moderate-severe</i>	
Depressive symptoms Parent report	66.77 (10.2)		-	
	<i>High average</i>			
Anxiety symptoms Self-report	60.84 (11.7)		10.40 (3.6)	
	<i>High average</i>		<i>Moderate</i>	
Anxiety symptoms Parent report	66.00 (9.3)		-	
	<i>High average</i>			
Suicidal thoughts	11 endorsed suicidal thoughts in past month		5 endorsed suicidal thoughts in past month	

N: the number of participants; M: mean; SD: standard deviation.

\* Depressive symptoms on Revised Children's Anxiety and Depression Scale (adolescent clients; T-scores) and Patient Health Questionnaire-9 (adults; raw scores).

† Anxiety symptoms on Revised Children's Anxiety and Depression Scale (adolescent clients; T-scores) and General Anxiety Disorder-7 (adults; raw scores).

**Table 2.** Means and standard deviations of feasibility and acceptability ratings of MBC-AUT from autistic clients.

	T1		T2		T3	
	M (SD)		M (SD)		M (SD)	
Youth clients (n = 13)						
Difficult to complete <sup>a</sup>	4.2 (1.4)		3.4 (1.2)		3.1 (0.8)	
	<i>Neutral</i>		<i>Slightly disagree</i>		<i>Disagree</i>	
Good use of time <sup>b</sup>	4.9 (1.3)		5.7 (1.1)		5.9 (0.7)	
	<i>Neutral</i>		<i>Slightly agree</i>		<i>Slightly agree</i>	
Helpful to therapy <sup>c</sup>	5.4 (1.5)		6.1 (0.8)		6.2 (0.8)	
	<i>Slightly agree</i>		<i>Agree</i>		<i>Agree</i>	
Interfered with therapy <sup>d</sup>	3.8 (1.2)		2.9 (0.9)		2.8 (0.9)	
	<i>Slightly disagree</i>		<i>Disagree</i>		<i>Disagree</i>	
Caregivers (n = 13)						
Difficult to complete <sup>a</sup>	3.1 (1.9)		2.5 (0.9)		1.9 (0.7)	
	<i>Slightly disagree</i>		<i>Disagree</i>		<i>Very much disagree</i>	
Good use of time <sup>b</sup>	5.9 (1.3)		6.2 (0.6)		6.3 (0.6)	
	<i>Slightly agree</i>		<i>Agree</i>		<i>Agree</i>	
Helpful to therapy <sup>c</sup>	5.7 (1.4)		6.3 (0.6)		6.4 (0.5)	
	<i>Slightly agree</i>		<i>Agree</i>		<i>Agree</i>	
Interfered with therapy <sup>d</sup>	2.8 (1.2)		1.9 (0.6)		1.8 (0.6)	
	<i>Disagree</i>		<i>Very much disagree</i>		<i>Very much disagree</i>	
Adult Clients (n = 5)						
Difficult to complete <sup>a</sup>	3.8 (1.4)		2.9 (1.1)		2.8 (0.9)	
	<i>Slightly disagree</i>		<i>Disagree</i>		<i>Disagree</i>	
Good use of time <sup>b</sup>	5.5 (1.5)		6.3 (0.6)		6.4 (0.6)	
	<i>slightly agree</i>		<i>Agree</i>		<i>Agree</i>	
Helpful to therapy <sup>c</sup>	5.8 (0.7)		6.4 (0.6)		6.4 (0.6)	
	<i>Slightly agree</i>		<i>Agree</i>		<i>Agree</i>	

	T1	T2	T3
	M (SD)	M (SD)	M (SD)
Interfered with therapy <sup>d</sup>	2.3 (1.5)	2.1 (1.1)	2.0 (0.9)
	<i>Disagree</i>	<i>Disagree</i>	<i>Disagree</i>

MBC-AUT: autism-adapted measurement-based care; SD: standard deviation.

<sup>a</sup> Completing the surveys was difficult for me.

<sup>b</sup> Completing the surveys was a good use of my time.

<sup>c</sup> Completing the surveys was helpful to my experience in therapy.

<sup>d</sup> Completing the surveys interfered with my experience in therapy.

**Table 3.**

The benefits of the MBC-AUT for autistic clients and clinicians.

<b>Clients</b>	
<i>Diagnostic decisions and treatment planning</i>	<p>Communication of internal experiences: Easier communication about clients' internal experiences using self-report than clinician interview alone.</p> <p>Psychoeducation and normalization: Improved client understanding and normalization of symptoms.</p> <p>Treatment collaboration: Active client participation in identifying treatment goals and developing treatment plans with clinicians.</p> <p>New family perspectives of youth mental health: Identified youth-caregiver rating discrepancies regarding youth mental health and fostered opportunities for clarification and group consensus.</p> <p>Caregiver needs during youth therapy: Increased caregiver awareness of personal experiences throughout child's services.</p>
<i>Individual psychotherapy</i>	<p>Enhanced symptom tracking: Multiple datapoints of psychiatric symptoms and other domains afforded clients with greater clarity of their progress toward treatment goals than the weekly subjective report.</p> <p>Highlighting risk/protective factors: Awareness of risk and protective factors in the pathway to treatment goals and increased opportunities for change.</p> <p>Improved communication about therapeutic process: Facilitated discussions of therapeutic alliance, therapy modality, and skills taught, as well as options for therapist adjustments, as needed.</p> <p>Optimizing treatment dosage: Modification of session frequency and/or other treatment decisions (e.g. additional services).</p> <p>Preparing for graduation: Enhanced confidence about therapy graduation and learned skills, as well as client data to guide discussions of relapse prevention.</p>
<i>Group psychotherapy</i>	<p>Service selection and fit: Facilitated decisions regarding goodness of fit for clients with established group therapy curriculum.</p> <p>Facilitating psychoeducation: Increased understanding and normalization of symptoms for youth and caregivers.</p> <p>Treatment planning: Guided families' treatment decisions in anticipation of graduation.</p> <p>Individualization: Afforded a more personalized approach to group therapy.</p> <p>Care coordination: Score summaries to facilitate ongoing care.</p>
<b>Clinicians</b>	
<i>Ongoing Care</i>	<p>Comprehensive screening: Screening for additional psychiatric symptoms and/or safety risks.</p> <p>Case conceptualization: Comprehensive, multifaceted understanding of clients and opportunities to resolve youth-caregiver rating discrepancies.</p> <p>Improved therapeutic process: Opportunities to integrate client feedback into therapy delivery, modality, skill instruction, and techniques to enhance the therapeutic relationship.</p> <p>Safety monitoring: Consistent and routine safety monitoring to guide crisis assessments and safety planning.</p> <p>Care coordination: Shared data for multidisciplinary care and connection to future services/providers.</p>
MBC-AUT: autism-adapted measurement-based care.	

**Table 4.**

The barriers and proposed solutions to the MBC-AUT for autistic clients and clinicians.

CLIENTS	
MBC-AUT barriers	Suggested solutions
<i>Survey fatigue:</i> Tiredness/weariness in completing surveys, particularly for autistic youth.	<ul style="list-style-type: none"> <li>• Consideration of a shortened assessment battery.</li> <li>• Return functions on REDCap to enable clients to complete surveys in portions.</li> <li>• Customization of the assessment battery such that the clinician can send only portions of it at each visit and reduce survey fatigue for certain clients, if need be.</li> <li>• Clinician validation of survey fatigue and brief psychoeducation on the use and importance of the MBC-AUT to therapy process.</li> </ul>
<i>Item confusion:</i> Uncertainty about the meaning of certain items on questionnaires.	<ul style="list-style-type: none"> <li>• Include an optional, blank text box at the end of each questionnaire for clients to write questions or clarifications.</li> <li>• Hyperlinks on items with hard words defined and opened in another tab.</li> <li>• Clinicians could directly inquire about the wording of items or meaning of questionnaires with clients at TI to clarify.</li> <li>• Use of measures with brief, clear wording and response options to limit potential client confusion or uncertainty.</li> </ul>
<i>Item irrelevance:</i> Answering questions that seem irrelevant or unrelated to the client's experience.	<ul style="list-style-type: none"> <li>• Consideration of the necessity for certain measures with certain clients.</li> <li>• Clinician validation of clients' experience and brief psychoeducation on the need to screen for and/or monitor certain experiences (e.g. substance use, sleep quality, etc.)</li> </ul>
<i>Survey burden:</i> Difficulties in completing surveys amidst other, ongoing responsibilities.	<ul style="list-style-type: none"> <li>• Return functions on REDCap to enable clients to complete surveys in portions.</li> <li>• One-time, automatic email reminders to complete surveys.</li> <li>• Clinician validation of survey burden and problem solving (as needed) to address barriers or adapt the system (as feasible) to client and/or family needs.</li> </ul>

CLINICIANS	
MBC-AUT Barriers	Suggested solutions
<i>Clinician time for startup:</i> In the startup phase, significant clinician time is needed to learn and adopt the MBC-AUT into routine clinical practice.	<ul style="list-style-type: none"> <li>• Clinic/system investment (e.g. protected time, resources, etc.) in the startup phase for clinicians to learn and adopt the MBC-AUT into clinical practice.</li> <li>• Clinic/system investment (e.g. protected time, resources, etc.) in the startup phase for clinicians to become familiar with certain measures.</li> <li>• Include score interpretations in the output (e.g. done via REDCap calculated fields) to scaffold clinician knowledge</li> </ul>
<i>Clinician time for survey administration:</i> Some clinician time to administer online surveys.	<ul style="list-style-type: none"> <li>• Ongoing clinic/system investment (e.g. protected time, resources, etc.) in clinicians' administration of the MBC-AUT surveys and/or administrative staff to administer surveys.</li> <li>• Integration of the MBC-AUT into electronic medical record systems.</li> </ul>

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*Clinician time for documentation:* Ongoing clinical time needed to integrate data from the MBC-AUT into client chart/medical record.

- Ongoing clinic/system investment (e.g. protected time, resources, etc.) in clinicians' use of MBC-AUT data to update client charts/medical records.

- Integration of the MBC-AUT into electronic medical record systems.

- Clinic/system recognition of shared data to enhance collaborative, multidisciplinary care.

*Survey limitations:* Reliance on parent-report measures for clients with intellectual or other disabilities that limited self-reports.

- Development and implementation of an adapted MBC-AUT for and with autistic clients and intellectual or other disabilities.

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MBC-AUT: autism-adapted measurement-based care; REDCap: research electronic data capture.