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Online First Publication, August 13, 2018. <http://dx.doi.org/10.1037/ser0000275>

CITATION

Treichler, E. B. H., Avila, A., Evans, E. A., & Spaulding, W. D. (2018, August 13). Collaborative Decision Skills Training: Feasibility and Preliminary Outcomes of a Novel Intervention. *Psychological Services*. Advance online publication. <http://dx.doi.org/10.1037/ser0000275>

Collaborative Decision Skills Training: Feasibility and Preliminary Outcomes of a Novel Intervention

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Increasing consumer empowerment and agency in treatment decision-making is a priority for improving recovery among people with serious mental illness (SMI), as it is associated with a number of positive outcomes, including improved treatment engagement and satisfaction. Although there are many tools to promote initiation of shared decision-making by providers, there are few tools empowering consumers to independently initiate collaborative decision-making (CDM). Therefore, this study tests the feasibility of a novel skills training intervention for outpatients with SMI, collaborative decision skills training (CDST). Twenty-one consumers with SMI currently receiving community-based day services participated in CDST. Four areas of feasibility were assessed—acceptability, demand, practicality, and preliminary evidence of efficacy. Feasibility results were favorable, including high acceptability and practicality. Demand results were mixed: rates of attendance were high and attrition was low, but participants did not complete homework as often as expected. Finally, there was evidence CDST has a positive impact on targeted outcomes; participants reported an increased sense of personal recovery, and displayed improvements in both knowledge and skills targeted by CDST. CDST is feasible to implement with fidelity and is received well by participants. Next steps include larger controlled trials of CDST, which will better inform efficacy and implementation related questions.

Keywords: serious mental illness, collaborative decision-making, skills training intervention, pilot study, feasibility

Shared decision-making (SDM) is a championed treatment decision-making approach (Treichler & Spaulding, 2017). SDM assigns decision-making roles to providers and consumers, according to their perceived respective areas of expertise, and encourages a mutual final decision. SDM is preferred by consumers with

serious mental illness (SMI)¹ above traditional methods, which typically place providers in an expert role and consumers in a recipient role (Hamann et al., 2006; Joosten et al., 2008). This is intended to facilitate greater empowerment and autonomy for the consumer, while improving the quality of consumer-provider interactions, leading to better treatment personalization and outcome.

SDM is associated with proximal process-related benefits for treatment, like improved treatment-relevant knowledge, treatment adherence, and decreased attrition (e.g., Joosten et al., 2008; Swanson, Bastani, Rubenstein, Meredith, & Ford, 2007; Stacey et al., 2014). For example, one study found that more positive collaboration with providers and more input from providers during decision-making was associated with greater treatment satisfaction among veterans with SMI (Klingaman et al., 2015). These treatment process benefits appear to translate into improved outcomes, like improved quality of life, improved social functioning, and decreased symptom severity (e.g., Joosten et al., 2008; Malm et al.,

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We gratefully acknowledge the support of Disability Rights Nebraska and OUR Homes, particularly Jennifer Monjaras' and Sondra Hepburn's administrative support. We also thank our study staff, including Jesse Hochheiser, Elaina Montague, Lexi Gunning, and Sarah Fischer.

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¹ *Serious mental illness* here means chronic, disabling psychiatric disorders in the schizophrenia spectrum, sometimes including affective disorders with psychotic features or obsessive compulsive disorders, when severe and persistent enough to result in long-term functional disability.

2003; Stacey et al., 2014). One study of depression found that consumers who received the intervention of their choice had better outcomes compared to consumers who were randomly assigned to therapy (Mergl et al., 2011).

Despite this, SDM implementation remains infrequent (e.g., Matthias, Salyers, Rollins, & Frankel, 2012). Qualitative analysis of provider, consumer, and family member perspectives indicates there is a range of barriers to implementation (Mahone et al., 2011). Some of these are provider- and agency-associated logistical and philosophical issues, like belief in the medical model and focus on liability management. Other obstacles were rooted in consumer ability to engage in SDM, including concerns about symptom severity or insight preventing useful engagement, fear of provider response, lack of knowledge about options, and impaired ability to communicate.

There have been several provider- and clinic-based interventions developed to increase SDM (e.g., Deegan, 2010; Priebe et al., 2007; Steinwachs et al., 2011). Although such interventions are important advances showing promise to improve the quality of treatment for people with SMI, control over the process remains with the provider. This is problematic, as even familiar providers are less likely to use SDM principles if they view the consumer as “too symptomatic” (Seale, Chaplin, Lelliott, & Quirk, 2006). These gaps indicate that a consumer-based intervention may be a more effective method, particularly given studies indicating consumers often understandably lack the skill set to initiate SDM (Mahone et al., 2011). Consumer-based interventions are rare at this time; we are aware of only one other consumer-based intervention for people with SMI, a five-session group intervention intended to promote SDM between inpatients with schizophrenia and their psychiatrists (Hamann et al., 2017).

The inequality in resources available to consumers to initiate SDM reveals a gap not only in available tools, but also in the conceptualization of SDM itself (Treichler & Spaulding, 2017). SDM starts with the provider and leaves the “technical” part of the treatment decision mostly or entirely off-limits to the consumer, arguably a vestige of its roots in oncology. Considering the context of the complicated and dynamic decisions associated with treatment for SMI, as well as stigmatization, health care disparities, and poor outcomes among people with SMI, further evolution of the SDM concept is necessary to truly enhance consumers’ participation in decision-making about their own lives.

Collaborative decision-making (CDM) is a recalibrated treatment decision-making approach that assigns equal power and responsibility to providers and consumers across all aspects of decision-making (Treichler & Spaulding, 2017). The substitution of “collaborative” for “shared” reframes the context from one where practitioners might share decision-making based on preference or clinical judgment, to one where both mutually collaborate on decisions. By creating this semantic change, the implied meaning is reframed, particularly for those who are not fluent in the nuances of decision-making paradigms. Recent work indicates providers interpret the shared in SDM as reflecting access to information about decisions; for example, a provider would share a consumer’s diagnosis with them, not the active process of decision-making itself (Goossensen, Zijlstra, & Koopmanschap, 2007). Use of “collaborative” explicitly communicates the expectation of a mutual, collaborative process, rather than a one-sided but shared end result. This adjustment facilitates understanding of

the goals of CDM among stakeholders who may not be familiar with it.

Ultimately, CDM aims to broaden the context of decision-making, increase expectations of reciprocity and collaboration, and limit the provider’s role in deciding if and how a consumer contributes to decision-making. This approach maximizes consumer autonomy and responsibility, while increasing the utility and flexibility of decision-making. CDM is conceptualized as a systems-level approach, whereas SDM is a provider–consumer interaction approach. Overall, CDM emphasizes essential pathways to desired outcomes and has strong congruence with the recovery model (Deegan, 2010).

Collaborative Decision Skills Training

Collaborative decision skills training (CDST) was developed in pursuit of increasing consumer initiation and engagement in CDM, as well as filling a gap in available CDM tools for consumers. A skills training intervention was chosen for this purpose because consumer initiation is likely to receive a positive response from providers (Matthias et al., 2012; Young, Bell, Epstein, Feldman, & Kravitz, 2008), which suggests that training consumers to change the patient-provider dynamic is a viable strategy. In addition, similar skills training interventions are effective and generalizable to functional outcomes (e.g., Granholm, Holden, Link, & McQuaid, 2014; McGurk, Twamley, Sitzler, McHugo, & Mueser, 2007). Finally, a skills training intervention was chosen because of its ease of implementation; skills training requires very little financial or technical resources, and evidence-based treatment programs for SMI typically prioritize skills-based approaches.

A skills training intervention also complements existing provider-based tools because lack of familiarity with CDM principles or associated skill deficits may prevent consumers from fully engaging in CDM. This approach also has the promise to expand use of CDM across types of decisions and providers. CDST enables consumers to initiate CDM with any treatment team member regarding any decision, and define their own preferred role in decision-making, unlike most SDM interventions, which target specific decisions or practitioners.

Although many recovery-oriented providers and programs offer SDM tools, there are many that do not. Ideally, CDM would be improved by implementing both consumer-based and provider-based tools, but CDST is also formulated for independent use, with the aim of changing provider communication style through changes in consumer communication. Therefore, CDST should benefit consumers whose providers do not have access to relevant tools. Skills training increases CDM accessibility across all services due to its generalizability: once a consumer has learned CDM-relevant skills, they can apply them across providers and programs, even if provider-based tools are not available for a given decision. This maximizes opportunity for CDM, which is essential given the size and diversity of treatment teams in SMI. In particular, most provider-based tools focus on medication decisions, with fewer tools facilitating decisions regarding psychotherapy, supported education or employment, living arrangements, and so on.

Further, enabling consumer initiation of CDM is highly congruent with the recovery model, given the emphasis on autonomy, choice, and empowerment. Given past studies (Ludman et al.,

2003) indicating SDM may be effective because of improved self-management and self-efficacy, the focus on empowerment and autonomy is also congruent with understandings of how to apply CDM in an evidence-based manner.

Based on these theoretical underpinnings and practical considerations, Emily B. H. Treichler developed an initial CDST manual, which is similar to other successful skills training interventions in its approach, but unique in the combination of skills practiced and specific focus on CDM. The initial manual emphasized psychoeducation and behavioral strategies (e.g., role plays) to facilitate improved knowledge and skill sets needed to effectively collaborate on treatment decisions. Problem solving, assertiveness skills, goal setting, and knowledge of patient rights were prioritized to achieve this aim.

Following initial manual development, two combined groups of consumers and providers gave qualitative feedback on the manual. Their feedback was analyzed using structured content analysis. Emily B. H. Treichler, Eric A. Evans, and William D. Spaulding analyzed the qualitative feedback data and came to a consensus on manual revisions based on the feedback. Participants had largely positive responses to both the intention of the manual and its component parts. Suggested improvements yielded 10 changes to the CDST manual, including increasing role plays; adding sections to address handling conflict and resistance from providers, the limits to CDM, guardianship, focusing on small goals, and advocacy; and creating a laminated index card with CDST principles for participants to carry with them.

Therefore, although the revised CDST manual retained the original strategies and focus, it increased the scope (e.g., addressing how to respond when a provider is resistant to CDM), resources (i.e., the laminated card), and opportunities to practice

(i.e., more role plays). Figure 1 outlines the hypothesized theoretical model of CDST pathways. Table 1 outlines the session-by-session content covered by CDST, including assertiveness training, problem-solving, conflict management, and psychoeducation. All modules are delivered within the framework of empowerment. Although the intervention is a structured skills training format, it can be personalized according to participants' goals and values.

Purpose of Study and Hypotheses

The purpose of this study was to conduct a pilot test evaluating the feasibility of CDST as an intervention to increase CDM knowledge and skills for this population. Although every intervention should ultimately be tested, and independently replicated, in randomized controlled trials (RCTs) to establish empirical support for its use, a preliminary step to justify the resources for an RCT is to establish feasibility (Bowen et al., 2009).

This study addresses four of the eight aspects of feasibility reviewed in Bowen et al.'s (2009) work: acceptability, demand, practicality, and preliminary evidence of efficacy. These aspects of feasibility align with the following hypotheses: (a) the intervention would be acceptable to participants, as evidenced by participants showing high satisfaction with the intervention as well as an increased preference for CDM practices; (b) the intervention would be in demand, as evidenced by actual use of the intervention, including 75% or higher participant attendance, 14.7% or lower participant attrition during the treatment itself (see Roder, Mueller, Mueser, & Brenner, 2006), and 70% or better participant adherence to homework assignments by the last session (see Deane, Glaser, Oades, & Kazantzis, 2005); (c) the intervention would be practical to conduct, as evidenced by skills training

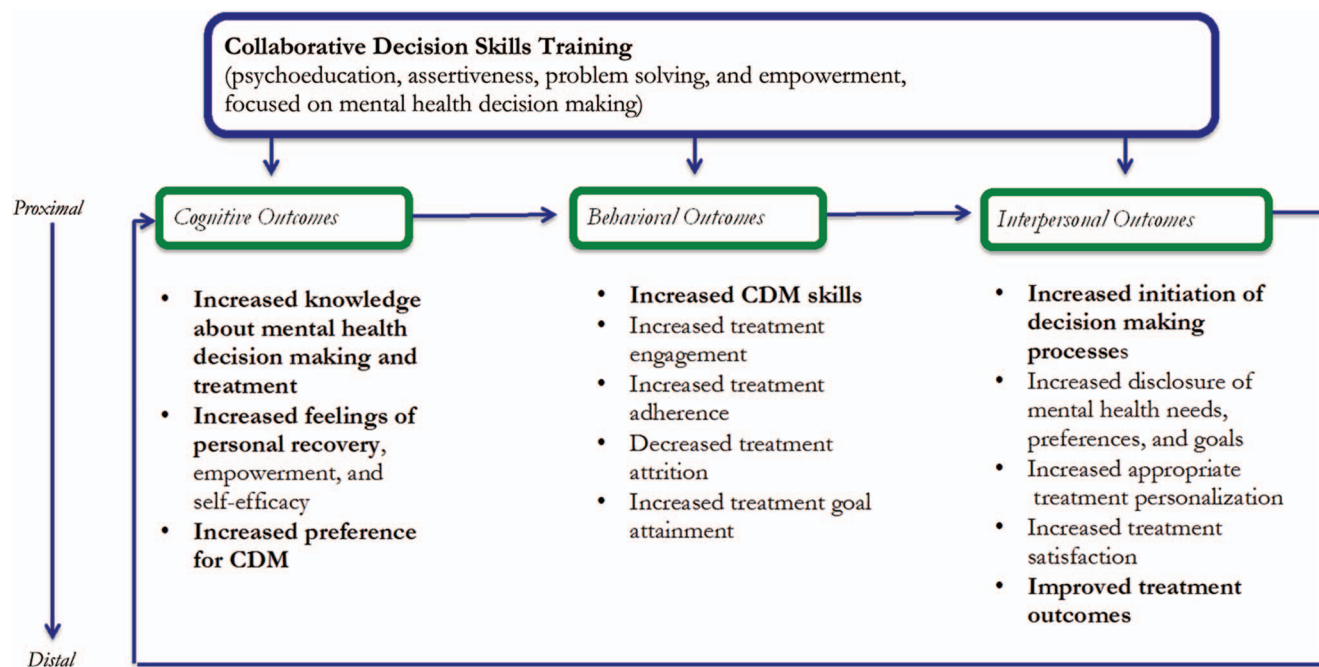


Figure 1. Collaborative decision skills training theoretical model (study target variables are in bold type). CDM = Collaborative decision-making. See the online article for the color version of this figure.

Table 1
Description of CDST

Session number and title	Topics covered
Session 1: Introduction to collaborative decision making	<ul style="list-style-type: none"> • Introduction and group rules • Definition of “collaborative decision making” (CDM) and related psychoeducation • <i>Pros and cons of using CDM</i> • Homework: identifying participants’ treatment goals
Session 2: Collaborative decision making and your treatment team	<ul style="list-style-type: none"> • Homework review • Relationship between treatment goals and CDM • Definition of “treatment team” and identifying members of participants’ treatment team • Psychoeducation regarding patient rights on treatment teams • Psychoeducation about and practice of the NOW model to identify decisions and begin the decision making process • Homework: Finish treatment team worksheet and one NOW sheet
Session 3: Being assertive with your treatment team	<ul style="list-style-type: none"> • Homework review • Discussion of what gets in the way of initiating CDM with providers • Strategies to feel more comfortable initiating CDM • Definition of assertiveness and its importance for decision making • Psychoeducation about and role-play practice of the ASAP model of assertiveness • Homework: Practice ASAP with someone outside of class
Session 4: Making complaints and dealing with conflict	<ul style="list-style-type: none"> • Homework review • <i>Discussion of complaints and other problems in treatment</i> • <i>Applying assertiveness to make complaints, resolve problems and manage conflict with providers</i> • <i>Role-play practice of the ASAP model to make complaints</i> • <i>Discussion of how to handle negative or unsatisfying interactions with providers</i> • <i>Role-play practice of the ASAP model to react to conflict with providers</i> • Homework: Practice ASAP with someone outside of class
Session 5: Introduction to problem solving	<ul style="list-style-type: none"> • Homework review • Discussion of how problem solving strategies can help reach treatment goals • Discussion of relationship between problem solving and CDM • Psychoeducation about and practice of the SCALIE model of problem solving • Homework: identify a current problem or goal using the NOW model
Session 6: Applying problem solving to your mental health care	<ul style="list-style-type: none"> • Homework review • Discussion of applying SCALIE to treatment goals and problems • Group practice of SCALIE using participants’ current goals and problems from the homework • <i>Homework: Practice SCALIE using an example of a conflict with a provider</i>
Session 7: Applying collaborative decision making: putting it all together	<ul style="list-style-type: none"> • <i>Homework review</i> • Review of CDM definition, benefits and applicability to participant goals • Discussion of handout and how to decide what decision making approach to use in different situations • <i>Practice identifying best approaches and applying multiple decision-making techniques to example problems and participants’ goals</i> • Homework: Use past NOW sheets to identify an issue and decide what approach you want to use to resolve it
Session 8: Collaborative decision making in your life and wrapping up	<ul style="list-style-type: none"> • Homework review • Discussion of applying CDM to participants’ lives • <i>Application of CDM to larger issues, including advocating for oneself and one’s community</i> • <i>Practicing using CDM skills to advocate for access to needed treatment programs</i> • Practicing using CDM skills to achieve participants’ goals

Note. NOW = name of decision; opinion about decision; who you want involved in the decision; ASAP = be Assertive, be Specific, pay Attention, make a Plan; SCALIE = specify the problem, consider possible solutions, assess possible solutions, lay out a plan, implement, and evaluate. Italics indicate that the component was added or modified based on feedback from stakeholders during the revision process.

groups being executed with high therapist fidelity to the manual; and (d) the intervention would show preliminary evidence it could be successful if tested on a larger scale, thereby justifying resources for further investigation, including RCTs. These four aspects of feasibility were chosen to test first, as any evidence of problems with these areas may indicate a need for revisions in the manual before proceeding onto larger scale testing.

We identified target constructs for hypothesis four based on the theoretical model of CDST (see Figure 1). These constructs were CDM knowledge, CDM skills, CDM engagement, personal recovery, and psychiatric symptoms. Measuring CDM knowledge, CDM skills, and CDM engagement allow for examination of preliminary evidence of successful relation of key programmatic content (e.g., development of CDM skills via role-plays and shap-

ing). Personal recovery and psychiatric symptoms are key target outcomes of CDST. CDM is conceptually congruent with the recovery model as it is intended to bolster consumer autonomy and empowerment, and so would be expected to directly increase personal recovery and indirectly decrease symptoms through increased treatment engagement and adherence.

Method

The overall design for this study is diagrammed in Figure 2. Descriptive statistics appear in Table 2. The Institutional Review Board at (Treichler & Spaulding, 2017) approved this study. All measures developed for the purpose of this study are available by contacting Emily B. H. Treichler.

Participants

Twenty-one consumers of mental health services were recruited for the study. Consumer inclusion criteria were age 19 or older, schizophrenia-spectrum or psychotic-spectrum diagnosis that caused a significant decrease in functioning, and participation in at least one outpatient mental health treatment. Although CDST is intended to be applied to all people with SMI, this study focused

on schizophrenia-spectrum and psychotic-spectrum disorders to decrease participant heterogeneity given the limited sample size of the pilot study. Exclusion criteria were eligibility for public developmental disability services, and participation in the manual revision process. Participants were recruited from their day program either based on recommendations by staff members or based on self-described interest in the study.

Each participant in the CDST groups received up to \$90 compensation based on participation in assessments. Participants were allocated to CDST group primarily by participant scheduling needs, with secondary considerations to balancing groups in regard to demographics and baseline ability. CDST was implemented within a day program's treatment milieu to maximize continuity of care.

Measures

Hypothesis 1: Acceptability.

Patient satisfaction. The Patient Satisfaction Questionnaire (PSQ) is a 25-item patient-rated scale measuring satisfaction with CDST. This measure included components of CDST, overall satisfaction, and perceived helpfulness. Most items are on a 5-point Likert scale, with four open-ended questions to fully describe satisfaction overall and with specific CDST components (Likert scale item range = 0–80). Internal consistency was satisfactory for our sample, Cronbach's $\alpha = .878$.

CDM preferences. The Problem-Solving Decision-Making Scale (Deber et al., 2007) was adapted for use in an SMI population for this study. The resulting Problem-Solving Decision-Making Scale, mental health version (PSDM-MH) is a 21-item self-report scale measuring consumer decision-making preference across seven different aspects of treatment decision-making and three decision-making scenarios relevant to SMI (range = 0–36). There are two versions of the PSDM-MH with different decision-making scenarios. Scenarios are paired between versions, intended to capture three themes: symptoms impacting function, potentially dangerous symptoms, and balancing treatment goals with quality of life. Higher scores indicate the consumer prefers to be more involved in decision-making. Internal consistency was satisfactory for our sample, Cronbach's $\alpha = .922$.

Hypothesis 2: Demand. Participant attendance, attrition, and adherence (operationalized as completion of homework assignments) were monitored by study staff as the measures for Hypothesis 2.

Hypothesis 3: Practicality.

Therapist fidelity. The CDST Fidelity Measure (CFM) is a 35-item supervisor-rated checklist to monitor therapist fidelity to the manual. It incorporates elements from related, previously validated measures used to measure social skills training fidelity (Bellack, Mueser, Gingerich, & Agresta, 2004), cognitive-behavioral therapy fidelity (Young & Beck, 1980), and group leader skills (M. Sullivan & M. Tarasenko, personal communication, February 27, 2015). There are six subdomains: group leader skills, use of socratic method, tailoring session to group needs, group management skills, recovery oriented treatment approach, and steps of CDST. Items are scored on a 3-point scale, range = 0–70. Fidelity was monitored by Emily B. H. Treichler using

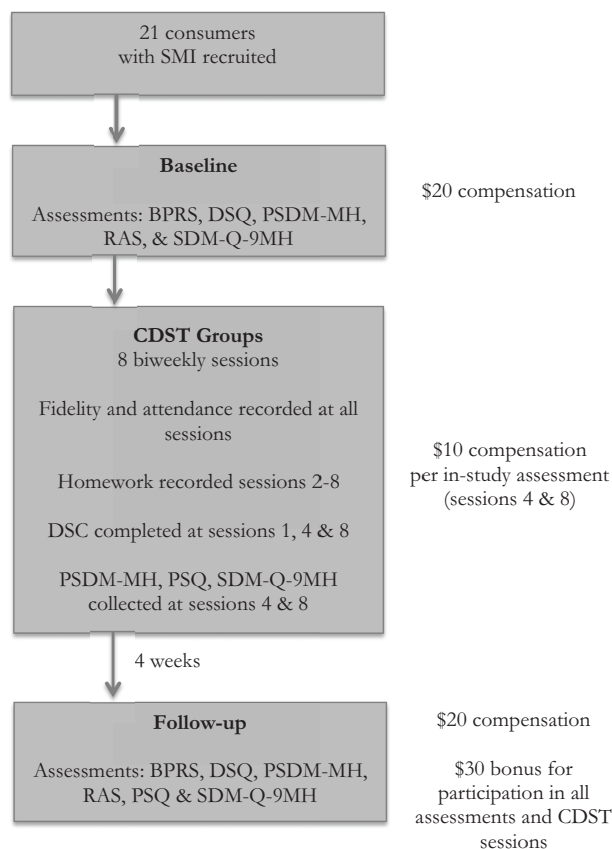


Figure 2. Study flow. BPRS = Brief Psychiatric Rating Scale; DSQ = Decision Skills Questionnaire; PSDM-MH = Problem-Solving Decision-Making Scale, mental health version; RAS = Recovery Assessment Scale; SDM-Q-9MH = Shared Decision-Making Questionnaire, mental health version; PSQ = Patient Satisfaction Questionnaire.

Table 2
Descriptive Statistics

Participant characteristics	<i>n</i> (of 21 total participants)	<i>M</i> (<i>SD</i>)	Frequency (%)	Range
Female	11		52.38%	
White	15		71.43%	
12 + years of education	12		57.14%	
Age		48 (12.51)		25–65
feasibility measures				
PSQ score		71.72 (10.14)		35–80
CFM score		60.59 (9.84)		23–69
DSQ score		4.35 (2.78)		0–10
DSC score		72% (20.6%)		0–100%
Outcome measures				
PSDM-MH score		35.08 (12.46)		0–66
SDM-Q-9MH score		6.838 (12.98)		0–45
RAS score		154.57 (25.50)		78–201
BPRS score		31.92 (31.36)		0–87

Note. PSQ = Patient Satisfaction Questionnaire; CFM = CDST Fidelity Measure; DSQ = Decision Skills Questionnaire; DSC = Decision Skills Checklist; PSDM-MH = Problem-Solving Decision-Making Scale, mental health version; SDM-Q-9MH = Shared Decision-Making Questionnaire, mental health version; RAS = Recovery Assessment Scale; BPRS = Brief Psychiatric Rating Scale.

audio recording and therapists received feedback on their performance.

Hypothesis 4: Preliminary evidence of efficacy.

Targeted knowledge. The Decision Skills Questionnaire (DSQ) is a 10-item self-report scale developed to measure knowledge of information and skills presented in the CDST group. There are two versions of the DSQ to minimize practice effects. The range is 0–10, and higher scores indicate greater acquisition of skills and knowledge through participation in the group. Internal consistency was satisfactory for our sample, Cronbach's alpha = .765.

Targeted skills. The Decision Skills Checklist (DSC) was developed to assess skills targeted by CDST. It is a clinician-rated 14-item scale assessing social, communication, and problem-solving skills. Each item is scored 0 to 2, with greater scores indicating higher skill acquisition (range = 0–28). Internal consistency was satisfactory for our sample, Cronbach's alpha = .884.

CDM engagement. The Shared Decision-Making Questionnaire (SDM-Q-9; Kriston et al., 2010) was minimally adapted for this study to focus on mental health treatment and to increase ease of use. The resulting Shared Decision-Making Questionnaire, mental health version (SDM-Q-9MH) is a self-report 9-item scale measuring mental health treatment decision-making processes from the consumer's perspective. Each item is on a 6-point scale, range = 0–54. Higher scores indicate greater perceived participation in treatment decision-making. Internal consistency was satisfactory for our sample, Cronbach's alpha = .933.

Personal recovery. The Recovery Assessment Scale (RAS; Giffort, Schmook, Woody, Vollendorf, & Gervain, 1995) is a 41-item self-report measure assessing recovery from the consumer's perspective. A 5-point Likert scale is used, range = 0–205, and higher scores indicate higher levels of attributes associated with recovery. The RAS has been validated in past studies (e.g., Corrigan, Giffort, Rashid, Leary, & Okeke, 1999).

Symptoms. The Brief Psychiatric Rating Scale-Expanded (BPRS-E; Lukoff, Nuechterlein, & Ventura, 1986) is a commonly used clinical interview for assessing severity of psychiatric symp-

toms, especially those related to schizophrenia. Higher scores indicate greater impairment. The BPRS is a 24-item measure on a 7-point scale, range = 24–168, and higher scores indicate more severe symptoms. The BPRS has been validated in past studies (Thomas, Donnell, & Young, 2004).

Design and Procedure

CDST pilot test procedure. There were three pilot study groups, with seven participants assigned to each group. Each group completed eight 1-hr CDST sessions held biweekly. Three trained clinical psychology doctoral students led groups individually and followed a therapist manual. These student therapists monitored attendance, homework completion, and attrition. All groups were audio recorded and Emily B. H. Treichler monitored fidelity throughout the study. The same three doctoral students administered all assessments. These students were trained and supervised by Emily B. H. Treichler and William D. Spaulding. The total study length was 16 weeks, including baseline and follow-up assessments.

Statistical analysis approach for CDST. Hypotheses were tested using SPSS 19.0/24.0 and Excel. Given the small sample size of this pilot, we primarily relied on descriptive statistics for our first three hypotheses, which require less power. We additionally completed *t* tests, regression analysis, and repeated measures analysis of variance (ANOVA) to further describe feasibility. A traditional significance threshold of $p = .05$ was used in all statistical tests. Missing items were accounted for using pairwise deletion.

Results

Hypothesis 1: Acceptability

Participant satisfaction. The average summed PSQ score was 71.72 out of 80 ($N = 16$). After accounting for missingness, the average PSQ percentage was 91.76%. PSQ ratings did not

change over time, $R^2 = 0.076$, $F(1, 44) = 3.604$, $p = .064$. Group 3's PSQ scores ($M = 96.16\%$, $SD = 5.22\%$) were significantly higher than Group 1's ($M = 87.36\%$, $SD = 10.90\%$), $t(26) = -2.876$, $p = .008$. There were no other group-level differences.

Twenty-seven qualitative comments were made on the PSQ across all assessments. The majority of comments were general (e.g., "I feel CDST was very helpful to me. Good skills to have") or specific (e.g., "CDST has enabled me to ask staff's opinions on problems without feeling unjustified") positive feedback.

Six comments were constructive feedback. Two comments asked for more time in generic terms (e.g., "just more time"). Two comments indicated that the homework was sometimes unclear (e.g., "I would always like to be sure what is expected to be my homework"). One requested more problem-solving examples, and another requested more personal experience sharing.

CDM preferences. There were no differences in PSDM-MH scores by CDST group overall, or at baseline, $p > .05$. A linear regression of change in PSDM-MH scores was significant, indicating preference for CDM increased over time ($\beta = .399$, $t = 3.014$, $p = .004$), $R^2 = .159$, $F(1, 48) = 9.084$, $p = .004$.

Hypothesis 2: Demand

Participant attendance. Nineteen of 21 CDST enrollees (90.48%) came to the first group. After removing participants who dropped out, average attendance rate across all sessions was 89.1% ($N = 16$). Attendance did not change over time, Nagelkerke $R^2 = .027$, chi-square = 1.808, $df = 1$, $p = .179$. Attendance was higher in Group 3 ($M = 97.9\%$, $SD = 14.43\%$) than in Group 2 ($M = 80.77\%$, $SD = 39.80\%$), $df = 65.136$, $t = -2.907$, $p = .005$. There were no other group-level differences.

Participant attrition. Four participants withdrew and one passed away during the pilot study. For the purposes of this hypothesis, the two participants who withdrew after the groups began (i.e., "during the treatment itself" as discussed in the hypotheses) were included in analysis. Therefore, participant attrition was two of 18 participants, or 11.11%. This was less than the average attrition found in Roder et al.'s, 2006 meta-analysis of integrated psychological therapy, where among 15 studies, attrition during the treatment itself was 14.7% (95% confidence interval: 7.8–21.6%).

Participant adherence. Adherence was operationalized as completion of homework assignments. At the final session, 31.3% of participants fully completed homework, 31.3% of participants partly completed homework, 25% of participants did not complete homework, and 12.5% of participants were absent ($n = 16$; see Figure 3). There was no change in adherence over time, $R^2 = .016$, $F(1, 100) = .025$, $p = .874$. There were no group-level differences of total adherence, partial homework completion, or full homework completion, all $ps > .05$.

Hypothesis 3: Practicality

Therapist fidelity. Fidelity monitoring was entirely or partially completed for 22 of the 24 sessions (91.67%) because technical difficulties rendered two sessions inaudible.

The average CFM score was 90.07%.² Curve estimation revealed that an S curve was the best fit for the data, $R^2 = 0.337$,

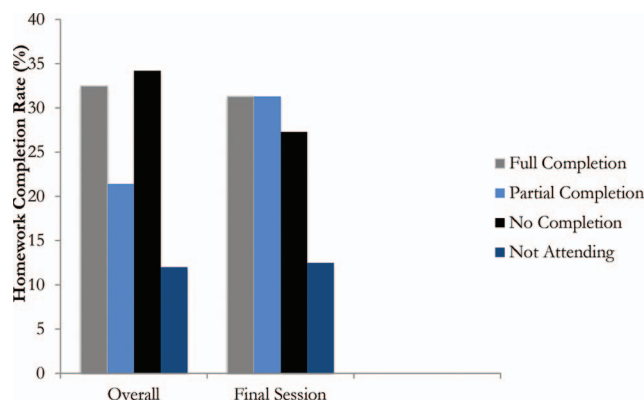


Figure 3. Homework completion. See the online article for the color version of this figure.

$F(1, 20) = 10.167$, $p = .005$. There were no significant differences between therapists, all $ps > 0.05$.

Paired samples t tests tested whether the six subscales of the CFM differed from each other. The results indicated that all the subscales had 90% or better average fidelity except Steps of CDST, which had the lowest average fidelity, 77.88%.

Only three items on the Steps of CDST subscale fell below 85% average fidelity. These items measure agenda establishment and maintenance (64.29%); session review (40.48%); and feedback (42.86%). All three of these items were significantly lower than the all of other items in the Steps of CDST subscale, all $ps < .05$.

Hypothesis 4: Preliminary Evidence of Efficacy

The following analyses included all data available, whether or not participants withdrew from the study. However, given the constraints of our sample size, we were unable to conduct intent-to-treat analyses, so only participants who had data at all time points for a given analysis were included in longitudinal analyses.

Targeted knowledge. There were significant baseline differences in DSQ score by group: Group 3's average baseline score ($M = 1.429$, $SD = 1.397$) was significantly lower than either Group 1 ($M = 5.200$, $SD = 0.447$), $t(7.610) = 6.678$, $p < .001$, or Group 2 ($M = 4.667$, $SD = 2.658$), $t(7.307) = 2.683$, $p = .030$. Therefore, change over time was tested by group.

Group 1's DSQ scores improved over time ($\beta = .501$, $t = 2.243$, $p = .040$), $R^2 = .250$, $F(1, 15) = 5.031$, $p = .040$. The regression model for Group 2 was nonsignificant, ($\beta = .149$, $t = .692$, $p = .492$), $R^2 = .022$, $F(1, 21) = 5.426$, $p = .496$. The regression model for Group 3 approached significance ($\beta = .360$, $t = 1.853$, $p = .077$), $R^2 = .130$, $F(1, 23) = 3.435$, $p = .077$. (See Figure 4.)

Targeted skills. The DSC is missing for all participants in Group 1 at Session 1 due to procedural error. Only Groups 2 and 3 are compared at baseline. All other DSCs were completed so all three groups were compared for average scores. There were no

² All total CFM scores are presented in percentages here because for session 1 and session 8, specific items were not applicable (e.g., for Session 1, review of homework did not apply).

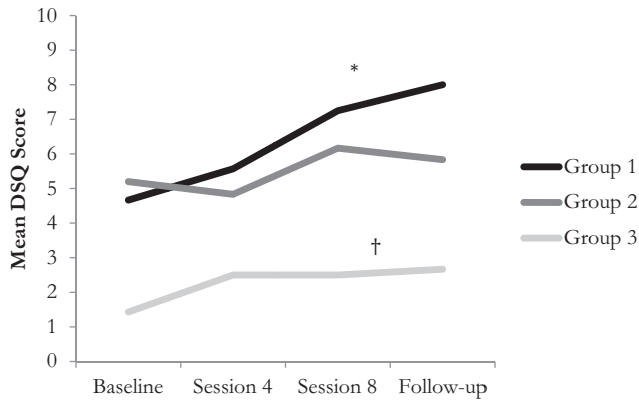


Figure 4. Collaborative decision-making relevant knowledge changes varied by group. DSQ = Decision Skills Questionnaire.

differences in DSC scores by CDST group overall, or at baseline, $p > .05$.

A linear regression was significant, indicating DSC scores improved over time ($\beta = .445$, $t = 3.222$, $p = .002$), $R^2 = .198$, $F(1, 42) = 10.379$, $p = .002$.

A linear regression was conducted to test potential impact of homework completion found that homework completion was associated with increases in DSC scores ($\beta = .398$, $t = 2.516$, $p = .018$), and time remained significant ($\beta = .368$, $t = 2.330$, $p = .028$), $R^2 = .220$, $F(2, 27) = 7.284$, $p = .003$. A follow-up model adding the interaction between homework completion and time to the model indicated the interaction was nonsignificant, $p = .199$.

CDM engagement. There were no differences in SDM-Q-9MH scores by CDST group overall, or at baseline, $p > .05$. There was no significant change in SDM-Q-9MH scores over time, $p = .689$.

Personal recovery. There were no differences in RAS scores by group overall, or at baseline, $p > .05$. A repeated-measures ANOVA comparing baseline and follow-up RAS scores was significant, indicating personal recovery increased over the course of the study, $F(1, 9) = 5.432$, $p = .045$, Cohen's $d = 1.5525$ (see Table 3).

Symptoms. There were no differences in BPRS scores by CDST group overall, or at baseline, $ps > .05$. A repeated-measures ANOVA comparing baseline and follow-up BPRS scores was marginally significant, indicating a trend for decreased symptoms over time, $F(1, 12) = 4.714$, $p = .051$, Cohen's $d = 1.2534$ (see Table 3).

Discussion

Overall, the results of our study support CDST's feasibility, including preliminary evidence indicating CDST may improve targeted outcomes. Five out of six measures found support for the intervention's acceptability, demand, and practicality. Two of five preliminary measures of efficacy showed significant improvements, one approached significance, one had mixed results, and one measure of change was not supported.

Our first hypothesis was supported; the intervention was found to be acceptable to participants, as evidenced by participants

showing high satisfaction with the intervention as well as an increased preference for CDM practices. The primarily positive comments and ratings after CDST echoed the positive feedback from the manual's qualitative revision process. In addition, participants indicated a preference for CDM and this preference increased over time, as their familiarity with a CDM approach increased.

Our second hypothesis was mostly supported; the intervention was in demand, as evidenced by actual use of the intervention. Participants attended CDST regularly and only 11.11% dropped out, indicating strong engagement compared to other studies as well as typical engagement in the study setting. One aspect of the demand hypothesis was not supported: Participants did not complete homework as often as expected. The only study we found of homework completion in schizophrenia was of individual therapy (Deane et al., 2005), so it is possible that homework completion is lower among group therapies in general. Alternatively, some of the feedback from the qualitative comments about the group included recommendations to clarify homework assignments in the future, so it is possible that homework completion was lower due to confusion about expectations.

Our third hypothesis was also supported; the intervention was practical to conduct, as evidenced by skills training groups being executed with high therapist fidelity to the manual. Therapists not only met fidelity standards overall, but they improved in fidelity during the pilot test. There was some variation across CFM subscales, but this appeared to be congruent with expected levels of therapist experience. For example, therapists had higher fidelity in the Use of Socratic Method subscale compared to Steps of CDST, which is logical given significant prior experience and training in the Socratic method compared with their first experience conducting CDST. This supports the overall finding that therapists improved fidelity during the study, and it's reasonable to expect areas of less experience to continue to improve over continued practice.

Only three items from the Steps of CDST subscale fell below 85% fidelity: agenda establishment and maintenance (64.29%); session review (40.48%); and feedback (42.86%). Feedback from participants indicated that some desired longer sessions or a greater number of sessions, while others indicated additional clarity on homework assignments would have been helpful. It is feasible that fidelity improvements like better maintenance of agendas, more in-depth session review, and more individualized feedback would have resolved these concerns.

Our fourth hypothesis was mostly supported; the intervention showed strong preliminary evidence it could be successful if tested

Table 3
RAS and BPRS Scores

Measure	Baseline	Follow up	Δ
RAS			
M	139.9	159.6	19.7*
SE	8.989	6.313	—
BPRS			
M	46.77	40.46	-6.31†
SE	2.402	2.456	—

Note. RAS = Recovery Assessment Scale; BPRS = Brief Psychiatric Rating Scale.

†. $.06 < p < .05$. * $p < .05$.

on a larger scale, thereby justifying resources for further investigation, including RCTs. Considering the theoretical model (see Figure 1), all proposed cognitive outcomes and the only measured behavioral outcome were supported, but there was less evidence for the interpersonal outcomes. Participants reported an increased sense of personal recovery, and displayed improvements in both knowledge and skills targeted by CDST. There was an additional trend toward improved clinician-rated symptoms. Only CDM engagement behaviors showed no evidence of the hypothesized change.

The improvement of CDM knowledge and skills is particularly promising when considered in the context of prior research linking increased knowledge to increased treatment satisfaction (Lara, Navarro, Rubí, & Mondragón, 2003). However, there were group differences in knowledge gain, which warrant further consideration. These differences are not likely explained by having different therapists, as the therapists had equally high treatment fidelity. Further work to understand differences in knowledge attainment during CDST are indicated. These might include measuring differences in group dynamic, participant buy-in, and other variables known to be associated with treatment benefit.

Encouragingly, participants who completed more homework had greater CDST-related skills. The interaction between time and homework completion was not significant, so postulating that homework is an active ingredient of improvement in skills is not supported by this study. It could be that homework is a proxy of overall engagement, rather than a separable active ingredient. Still, either of these explanations indicates the homework assigned is congruent with targeted outcomes, and those who are more engaged with CDST are likely to benefit more.

In addition, their personal recovery increased during CDST. Furthermore, there was an observed trend of symptom improvement. It is possible CDST's focus on goal development catalyzed participant pursuit of personal and treatment goals. Alternatively, it could be the result of a general treatment effect even though CDST does not focus on symptom management. Taken together, these findings support that CDST is congruent with recovery- and empowerment-oriented service models.

There was no change in CDM engagement behaviors. It is possible CDM behaviors are a more distal outcome, unable to be measured in a 4-week follow-up. Alternatively, consumers may need more training in CDST to be able to generalize their skills to outside providers. Additional group sessions or individualized coaching may be helpful in actualizing those outcomes.

Consideration of Findings in Context

CDST is a novel approach to a consistent problem in SMI treatment. A skills training approach allows for targeted intervention within the psychiatric rehabilitation paradigm and maximizes likelihood of dissemination, given minimal required resource allocation and ease of implementation in SMI-focused programs. A skills training intervention may yield generalized skills, increasing consumer competency to work with broad and complex treatment teams, thereby improving general treatment success. This has the potential to expand the accessibility of CDM beyond adroit providers to programs that do not integrate SDM tools into their decision-making process, as well as increasing consumer ability to benefit from tools like decision aids. In addition, success and

satisfaction with a short intervention like CDST may increase buy-in to other interventions.

Improving CDM in treatment programming for people with SMI is essential. Person-centered and collaborative care is a necessary component of high quality and ethical treatment (Drake, Deegan, & Rapp, 2010) and is associated with a myriad of beneficial treatment outcomes (Joosten et al., 2008; Kane et al., 2015).

It is unnecessary to seek a panacea to improve CDM. It is likely that improvement will come through several person-centered, flexible solutions, some of which are already in development or implementation phases. For example, combining CDST with existing decision aids may maximize impact by increasing consumer ability to understand decision aids and translate conclusions from decision aid engagement into interactions with providers. This group of solutions must target consumers, practitioners and other stakeholders to increase knowledge, skills, access and comfort with CDM.

Future Directions

A larger trial of CDST is merited. The trial should evaluate CDST efficacy when compared to a control group. In addition to increasing the sample size and adding an appropriate control group, future trials should precisely target outcomes proposed by the theoretical model (i.e., initiation of CDM vs. CDM engagement). If there is evidence for efficacy of CDST, other components of feasibility identified by Bowen et al. (2009), such as feasibility of implementation in different treatment settings or adaptation/expansion to other settings, can be examined.

Multiple ways to improve the CDST modality are indicated by the results of this study. Homework is an essential component of CDST, but homework adherence was lower than hypothesized. Future trials should emphasize discussion and clarification of homework by therapists and use homework handouts in addition to the participant handbook for participants who leave their handbooks at their program, as many participants did in this study.

Three CFM items were implemented at low rates: agenda establishment and maintenance; session review; and feedback. These steps were not written out into the therapist manual, although therapists received feedback on fidelity throughout the study. Future studies could add explicit sections for each of these components to the therapist manual and increase therapist training.

Some participants requested more session time, and at times therapists did not complete all sections of each session within the allotted time. Increasing the duration or number of sessions is indicated. Another change to consider is adding individual coaching sessions to give participants more time and help with applying skills to specific treatment decisions.

Limitations of the Current Study

As noted previously, this article describes preliminary findings only. There are other factors that may explain improvements in target outcomes (e.g., as described previously, improvements in symptoms may be due to common factors rather than CDST-specific factors). Drawing strong conclusions as to CDST's efficacy is not warranted, given the intention and constraints of the study. The small sample size constrained the power of the findings, and additional studies with a larger sample size and a control group

will be needed to fully test the effectiveness of this intervention. However, the effect sizes found in this study are promising and indicate our findings are not likely to be Type I errors. The small sample size also constrained our analytic choices, but the scope of our study allowed us to address our aims using relatively simple statistics.

We designed three new measures (i.e., PSQ, DSQ, and DSC) for assessment of CDST during this study. Although the reliability of these measures was satisfactory, and face validity was achieved, these measures have not undergone rigorous validity testing. The congruence of these measures with each other and with other measures used (i.e., most showing generally positive outcomes) is an initial indication of concurrent validity. However, further psychometric testing is needed, and outside of the scope of the current study.

There were audiotaping errors during the pilot test, making a small portion of the fidelity data unintelligible. In addition, there was counterbalancing error during collection of the DSQ and PSDM-MH. There were no differences in average scores between versions of the DSQ or the PSDM-MH, but increased fatigue or learning effects may have increased error.

Finally, the same three graduate students collected assessment data and facilitated the CDST groups. This may have introduced error due to assessor bias. Most of the measures were either self-report (e.g., PSQ) or objectively assessed (e.g., sessions attended), so this would most likely have influenced behavioral skill ratings (i.e., DSC). Future studies should aim to have separate (and blinded, if there are multiple treatment groups) assessors.

Conclusion

The study introduced a novel skills training intervention, CDST, to improve CDM among SMI populations, a documented need in the mental health field. The pilot study indicated feasibility and initial evidence of positive impact due to CDST participation. There was no evidence for increased CDM engagement, although the length of follow-up (4 weeks) may have dulled ability to detect distal outcomes. These findings also supported the initial theoretical pathway of change for CDST. A larger trial of CDST is indicated.

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Received December 19, 2017

Revision received March 30, 2018

Accepted April 22, 2018 ■