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Implementing an evidence-based psychological intervention for suicidal thoughts and behaviors on an inpatient unit: Process, challenges, and initial findings

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ABSTRACT

Objective: Barriers to implementing evidence-based psychological treatments for suicidal thoughts and behaviors in busy hospital settings exist. Transdiagnostic interventions may serve to facilitate training in evidence-based treatment and more efficiently treat individuals with multiple psychiatric comorbidities. We describe the rationale for, process of, and initial data from implementing the Unified Protocol for Transdiagnostic Treatment of Emotional Disorders (UP) on an inpatient unit for adults with suicidal thoughts and behaviors and affective disorders.

Method: We analyzed clinical intake and outcome data from a subsample of patients admitted during the six months before and six months after UP implementation (n = 133 and n = 61, respectively), and available acceptability and fidelity data from the month following UP implementation.

Results: Patients improved significantly over the course of inpatient treatment before and after UP implementation. Effects for depression, suicidal ideation, anxiety, and emotion regulation were similar before and after UP implementation. Patients generally reported high acceptability of the UP and clinician fidelity to the protocol was variable during the month following UP implementation.

Conclusions: The UP may be a promising evidence-based intervention for inpatient settings that treat individuals with suicidal thoughts and behaviors. Well-controlled, randomized trials are needed to determine efficacy, particularly regarding suicidal behavior after discharge.

1. Introduction

Suicide is a prevalent and burdensome public health problem. It is the 10th leading cause of death across all ages in the United States, the 2nd leading cause of death for 18- to 34-year-olds, and the 4th for 35- to 54-year-olds [1]. Particularly concerning is the increase in the national suicide rate over the past decade [2].

During the past quarter century, research aimed at establishing evidence-based psychological treatments (EBPTs) for suicidal thoughts and behaviors (STBs) has proliferated; however, few interventions have consistently demonstrated efficacy [3–5]. Further, the vast majority of research on treatments for STBs has taken place in outpatient treatment settings. Little is known about the psychological interventions provided on inpatient units [6], underscoring the dual need to both improve treatments for STBs and disseminate the most promising interventions to inpatient contexts.

Newer transdiagnostic treatment approaches show promise in addressing some of the barriers to disseminating EBPTs, particularly in inpatient settings. Transdiagnostic interventions, designed to apply across a range of mental disorders, have the potential to simultaneously treat an array of commonly co-occurring conditions or symptoms (e.g., social anxiety and alcohol misuse, PTSD and suicidal ideation, depression and self-injury) [7,8]. Given that STBs typically present in the context of other disorders [9], interventions that can seamlessly address a range of issues within the same therapeutic framework have advantages. This may be especially crucial in inpatient settings where

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group-based treatment is common, yet patients present with a wide array of diagnoses that may make using a single-diagnosis protocol less feasible.

Another barrier to disseminating EBPTs for STBs is the time and resources needed to deliver program-wide training in an EBPT [10]—especially daunting for inpatient settings that operate 24/7. Transdiagnostic treatments allow providers to learn a single protocol that can be flexibly utilized across many diagnostically heterogeneous patients, rather than undergoing expensive and time-consuming training in numerous single-diagnosis approaches.

2. Applicability of the Unified Protocol to STBs

The Unified Protocol for Transdiagnostic Treatment of Emotional Disorders (UP) [11,12] is one transdiagnostic intervention that may be applicable to individuals presenting with STBs. The UP is an emotion-focused, cognitive-behavioral treatment designed to target any disorder characterized by aversive reactions to frequent and intense negative affect. The original protocol consists of eight modules, five of which are considered "core" and aim to extinguish distress in response to the experience of strong emotion by fostering adaptive, non-avoidant emotional responding through strategies such as cognitive flexibility and emotion exposure [12].

Though most controlled trials of the UP have focused on patients with primary emotional disorders [13–15], the approach may also be applicable to STBs. Several lines of research and theory indicate that STBs may fit within the UP's functional framework of treating the aversive reactions to frequently occurring negative emotions that lead to short-term relief but long-term exacerbation of negative affect. For one, the role of intense negative affect in contributing to STBs is prominent within many extant theories of STBs [16–21] and negative affectivity prospectively predicts STBs [22–25]. From a clinical perspective, when experiencing overwhelming negative emotion, individuals may fantasize about suicide, make a suicide plan, or take steps toward ending their life to relieve or escape extremely distressing emotional states.

There are several key conceptual differences between the UP and other well-studied psychological interventions for STBs (e.g., [20,26–30]). Given that the UP targets factors underlying the development and maintenance of the full range of emotional disorders [8], this treatment is thought to be applicable across problems maintained by maladaptive emotion processing and regulation (potentially including STBs), whereas other evidence-based interventions are often more narrowly focused on STBs (e.g., directly address specific vulnerability factors for suicide). Each core UP module seeks to engage the treatment's putative mechanism of change – reduction of distress in response to negative affect – through cultivating an approach-oriented stance to emotion. This emphasis on countering emotion avoidance with non-avoidant emotional responding is not necessarily the primary aim of *all* core strategies in other interventions (e.g., interpersonal effectiveness in Dialectical Behavioral Therapy [DBT]).

Initial empirical data support the feasibility of UP strategies for STBs. In a recent proof of concept study, we adapted the UP for suicidal individuals on a community crisis stabilization unit [8]. Patients (N = 12) received usual care on the unit or usual care plus five 60-minute, individual UP sessions. We observed high intervention feasibility (e.g., 5 of 6 patients completed all sessions) and acceptability (e.g., significantly higher satisfaction for the UP condition).

Given that the UP may represent a comprehensive and efficient EBPT approach for STBs and co-occurring conditions, we set out to administer this EBPT on a large, hospital-based inpatient unit for STBs and affective disorders at AMITA Health Alexian Brothers Behavioral Health Hospital (AMITA).

3. Implementing the UP on an inpatient unit

3.1. Building a Partnership

The collaboration between the UP research team and AMITA leadership was established over about two years. The Executive Director of the Outpatient Program initiated contact (June 2015) with our training institute, indicating their plan to adopt a hospital-wide "framework" to provide a common therapeutic approach across levels of care (e.g., inpatient, residential, outpatient) and problem-focused programs (e.g., eating disorders, chemical dependency, OCD). A unitary treatment framework was desired to provide consistency for patients transitioning between levels of care and address patient comorbidity in problem-focused programs.

After several phone conversations, a UP trainer provided a one-hour presentation at AMITA that included the transdiagnostic treatment rationale, an overview of UP skills, and UP applications in other routine practice settings (November 2015). AMITA leadership indicated their plan to first implement the protocol on their affective disorders inpatient unit to pilot test the training and administration efforts that could be later applied to the broader hospital context.

3.2. Adapting the UP

From December 2015 to August 2016, the UP team worked closely with AMITA leadership and clinicians to adapt UP materials for this inpatient unit, consistent with literature suggesting that transplanting EBPTs from research to community-settings requires thoughtful adaptation [10], as treatments with high efficacy in academic contexts often fail to achieve similar outcomes in routine practice [31]. Unit inpatients typically present with affective disorders and acute STBs. The average length of stay is 5 to 8 days, psychological treatment is primarily group-based, and admission is rolling, underscoring the need for content that could be presented independently from other skills. The UP was initially developed to be delivered in 12 to 20 sessions [11] and although previous studies used adapted formats with rolling admission [32,33], suicidal individuals [8], and in group [34], additional modifications were necessary.

The UP team developed a seven-day schedule that allows patients to receive all modules within their first two days on the unit (Table 1). Important foundational skills (e.g., *Function of Emotions and Breaking Down an Emotion*, *Mindful Emotion Awareness*), emotion exposure (*Learning by Doing*), and review and practice groups are repeated daily, with each day focusing on a different emotion (e.g., anger, sadness, anxiety, guilt, joy). The additional UP modules (*Motivation*, *Cognitive Flexibility*, and *Emotion-driven Behavior and Alternative Action*) are each presented every other day.[1]

Given that most unit staff, which includes nurses, bachelor's and master's-level behavioral health associates (BHAs), and expressive therapists, have limited or varied cognitive-behavioral therapy (CBT) experience, detailed session outlines were developed. These outlines provided specific suggested language for presenting skills and facilitating discussion (e.g., "Who here feels like they experience intense emotions?"). With an average daily census of 24 patients, session content was abbreviated to allow for large group discussion. Content describing the application of UP concepts to STBs was added.

The most substantial modifications were made to *Learning by Doing*, the module designed to ensure that patients amass practice using their skills while experiencing moderate to strong emotions. In the outpatient UP, patients are encouraged to engage in exposure exercises in vivo by approaching emotion-eliciting situations in their lives; however,

[1] The only original core UP module not included was interoceptive exposure [11,12] due to the challenges of conducting these exercises in large groups where complex medical comorbidities may exist.

Table 1
Content of the modified unified protocol for delivery on an adult inpatient unit.

Module/Session	Session content	Session time
Function of Emotions and Breaking Down an Emotion	• Discuss functional nature of emotions, as well as suicidal thoughts • Conduct brief (< 5-minute) daily mindfulness exercise[a] • Learn to break down emotional experiences into three components (thoughts, physical feelings, behaviors) • Identify antecedents and consequences of responses • Practice breaking down a recent emotional experience, which can be a suicidal episode	50 min (daily)
Motivation	• Discuss the concept of motivation and its relationship to outcomes • Conduct decisional balance exercise (costs/benefits of change/treatment, costs/benefits of living)	60 min (every other day)
Mindful Emotion Awareness	• Discuss benefits of nonjudgmental emotion awareness • Conduct 10-minute nonjudgmental emotion awareness exercise using a script • Learn skill for anchoring in the present moment • Play group game to label thoughts, physical sensations, and behaviors as past-, present-, or future-oriented	60 min (daily)
Cognitive Flexibility	• Highlight interacting relationship between thoughts and physical sensations and behaviors/urges • Introduce negative automatic thoughts and conduct ambiguous picture exercise • Practice generating more flexible interpretations for negative automatic thoughts	40 min (every other day)
Emotion-Driven Behavior and Alternative Action	• Introduce and identify emotion-driven behaviors and corresponding short- and long-term consequences • Introduce and generate adaptive alternative actions	40 min (every other day)
Learning by Doing	• Introduce emotion exposure • Conduct emotion exposure exercise(s) as a group in which patients practice (or imagine using) previously learned skills while experiencing a strong emotion • Identify potential idiographic emotion exposure exercises for future practice	60 min (every other day)
Review and Homework	• Review of skills • Practice of skills using worksheets	60 min (daily)

Note. Each day of the week focuses on a different emotion throughout all daily groups (e.g., anger, anxiety, sadness, etc.).
[a] A brief mindfulness exercise focused on one's breath is conducted during the first Module/Session of the day.

inpatients may have limited access to their typical stressors. Thus, about 20 exercises were developed to conduct emotion exposures during group (e.g., musical mood inductions, film clips) and offer other activities for further practice on the unit (e.g., making a post-discharge plan).

The UP team also modified and shortened the original UP workbook [35] to correspond to content presented during the group sessions.

3.3. Implementation

Implementation began in fall 2017. Typical UP training program implementation begins with a staff-wide, day-long or multi-day didactic workshop. This was not possible for the AMITA inpatient unit because the unit must remain fully staffed at all times and training staff off-duty was fiscally prohibitive. Instead, one trainer at AMITA, a licensed clinical psychologist with 18 years of CBT experience was certified as a UP supervisor by audio-recording group sessions, which were rated for adherence and competence by UP experts [13].

The AMITA trainer subsequently provided a 45-minute presentation on the UP to the unit staff and began delivering the first UP module on the unit. A lead BHA ("senior clinician") observed the trainer implement each module. The second UP module was introduced by the trainer the following week with the senior clinician observing. During this second week, the senior clinician independently implemented the first module, with unit staff observing. In the third week, the trainer implemented the third module with the senior clinician observing, while the senior clinician implemented the second module, and the remaining BHAs implemented the first module. This staggered module implementation and nested training approach, akin to a "see-one-do-one-teach-one" (SODOTO) method [36], continued until all modules were implemented. The AMITA trainer transitioned to observing and providing feedback to unit staff, while formally rating adherence for a subset of UP groups. Consultation groups were used to provide feedback, address staff's concerns, and provide education on the UP.

3.4. Challenges encountered

It became clear that the SODOTO method had limitations. For example, the trainer and senior clinician had limited to no opportunities to implement the SODOTO method with some BHAs (e.g., who worked weekends). Whereas some staff immediately implemented the UP to fidelity, others struggled with basic UP principles. For example, some staff were hesitant to engage patients in exposure exercises, fearing patients would decompensate.

To aid implementation, additional educational materials, including a narrated overview and detailed presentations for each UP module, were provided. Further, a UP "primer" was written to further orient staff to the treatment goals and principles, emphasizing the limitations of avoidance and the long-term benefits of experiencing emotions without maladaptive emotion-driven behaviors. To encourage adoption of terminology and aid memory, a glossary of commonly used terms and a checklist of major content of each module were created. Staff observed the AMITA trainer deliver *Learning by Doing* to witness patients undergoing emotion exposures without decompensating. Additional consultation was provided to expressive therapists conducting *Learning by Doing* modules, which focused on utilizing their experience in therapeutic creative arts (e.g., music, writing, role-playing) to help induce affect.

Implementing nearly all modules daily allowed patients to gain a better understanding of UP skills; however, after several days, some patients expressed irritation with the repetition. In response, alternative exercises and stimuli continue to be developed to increase variety within modules. The five primary emotions were expanded to include grief and love so that every day in the sequence focused on a different emotion.

Below, we present the methods used to collect clinical outcome data, followed by preliminary results from the six months before and after UP implementation.

4. Methods

4.1. Procedures

Descriptive and outcome data were obtained at admission and/or discharge as part of the hospital's clinical assessment and outcome process. All data were de-identified prior to analysis in accordance with the Safe Harbor standard (45 CRF 164.514[a][b]). Because we used existing clinical data, the study was classified as exempt by the hospital IRB.

4.2. Measures

4.2.1. Demographic and clinical information

Age, race/ethnicity, gender, length of stay, and diagnoses were obtained from the electronic medical record (EMR).

4.2.2. Patient Health Questionnaire (PHQ-9) [37]

Instructions for this nine-item self-report measure were modified to assess depressive symptom severity in the last week.

4.2.3. Generalized Anxiety Disorder 7-Item Scale (GAD-7) [38]

Instructions for this seven-item self-report measure were modified to assess anxiety symptoms in the last week.

4.2.4. Difficulties in Emotion Regulation Scale (DERS-18) [39]

This is an 18-item self-report measure of emotion dysregulation in six domains. Instructions did not indicate a time frame.

4.2.5. Columbia-Suicide Severity Rating Scale (C-SSRS) [40]

The C-SSRS – Lifetime/Recent and Discharge Versions were used to assess suicide severity at admission and discharge, respectively [40]. The time frame for “Recent” in the ideation sections was modified from “past month” to “past 48 hours” to evaluate medical necessity for inpatient admission.

4.2.6. Acceptability

To better understand the UP's acceptability and tolerability, previous UP research feedback forms were modified [8,41] to include general items (e.g., enjoyment of group, relevance of content to patients' lives, belief that the will help patients' cope), and module-specific items assessing understanding of content. For example, for the *Motivation* module, patients rated how well they understood the pros and cons of change, that it is common to feel conflicted about change, and understanding of the decisional balance skill. Items were rated and averaged using a 5-point Likert scale (1 = not at all, 5 = very much).

4.2.7. Fidelity

The UP team adapted the fidelity measure from previous trials [13]. Each fidelity measure (one per module) comprised 4 to 7 items assessing delivery of key points (e.g., for *Cognitive Flexibility*, “therapist describes the reciprocal relationship between thoughts/emotions”) using yes/no responses followed by an item assessing whether any interventions not included in the UP were delivered (reverse-scored). It was decided a priori that adherence would be calculated based on the percentage of applicable items with affirmative responses and > 80% would be considered adherent [12].

4.3. Participants

Patients were divided into two conditions: those admitted or discharged from the unit six months prior to UP implementation (April 2017 to September 2017) and those admitted or discharged six months after UP implementation (December 2017 to May 2018). In preparation for new regulatory requirements [42], unit clinicians began intermittently administering clinical outcome assessments at admission and discharge. Because the process for collecting clinical outcomes was not yet routine, of the ~1500 patients admitted or discharged during the 12 months examined, clinical outcome data were available for only 194 patients or ~13% (133 pre-UP and 61 post-UP). There is no systematic explanation why outcome data are only available for some patients. Additionally, demographic data were missing for 44 (22.7%) of the 194 patients with outcome data because the hospital transitioned to a new EMR in April 2018, and research staff were unable to access data in the new system. The available demographic data for 1295 patients admitted or discharged during this period were compared to the 150 patients with demographic *and* outcome data; there were no significant differences by age, gender, or race/ethnicity.

Here we present demographic information for the 150 patients with both demographic and outcome data. Over half (51.7%) of these 150 patients were female, with a mean age of 34.1 years (SD = 13.6), and predominantly non-Hispanic white (75.2%), with the remaining identifying as Latinx (10.1%), African American (4.0%), Asian (3.4%), or another race/ethnicity (1.3%); 6.0% refused to disclose or were missing this information. Patients were diagnosed with up to five mental disorders, with a mean of 2.5 diagnoses (SD = 1.0). Primary diagnoses included unipolar depressive disorders (68.7%), bipolar disorder (19.3%), adjustment disorder (4.0%), perinatal depressive disorder (2.0%), alcohol use disorders (2.0%), anxiety disorders (2.0%), somatic disorders (0.7%), eating disorders (0.7%), and unspecified mood disorder (0.7%). The majority of these 150 inpatients funded their treatment through commercial insurance (79.3%), with the remaining patients using Medicaid or Medicare (14.7%), or hospital-funded charity care (6.0%). The median length of stay for these 150 patients was 5 days (mean = 6.5, SD = 4.6).

Among the 194 patients with outcome data, 100 (51.5%) patients had C-SSRS data at admission. C-SSRS data were missing for 44 (22.7%) patients admitted after the go-live of the new EMR and for 50 (25.8%) patients who either refused to answer these questions or bypassed the hospital's standard intake assessment because they were assessed at another facility. Results from the C-SSRS data indicate that over half (51.6%) endorsed Level 5 (most severe) ideation, 18.6% endorsed Level 4, 11.3% endorsed Level 3, 6.2% endorsed Level 2, and 4.1% endorsed Level 1 as their highest suicidal ideation in the past 48 h; 8.3% of patients denied recent thoughts of suicide. An actual, aborted, or interrupted suicide attempt was disclosed by 24.0% of patients within 48 h of admission, and by 42.7% of patients in their lifetime. C-SSRS data collected as discharged were not analyzed because all patients denied STBs on this measure.

4.4. Data collection

Clinical outcome measures were administered by unit clinicians. Acceptability data were collected anonymously during the month immediately after UP implementation. Clinicians leading UP groups were instructed to administer feedback forms after each group; however, this measure was only given after 4 of 7 UP modules, resulting in a total of 73 completed forms. The AMITA trainer used the fidelity measure to rate six UP sessions (selected based on the trainer's schedule) during the month after UP implementation. These six sessions (spanning 5 of 7 modules) were conducted by 4 of 6 non-senior BHAs trained in the UP.

5. Data analysis

Paired t-tests were conducted for pre-UP and post-UP implementation conditions to determine statistical significance of changes in outcomes from admission to discharge. Standardized mean effect sizes and 95% confidence intervals, which include a correction for non-independent repeated measures [43], were calculated for pre-post change within each condition [44]. Hedge's g and 95% confidence intervals were computed to estimate the effect size of the difference in outcomes between the pre- and post-UP conditions [43,45,46]. The effects of UP

Table 2
Descriptive statistics and change in outcomes from admission to discharge by implementation condition (pre- vs. post-UP).

	Admission		Discharge							95% CI	
	M	*SD*	*M*	*SD*	Δ*M*	*t*	*p*	ES_w	*SE*	LL	UL
Pre-UP (n = 133)											
PHQ-9	13.64	8.08	6.56	5.74	7.08	10.86	< 0.001	0.98	0.11	0.76	1.19
PHQ-9 SI	1.33	1.13	0.46	0.76	0.87	9.41	< 0.001	0.85	0.11	0.64	1.06
GAD-7	10.81	6.59	5.79	5.44	5.02	10.17	< 0.001	0.90	0.10	0.70	1.09
DERS-A	7.53	3.29	7.05	2.88	0.48	1.87	0.064	0.16	0.08	0.00	0.33
DERS-C	7.36	3.04	6.20	2.73	1.17	4.25	< 0.001	0.37	0.10	0.18	0.56
DERS-G	10.02	4.09	8.38	3.75	1.64	5.32	< 0.001	0.46	0.08	0.30	0.63
DERS-I	6.50	3.44	5.41	2.54	1.09	4.10	< 0.001	0.37	0.09	0.19	0.54
DERS-N	8.65	4.03	7.08	3.56	1.57	5.30	< 0.001	0.46	0.08	0.30	0.63
DERS-S	7.97	3.72	6.44	3.06	1.53	5.29	< 0.001	0.47	0.09	0.29	0.64
Post-UP (n = 61)											
PHQ-9	15.51	7.45	7.00	6.05	8.51	8.64	< 0.001	1.12	0.11	0.77	1.46
PHQ-9 SI	1.46	1.10	0.46	0.74	1.00	6.45	< 0.001	0.85	0.11	0.49	1.20
GAD-7	13.26	6.07	6.46	5.71	6.80	8.21	< 0.001	1.05	0.10	0.72	1.38
DERS-A	7.87	2.75	6.85	2.57	1.02	2.82	0.006	0.36	0.08	0.09	0.63
DERS-C	7.82	3.34	5.92	2.35	1.90	5.04	< 0.001	0.67	0.10	0.40	0.95
DERS-G	10.48	3.67	8.28	3.16	2.20	4.51	< 0.001	0.58	0.08	0.28	0.88
DERS-I	7.44	3.67	5.77	3.11	1.67	4.19	< 0.001	0.54	0.09	0.30	0.79
DERS-N	8.82	4.08	6.66	3.27	2.16	4.46	< 0.001	0.58	0.08	0.31	0.86
DERS-S	8.77	3.75	6.66	3.24	2.11	4.65	< 0.001	0.60	0.09	0.32	0.87

Note. PHQ-9 = Patient Health Questionnaire-9 item version; PHQ-9 SI = PHQ-9 Item 9 assessing suicidal ideation; GAD-7 = Generalized Anxiety Disorder- 7 item scale; DERS-A = Difficulties in Emotion Regulation Scale- Lack of emotional awareness scale; DERS-C = Difficulties in Emotion Regulation Scale- Lack of emotional clarity scale; DERS-G = Difficulties in Emotion Regulation Scale- Difficulty engaging in goal-directed behavior; DERS-I = Difficulties in Emotion Regulation Scale- Impulse control difficulties scale; DERS-N = Difficulties in Emotion Regulation Scale- Nonacceptance of emotional responses; DERS-S = Difficulties in Emotion Regulation Scale- Limited access to emotion regulation strategies; M = mean; SD = standard deviation; SE = standard error.

condition on change from admission to discharge were examined directly for each of the outcomes. Using the xtmixed command in Stata, linear mixed models were conducted to examine the interaction between UP condition (pre-UP versus post-UP) and time (admission vs. discharge) as fixed effects, with a random intercept for patient and a random slope for time.

6. Results

Results from paired *t*-tests indicated that depression, suicidal ideation, and anxiety improved significantly in both conditions, with large within-condition effects (see Table 2).[2] Between-condition effect sizes indicate that symptom outcomes were not statistically different between pre- and post-UP implementation conditions (as evidenced by 95% confidence intervals including zero; see Table 3). Linear mixed models indicate no significant interaction between pre-post changes in symptoms and condition, though a non-significant trend was observed for anxiety symptoms ($\beta = -1.78$, $SE = 0.92$, 95% CI [−3.57, 0.013]). The pre-UP implementation improved significantly on 5 of 6 aspects of emotion regulation (not emotional awareness), with small effects, whereas the post-UP condition improved significantly on all facets of emotion regulation, with moderate effects except for emotional awareness (a small effect). Between-condition effect sizes and 95% confidence intervals, as well as linear mixed models, indicated that improvements in emotion regulation were not statistically different between conditions.

The average acceptability score across the 73 patient feedback forms (administered during the month after implementation) was 3.85 (SD = 1.14) on a 0 to 5 scale. *Mindful Emotion Awareness* had the highest mean acceptability rating at 4.14 (SD = 1.07), followed by *Function of Emotions and Breaking Down an Emotion* at 4.11 (SD = 0.92) and *Review and Homework* at 3.91 (SD = 1.12). *Motivation* had the lowest mean rating at 3.41 (SD = 1.22).

[2] Cutoffs used for determining small, moderate, and large effects were 0.2, 0.5, and 0.8 [49].

Table 3
Effect size of outcomes at discharge between the pre- and post-UP implementation conditions.

	Hedge's *g*	95% CI	
		LL	UL
PHQ-9	−0.07	−0.37	0.23
PHQ-9 SI	0.05	−0.25	0.36
GAD-7	−0.12	−0.42	0.18
DERS-A	0.07	−0.23	0.37
DERS-C	0.11	−0.20	0.41
DERS-G	0.03	−0.28	0.33
DERS-I	−0.13	−0.44	0.17
DERS-N	0.12	−0.18	0.42
DERS-S	−0.07	−0.37	0.23

Note. PHQ-9 = Patient Health Questionnaire-9 item version; PHQ-9 SI = PHQ-9 Item 9 assessing suicidal ideation; GAD-7 = Generalized Anxiety Disorder- 7 item scale; DERS-A = Difficulties in Emotion Regulation Scale- Lack of emotional awareness scale; DERS-C = Difficulties in Emotion Regulation Scale- Lack of emotional clarity scale; DERS-G = Difficulties in Emotion Regulation Scale- Difficulty engaging in goal-directed behavior; DERS-I = Difficulties in Emotion Regulation Scale- Impulse control difficulties scale; DERS-N = Difficulties in Emotion Regulation Scale- Nonacceptance of emotional responses; DERS-S = Difficulties in Emotion Regulation Scale- Limited access to emotion regulation strategies; 95% CI = 95% Confidence Interval; Hedge's *g* was calculated for between condition comparison of discharge scores.

The average clinician adherence rating for the six rated group sessions was 73.3%. Three sessions (*Function of Emotions and Breaking Down an Emotion*, *Mindful Emotion Awareness*, and *Cognitive Flexibility*) were considered adherent (100% for two sessions and 80% for one). Three sessions did not meet criteria for adherence (60%, 50%, and 50% for *Motivation*, *Function of Emotions and Breaking Down an Emotion*, and *Emotion Exposure*, respectively).

7. Discussion

Despite recent efforts to develop EBPTs for STBs, relatively few

studies have examined the implementation of empirically supported treatments in inpatient settings. Transdiagnostic interventions targeting shared functional processes underlying a range of mental disorders may be well-suited to treating patients with complex psychiatric comorbidities. The UP [11,12] is a transdiagnostic, cognitive-behavioral intervention that holds promise for treating inpatients with STBs and comorbid disorders. Our work implementing the UP on an adult inpatient unit has resulted in several observations warranting further commentary.

We first established a collaborative partnership between the UP team and hospital leadership. Starting with a single unit as a pilot allowed us to identify and respond promptly to challenges, thereby anticipating and preemptively circumventing similar challenges when implementing across the hospital. Our second step was to iteratively adapt this EBPT to meet the unique needs of the hospital inpatient unit, which required considerable "flexibility within fidelity" [47,48]. Close involvement of the team with intimate knowledge of and experience with the protocol has ensured the core concepts of this EBPT remain unchanged.

Flexibility has also been critical during our third step of staff training. As the typical day-long or even multi-day training workshops were not feasible, an abbreviated workshop was conducted and supplementary self-study learning materials were developed for staff members who were unable to attend the workshop. A train-the-trainer model followed by a SODOTO approach was used to train staff. We recommend others interested in implementing EBPTs within hospital settings consider starting with a single program, focusing on flexibility within fidelity during protocol adaptation, and shifting typical training formats as needed.

Patients improved in both pre- and post-UP implementation conditions with large effects for depression, suicidal ideation, and anxiety, and small-to-moderate effects for emotion regulation. Effect magnitudes were larger in the post-UP implementation condition for nearly all outcomes; however, differences were not statistically significant. These findings are perhaps unsurprising given that all patients underwent intensive inpatient care. Further, the goal of using the UP was not necessarily to have superior effects [13], but to adopt a unitary treatment framework across all units and levels of care. It is possible that with larger (and better matched) sample sizes, outcomes may favor the UP, especially at follow-ups after discharge, given the UP's emphasis on long-term adaptive emotion management.

Mean acceptability scores from the month after UP implementation indicated that patients perceived 3 of the 4 assessed UP modules as helpful and *Motivation* as "somewhat" helpful. These preliminary data suggest that overall, this intervention was well-received. Fidelity to the UP during the month following implementation was variable and somewhat lower (at 73% overall) than anticipated. This may be a function of how immediately these sessions were rated after UP implementation, or a limitation of the SODOTO method. As described earlier, after our initial SODOTO approach to training, we created additional didactic training materials for staff, encouraged staff to observe the UP trainer delivering additional modules (especially the exposure module), and provided extra direct consultation to unit therapists. Future UP implementation and training efforts could consider, if resources permit, live observation or review of tapes or videos for all unit clinicians initially delivering the protocol (or at least a sample of sessions for each clinician), followed by individualized feedback as needed, or a co-leader approach in which a unit clinician with more protocol experience (or higher fidelity ratings) partners with a clinician with less experience (or lower fidelity ratings) to co-lead a limited number of sessions.

There are several limitations of our current data. First, outcome data were available for only a relatively small subsample (~13%) of patients, calling into question the generalizability of our findings. Second, the lack of a randomized controlled trial means that time or other third variables may have affected outcomes during pre- and post-UP conditions, questioning our internal validity. Third, all patients denied suicidal ideation on the C-SSRS at discharge – likely reflecting fears that endorsing STBs could result in continued hospitalization – which prevented analysis of an in-depth measure of STBs. Another limitation is the lack of follow-up outcome data. Acceptability data were collected anonymously, which may have encouraged more honest feedback, but left us unable to determine whether characteristics of patients who provided acceptability ratings are generalizable. Clinicians were responsible for administering feedback forms, which not only resulted in missing data for three UP modules but also may have introduced selection bias that positively skewed our acceptability results. Lastly, fidelity was formally rated for only a small number of sessions during the month after UP implementation.

These limitations in part reflect the many challenges inherent in conducting clinical research on an active hospital inpatient unit, especially without funding. Despite these limitations, this study offers promising (albeit preliminary) data to support the feasibility and acceptability of delivering the UP in an inpatient setting [13–15]. The similar effects before and after implementation provide an initial (and again, preliminary) indication that standardizing delivery across a hospital system with the UP does not negatively impact effectiveness at the highest level of care. There is a need for more rigorous, well-controlled research with inpatients with STBs to isolate the potential impact of the UP and to collect key outcomes (including suicide attempts and repeat hospitalizations) after discharge.

Our hope is that these reflections are helpful to others striving to improve evidence-based care within hospital settings. Extending EBPTs to the clinical settings that treat individuals at high risk for suicide is wrought with challenges, yet an area with great potential impact.

References

[1] Centers for Disease Contrrol and Prevention. Web-based injury statistics query and reporting system (WISQARS). http://www.cdc.gov/injury/wisqars/leadingcauses.html; 2014.
[2] Centers for Disease Control and Prevention. Increase in suicide in the United States, 1999–2014. https://www.cdc.gov/nchs/products/databriefs/db241.htm; 2016.
[3] Brown GK, Jager-Hyman S. Evidence-based psychotherapies for suicide prevention future directions. Am J Prev Med 2014;47:S186–94. https://doi.org/10.1016/j.amepre.2014.06.008.
[4] Glenn CR, Franklin JC, Nock MK. Evidence-based psychosocial treatments for self-injurious thoughts and behaviors in youth. J Clin Child Adolesc Psychol 2015;44:1–29. https://doi.org/10.1080/15374416.2014.945211.
[5] Meerwijk EL, Parekh A, Oquendo MA, Allen IE, Franck LS, Lee KA. Direct versus indirect psychosocial and behavioural interventions to prevent suicide and suicide attempts: a systematic review and meta-analysis. Lancet Psychiatry 2016;3:544–54. https://doi.org/10.1016/S2215-0366(16)00064-X.
[6] Jobes DA. Clinical assessment and treatment of suicidal risk: a critique of contemporary care and CAMS as a possible remedy. Pract Innov 2017;2:207–20. https://doi.org/10.1037/pri0000054.
[7] Sauer-Zavala S, Bentley KH, Wilner JG. Transdiagnostic treatment of borderline personality disorder and comorbid disorders: a clinical replication series. J Pers Disord 2016;30:35–51. https://doi.org/10.1521/pedi_2015_29_179.
[8] Bentley KH, Sauer-Zavala S, Cassiello-Robbins CF, Conklin LR, Vento S, Homer D. Treating suicidal thoughts and behaviors within an emotional disorders framework: acceptability and feasibility of the Unified Protocol in an inpatient setting. Behav Modif 2017;41:529–57. https://doi.org/10.1177/0145445516689661.
[9] Kessler RC, Berglund P, Borges G, Nock M, Wang PS. Trends in suicide ideation, plans, gestures, and attempts in the United States, 1990–1992 to 2001–2003. JAMA 2005;293:2487–95. https://doi.org/10.1001/jama.293.20.2487.
[10] McHugh RK, Barlow DH. The dissemination and implementation of evidence-based psychological treatments: a review of current efforts. Am Psychol 2010;65:73–84. https://doi.org/10.1037/a0018121.
[11] Barlow DH, Farchione TJ, Fairholme CP, Ellard KK, Boisseau CL, Allen LB, et al. Unified Protocol for Transdiagnostic Treatment of Emotional Disorders: Therapist guide. 1st ed Oxford: Oxford University Press; 2011.
[12] Barlow DH, Farchione TJ, Sauer-Zavala S, Murray Latin H, Ellard KK, Bullis JR, et al. Unified Protocol for the Transdiagnostic Treatment of Emotional Disorders: Therapist guide. 2nd ed New York, NY: Oxford University Press; 2018.
[13] Barlow DH, Farchione TJ, Bullis JR, Gallagher MW, Murray-Latin H, Sauer-Zavala S, et al. The Unified Protocol for Transdiagnostic Treatment of Emotional Disorders compared with diagnosis-specific protocols for anxiety disorders. JAMA Psychiat 2017;74:875–84. https://doi.org/10.1001/jamapsychiatry.2017.2164.
[14] Ellard KK, Bernstein EE, Hearing C, Baek JH, Sylvia LG, Nierenberg AA, et al. Transdiagnostic treatment of bipolar disorder and comorbid anxiety using the Unified Protocol for Emotional Disorders: A pilot feasibility and acceptability trial. J

Affect Disord 2017;219:209–21. https://doi.org/10.1016/j.jad.2017.05.011.
[15] Farchione TJ, Fairholme CP, Ellard KK, Boisseau CL, Thompson-Hollands J, Carl JR, et al. Unified Protocol for Transdiagnostic Treatment of Emotional Disorders: a randomized controlled trial. Behav Ther 2012;43:666–78. https://doi.org/10.1016/j.beth.2012.01.001.
[16] Abramson LY, Alloy LB, Hogan ME, Whitehouse WG, Gibb BE, Hankin BL, et al. The hopelessness theory of suicidality. In: Joiner TE, Rudd MD, editors. Suicide Sci. Expand. Boundaries. New York, NY: Kluwer Academic; 2000. p. 17–32.
[17] Baumeister RF. Suicide as escape from self. Psychol Rev 1990;97:90–113.
[18] Beck AT. Hopelessness as a predictor of eventual suicide. Ann N Y Acad Sci 1986;487:90–6. https://doi.org/10.1111/j.1749-6632.1986.tb27888.x.
[19] Joiner TE. Why people die by suicide. Cambridge, MA: Harvard University Press; 2005.
[20] Linehan MM. Cognitive-behavioral treatment of borderline personality disorder. Guilford Press; 1993.
[21] Shneidman ES. Suicide as a psychache. J Nerv Ment Dis 1993;181:147–9.
[22] Handley TE, Inder KJ, Kelly BJ, Attia JR, Lewin TJ, Fitzgerald MN, et al. You've got to have friends: the predictive value of social integration and support in suicidal ideation among rural communities. Soc Psychiatry Psychiatr Epidemiol 2012;47:1281–90. https://doi.org/10.1007/s00127-011-0436-y.
[23] Holma KM, Haukka J, Suominen K, Valtonen HM, Mantere O, Melartin TK, et al. Differences in incidence of suicide attempts between bipolar I and II disorders and major depressive disorder. Bipolar Disord 2014;16:652–61. https://doi.org/10.1111/bdi.12195.
[24] Fang L, Heisel MJ, Duberstein PR, Zhang J. Combined effects of neuroticism and extraversion. J Nerv Ment Dis 2012;200:598–602. https://doi.org/10.1097/NMD.0b013e31825bfb53.
[25] Tanji F, Kakizaki M, Sugawara Y, Watanabe I, Nakaya N, Minami Y, et al. Personality and suicide risk: the impact of economic crisis in Japan. Psychol Med 2015;45:559–73. https://doi.org/10.1017/S0033291714001688.
[26] Mewton L, Andrews G. Cognitive behavioral therapy for suicidal behaviors: improving patient outcomes. Psychol Res Behav Manag 2016;9:21. https://doi.org/10.2147/PRBM.S84589.
[27] Stanley B, Brown G, Brent DA, Wells K, Poling K, Curry J, et al. Cognitive-behavioral therapy for suicide prevention (CBT-SP): treatment model, feasibility, and acceptability. J Am Acad Child Adolesc Psychiatry 2009;48:1005–13. https://doi.org/10.1097/CHI.0b013e3181b5dbfe.
[28] Brown GK, Ten Have T, Henriques GR, Xie SX, Hollander JE, Beck AT. Cognitive therapy for the prevention of suicide attempts. JAMA 2005;294:563. https://doi.org/10.1001/jama.294.5.563.
[29] Ghahramanlou-Holloway M, Cox DW, Greene FN. Post-admission cognitive therapy: a brief intervention for psychiatric inpatients admitted after a suicide attempt. Cogn Behav Pract 2012;19:233–44. https://doi.org/10.1016/J.CBPRA.2010.11.006.
[30] Stanley B, Brown GK. Safety planning intervention: a brief intervention to mitigate suicide risk. Cogn Behav Pract 2012;19:256–64. https://doi.org/10.1016/j.cbpra.2011.01.001.
[31] Comer JS, Barlow DH. The occasional case against broad dissemination and implementation: retaining a role for specialty care in the delivery of psychological treatments. Am Psychol 2014;69:1–18. https://doi.org/10.1037/a0033582.
[32] Thompson-Brenner H, Brooks GE, Boswell JF, Espel-Huynh H, Dore R, Franklin DR, et al. Evidence-based implementation practices applied to the intensive treatment of eating disorders: summary of research and illustration of principles using a case example. Clin Psychol Sci Pract 2018:e12221https://doi.org/10.1111/cpsp.12221.
[33] Thompson-Brenner H, Boswell JF, Espel H, Brooks GE, Ortiz S, Lowe M. Implementation of transdiagnostic treatment for emotional disorders in residential eating disorder programs: a preliminary evaluation. Psychother Res 2018. https://doi.org/10.1080/10503307.2018.1446563.
[34] Bullis JR, Sauer-Zavala S, Bentley KH, Thompson-Hollands J, Carl JR, Barlow DH. The Unified Protocol for Transdiagnostic Treatment of Emotional Disorders: preliminary exploration of effectiveness for group delivery. Behav Modif 2015;39:295–321. https://doi.org/10.1177/0145445514553094.
[35] Barlow DH, Sauer-Zavala S, Farchione TJ, Murray Latin H, Ellard KK, Bullis JR, et al. Unified Protocol for Transdiagnostic Treatment of Emotional Disorders. 2nd ed New York, NY: Oxford University Press; 2018.
[36] Kotsis SV, Chung KC. Application of the “see one, do one, teach one” concept in surgical training. Plast Reconstr Surg 2013;131:1194–201. https://doi.org/10.1097/PRS.0b013e318287a0b3.
[37] Kroenke K, Spitzer RL, Williams JBW. The PHQ-9: validity of a brief depression severity measure. J Gen Intern Med 2001;16:606–13. https://doi.org/10.1046/j.1525-1497.2001.016009606.x.
[38] Spitzer RL, Kroenke K, Williams JBW, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. Arch Intern Med 2006;166:1092–7. https://doi.org/10.1001/archinte.166.10.1092.
[39] Victor SE, Klonsky ED. Validation of a brief version of the Difficulties in Emotion Regulation Scale (DERS-18) in five samples. J Psychopathol Behav Assess 2016;38:582–9. https://doi.org/10.1007/s10862-016-9547-9.
[40] Posner K, Brown GK, Stanley B, Brent DA, Yershova KV, Oquendo MA, et al. The Columbia–suicide severity rating scale: initial validity and internal consistency findings from three multisite studies with adolescents and adults. Am J Psychiatry 2011;168:1266–77. https://doi.org/10.1176/appi.ajp.2011.10111704.
[41] Bentley KH, Nock MK, Sauer-Zavala S, Gorman BS, Barlow DH. A functional analysis of two transdiagnostic, emotion-focused interventions on nonsuicidal self-injury. J Consult Clin Psychol 2017;85:632–46. https://doi.org/10.1037/ccp0000205.
[42] The Joint Commission. New Outcome Measures Standard (CTS.03.01.09). https://www.jointcommission.org/accreditation/bhc_new_outcome_measures_standard.aspx; 2018.
[43] Morris SB, DeShon RP. Combining effect size estimates in meta-analysis with repeated measures and independent-groups designs. Psychol Methods 2002;7:105–25. https://doi.org/10.1037/1082-989X.7.1.105.
[44] Borenstein M. Effect sizes for continuous data. In: Cooper H, Hedges LV, Valentine JC, editors. Handb. res. synth. meta-analysis. Russell Sage Foundation; 2009.
[45] Hedges LV. Estimation of effect size from a series of independent experiments. Psychol Bull 1982;92:490–9. https://doi.org/10.1037/0033-2909.92.2.490.
[46] Hedges LV. Distribution theory for Glass's estimator of effect size and related estimators. J Educ Stat 1981;6:107–28. https://doi.org/10.2307/1164588.
[47] Kendall PC, Gosch E, Furr JM, Sood E. Flexibility within fidelity. J Am Acad Child Adolesc Psychiatry 2008;47:987–93. https://doi.org/10.1097/CHI.0b013e31817eed2f.
[48] McHugh RK, Murray HW, Barlow DH. Balancing fidelity and adaptation in the dissemination of empirically-supported treatments: the promise of transdiagnostic interventions. Behav Res Ther 2009;47:946–53. https://doi.org/10.1016/j.brat.2009.07.005.
[49] Cohen J. Statistical power analysis for the behavioral sciences. Hillsdale, NJ: Lawrence Erlbaum Associates; 1988.