

Suicidal Behaviors from Adolescence through Young Adulthood: Developmental Trajectories and Intervention

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Prevention

Goals of Presentation

Suicidal behaviors as a public health problem

Proximal psychiatric diagnostic risk factors for suicidal behaviors and developmental trajectories from adolescence through young adulthood

Patterns of escalation with repeat suicide attempts

Promising avenues for intervention



Suicide is a Major Public Health Problem

- In the US, someone dies by suicide every 12 to 13 minutes
- For the year 2018, over twice as many individuals died by suicide as died by homicide (48,344 vs. 18,830) (CDC, 2020)
- From 2003 to 2018, suicide rates for 10- to 17-year-olds doubled (CDC, 2021)
- Rates of suicide deaths for girls ages 15 to 19 in the US are higher than at any point in the last 40 years (CDC, 2020)

Suicidal Behavior is a Major Public Health Problem

Concern about suicidal behavior or risk of suicidal behavior is one of the primary reasons for psychiatric emergencies and hospitalization (e.g., Larkin et al., 2008)

A significant proportion of youth experiencing suicidal thoughts or behaviors do not receive medical attention or have contact with a mental health professional.

In emergency department settings, it is not uncommon for youth with mental health issues to not be seen by a mental health professional (Kalb et al., 2019) or for suicidal youth to not receive therapy following their discharge (Asarnow et al., 2011).

Psychiatric and Substance Use Disorders as Proximal Risk Factors

Suicide and suicidal behaviors are multiply determined

There is much heterogeneity in the factors associated with, and the developmental trajectories that culminate in suicidal behavior

With that said, the clear majority of suicide attempts occur in the context of diagnosable and treatable psychiatric and substance use disorders

Two Prospective
Studies
Examining
Suicidal
Behaviors
and Co-Occurring
Psychiatric
Diagnoses

- Great Smoky Mountain Study¹ (longitudinal community-based study)
- Adjustment of Adolescents Following Hospitalization Study² (longitudinal study of at-risk adolescents through adulthood)

¹Foley, Goldston, Costello, & Angold (2006). Proximal psychiatric risk factors for suicidality in youths: The Great Smoky Mountain Study. *Archives of General Psychiatry*, 63, 1017-1024.

²Goldston, et al. (2009). Psychiatric risk factors as contemporaneous risk factors for suicide attempts among adolescents and young adults: Developmental changes. *Journal of Consulting and Clinical Psychology*, 77, 281-290.



The Eleven
Psychiatric
Profiles in
GSMS*

- | |
|---|
| 1. Pure depression |
| 2. Pure disruptive (3.66% v. 12.36%, OR=7.36) |
| 3. Depression + anxiety (0.39% v. 22.71%, OR=134.56) |
| 4. Depression + disruptive (0.25% v. 15.04%, OR=129.60) |
| 5. Anxiety + disruptive |
| 6. Depression + anxiety + disruptive |
| 7. Depression + disruptive + alcohol |
| 8. Depression + anxiety + disruptive + alcohol |
| 9. Depression + anxiety + disruptive + illicit drugs |
| 10. Depression + anxiety + alcohol + illicit drugs |
| 11. Depression + disruptive + alcohol + illicit drugs |

(* $p \leq .05$; Foley, Goldston, Costello, & Angold, 2006; $n=1420$, 6676 records, ages 9 to 16)

Psychiatric Disorders following Hospitalization and Suicide Attempts

Goldston, Daniel, Erkanli, Reboussin, Mayfield, Frazier, Treadway (2009). Psychiatric diagnoses as contemporaneous risk factors for suicide attempts among adolescents and young adults. *JCCP*, 77, 281-290. (n=180, 1,825 assessments; followed from average age of 14.6 for up to 13.6 years)

Diagnosis	B (SE)	Adj Haz (p val)
MDD	1.94 (0.25)	6.95 (<.001)
Dysthymia	0.92 (0.38)	2.51 (.015)
GAD	1.37 (0.48)	3.92 (.005)
Phobias	0.06 (0.82)	1.06 (0.94)
Panic Disorder	2.10 (0.54)	7.46 (<.001)
ADHD	0.88 (0.34)	2.41 (.009)
ODD	-0.64 (0.53)	0.53 (.225)
CD	1.03 (0.25)	2.79 (<.001)
Substance Abuse	1.14 (0.36)	3.14 (.002)

Suicide Attempts and Psychiatric Disorders: Developmental Changes

Diagnosis	ρ	χ^2	p
Major depressive disorder	.19	11.98	<.001
Dysthymic disorder	-.03	<1.00	.386
Generalized anxiety disorder	.14	10.62	.001
Panic disorder	-.12	6.54	.011
Attention-deficit/hyperactivity disorder	.11	3.95	.047
Conduct disorder	-.11	4.20	.040
Substance use disorder	.10	11.89	<.001

Goldston et al. (2009). Psychiatric diagnoses as contemporaneous risk factors for suicide attempts among adolescents and young adults. *JCCP*, 77, 281-290.

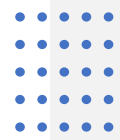
Heterogeneity among Suicidal Youths

There also is a great deal of diversity in developmental patterns or trajectories in suicidal behaviors amongst individuals.

Paying attention to differences in these different patterns over time may give us insight into the context of suicidal behavior and how best shape our interventions

Developmental Trajectories

- In our longitudinal study of youths since hospitalization, at each assessment (2,273 total assessments), we rated the most severe level of suicidal thoughts or behavior since the last assessment (or since the index hospitalization):
 - (1) no suicidal thoughts
 - (2) suicidal thoughts but no mean envisioned
 - (3) suicidal thoughts with means envisioned
 - (4) single suicide attempt
 - (5) multiple suicide attempts



Developmental Trajectories

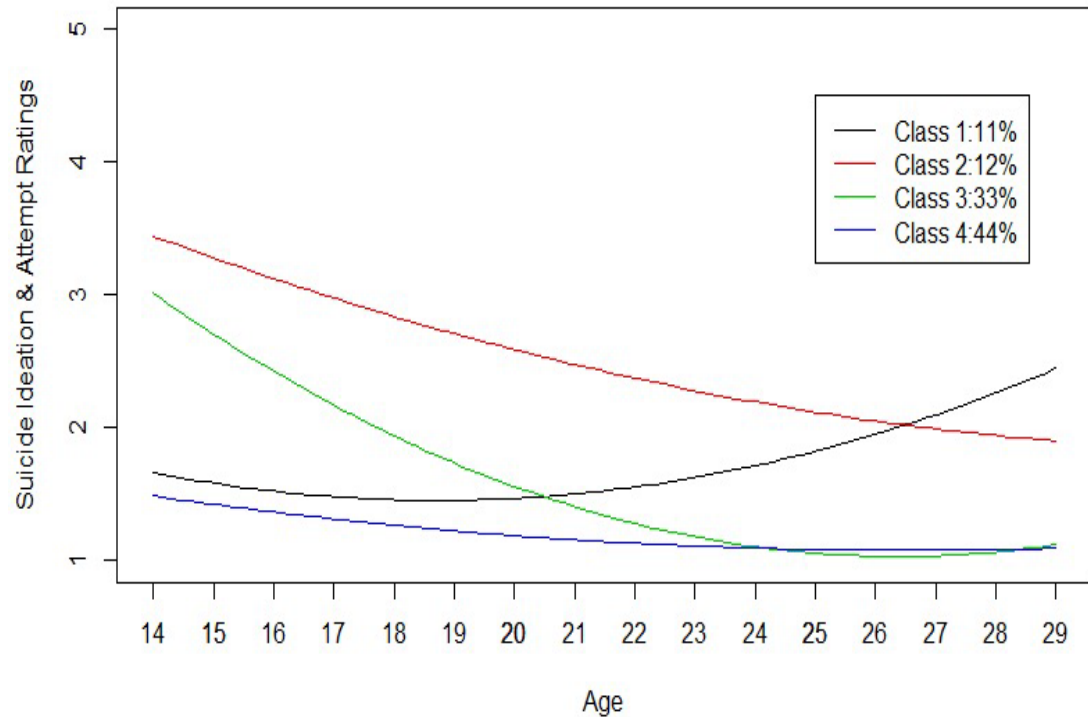
- We took a two-stage approach to modeling
 - First, via a process of multiple simulations, we examined all possible configurations of latent class memberships. Through this process, we determined probabilistically the most likely number of developmental trajectories and individuals' probabilities of class memberships
 - Second, again via multiple simulations, we assessed independently how the different developmental trajectories were similar or different in known risk and protective factors



Developmental Trajectories

Four group-based trajectories were identified using Markov Chain Monte Carlo (MCMC) simulation approaches: a class with decreasing risk from adolescence through young adulthood (33%), a group with increasing risk beginning in young adulthood (11%), a group that remained at relatively low risk throughout the follow-up (44%), and a class that began at high risk in adolescence but more gradually reduced risk through young adulthood (12%).

Latent class trajectories of severity of suicidal thoughts and behavior following hospitalization*



- *Based on most severe suicidal thoughts/behavior since last assessment: 1 = no suicidal thoughts, 2 = suicidal thoughts, without means envisioned, 3 = suicidal thoughts with means envisioned, 4 = 1 suicide attempt, 5 = >1 suicide attempt
- Goldston, D., Erkanli, A., Daniel, S. et al. (2016). Developmental trajectories of suicidal thoughts and behaviors from adolescence through adulthood. *Journal of the American Academy of Child & Adolescent Psychiatry*, 55, 400-407.

Class 1 (Increasing Suicidal Thoughts and Behaviors)

- More trait anxiety than lowest risk class* *p <.05, **p<0.01, ***p<0.001
- More aggressive behavior in adulthood*
- More impulsivity in adulthood**
- Social adjustment difficulties in adulthood, especially with family**
- More impairment in role performance and relations with other*

Class 2 (Highest Overall Risk)

- Greater proportion of time in episodes of Major Depression*** and Generalized Anxiety Disorder** than lowest risk class *p <.05, **p<0.01, ***p<0.001
- Higher likelihood of sexual abuse*
- Greater impulsivity in adulthood*
- Lower reasons for living (survival and coping beliefs)*** and greater hopelessness**
- Social difficulties in adulthood**

Class 3 (Decreasing Risk)

- Older age at hospitalization than lowest risk group***
- Greater overall trait anxiety**
- Lower reasons for living over time**

*p <.05, **p<0.01, ***p<0.001



Why do Some Individuals Continue to Think About and Engage in Suicidal Behavior?

- Surprisingly, few theoretical frameworks have emphasized the behavioral mechanisms that might be associated with suicidal behavior
- However, some of our most promising treatments for individuals who have been suicidal draw upon behavioral methods and concepts

A Behavioral Framework

- Individuals who attempt suicide are generally highly distressed, and by definition, have at least some intent to die
- Nonetheless, once someone has made a suicide attempt, the attempt may result in consequences that may increase the likelihood of recurrence
 - Sense of control (in context of other feelings of things being out of control)
 - Clinically, some individuals describe a cathartic effect or reduction in distress following a suicide attempt
 - The focus on suicide attempts (and their aftermath) may allow individuals to “escape” or shift attention away from distressing circumstances



Implicit Affective Responses

These effects may be reflected indirectly in how individuals respond - positively or negatively - to images related to death and suicide

Implicit affective responses can be affected by operant conditioning

We used the Affect Misattribution Procedure (AMP), developed by Keith Payne, at UNC, to examine this possibility

We examined implicit affective responses, both retrospectively in relation to developmental trajectories, and also prospectively over five additional years

AMP Procedures

Participants randomly shown a pleasant, neutral, unpleasant, and death- or suicide-related image for a very brief period of time

After each, they were shown a Chinese character and asked to rate the Chinese character as to whether they viewed it as pleasant or unpleasant

Ratings of the Chinese characters reflected their reaction to the stimuli they had seen briefly right before







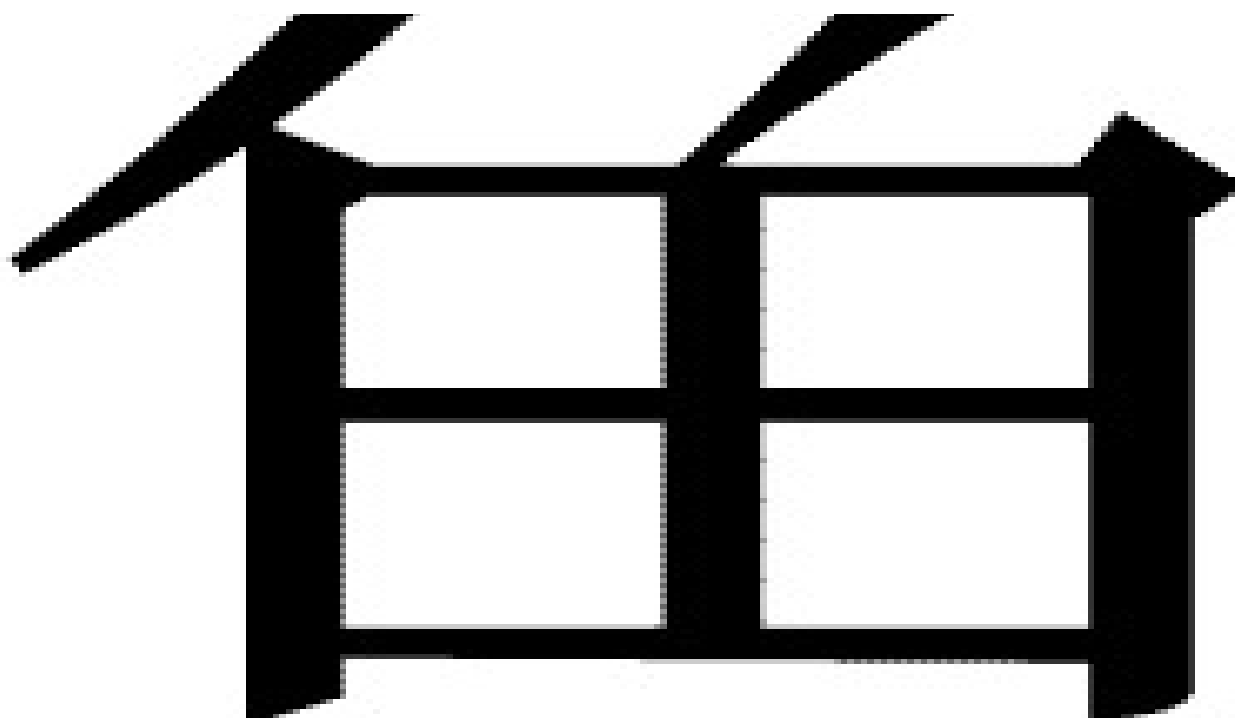












Developmental Trajectories and Implicit Affect

Because of the skewed distribution of responses to different stimuli, and to control for within-subject response propensities, we examined differences between responses to neutral stimuli and responses to pleasant, unpleasant, and death-related stimuli

Trajectories did not differ in differences between neutral and either pleasant or unpleasant images ($p > 0.05$).

The difference between responses to death-related and neutral images was related to trajectory classification ($p = 0.0098$)

Specifically, the trajectory class with increasing SITBs through adulthood responded most favorably to the death-related images, relative to neutral images ($b = 22.01$, $se = 8.04$, $p = 0.0071$)

Prospective Course and Implicit Affect

Ratings for AMP stimuli were not predictive of subsequent SITBs

Ratings for the AMP control stimuli (neutral, pleasant, unpleasant) across assessments were not related to severity of suicide ideation (assessed with the Beck Scale for Suicide Ideation) or SITB ratings over time

The degree to which participants rated death- and suicide-related stimuli as positive, however, was related to severity of suicide ideation in the last week ($b = 0.018$, $se = .006$, $p=0.003$)

Ratings for these stimuli were also related to severity of SITBs since last assessment ($b=0.005$, $se=0.003$, $p=0.036$)



Behavioral Processes Could also be Related to Escalation in Suicidal Behavior

Goldston, Daniel, Erkanli, Heilbron, Doyle, Weller, Sapyta (2015). Suicide attempts in a longitudinal sample of adolescents followed through adulthood: Evidence of escalation. *Journal of Consulting and Clinical Psychology*, 83(2), 253-264. n=180, 109 of which attempted suicide, 63 with repeat attempts; 2270 assessments.

- Escalation and sensitization were examined via within-participant patterns in:
 - Intent of suicide attempts
 - Medical lethality of suicide attempts
 - Amount of time between successive attempts
 - The association between severe life stresses and suicide attempts

Escalation of Suicidal Behavior from Adolescence through Adulthood

Neither number of life events, nor the sum of life change scores preceding suicide attempts are related to number of past attempts

Intent of suicidal behavior increases with number of past attempts ($p = .008$) and age ($p = .015$)

Medical lethality of suicidal behavior does not increase with repeated attempts ($p = .091$) but does increase with age ($p = .001$)

There are increasingly shorter periods of time between successive attempts as the number of attempts increases ($p < .001$)



Implications

- To summarize, there is much heterogeneity among adolescents and young adults that are suicidal, and different developmental trajectories that culminate in suicide attempts
- Some individuals have recurrent patterns of suicidal behavior, which may need to be targeted or interrupted
- Behavioral processes may play a role in risk and recurrence of suicidal behaviors




Psychotherapeutic Treatments

Interventions that have problem-solving or cognitive behavioral focus have shown promise (e.g., Cognitive Behavioral Therapy for Suicide Prevention, Dialectical Behavioral Therapy, SAFETY-Acute, SAFETY)

Interventions that have a specific focus on addressing suicidal or self-harm behaviors (rather than interventions aimed at just reducing risk factors such as psychiatric disorders)

Interventions that emphasize planning for acute safety (e.g., Stanley & Brown, 2012)



Relapse Prevention Interventions

- Given patterns of escalation, relapse prevention interventions that have the potential for interrupting the cycle of recurrent suicidal behavior may be especially useful
- Integrated relapse prevention interventions for suicidal behavior and substance abuse may fill gaps in care given fragmentation of mental health and substance use services, and fact that substance use is a greater proximal risk factor as individuals get older,
- Alan Marlatt's cognitive behavioral relapse prevention model provides a framework, and language for integrated approach



Cognitive Behavioral Therapy – Relapse Prevention (CBT-RP)

Goldston, Curry, Wells, Kaminer, Daniel, Esposito-Smythers, Doyle, Sapyta, Tunno, Heilbron, Roley-Roberts (2021). Feasibility of an integrated treatment approach for youth with depression, suicide attempts, and substance use. EBCAMH, 3, 155-172.

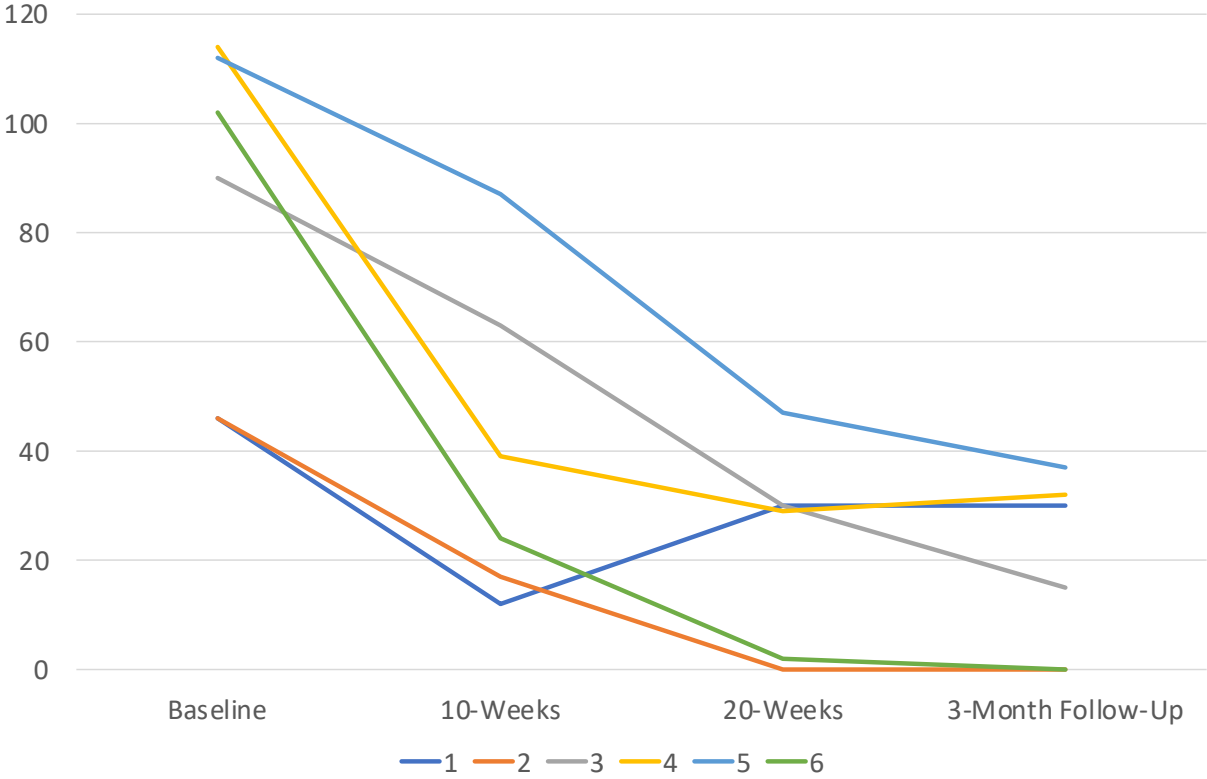
Integrated approach that applies common core skills, language, and approach for treating substance use, depression, and suicide risk

20-week flexible intervention tailored to individual youth needs, identified with functional analyses

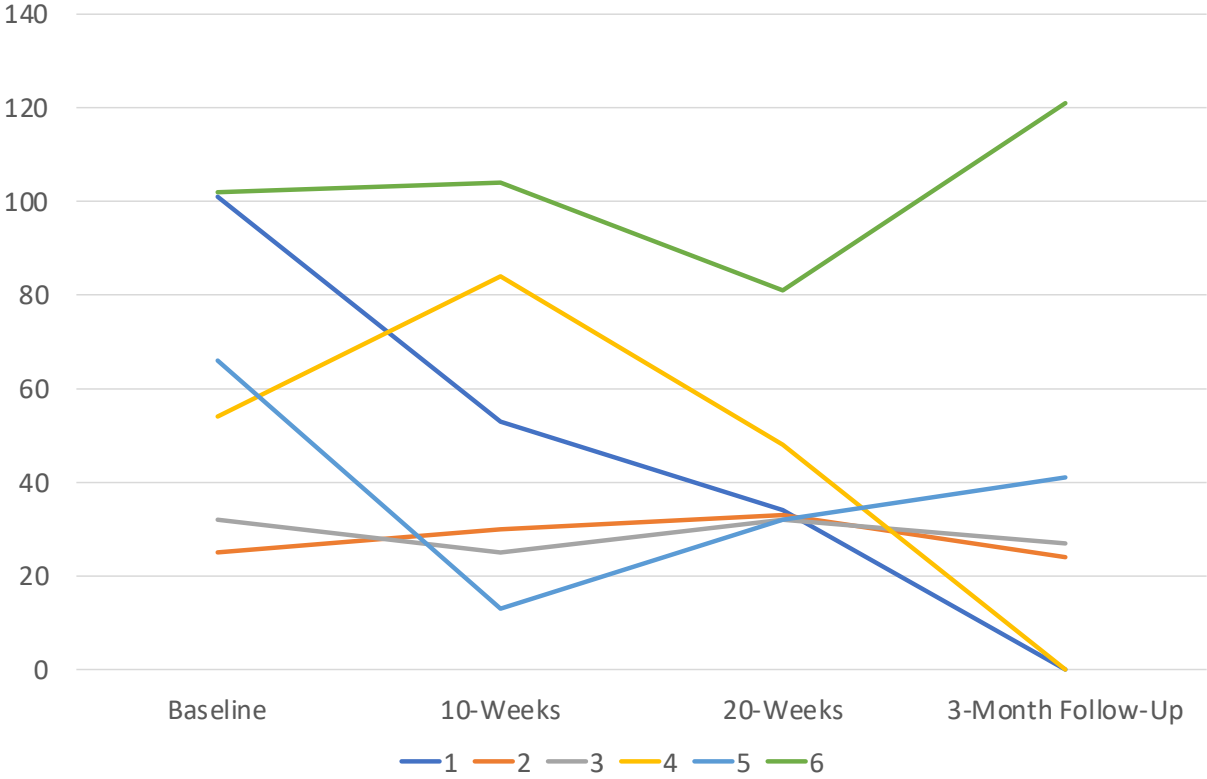
Small pilot feasibility study comparing CBT-RP + TAU vs. TAU alone (n=13)

High rates of retention and positive evaluations of helpfulness of the intervention

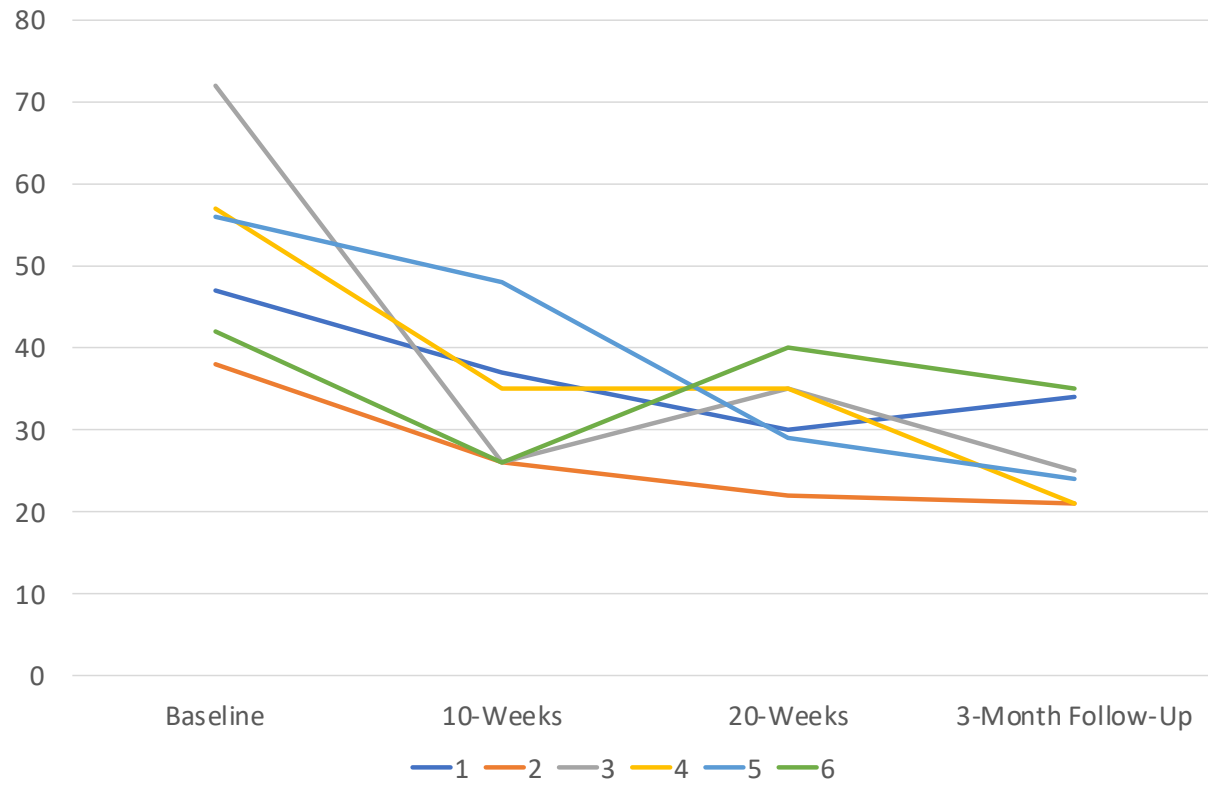
CBT-RP + TAU Suicide Ideation (SIQ)



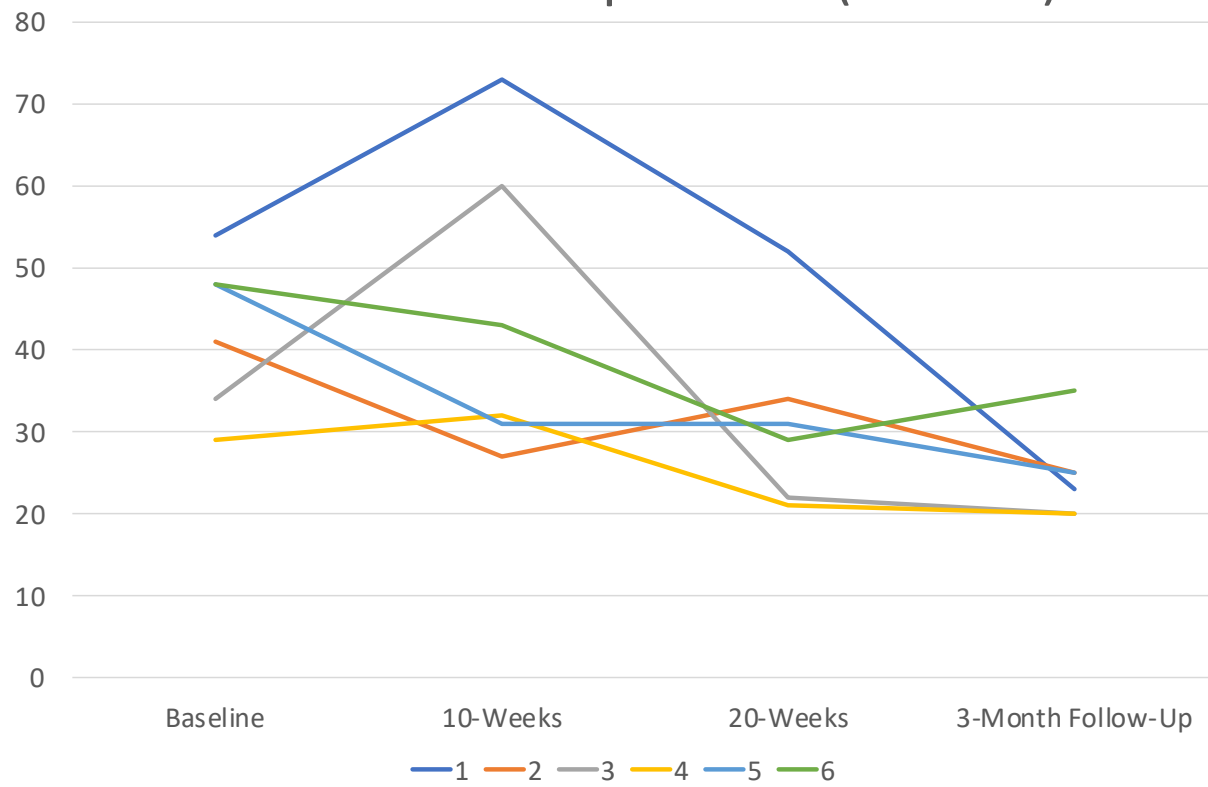
TAU Alone Suicide Ideation (SIQ)



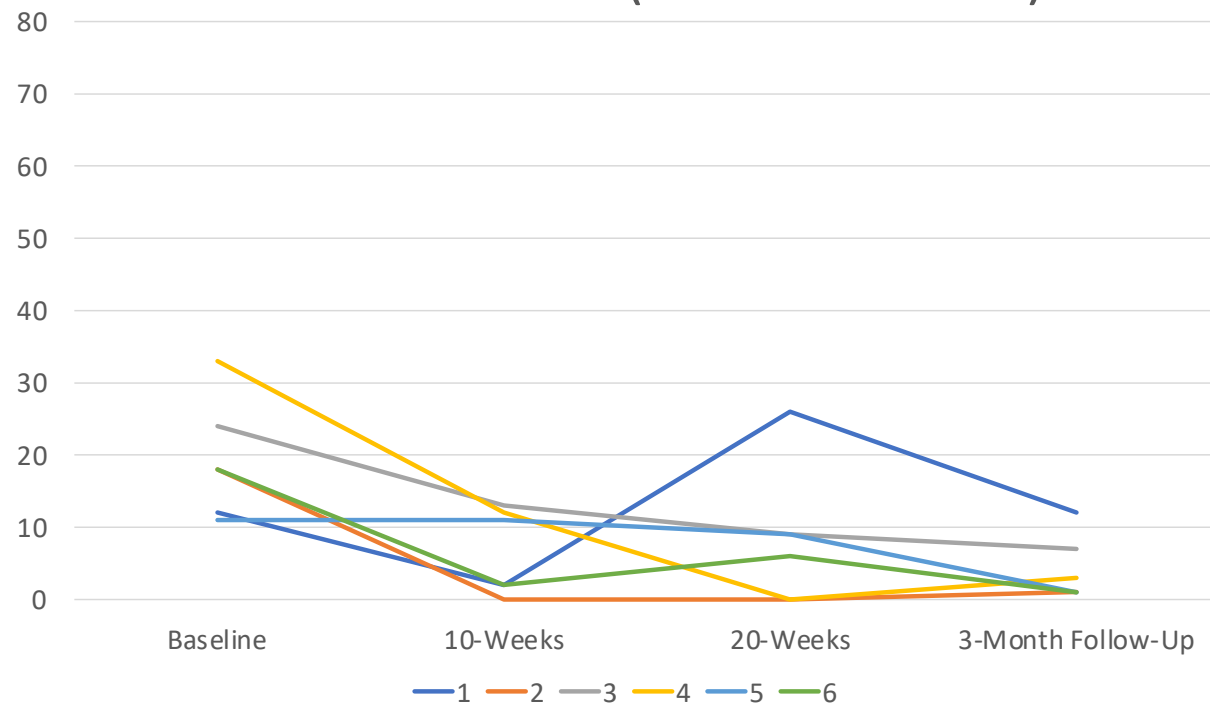
CBT-RP + TAU Depression (CDRS-R)



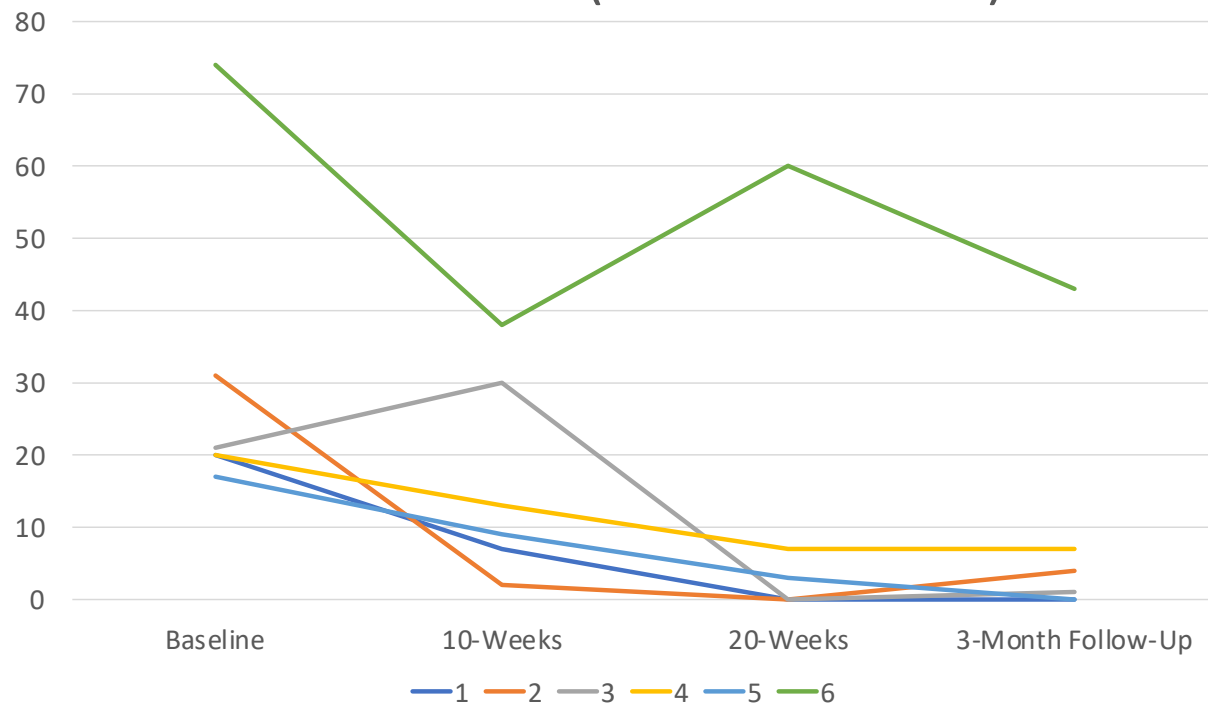
TAU Alone Depression (CDRS-R)



CBT-RP + TAU Alcohol and Cannabis Problems (RMPI and RAPI)



TAU Alone Alcohol and Cannabis Problems (RMPI and RAPI)



SAFETY-Acute (SAFETY-A), formerly known as the Family Intervention for Suicide Prevention

- Brief, developmentally nuanced
- Transdiagnostic
- Strengths-based
- Trauma-informed
- Family-based
- Emphasis on acute safety

Asarnow, Goldston, Tunno, Inscoc, Pynoos (2020). Suicide, self-harm, & traumatic stress exposure: A trauma-informed approach to the evaluation and management of suicide risk. *EBPCAMH*, 5, 483-500



SAFETY-A Implementations and Adaptations

- Emergency departments (NCTSN)
- Medical floors (NCTSN)
- Providers across entire communities (NCTSN)
- Schools (NCTSN, NIMH R34)
- Juvenile detention facilities (NIMH R34)
- With therapeutic follow-up contacts, examining heterogeneity of effects (PCORI)

Goldston & Asarnow (2021). Quality improvement for acute trauma-informed suicide prevention care: Introduction to Special Issue. EBPCAMH, 6, 303-306.

<http://asapnctsn.org>

Thank you!

Questions or follow-up:

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