



High Risk Suicidal Behavior in Veterans:

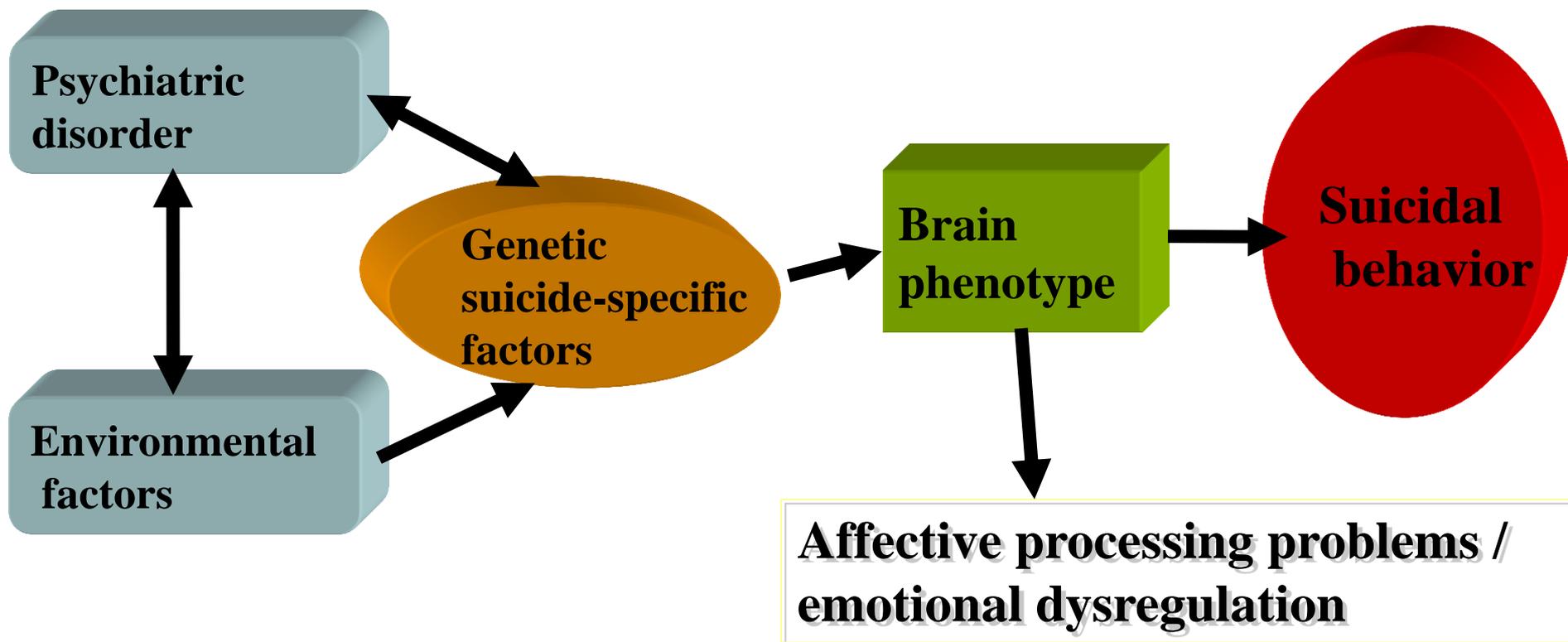
Assessment of Predictors and Efficacy of Dialectical Behavioral Therapy

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VISN 3 MIRECC
JUNE 22, 2012

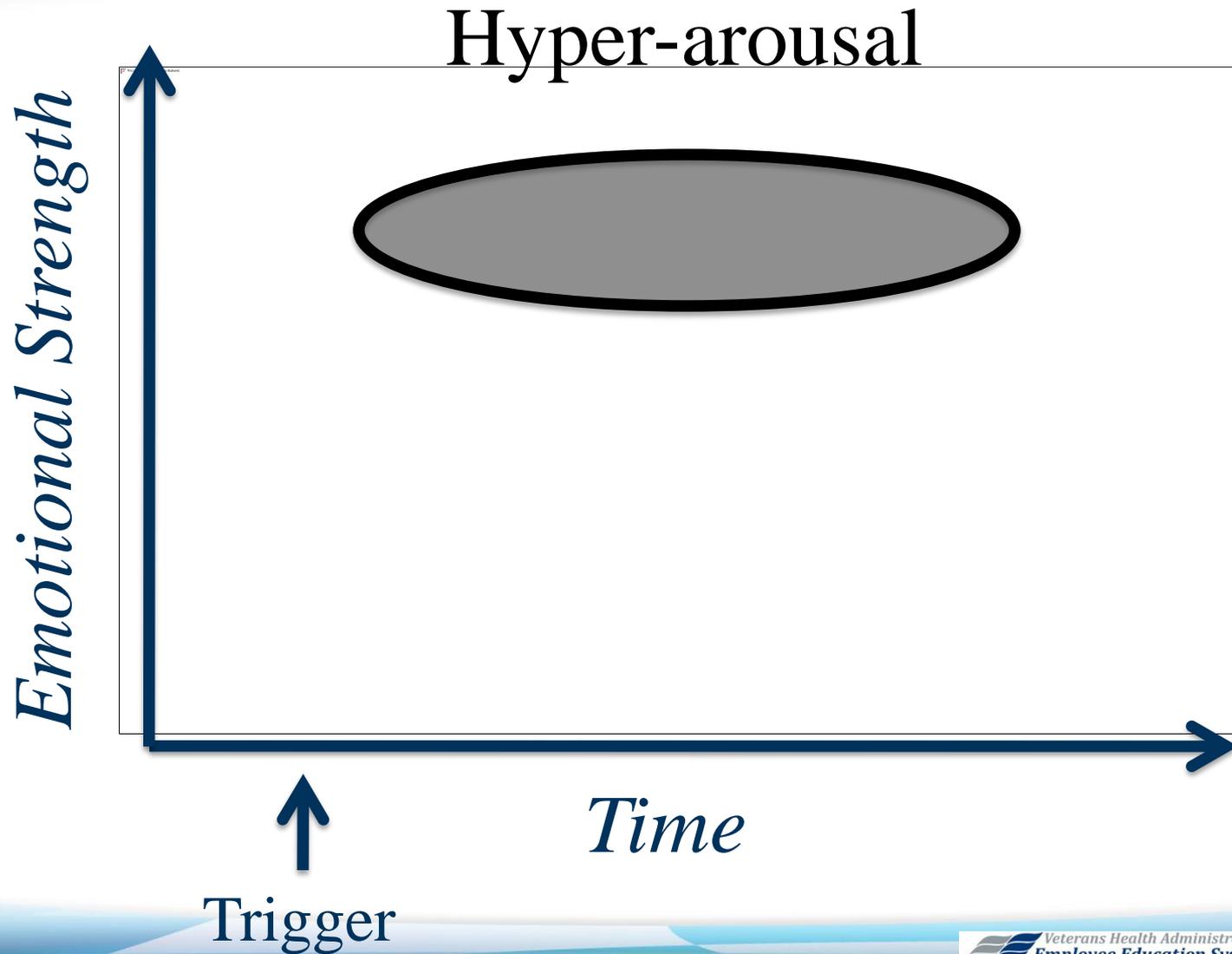
MODEL: Suicidal behavior is an outcome of interaction between individual suicide-specific biological factors and environment

(Mann & Arango, 1992; Mann et al. 1999)

Triggers/Stressors



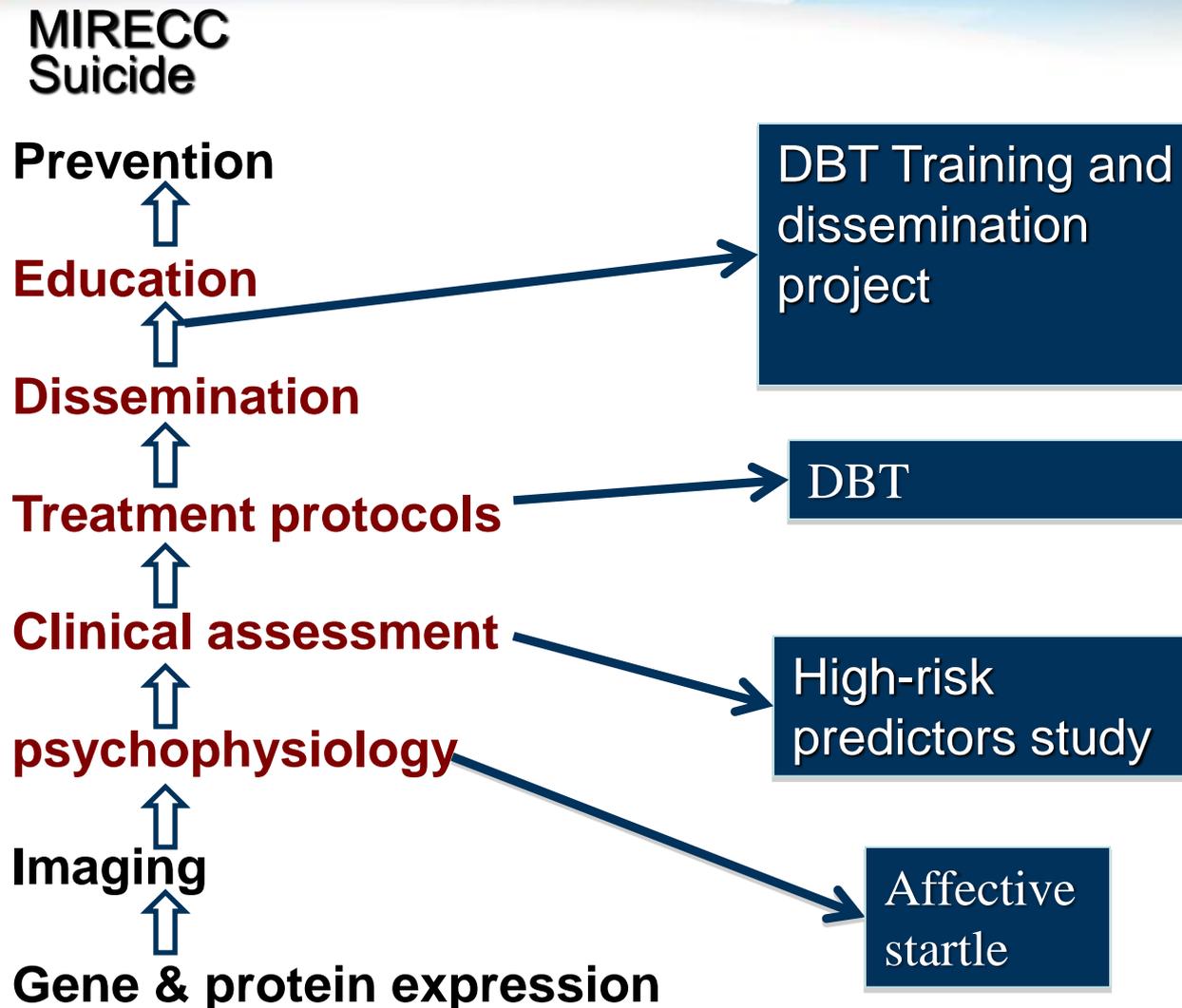
Emotional Dysregulation and Suicide Risk



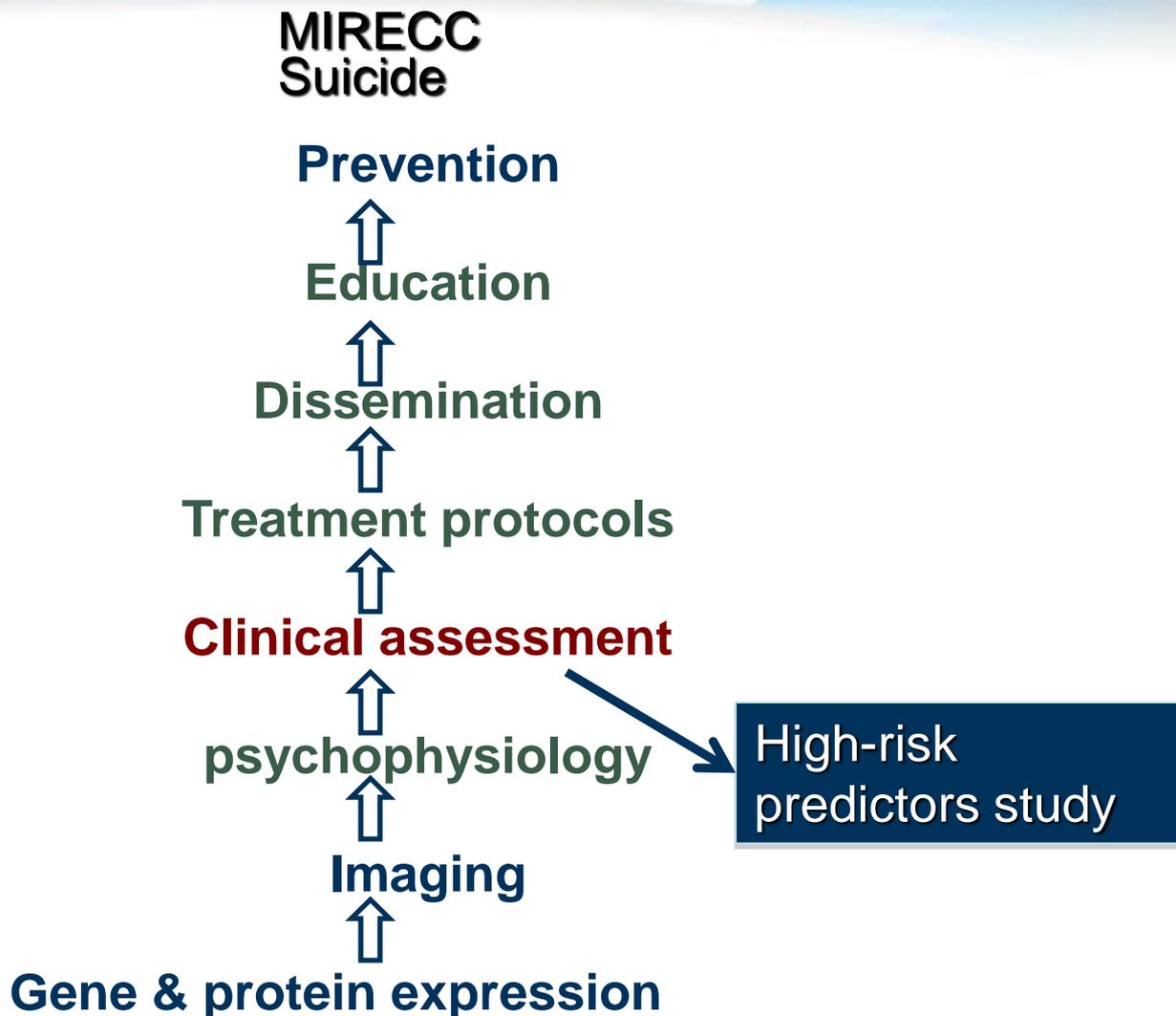
VISN 3 MIRECC Suicide Research Questions

- 1) Who are our high-risk suicidal Veterans?**
- 2) Can we identify predictors and/ or biomarkers of high-risk suicidal behavior?**
- 3) What are the current best practices to treat/ prevent suicidal behavior?**
- 4) How can we disseminate best treatment practices across the VA?**

Clinical Studies of Suicide



Who are our high-risk suicidal Veterans?

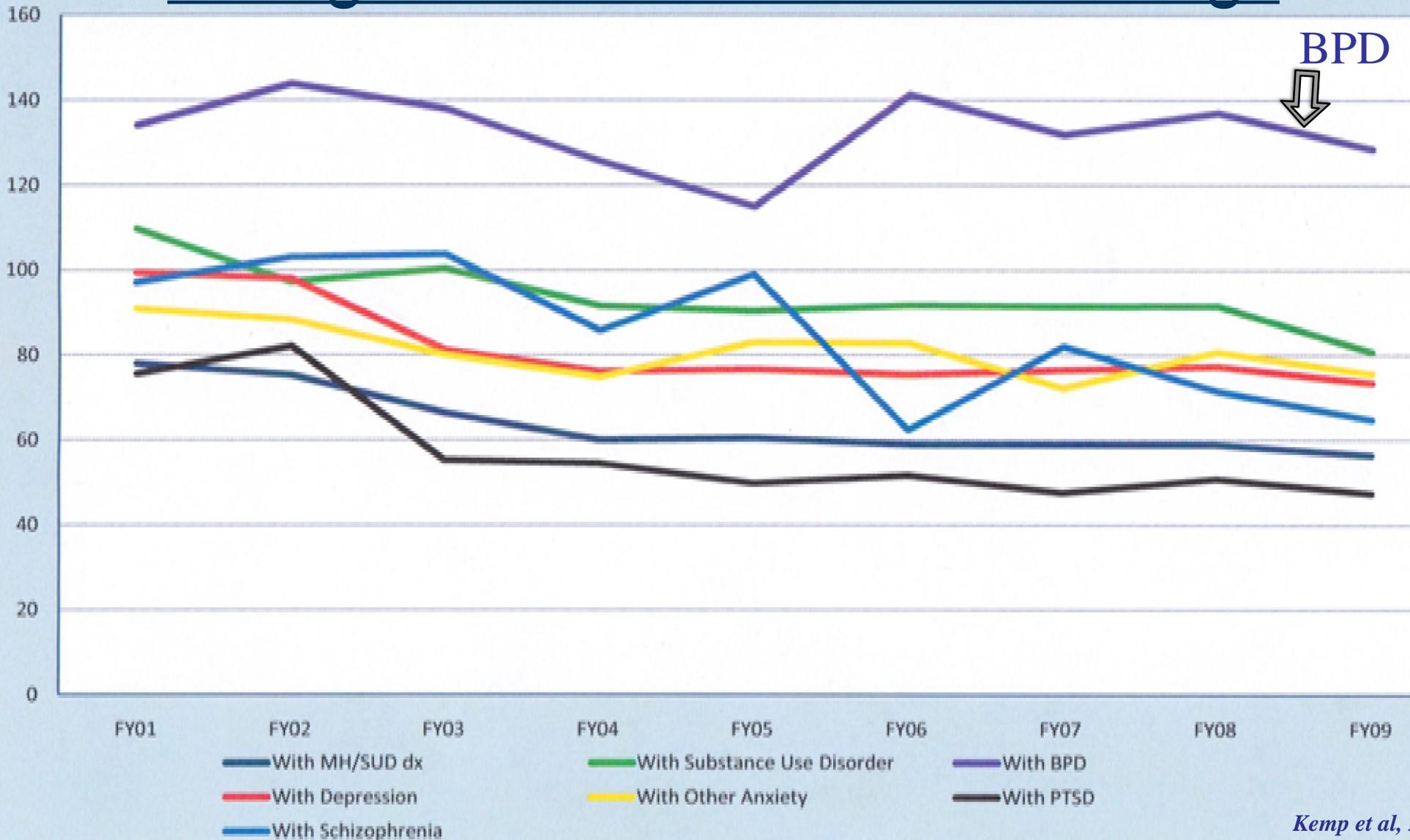


Background: Veteran Suicide

- Service members make up 1% of the U.S. population but account for 20% of suicides (OIG report, 2011).
- Average of 18 Veterans complete suicide every day (Bruce, 2010).
- Veterans are twice as likely as non-veterans to die by suicide (Kaplan et al, 2007).
- Since 2007, The VA has developed a series of national suicide prevention measures including maintenance of a high-risk suicide list and hiring of suicide prevention coordinators

Figure 6. Suicide Rates Per 100,000 Among VHA Users, by Mental Health Condition and Fiscal Year

Background/Rationale-new findings



Research Question: Predictors of High-risk Suicidal Behavior?

- **Aim 1:** To recruit veterans recently discharged from an acute psychiatric inpatient stay comparing ideators with single attempters and multiple attempters in symptom domains focusing on interpersonal functioning and resiliency.
- **Hypotheses:** *Measures of interpersonal dysfunction and resilience will be robust predictors of group membership (ideator vs. attempter).*
- **Interpersonal Dysfunction**
 - *Social Isolation,*
 - *Low Relationship Satisfaction*
 - *Sense of Belonging and Perception of Burdensomeness*
- **Resiliency**
 - Optimism
 - Positive Reframing

Design & Methodology

Inclusion/Exclusion Criteria

- **General Inclusion Criteria**

- Veterans between the ages of 18 and 55
- Recent admission to psychiatric inpatient unit (6B) or recent suicidal behavior in the outpatient/ER setting

- **General Exclusion Criteria**

- Lifetime or current diagnosis of schizophrenia or other psychotic disorder; current psychosis from affective disorder
- IQ < 80
- Current evidence or history of significant organic brain impairment, including stroke, CNS tumor, severe head trauma.

Design & Methodology Baseline

Assessment- Subject Characterization

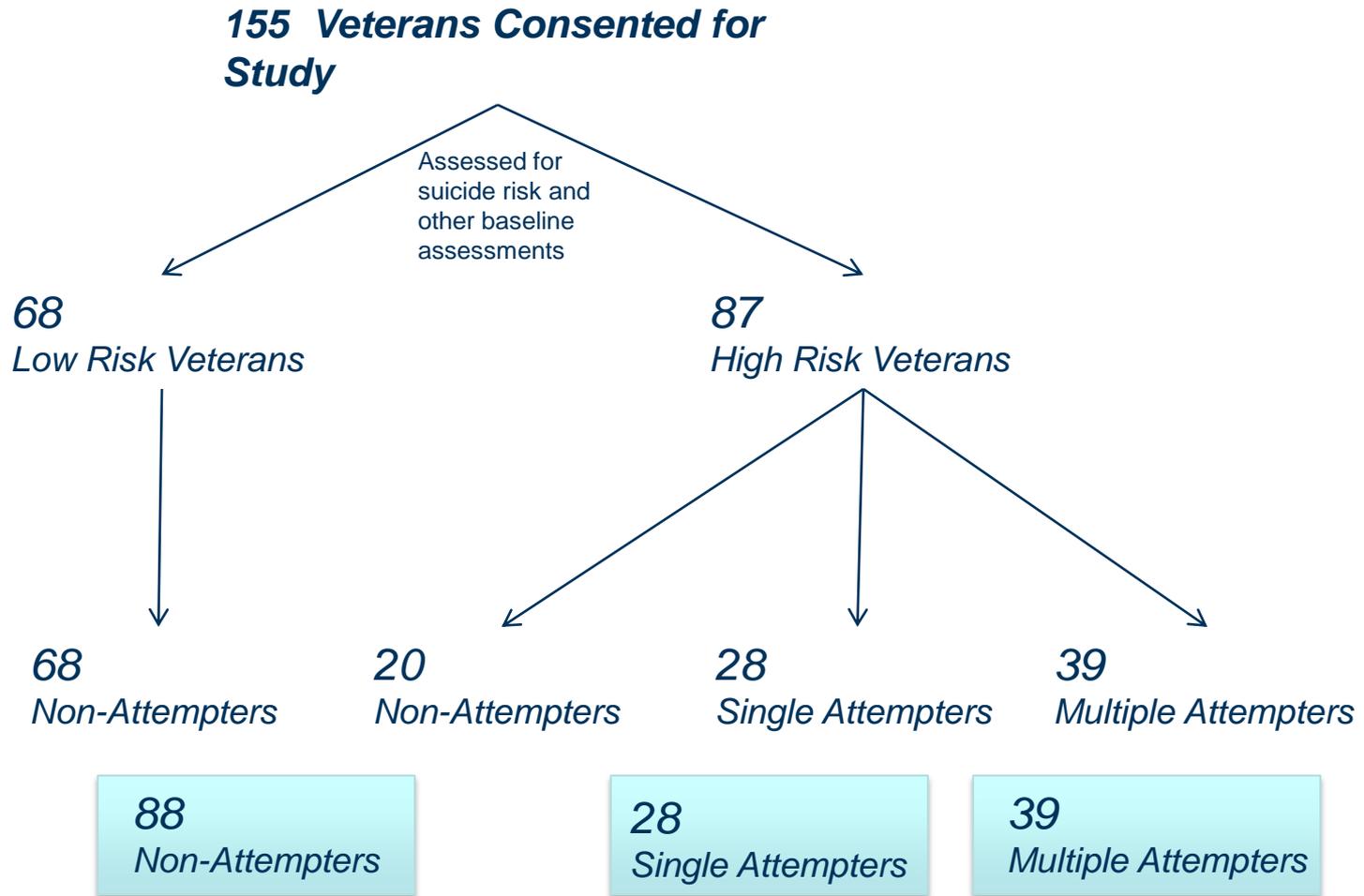
Category		Instrument
Demographic		Age, gender, marital/family status, education, employment, race/ethnicity
Suicide History	Suicide Ideation, Behavior	Columbia Suicide History Form (CSHF)
Diagnostic	Axis I	Structured Clinical Interview for DSM-IV Personality Disorders (SCID-I/P)
	Axis II	Structured Interview for DSM-IV Personality Disorders (SIDP-IV)
	Borderline Personality Disorder	Diagnostic Instrument for Borderline Personality Disorder (DIB-R)
Trauma	Childhood Trauma	Childhood Trauma Questionnaire (CTQ)
Intelligence	Composite IQ	Wechsler Abbreviated Scale of Intelligence (WASI)

Design & Methodology Baseline

Assessment- Subject Characterization

Category		Instrument
Resilience	Optimism	Life Orientation Test – Revised (LOT-R)
	Coping Strategies	Brief COPE
	Resilience	Conner-Davidson Resilience Scale (CD-RISC2)
Interpersonal Functioning	Relationship Quality	Interpersonal Support Evaluation List (ISEL)
	Belongingness, Burdensomeness, Readiness for Suicide	Interpersonal Psychological Survey (IPS)
	Social Contacts	Social Network Index (SNI)

Sampling



Results

Demographics

	Non-attempters (n=88)	Single Attempters (n=28)	Multiple Attempters (n=39)	Total (n=155)
Age (Mean)	41.4	39.0	40.6	40.7

		Non-attempters (n=88)	Single Attempters (n=28)	Multiple Attempters (n=39)	Total (n=155)
Gender	M	75 (85.2%)	19 (67.9%)	25 (64.1%)	119 (76.8%)
	F	13 (14.8%)	9 (32.1%)	14 (35.9%)	36 (23.2%)

- Age and attempter status are theoretically confounded, but the age-status relationship was not significant ($p > .05$).
- Significant difference ($p < .016$) in gender between groups. All subsequent analyses controlled for gender, but are virtually identical to non-controlled analyses.

Results

Demographics

	Non-attempters (n=88)	Single Attempters (n=28)	Multiple Attempters (n=39)	Total (n=155)
Married	24 (27.3%)	7 (25.0%)	6 (15.4%)	37 (23.8%)
Not Married	64 (72.7%)	21 (75.0%)	33 (84.6%)	118 (76.2%)

	Non-attempters (n=88)	Single Attempters (n=28)	Multiple Attempters (n=39)	Total (n=155)
Less than HS diploma	29 (33.0%)	10 (35.7%)	11 (28.2%)	50 (32.3%)
Some college	54 (61.4%)	18 (64.3%)	25 (64.1%)	97 (62.6%)
College degree or more	5 (5.7%)	0 (0.0%)	3 (7.7%)	8 (5.2%)

- Marital status does not significantly associate ($p > .05$) with attempter status.
- Education does not significantly associate ($p > .05$) with attempter status.

Results

Demographics

	Non-attempters (n=88)	Single Attempters (n=28)	Multiple Attempters (n=39)	Total (n=155)
Employed	28 (31.8%)	5 (17.9%)	8 (20.5%)	41 (26.5%)

	Non-attempters (n=88)	Single Attempters (n=28)	Multiple Attempters (n=39)	Total (n=155)
White	16 (18.2%)	6 (21.4%)	4 (10.3%)	26 (16.8%)
Black	39 (44.3%)	9 (32.1%)	12 (30.8%)	60 (38.7%)
Hispanic	28 (31.8%)	10 (35.7%)	18 (46.2%)	56 (36.1%)

- Employment does not significantly associate ($p > .05$) with attempter status.
- Race/Ethnicity does not significantly associate ($p > .05$) with attempter status.

Results

Military Experience

	Non-attempters (n=86)	Single Attempters (n=27)	Multiple Attempters (n=38)	Total (n=151)
Years Served (Mean, SD)	5.8 (5.0)	5.4 (4.2)	4.7 (3.6)	5.4 (4.6)

	Non-attempters (n=87)	Single Attempters (n=28)	Multiple Attempters (n=37)	Total (n=152)
Combat Exposure	37 (42.5%)	9 (32.1%)	14 (37.8%)	60 (39.5%)

- Military experience measures do not significantly associate ($p > .05$) with attempter status.

Results-Childhood Trauma

Three Groups

Clinical Variable	Attempter Status						ANOVA (a)		
	Non (N=73)		Single (N=21)		Multiple (N=32)		F (2,151)	p	par. Eta ²
	Mean	SD	Mean	SD	Mean	SD			
Childhood Trauma Questionnaire									
Total	58.3	17.5	61.9	16.6	73.6	21.3	5.395	0.006	0.081
Emotional Abuse	11.4	5.7	12.1	4.6	16	6.3	4.982	0.008	0.076
Physical Abuse	10.2	5.6	10	3.9	14.7	6.3	7.195	0.001	0.106
Sexual Abuse								NS	
Emotional Neglect								NS	
Physical Neglect								NS	

(a) Covariate: Gender

Results

Interpersonal Functioning

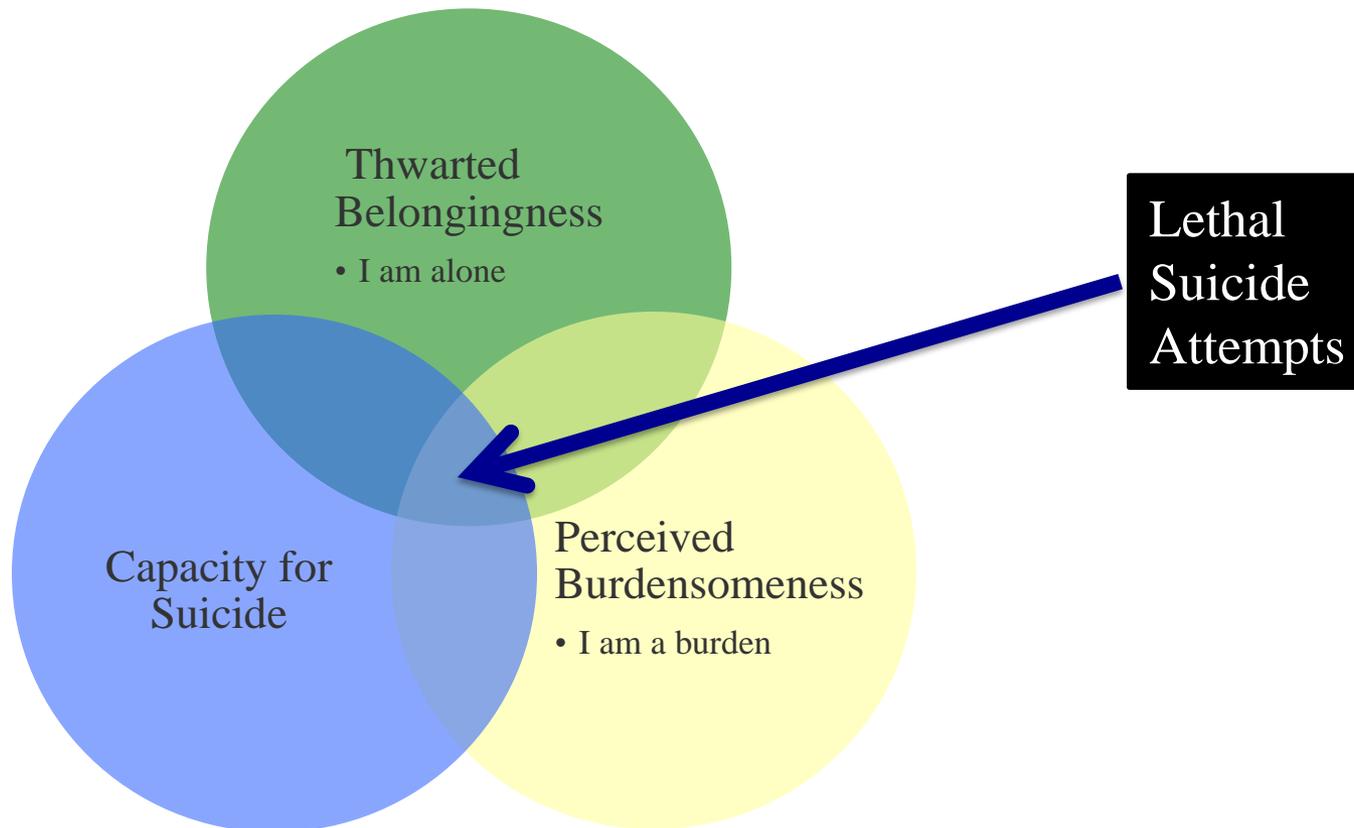
No differences in ISEL scores or SNI Diversity Score across attempter statuses.

Differences in IPS score only occur between non-attempters and attempters.

Clinical Variable	Attempter Status						ANOVA (a)		
	Non (N=72)		Single (N=20)		Multiple (N=26)		F (2,151)	p	par. Eta ²
	Mean	SD	Mean	SD	Mean	SD			
IPS Score	11.5	6.9	16.2	6.6	18.1	5.1	12.188	0.000	0.176
ISEL Scores (Set)								NS	
SNI Diversity Score								NS	

(a) Covariate: Gender

Interpersonal Psychological Survey



Van Orden et al. (2010). *Psychol Rev.*, 117(2): 575–600

Results- Depression

	Non-attempters (n=78)	Single Attempters (n=25)	Multiple Attempters (n=34)	Total (n=155)
BDI Score [Mean, (SD)]	21.6 (11.7)	25.2 (10.7)	29.0 (12.4)	14.1 (12.0)
BHS Score [Mean, (SD)]	8.2 (6.2)	10.2 (7.6)	11.1 (6.1)	9.3 (6.5)

- Significant difference in BDI score, $F(2,152) = 65.1, p < .001$
- No significant difference in BHS score across attempter groups.

Results

Diagnostic

- **No differences in Axis I disorders.**
- **No differences in Axis II disorders, except for BPD, all criteria.**



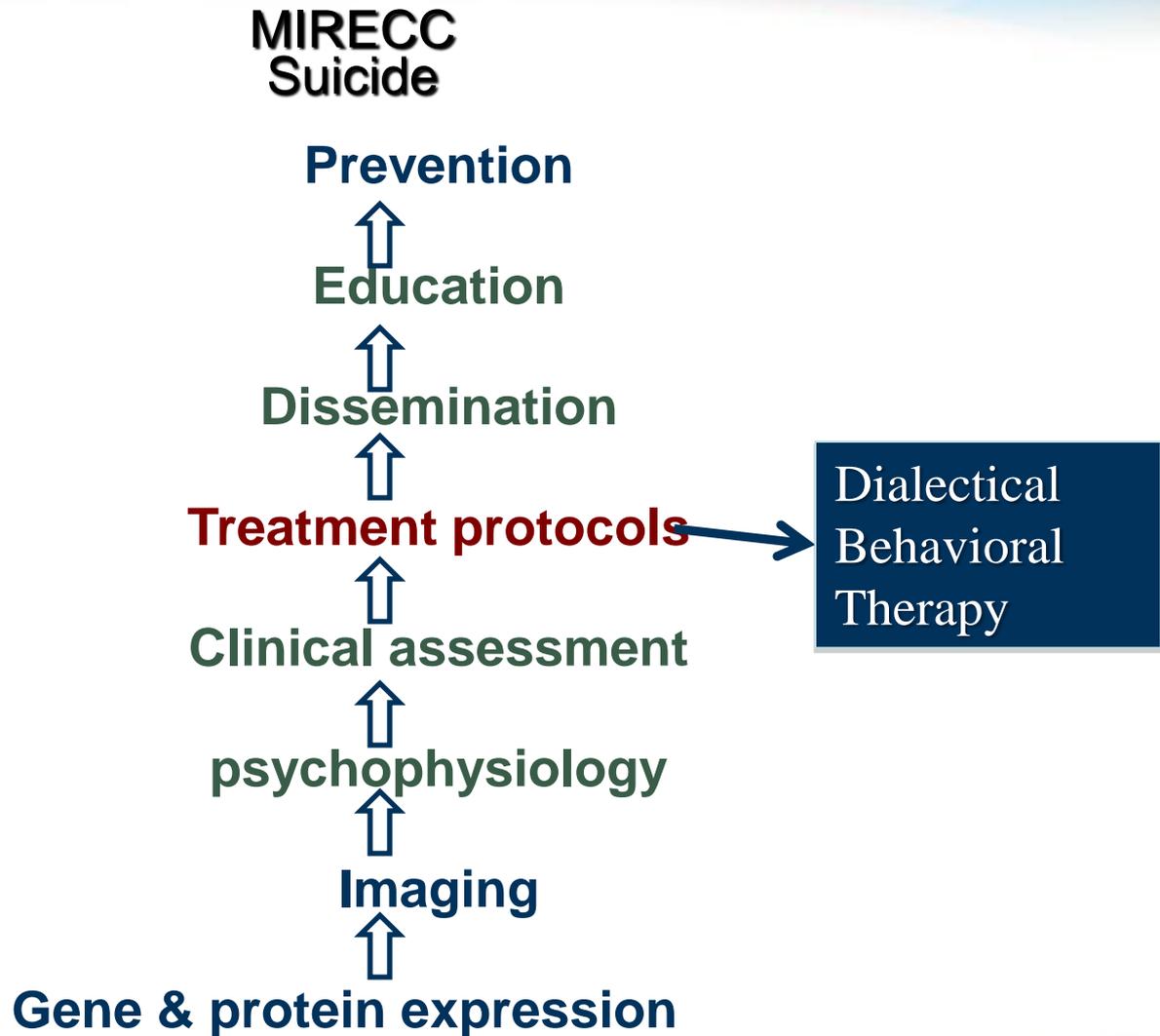
Results

Diagnostic (BPD) Three Groups

Clinical Variable	Attempter Status						Logistic Regression (a)		
	Non (N=88)		Single (N=28)		Multiple (N=39)		Wald (1)	p	OR
	N	%	N	%	N	%			
SIDP BPD Diagnosis	21	23.9	18	64.3	28	71.8	22.359	0.000	2.858
SIDP BPD Criteria									
Avoid Abandonment	10	11.4	8	28.6	12	30.8	5.509	0.019	1.757
Unstable Interpersonal Rel.	33	37.5	19	67.9	27	69.2	10.047	0.002	1.940
Identity Disturbance	20	22.7	8	28.6	23	59.0	11.711	0.001	2.053
Impulsivity	37	42.0	14	50.0	26	66.7	6.910	0.009	1.709
Recurrent Suicidality	15	17.0	18	64.3	36	92.3	42.871	0.000	7.560
Affective Instability	36	40.9	18	64.3	30	76.9	11.627	0.001	2.097
Emptiness	38	43.2	16	57.1	27	69.2	6.071	0.014	1.652
Intense Anger	40	45.5	20	71.4	28	71.8	5.205	0.023	1.639
Paranoid Ideation/Dissociation	12	13.6	11	39.3	19	48.7	14.029	0.000	2.310

(a) Covariate: Gender

What are the current best practices to treat/prevent suicidal behavior?



RCTs for DBT

TABLE 1
SUMMARY OF RANDOMIZED CONTROLLED TRIALS OF DIALECTICAL-BEHAVIORAL THERAPY⁶⁻²²

Treatments	Inclusion Criteria	Length of Study	Main Effects
DBT (n=24) vs. community mental health TAU (n=22) ¹⁰	BPD + suicide attempt in last 8 weeks + one other in last 5 years; female	1 year	Frequency, medical risk, suicide attempts, and intentional self-injury; treatment retention; use of emergency and inpatient treatment; anger; social and global adjustment
DBT (n=12) vs. community drug abuse/mental health TAU (n=16) ¹¹	BPD + current drug dependence; female	1 year	Illicit drug use, social and global adjustment
DBT + LAAM (n=11) vs. comprehensive validation treatment (DBT without change strategies) + 12-step facilitation and 12-step group + LAAM (n=12) ¹²	BPD + current opiate dependence; female	1 year	Opiate use
DBT-oriented (n=12) vs. patient-centered therapy (n=12) ¹³	BPD + referral from emergency services for suicide attempt	1 year	Suicide attempts and self-injury, impulsiveness, anger, depression, global adjustment, use of inpatient treatment
DBT (n=10) vs. VA mental health TAU (n=10) ¹⁴	BPD; female	6 months	Suicide attempts and self-injury frequency (trend), suicidal ideation, hopelessness, depression, anger expression
DBT (n=31) vs. community drug abuse/mental health TAU (n=33) ¹⁵⁻¹⁷	BPD; female	1 year	Frequency of self-mutilation and suicide attempts (trend), treatment retention, self-damaging impulsivity
DBT (n=52) vs. community treatment by psychotherapy experts in suicide and BPD (n=51) ¹⁸	BPD + suicide attempt or self-injury in last 8 weeks + one other in last 5 years; female	1 year	Suicide attempts, hospitalization for suicidal ideation, medical risk of suicide attempts and self-injury, treatment retention, emergency room visits, psychiatric inpatient treatment
DBT skills training + antidepressant (n=17) vs. clinical management + antidepressant (n=17) ¹⁹	Current episode of MDD >60 years of age	28 weeks	Self-rated depression scores, dependency and adaptive coping, interviewer rated depression scores at 6-month follow-up
DBT + antidepressant (n=21) vs. medication alone (n=14) ²⁰	Meet full diagnostic criteria for MDD and at least one personality disorder >55 years of age	24-30 weeks	Interpersonal aggression, interpersonal sensitivity, depression remission rates (trend)
DBT individual emotion regulation skills training (n=14) vs. wait-list control (n=15) ²¹	One binge/purge episode/week for previous 3 months.	20 weeks	Binge/purge incidents
DBT skills training (n=22) vs. wait-list control (n=22) ²²	Meet full research criteria for binge-eating disorder; female	20 weeks	Binge days and episodes, weight and shape concerns, eating concerns, anger

***VA
setting



**Suicide
reductions

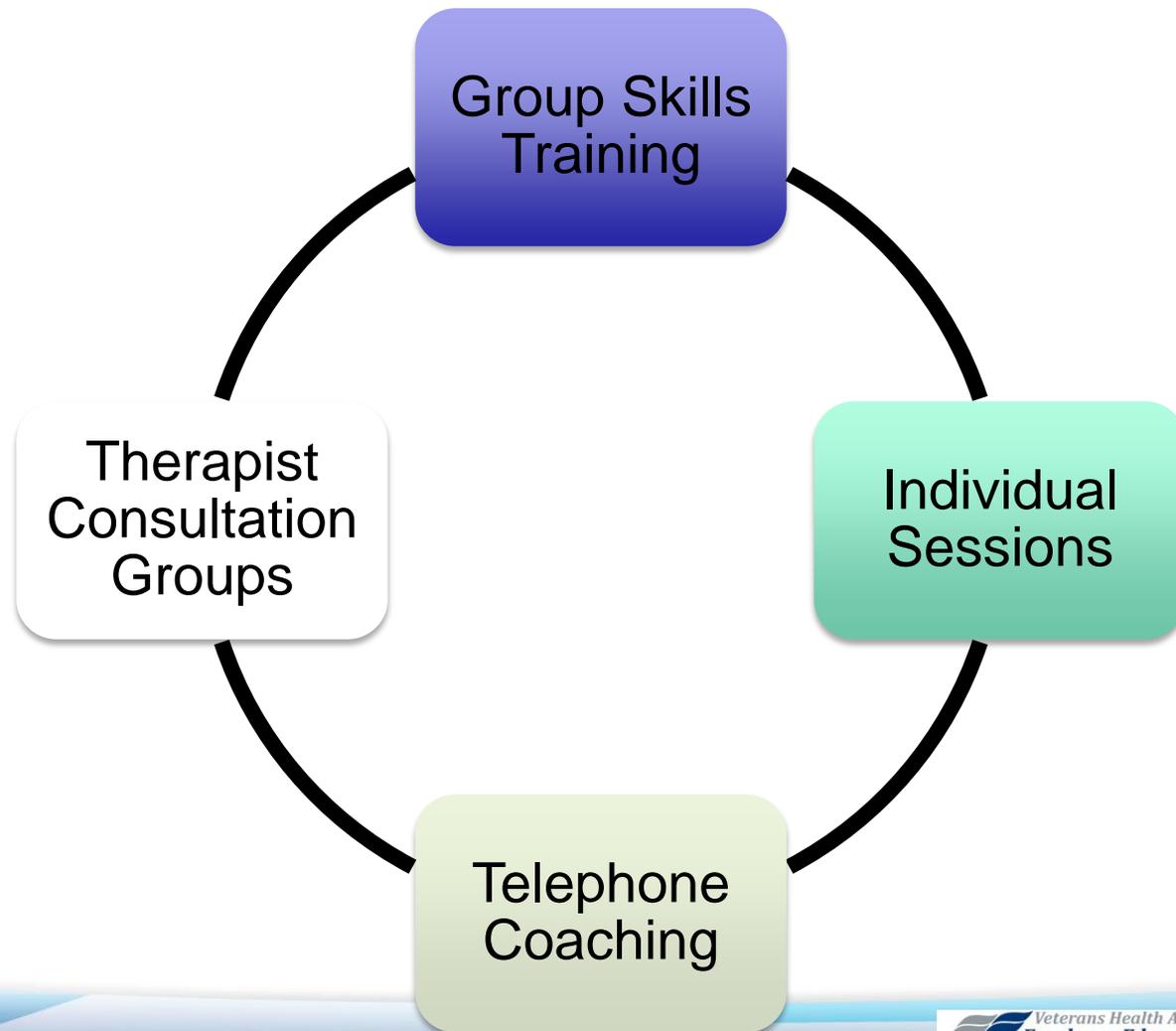


DBT=diagnostic behavioral therapy, vs.=versus; TAU=treatment-as-usual; BPD=borderline personality disorder; LAAM=levo-a-acylmethadol; VA=Veteran's Administration; MDD=major depressive disorder.

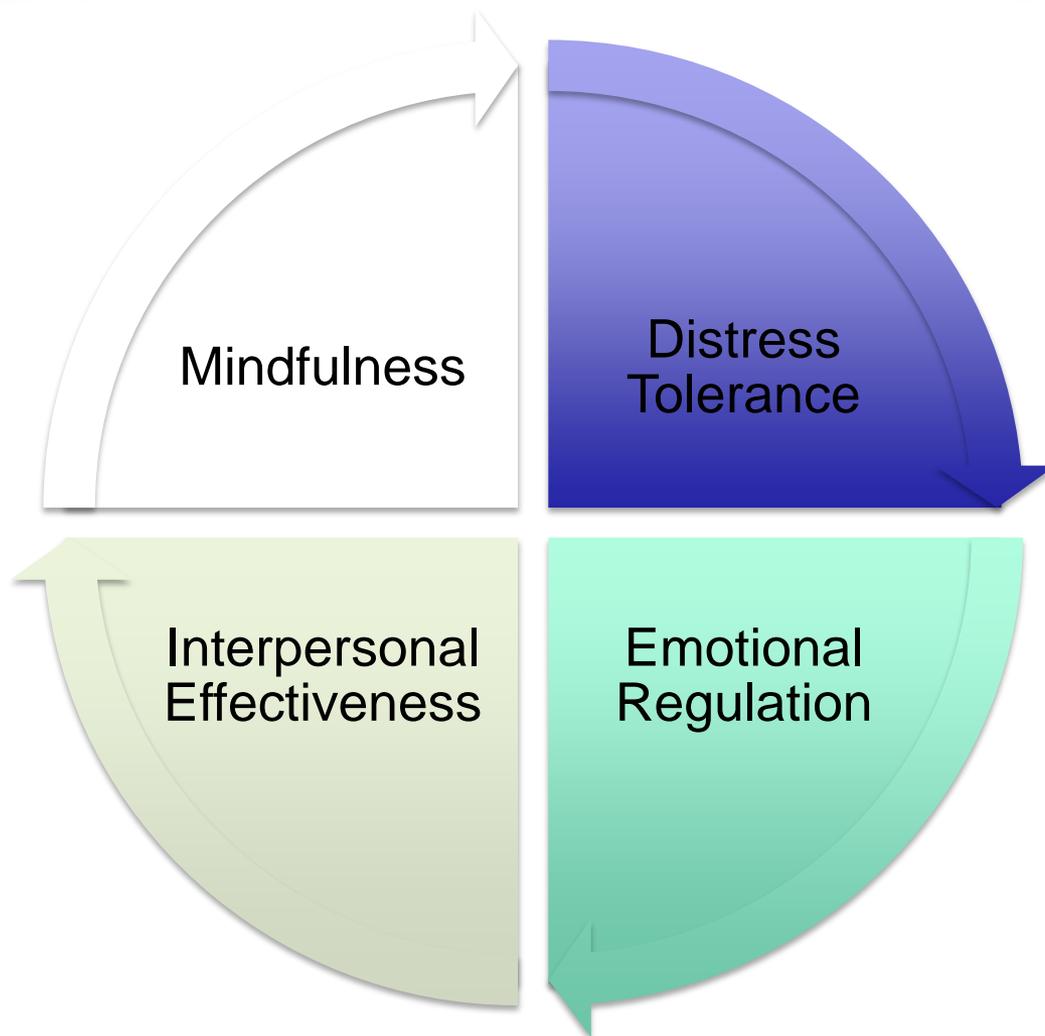
Lieb K, Zanarini MC, Schmahl C, Linehan MM, Bohus M. BPD. *Lancet*. 2004;364(9432):453-461. Adapted with permission from Elsevier. © 2004.

Salsman N, Linehan MM. *Primary Psychiatry*. Vol 13, No 5. 2005.

Overall Structure of Dialectical Behavioral Therapy (DBT)



Skills Training Modules of DBT



Research Question/ DBT treatment trial

- **Aim 2:** relates to a 6-month randomized clinical trial comparing Dialectical Behavior Therapy (DBT) to treatment as usual (TAU) in 120 veterans recently hospitalized with high-risk suicidal behavior.
- **Hypothesis:** *Standard DBT will be superior to TAU in reducing **suicide attempts** as measured by the Columbia Suicide Severity Rating Scale (CSSRS).*
- *Additionally, standard DBT will more effectively target:*
 - **suicidal ideation and parasuicidal behavior,**
 - **depression,**
 - **substance abuse and**
 - **hopelessness and**
 - **demonstrate greater treatment compliance than TAU**

DBT/Suicide Study Progress Randomized Clinical Trial

92 HR Assessments completed

62 HR Randomized to Treatment

33 DBT

29 TAU

14 completers

7 in Tx

16 completers

2 in Tx

12 Drop-Outs:

3 moved, 2 lost to f/up, 1 withdrew,
3 ineligible
3 inpt rehab rx

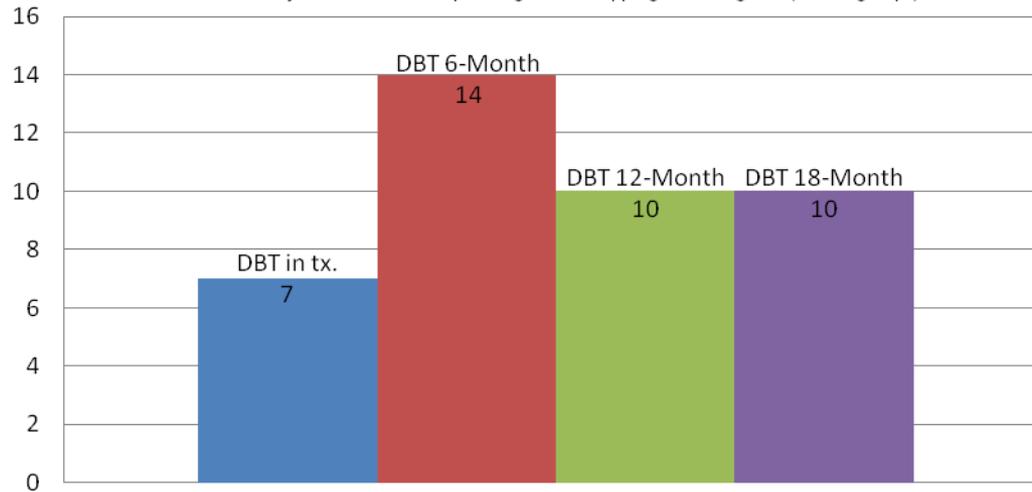
11 Drop-Outs:

9 lost to f/up, never engaged,
1 ineligible
1 inpt rehab

Follow up Assessments

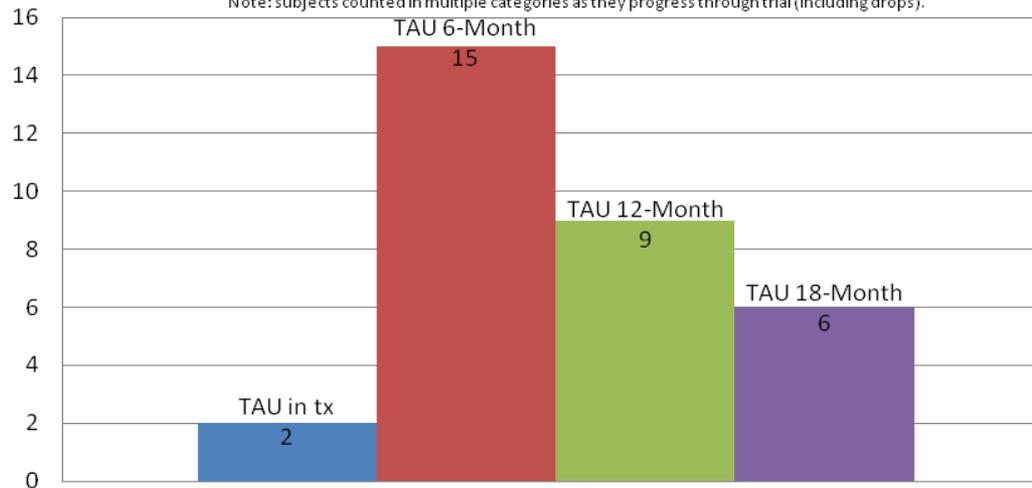
Total DBT Assessment Data

Note: subjects counted in multiple categories as they progress through trial (including drops).



Total TAU Assessment Data

Note: subjects counted in multiple categories as they progress through trial (including drops).

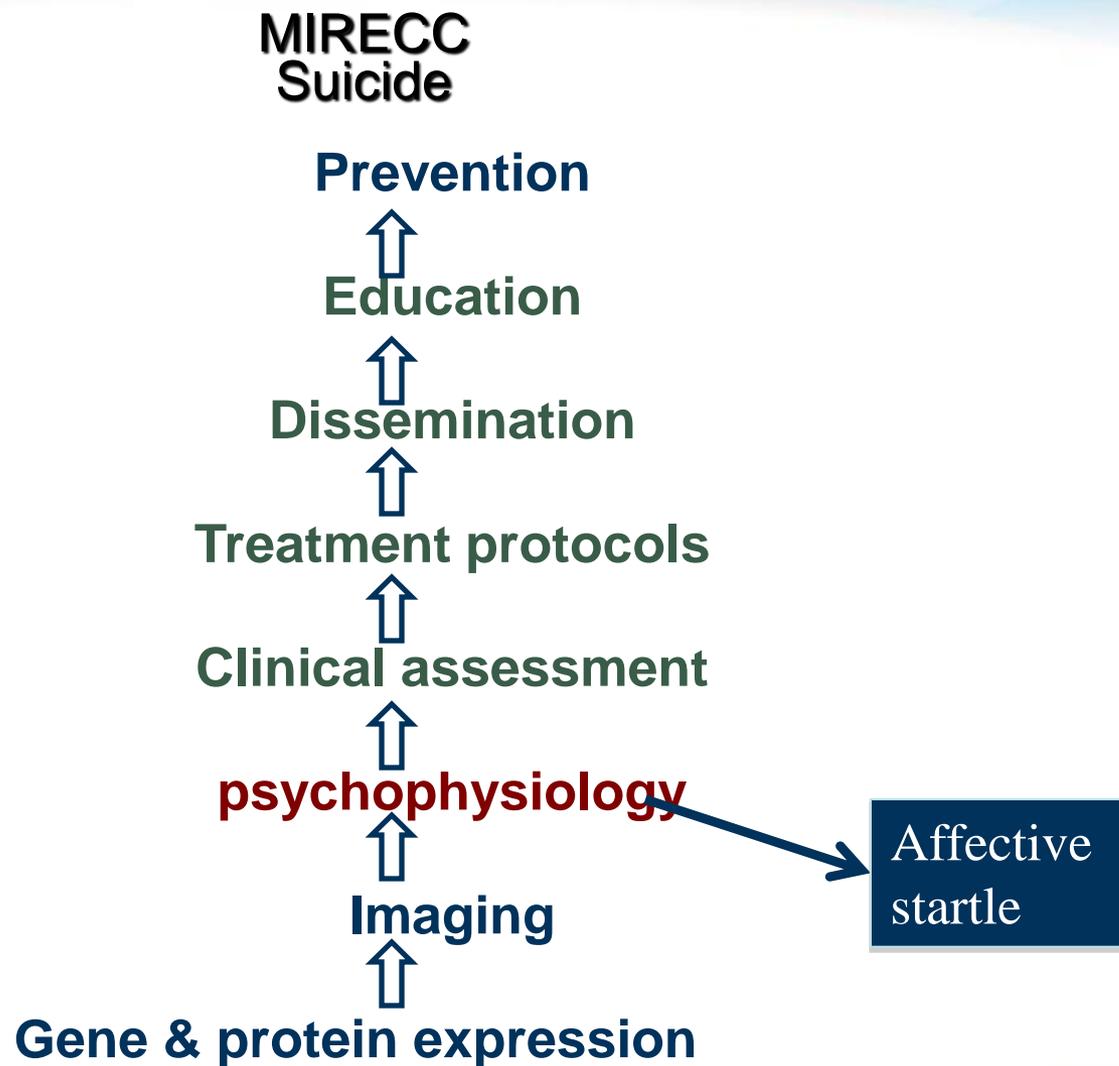


Summary on Study Progress to date

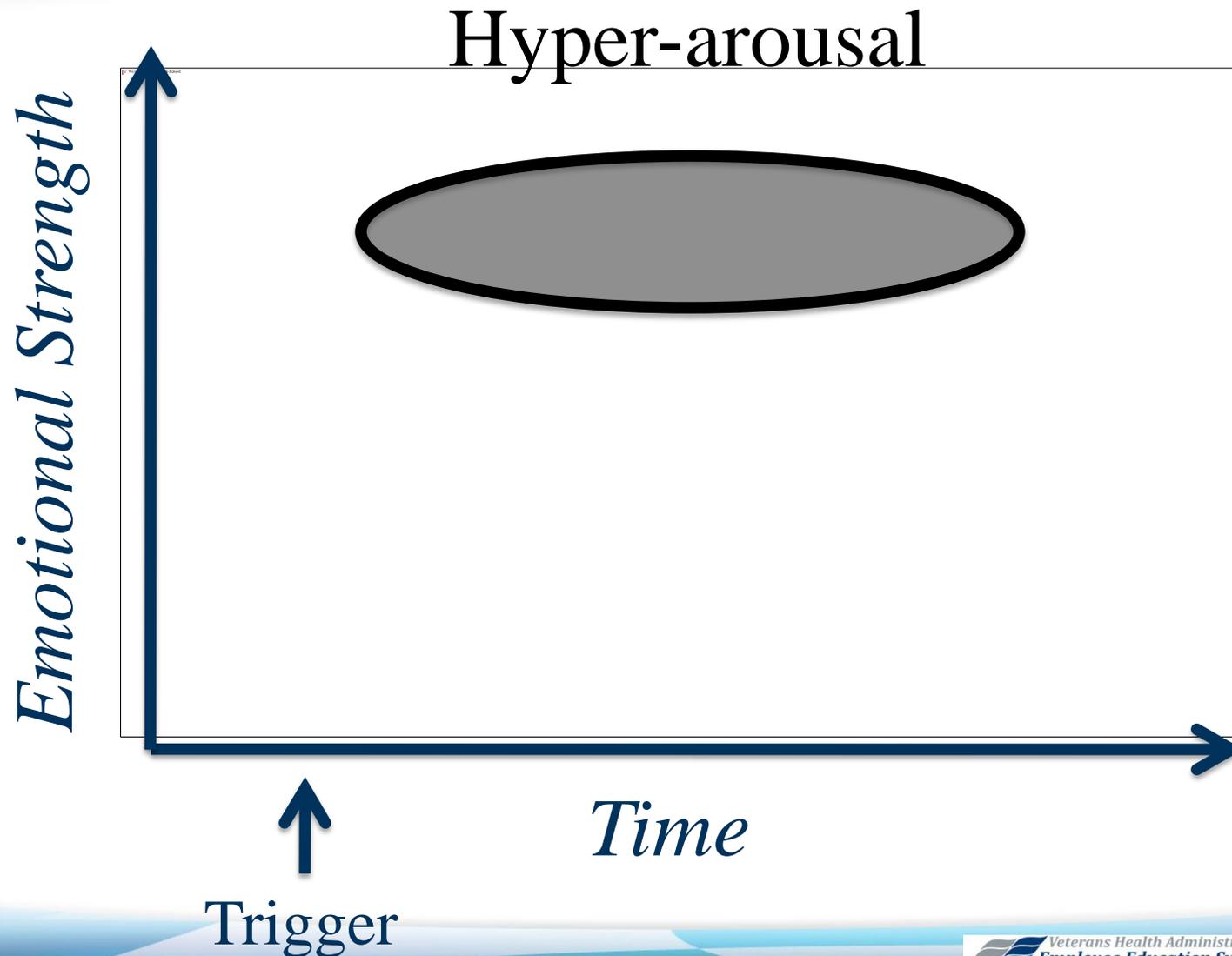
- **BASELINE ASSESSMENT:** Significant differences between Veteran Suicide Attempters and Non-attempters include: childhood trauma, IPS scores, depression and all indices of borderline personality disorder.
 - **Given these results of high risk suicidal behavior predictors pertaining to mood dysregulation (e.g. BPD, MDD), we have added affective startle to our assessment battery and plan to follow longitudinally with the treatment trial.**
- **RANDOMIZED CLINICAL TRIAL:** data collection. Difficult to engage substance abusing patients with poor living arrangements



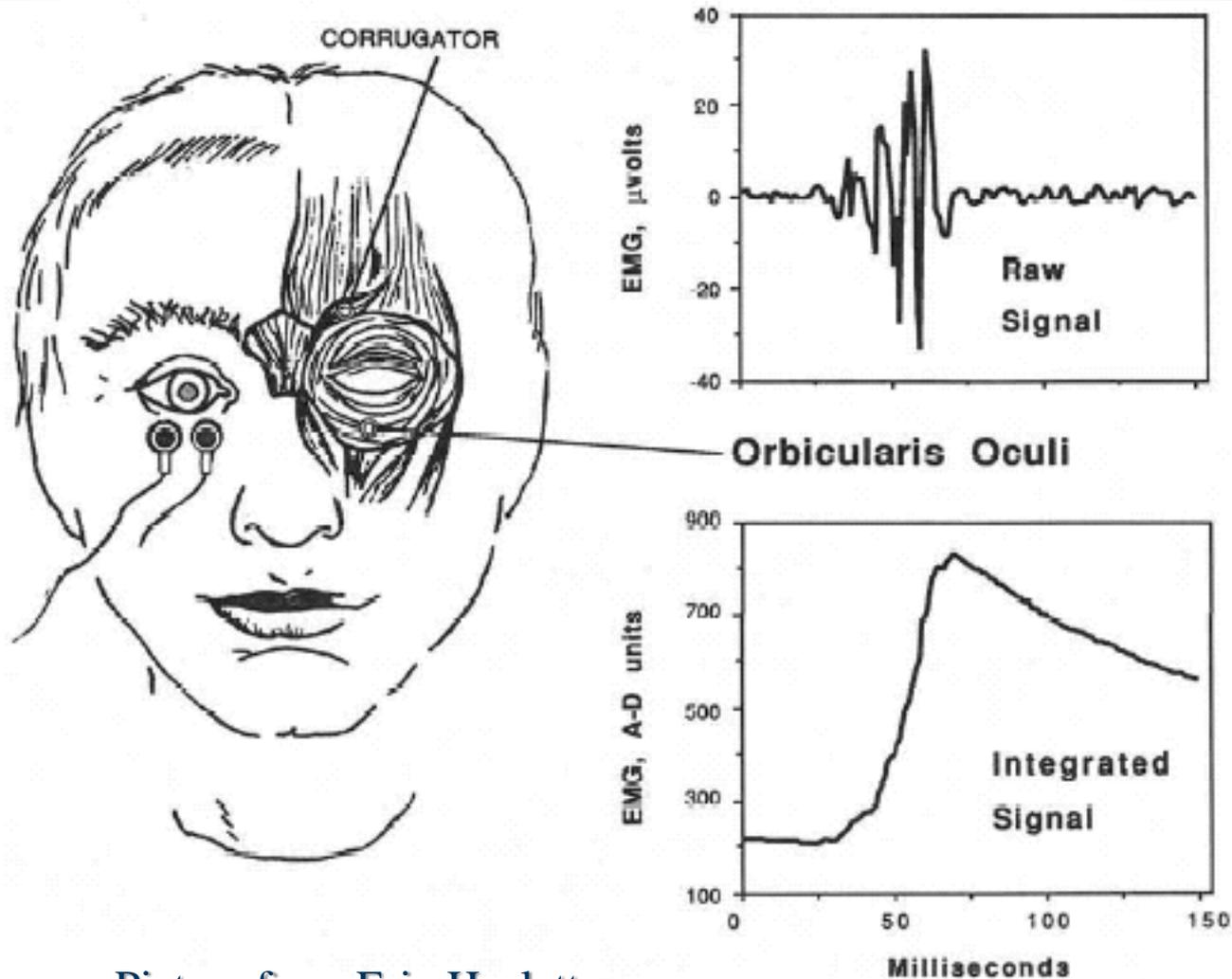
Can we identify biomarkers of high-risk suicidal behavior?



Emotional Dysregulation and Suicide Risk



Startle Eye-blink Measurement



Picture from Erin Hazlett

Measuring Emotion Processing: *Recording EMG during Affective Startle Paradigm*



Affective Startle Modulation

Event:

Startle Stimulus Alone
(50ms burst white noise)

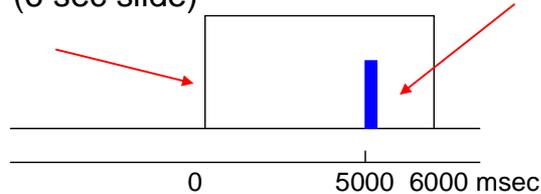


Startle Response:



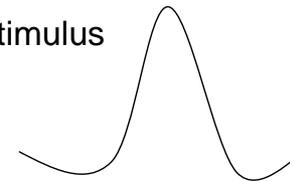
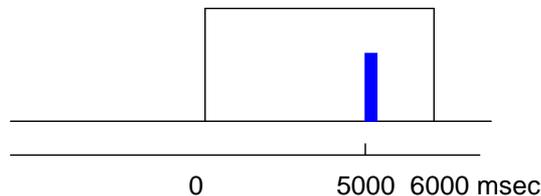
Normal Response

Neutral Word Prepulse + Startle Stimulus
(6 sec slide)



Potentiated Response

Unpleasant Word Prepulse + Startle Stimulus



More Potentiated Response

Time ->>>

- Little is known about emotion-processing abnormalities in individuals with suicidal behavior.
- Hypothesis: There is a spectrum of emotion-processing abnormalities:

Attempters>Ideators>Controls in terms of exaggerated startle eyeblink to negative pictures

Could this be a potential biomarker for suicide risk?

Affective Processing Abnormalities

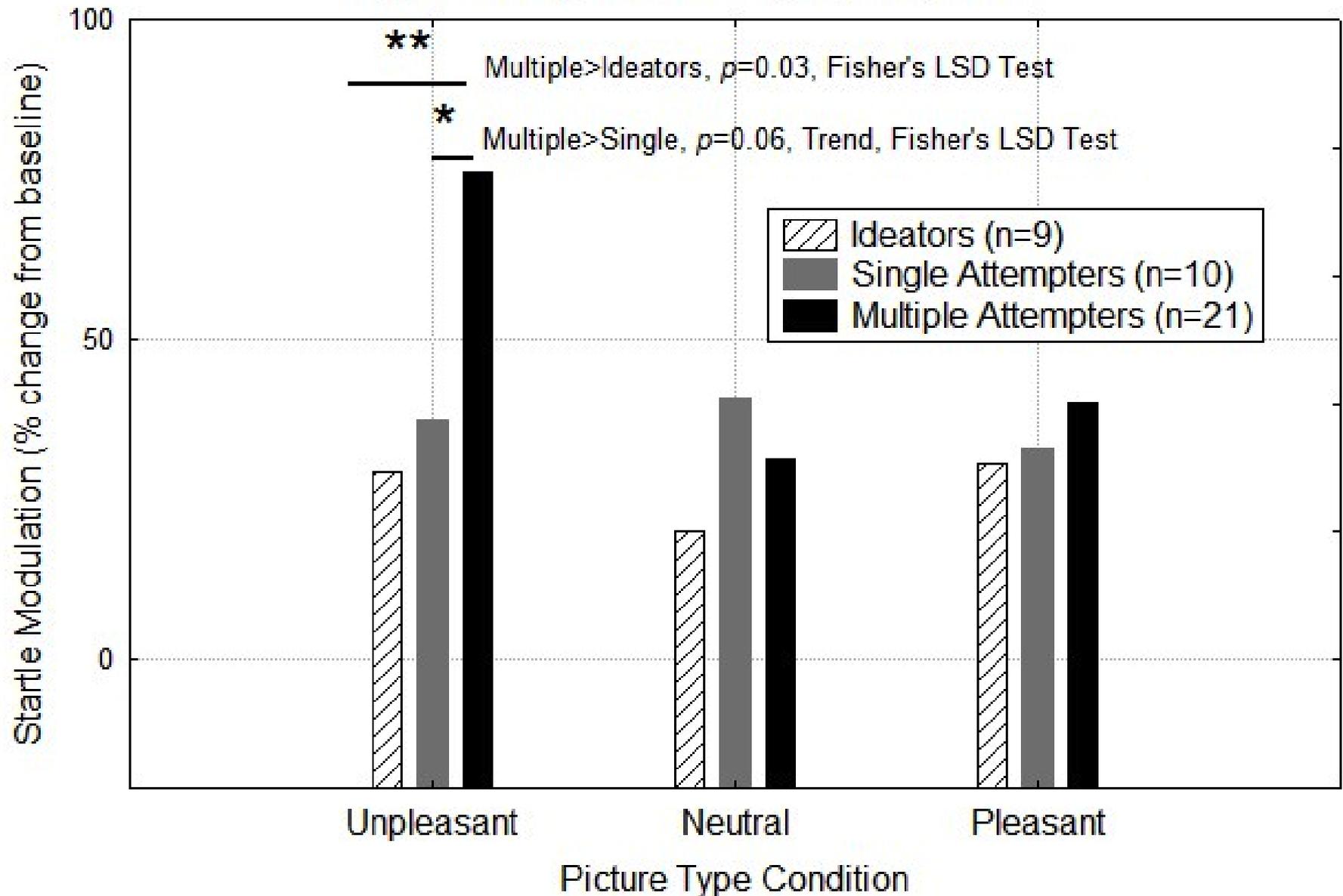
Control

Suicide Ideator

Suicide Attempter

AFFECTIVE STARTLE IN VETERANS WITH SUICIDAL BEHAVIOR

Group x Picture Type interaction, $F[4,74]=1.23$, $p=0.31$



Affective Startle Associated with Poor Emotion Regulation (n=39)

(Emotion Regulation Questionnaire, Gross & John, 2003)

Affective Startle

During:	Reappraisal		Suppression
	Total ERQ	Subscale	Subscale
Unpleasant pictures	-0.42**	-0.39*	-0.16
Neutral pictures	-0.22	-0.31	0.04
Pleasant pictures	-0.10	-0.24	0.13

* $p < 0.05$ ** $p < 0.01$

Emotion Regulation Questionnaire (Gross & John, 2003)

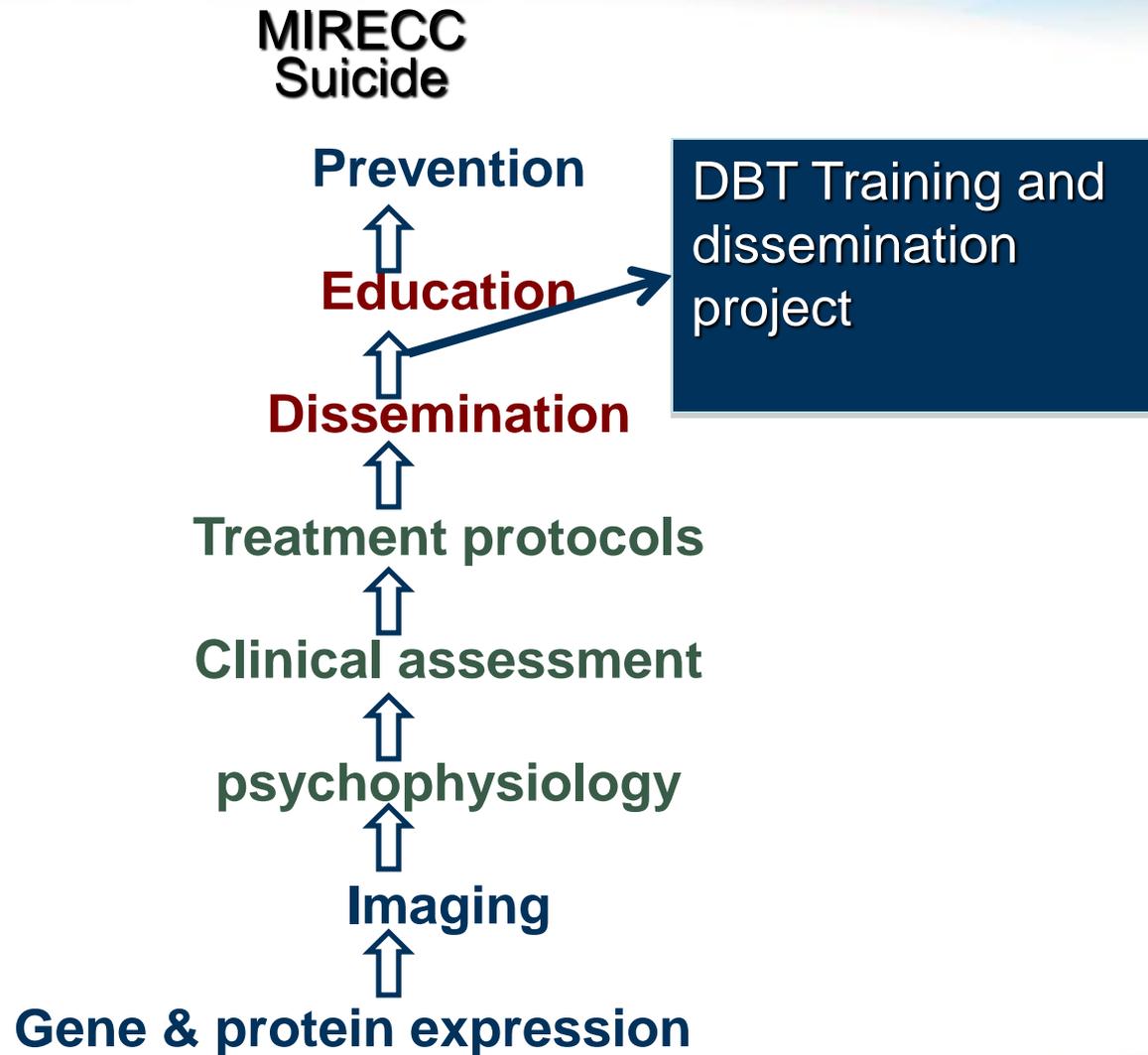
Reappraisal:

“When I want to feel more positive emotion, I *change* the way I’m thinking about the situation”

Suppression:

“I control my emotions by *not expressing them*”

How can we disseminate best practices for suicide prevention across the VA?



DBT Education and Dissemination Efforts- Jan 2012

- VISN 3 MIRECC sponsored first-ever “VA DBT training”
- VISN-wide DBT training Targeted to clinicians working with suicide, PTSD and BPD veterans
- Over 45 VISN-3 VA clinicians attended
- Led by treatment developer: Linehan, PhD
- Part II- June 2012



DBT Dissemination Efforts- VISN 3 MIRECC Jan 2012

- **45 conference participants completed assessment battery developed by MIRECC VISN 3 services**
- **Services researcher- Dr. Goldstein, with consultation from Dr. Landres, VISN 21 MIRECC**
- **Studying individual, team, and institution variables to identify barriers to implementation**
- **If successful, potential model for successful dissemination to other VISNs**

VISN 3 DBT TRAINING 1/2012



Organized and Sponsored by VISN 3 MIRECC

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