

# Suicidal and Self-Injurious Behaviors in Youth with Borderline Personality Disorder (BPD) Features



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# Few studies of suicidal behaviors in adolescents with BPD, despite ...

... suicide is the **2<sup>nd</sup>** leading cause of death in the **15-24** age group (CDC).

Approximately **17.7%** of US high school students seriously considered suicide, **8.6%** reported making an attempt, and **2.4%** made an attempt that required medical hospitalization in the preceding 12 mos (Youth Beh Risk Surv, 2015).

BPD has been strongly associated with increased suicide risk in adults, with an estimated **8-10%** mortality rate (American Psychiatric Association Practice Guidelines, 2001)

Studies that aim to identify risk factors of adolescent suicidality often omit assessment of BPD.

Most epidemiological studies of psychiatric disorders in children and adolescents typically do not assess for the presence of a PD.

# Controversy of PD diagnosis in children and adolescents

- PDs are rarely assessed or diagnosed in children and adolescents in clinical practice.
- Stigma of presumed chronic disorder.
- Personality is presumed to be forming during adolescence.
- Many PD traits reflect behaviors or identities that are not fully developed until adulthood (e.g. impulsivity, identity disturbance).

# Counterpoints

- Clinical observations, reports from adults with PDs.
- Temperament and personality traits, factors that underlie PDs are relatively stable.
  - Impulsivity is a precursor of antisocial or borderline PD
  - Callous/unemotional trait is a precursor of antisocial PD
  - Shyness is a precursor of avoidant PD
- Emerging research indicating that BPD can be reliably diagnosed in adolescents.
- Early diagnosis leads to early intervention.

# What we do know ...

- In adolescent inpatients, BPD confers incremental risk above Major Depressive Disorder and Substance Use Disorder:
  - for suicidal ideation and deliberate self-harm, but not suicide attempts, after accounting for MDD (Sharp et al., 2012).
  - for suicide risk, after accounting for depression and substance abuse symptoms (Yalch et al., 2014).

# What we do know ...

- Suicidal ideation has a strong relationship to suicide attempt history, particularly in those who engage in nonsuicidal self-injury (NSSI):
  - In a mixed sample, cross-sectional study, NSSI and suicidal ideation were significantly associated with suicide attempts but BPD was not (Klonsky et al., 2013).
  - In a prospective study, girls with both NSSI and suicidal ideation were significantly more likely to report lifetime and recent suicide attempts (Scott et al., 2015).

# What we do know ...

High degree of overlap in the developmental trajectories of self-injurious behaviors, suicidal behavior, and substance misuse, and the overlapping high risk classes show an exceptionally high score on BPD criteria (Nakar et al., 2016)

# Interpersonal Psychological Theory of Suicide (Joiner, 2005)

Thwarted belongingness

+

Perceived burdensomeness

+

Acquired Capacity for Self-Harm

# Study of BPD in Suicidal Adolescents

ADOLESCENT INPATIENTS FOLLOWED PROSPECTIVELY FOR 6 MOS POST-DISCHARGE:

- What is the prevalence rate of BPD in a sample of consecutively recruited adolescents admitted to the inpatient unit due to suicide risk? How does this compare to other disorders and how do those with and without BPD compare on clinical characteristics?
- Are there differences in suicidal behaviors and NSSI between those with and without BPD?
- What is the pattern of suicidal ideation (SI) in adolescents with BPD? How does BPD affect SI intensity and lability?
- Which suicidal ideation profile (high intensity vs. high lability) is associated with higher risk for suicidal behavior over six months of prospective follow-up?
- Does perceived emotional invalidation from family and/or peers predict suicidal behaviors and/or nonsuicidal self-injury (NSSI)?

# Study Participants

- All participants were recruited from inpatient psychiatric unit
  - Hospitalized for suicide attempt or ideation
  - Rule outs: cognitive impairment or non-English speaking (no diagnostic exclusions)
- 118 adolescents: 47 BPD+; 71 BPD-
- 99 participants with 6 months of follow-up data
- Age 12-18 yrs,  $M = 15.3$  ( $SD = 1.4$ )
- 68% female
- 78.5% White, 10.0% African American, 1.7% American Indian/Alaskan Native, 9.8% other
- 18% Hispanic ethnicity

# Measures: Interviews (semi-structured)

- Schedule for Affective Disorders and Schizophrenia for School Aged Children – Present and Lifetime Versions (K-SADS-PL; Kaufman, Birmaher et al. 1997)
  - Axis I diagnoses
  - History of suicidal behaviors, intent and threat
  - Presence of Childhood Abuse
- Childhood Interview for Borderline Personality Disorder (CI-BPD; Zanarini, 2003)
  - 9 DSM-IV criteria for BPD
  - Coded each criteria; total # number of criteria; diagnostic status (BPD if  $\geq 5$ )
- Longitudinal Interval Follow-Up Evaluation (LIFE; Keller et al, 1987)
  - Time-line follow back methodology using memorable time points to assess the course of suicidal ideation, negative affectivity, affective reactivity, family invalidation, and peer invalidation.
  - Ratings on a 6-point scale ranging from 1 (absent) to 6 (extreme).

# Measures: Self- and caregiver-report

- Suicidal and Self-Injurious Behaviors
  - Suicide Ideation Questionnaire (SIQ; Reynolds, 1988)
  - Functional Assessment of Self-Mutilation (FASM; Lloyd-Richardson et al., 2007)
- Affect/Affect Dysregulation
  - Affect Intensity Measure (AIM; Larsen & Diener, 1987)
  - Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997)
  - NEO-PI
- Behavioral Dysregulation
  - Aggression Questionnaire (AQ; Buss & Perry, 1992)
- Family Environment
  - Family Assessment Device (FAD; Epstein et al., 1983)
- Treatment Utilization
  - Child and Adolescent Services Assessment (CASA; Ascher et al., 1996)

# Methodology

- Separate baseline assessments with adolescent and parent during hospital stay or shortly after discharge. Consensus ratings were analyzed.
- Phone calls at 2- and 4- mos post baseline.
- At 6 mos, comprehensive assessment in which weekly or monthly ratings obtained on suicidal behaviors (including ideation), psychiatric symptoms (including BPD criteria), stressful life events, family environment, and treatment utilization.

What is the prevalence of BPD in an adolescent inpatient sample hospitalized due to suicide risk? How does this compare to other disorders? What are the clinical characteristics that differentiate those with and without BPD? How does BPD in suicidal adolescents compare to BPD in a sample of suicidal adults?

# Rate of BPD in Sample

	Male	Female
BPD	10 25% M 21% BPD	38 48% F 79% BPD
No BPD	30 75% M 42% NBPD	42 53% F 58% NBPD

- Consecutive admissions, very few diagnostic exclusions.
- 40% of sample met criteria for BPD; 4X more girls than boys,  $X^2 = 5.6$ ,  $p = .02$ .
- No significant differences on age, ethnicity, race.
- Compared to other disorders:
  - MDD 80%
  - GAD 38% (25% pure, 13% w/MDD)
  - ADD 37%
  - ODD 33% (21% pure, 12% w/ MDD)
  - PTSD 23%
  - Conduct 22%

# BPD vs. no-BPD: Axis I Disorders

	BPD (47)	No BPD (71)
Any Dep d/o	46 (98%)	63 (89%)
Any Bipolar*	9 (19%)	4 (6%)
GAD	20 (43%)	28 (39%)
Any Disruptive	35 (75%)	30 (42%)
-- CD**	18 (38%)	10 (14%)
-- ADHD*	24 (57%)	23 (32%)
Any SUD	10 (21%)	10 (14%)
Any Eating d/o	8 (17%)	5 (7%)
PTSD*	17 (43%)	12 (17%)

## BPD vs. no-BPD: Personality

- Only NEO - Neuroticism (Parent report) was statistically significant ( $t=-3.0$ ;  $p=.004$ ), with BPD adolescents having higher scores.
- No other factors (extroversion, openness, agreeableness, or conscientiousness) were significantly different between groups.

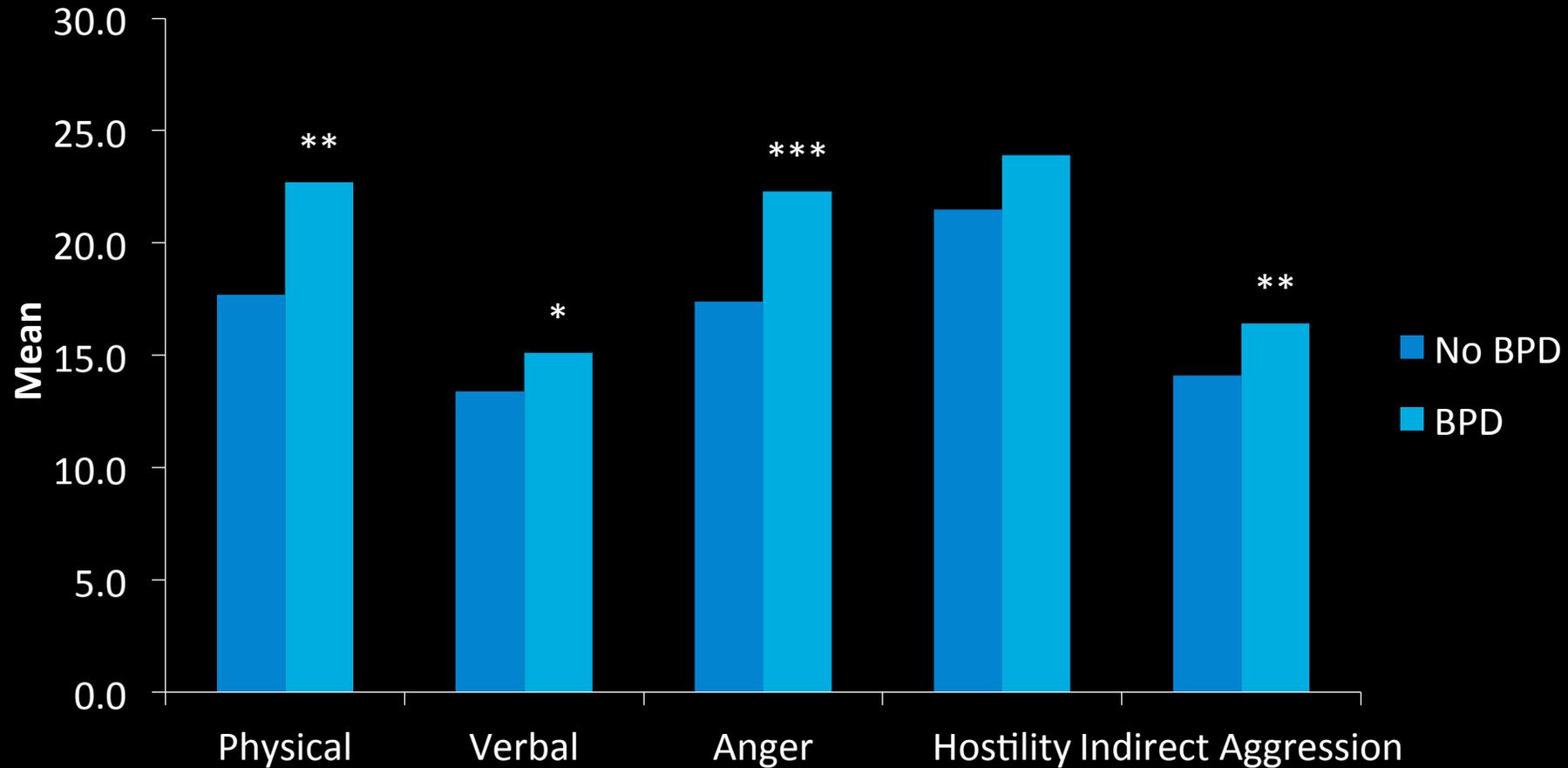
# BPD vs. no-BPD: Family Functioning

- No significant differences on FAD subscale scores between BPD and no-BPD groups.
- Significant discrepancies between adolescent and parent report on all subscales except for Roles, for both BPD and no-BPD.
- Participants with BPD reported significantly worse relationship with their mothers at baseline ( $Z=-3.1$ ,  $p=.002$ ), compared to those without BPD. Relationships with fathers and siblings were not significantly different between groups.

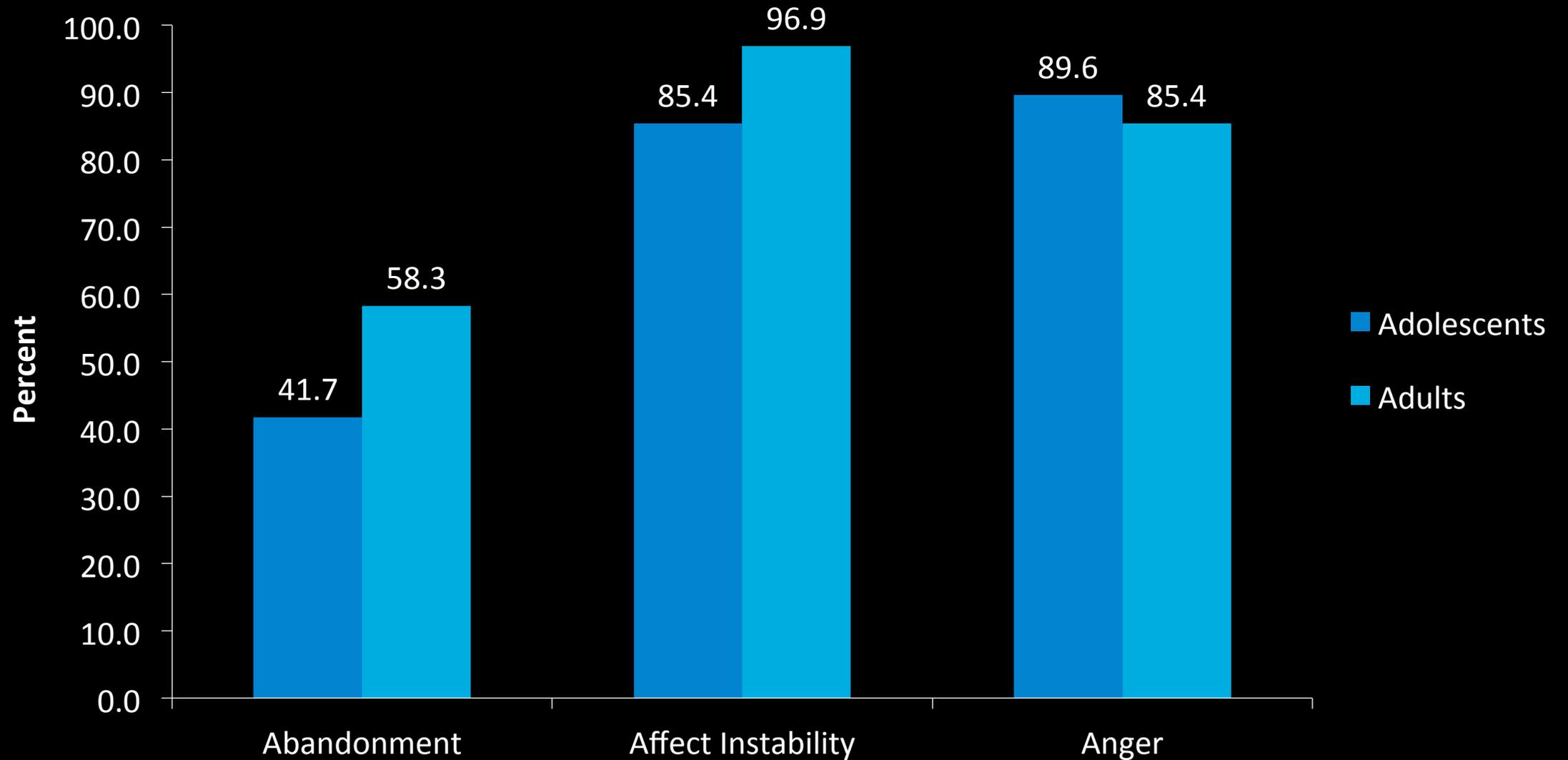
# BPD vs. no-BPD: Affective Dysregulation

- Affect Intensity Measure (negative intensity, positive affect, negative reactivity) scores did not significantly differ between groups.
- Negative Affect Self-Statement Q: only anxiety subscale significantly different with higher scores ( $t=-2.07$ ;  $p=.04$ ) in adolescents with BPD.
- Emotion Regulation Checklist: inappropriate affect dysregulation significantly different ( $t=-3.1$ ;  $p=.003$ ) with higher scores in adolescents with BPD. No significant differences on negative lability.

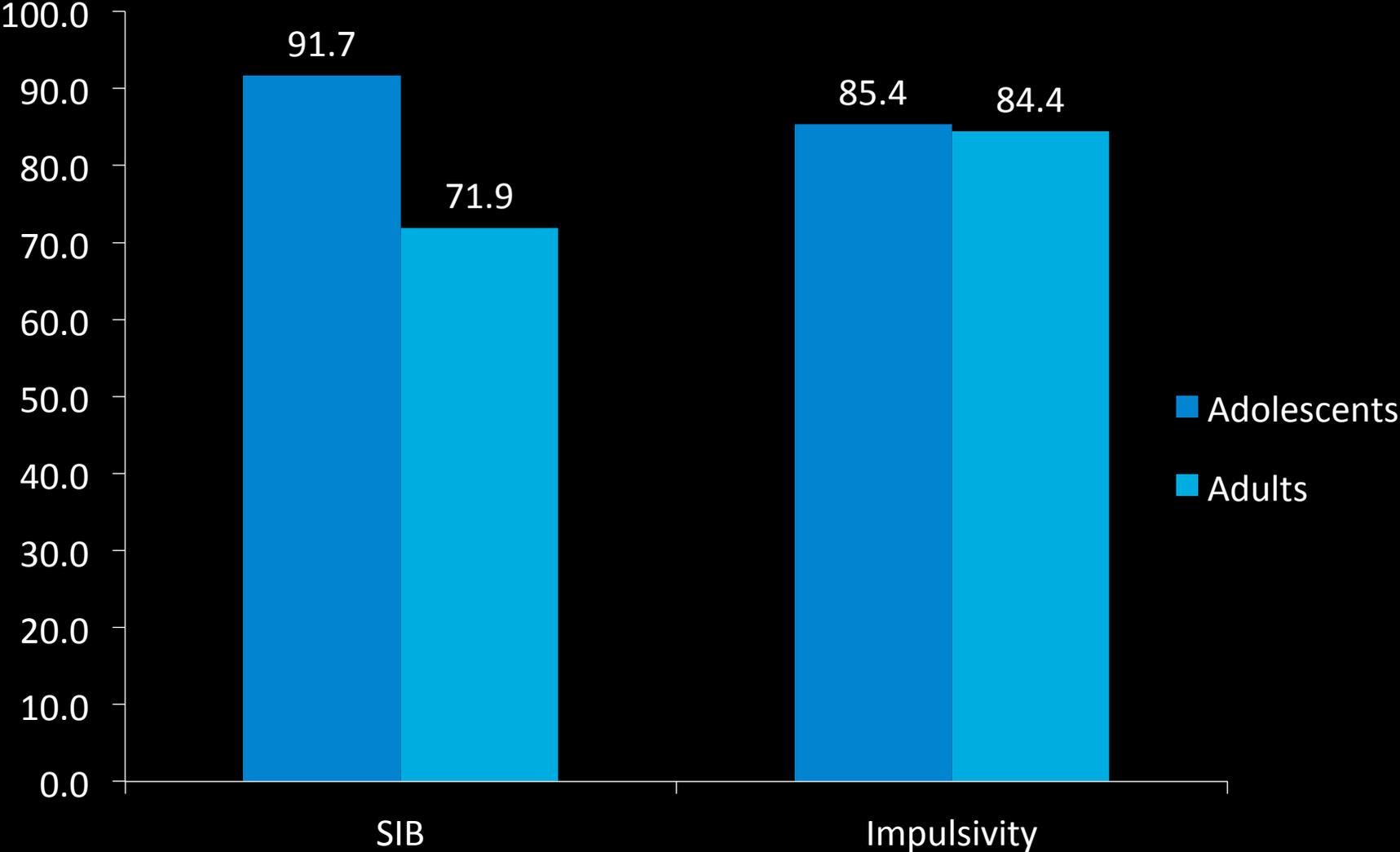
# BPD vs. no-BPD: Behavioral Dysregulation Aggression Questionnaire



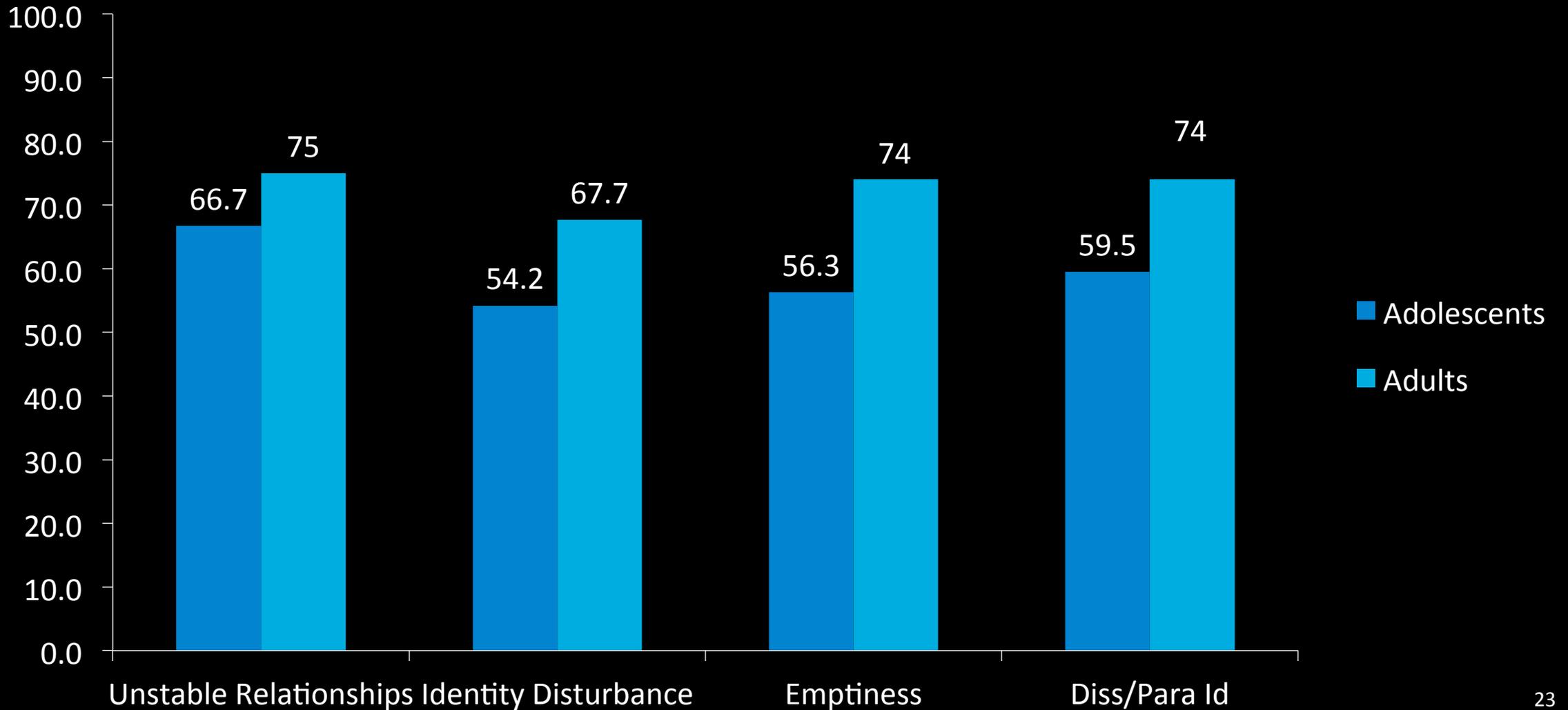
# Affect Dysregulation



# Behavioral Dysregulation



# Relationship Disturbance



# Summary

- BPD is highly prevalent among adolescents hospitalized due to suicide risk, more than other disorders except for MDD.
- Significant comorbidities include Conduct, ODD, Bipolar and PTSD.
- The most notable differences between suicidal adolescents with and without BPD was that those with BPD scored much higher on multiple domains of behavioral dysregulation and aggression. There were few differences on affective dysregulation, which may be more omnipresent in suicidal adolescents.
- BPD in adults and adolescents are comparable across affective and behavioral criteria (except for suicidal and self-injurious behavior) but differ more broadly on criteria related to relationship disturbance.

Do the characteristics of suicidal behavior in adolescents with or without BPD differ? Does BPD predict increased risk of suicidal events (suicide attempts, inpatient re-admissions) in the six months of follow-up after discharge?

# Baseline Suicidal Behavior

- Examined the precipitating behavior that led to admission (e.g. attempt, ideation, threat, or preparatory behaviors); adolescents with BPD had a higher rate of attempts (46% vs. 26%;  $X^2=4.6$ ,  $p=.03$ ).
- Those who met BPD criteria were also more likely to have a past history of SA (81% of BPD vs. 50% of non-BPD,  $X^2=11.5$ ,  $p=.001$ ).
- *No significant differences in level of intent or medical lethality between those with and without BPD.*

# Baseline NSSI

- There was no significant difference between BPD vs. no BPD groups in prevalence of NSSI: 34 BPD (83%) vs. 45 no-BPD (73%) endorsed NSSI.
- There were no significant differences between BPD and no-BPD groups on frequency of NSSI, or proportion seeking medical treatment for NSSI.
- No significant differences on functions of self-injury.

# Suicidal Behaviors 6 mo Follow-up

- Suicide Attempts:
  - **23.7%** of BPD vs. **15.2%** of no BPD
- Suicide Events:
  - **47.4%** of BPD vs. **28.8%** of no BPD
- Suicidal Ideation (BSS and SIQ):
  - BSS (8.6 BPD vs. 7.6 no BPD)
  - SIQ (45.2 BPD vs. 38.4 no BPD)
- SIB/NSSI:
  - **43.2%** of BPD vs. **40.7%** of no BPD

# Treatment During Follow-up

- ER visits:
  - **31.6%** BPD vs. **23.1%** no BPD
- Psychiatric hospitalization:
  - **36.8%** BPD vs. **22.7%** no BPD
- Residential:
  - **26.3%** BPD vs. **12.1%** no BPD
- Partial program:
  - **27.8%** BPD vs. **20.3%** no BPD
- Outpatient:
  - **90.9%** BPD vs. **91.4%** no BPD

# Summary

- BPD participants are more likely to have made an attempt prior to hospitalization and more likely to have a history of suicide attempts. Their past attempts do not differ from non-BPD suicidal adolescents on level of intent or medical threat.
- No differences in NSSI and functions of NSSI.
- BPD participants appear to be more likely to attempt suicide and to receive treatment in intensive settings during follow-up. However, these differences while notable, did not reach statistical significance.

Affective reactivity is a core component of BPD. Does this reactivity extend to suicidal ideation as well? Is suicidal ideation in BPD reactive with multiple fluctuations? Or more chronically severe? Which presentation is associated with higher risk for suicidal behavior?

# Parameters of Suicidal Ideation

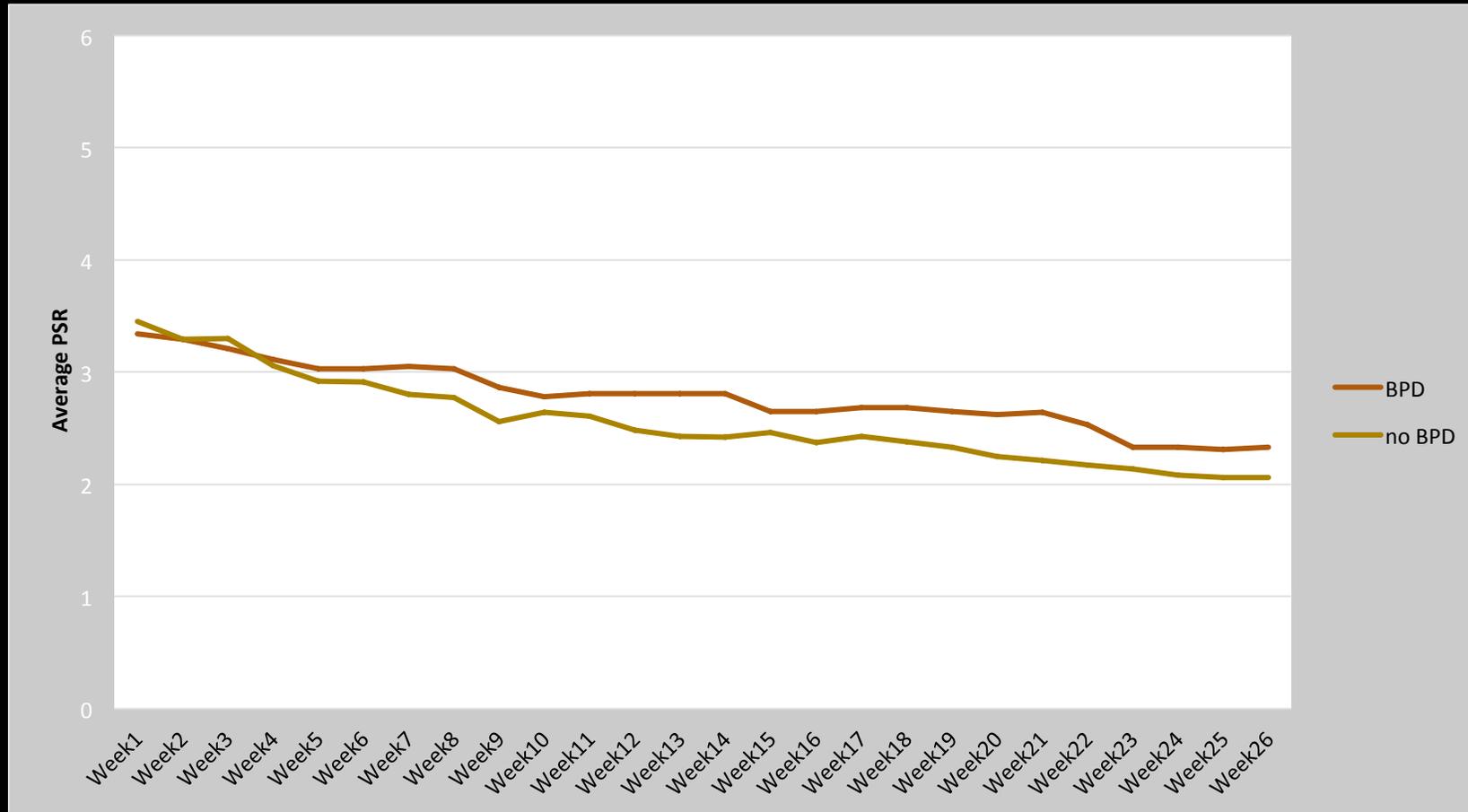
- Suicidal Ideation (SI) is a predictor of subsequent suicidal behavior; it is a central aspect of a suicide risk assessment.
- Most studies of SI rely on single administration self-report assessments which capture a specific time interval, but do not adequately capture variability within that time interval (e.g. How often over the past week have you had thoughts of suicide?)
- Very little research that focuses on parameters of SI, such as intensity, duration, lability; none in adolescents to our knowledge (Witte et al, 2005 in college students).
- Clinically, we observe that the course of suicidal ideation can be heterogeneous, labile or chronic.

# Assessment of SI Intensity and Lability

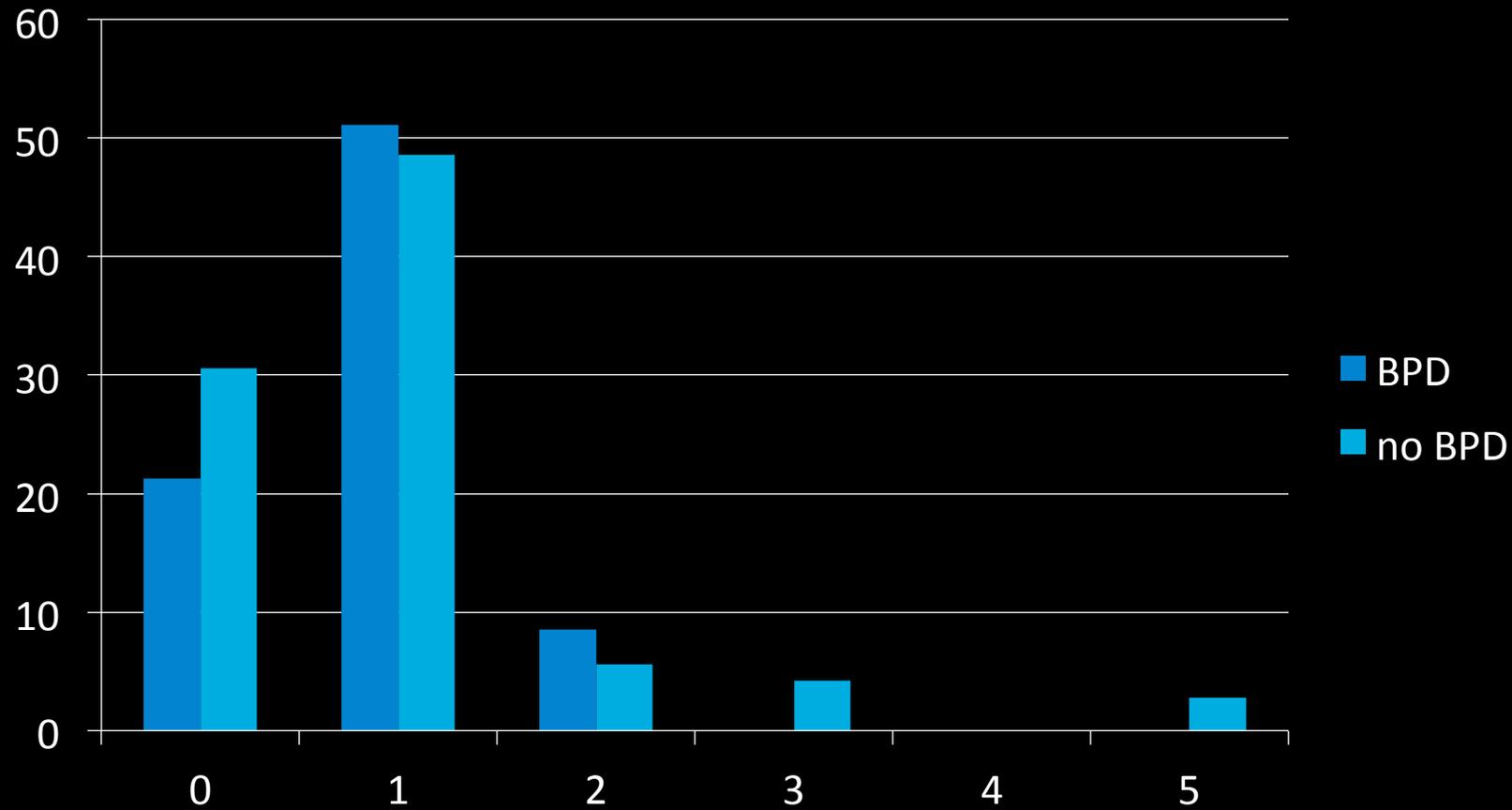
Employed a time-line follow back methodology using memorable time points to assess the course of SI. SI was assessed at baseline, 2 MO, 4MO, and 6 MO follow-up. Weekly ratings were assigned for each week of 6 MO interval.

- SI rated on 1-6 scale; in present analyses regrouped:
  - Clinically significant SI (PSR range 4-6 = moderate to extreme)
  - None or minimal SI (PSR range 1-3 = absent to minimal)
- **SI Intensity** = average SI PSR across f/u weeks
- **SI Lability** = Mean Squared Successive Differences
  - Captures degree that scores change week to week over 6M f/u
  - SI Number of Switches - # times A went from no/min to clinically significant SI or vice versa, over 6 MO f/u

# Suicidal Ideation PSR Score Over 6M f/u



# Number of switches: No/min SI to clinically significant SI



# Suicide and Self-Harm

	SI Intensity (Weekly SI mean)	SI Lability (Weekly SI MSSD)
SI Lability	.10	--
SIQ Baseline	.37***	.18
SIQ 6M f/u	.62***	.05
SA History	.12	.13
SA 6M f/u	.39**	.02
NSSI History	.05	.04
NSSI 6M f/u	.39***	-.06
SE 6M f/u	.35**	-.01

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$  for all tables

# Suicide Ideation and Affect

	SI Intensity	SI Lability
<b>Sexual Abuse</b>	<b>.37**</b>	<b>.22*</b>
Depression dx	-.08	.05
Anxiety dx	-.06	.01
<b>AIM Pos Affect</b>	<b>-.22*</b>	-.14
AIM Neg Intens	.14	<b>.31**</b>
AIM Neg React	.04	<b>.27**</b>
ERC Neg Lability	-.04	<b>-.23*</b>
ERC Emot Reg	.02	.01

# Predicting Suicide Events

	<b>B</b>	<b>SE (B)</b>	<b>OR (95%CI)</b>
<b><i>Univariate Models</i></b>			
SI Intensity	0.55	0.18	1.73 (1.21-2.45)***
SI Lability	-0.60	0.21	0.98 (1.02-4.51)
<b><i>Post-hoc Multivariate Model</i></b>			
SI Lability	0.78	0.93	2.19 (0.43-9.58)
Behavior Dysregulation	1.20	0.34	3.31 (1.80-6.66) ***
SI Lab x BD	-1.31	0.79	0.27 (0.07-1.25) <sup>t</sup>

# Summary

- In a sample of inpatient adolescents admitted due to suicide risk, BPD dx was largely unrelated to SI Intensity and SI Lability, possibly due to restricted severity range.
- SI intensity is more clearly associated with prospectively observed suicide attempts, suicide events than SI lability
- SI Lability was unrelated to other measures of SI
  - Related to negative affect intensity and reactivity
  - Thus, appears to have validity as an SI parameter distinct from intensity.
- This SI lability paradox may be explained by higher behavioral dysregulation in BPD, which when combined with SI Lability has a trend towards predicting SE.

Does perceived emotional invalidation from family and/or peers predict suicidal behaviors and/or nonsuicidal self-injury (NSSI)?

# Emotional Invalidation

- Emotional invalidation, intolerance towards the expression of private emotional experiences, is a key etiological component in Linehan's Biosocial Theory of BPD (Linehan, 1993)
- Most prevailing theories of suicide have a social belongingness perspective (e.g., Durkheim, 1897; Joiner's Interpersonal Theory, 2005).
- While related constructs have been examined in relation to risk for suicidal behavior, (e.g., social support, peer victimization), no study to our knowledge has examined perceived family and peer invalidation as prospective predictors of suicidal behaviors and NSSI.

# Methodology

- Employed a time-line follow back methodology using memorable time points to assess the course of **perceived peer invalidation** and **perceived family invalidation**. Weekly ratings were assigned for each week of 6 MO interval.
  - Ratings on 1-6 scale; in present analyses regrouped:
    - High Invalidation (PSR range 4-6 = moderate to extreme)
    - Low Invalidation (PSR range 1-3 = absent to minimal)
- Good interrater agreement for family invalidation  $\kappa = .99$ ; peer invalidation  $\kappa = .93$ .
- Previous reports from this same study sample have found that black race, childhood sexual abuse, positive affect intensity, and high aggression prospectively predicted SEs over 6 months of f/u (Yen et al. 2013), and were, therefore, controlled for in the present study.

# Perceived Invalidation Predicting Suicide Events: % Moderate to Severe Invalidation

	BOYS		GIRLS	
	SE (n=14)	NO SE (n=21)	SE (n=21)	NO SE (n=43)
BASELINE				
-- FAMILY	<b>57.1%<sup>1</sup></b>	<b>19.0%</b>	61.9%	65.1%
-- PEER	50.0%	42.8%	28.6%	46.5%
FOLLOW-UP				
-- FAMILY	<b>53.0%<sup>2</sup></b>	<b>8.2%</b>	53.0%	38.6%
-- PEER	43.0%	14.6%	20.6%	29.8%

<sup>1</sup> OR = 3.84 (95% CI: 1.05-14.04); p<.05

<sup>2</sup> OR = 8.01 (95% CI: 1.08-59.37); p<.05

# Perceived Invalidation Predicting NSSI: % Moderate to Severe Invalidation

	BOYS		GIRLS	
	NSSI (n=15)	NO NSSI (n=18)	NSSI (n=25)	NO NSSI (n=35)
BASELINE				
-- FAMILY	46.7%	22.2%	72.0%	62.9%
-- PEER	<b>66.7%<sup>1</sup></b>	<b>33.3%</b>	<b>52.0%<sup>2</sup></b>	<b>34.3%</b>
FOLLOW-UP				
-- FAMILY	33.6%	17.3%	53.1%	35.6%
-- PEER	<b>40.5%<sup>3</sup></b>	<b>15.0%</b>	<b>37.4%<sup>4</sup></b>	<b>25.4%</b>

<sup>1</sup> OR = 2.45 (95% CI: 0.99-6.10); p=.05

<sup>2</sup> OR = 1.86 (95% CI: 1.07-3.24); p<.05

<sup>3</sup> OR = 3.91 (95% CI: 0.98-15.56); p=.05

<sup>4</sup> OR = 2.57 (95% CI: 1.11-5.95); p<.05

# Summary

- A high proportion (<50%) of adolescents had feelings of perceived invalidation from family and peers at baseline that persisted through a significant proportion of the f/u interval.
- Perceived family invalidation predicted suicide events in boys only.
  - It is possible that perceived family invalidation, which is more intractable, leads to hopelessness and despair, which may lead to SA or SE.
- Perceived peer invalidation predicted NSSI in boys and girls.
  - Peer environments are potentially more modifiable, (e.g., change in school), such that perceived peer invalidation may prompt behaviors of escape or distraction.

# Conclusions and Clinical Take Aways

- There is compelling evidence that BPD leads to increased risk for suicidal behaviors, although the weight of the evidence is not as strong in adolescence compared to adults. However, per Interpersonal Psychological Theory, they may be acquiring the capacity to self-harm.
- When adolescents with BPD do make attempts, intent and medical threat are comparable in severity to those without BPD.
- Behavioral dysregulation seems to be the distinguishing characteristic in BPD suicidal adolescents.
- Despite affective lability, SI in adolescents with BPD is not characterized by lability. Intensity of SI more predictive of suicidal behaviors than lability of SI.
- Perceived invalidation is common in suicidal adolescents and family invalidation predicts suicidal events while peer invalidation predicts NSSI.

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