

Cognitive Functioning and Functional Abilities in Borderline Personality Disorder

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What Is Cognition?

- The term *cognition* refers to thinking abilities (e.g., attention, concentration, memory, and problem-solving skills).
- Neuropsychologists are trained to assess cognition in people with mental and neurological disorders. They use carefully designed instruments, which have been validated on very large groups of individuals, to measure various types of thinking abilities.

Cognitive Functions Often Evaluated By Neuropsychologists



Attention
Working Memory
Episodic Memory
Executive Functions
Visuospatial Abilities
Motor
Perceptual

Examples of Cognitive Tests Used By Neuropsychologists

Attention And Concentration

- *Brief attention* can be tested by asking examinees to repeat a series of digits.

For example:

Say these digits back to me in the same order: 6-4-1-9-3.

- *Concentration* may be evaluated using computerized tests that ask examinees to pay attention to letters presented on a computer monitor and press a key only when they see a certain letter

For example:

Press the space bar every time you see the letter “A”. Don’t press any button when you see any other letter.

Working Memory

- *Working memory* is the ability to maintain and manipulate information “online” for brief periods of time.

For example:

Remember these three words—apple, table, and mouse. Now count backward by five from the number 76. [Time 10 seconds.] Tell me the three words that I asked you to remember.

Verbal and Visual Memory

- *Verbal and visual memory* reflect the ability to learn and recall different types of information.

For example, verbal memory can be tested in this way:

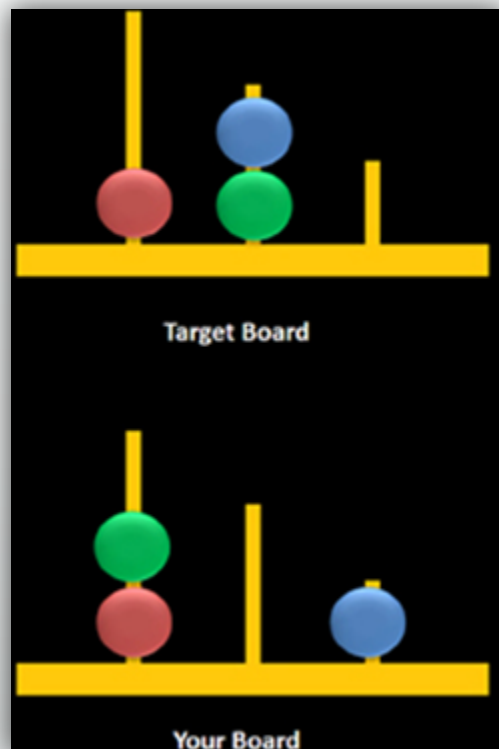
Remember this list of 10 words. [Read examinee the list of words.] After 20 minutes, I'm going to ask you to repeat the same list of words.

For example, visual memory can be tested in this way:

I'd like you to remember these 10 designs. [Show examinee a page with 10 designs.] After 20 minutes, I'm going to ask you to draw each of these designs from memory.

Executive Functions

- *Executive functions* refer to higher-order thinking abilities, such as planning, problem-solving and impulse control.



For example:

Make your board look like the target board using as few moves as possible.

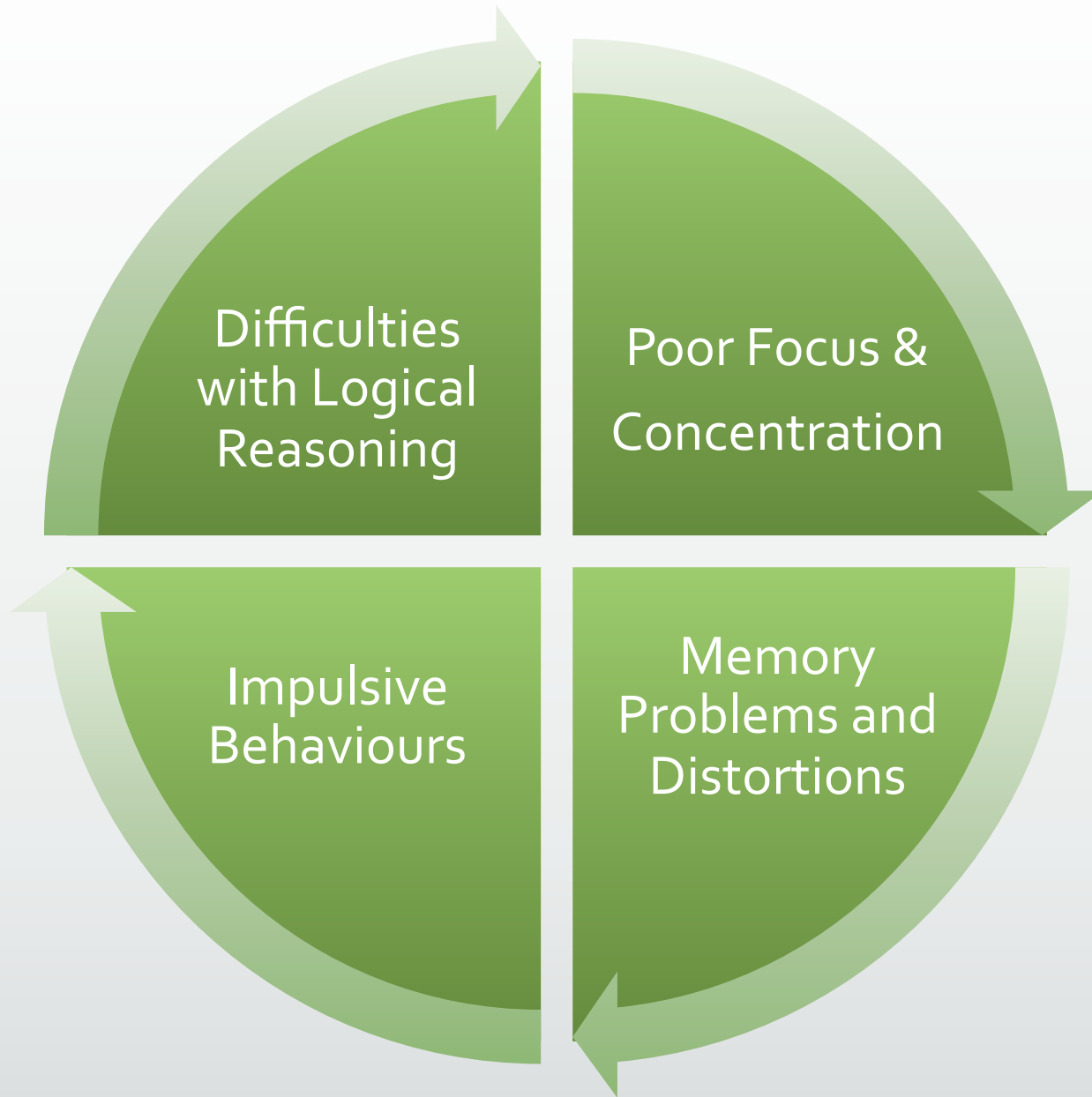
How Is Neuropsychological Testing Used in Clinical Practice?

- To aid in making a diagnosis (for example, diagnosing ADHD, a learning disorder, or dementia).
- To assist in treatment planning (for example, identifying a need for memory aids during psychotherapy or to remember to take medications).

Why Evaluate Cognition in Borderline Personality Disorder?

Why Evaluate Cognition in BPD?

- Historically, clinicians have described a variety of cognitive deficits which seemed to interfere with the treatment of some individuals with BPD (Kroll, 1988).
- Difficulties with cognitive functioning have been strongly associated with high levels of inpatient psychiatric hospitalization in BPD (Comtois et al., 2003) and a greater likelihood of patients with BPD dropping out of psychotherapy treatment (Fertuck et al., 2012).



People With Childhood ADHD Have A High Risk Of Developing BPD As Adults

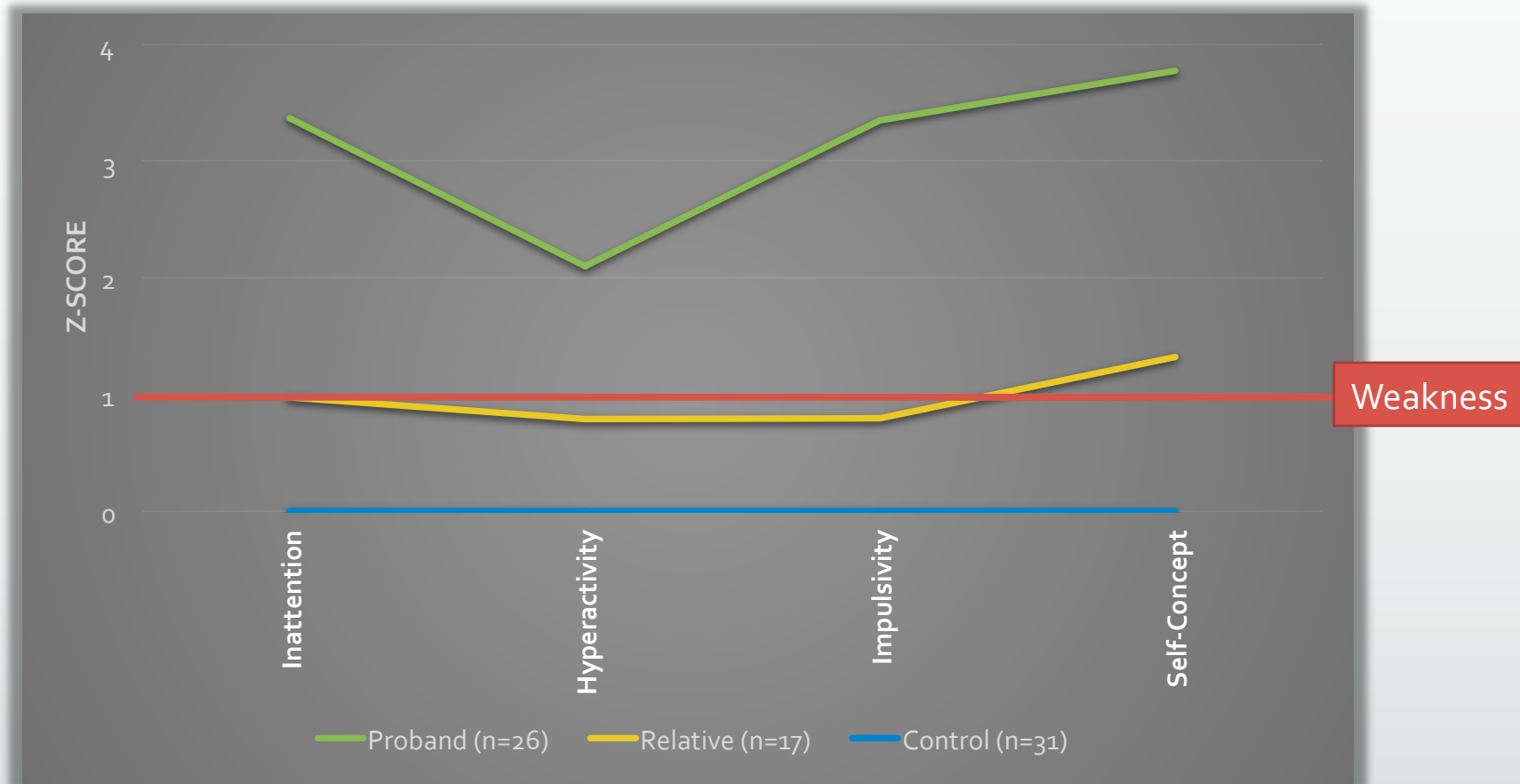
- Attention-deficit hyperactivity disorder (ADHD) and BPD appear to share several symptoms, including impulsiveness, emotional instability, and difficulty controlling anger.
- Children with ADHD are 5 times more likely than children without ADHD to develop BPD later in adulthood (Fischer et al., 2002).

Cognitive Function In Borderline Personality Disorder

Precautions When Interpreting Results Of Cognitive Functioning In BPD

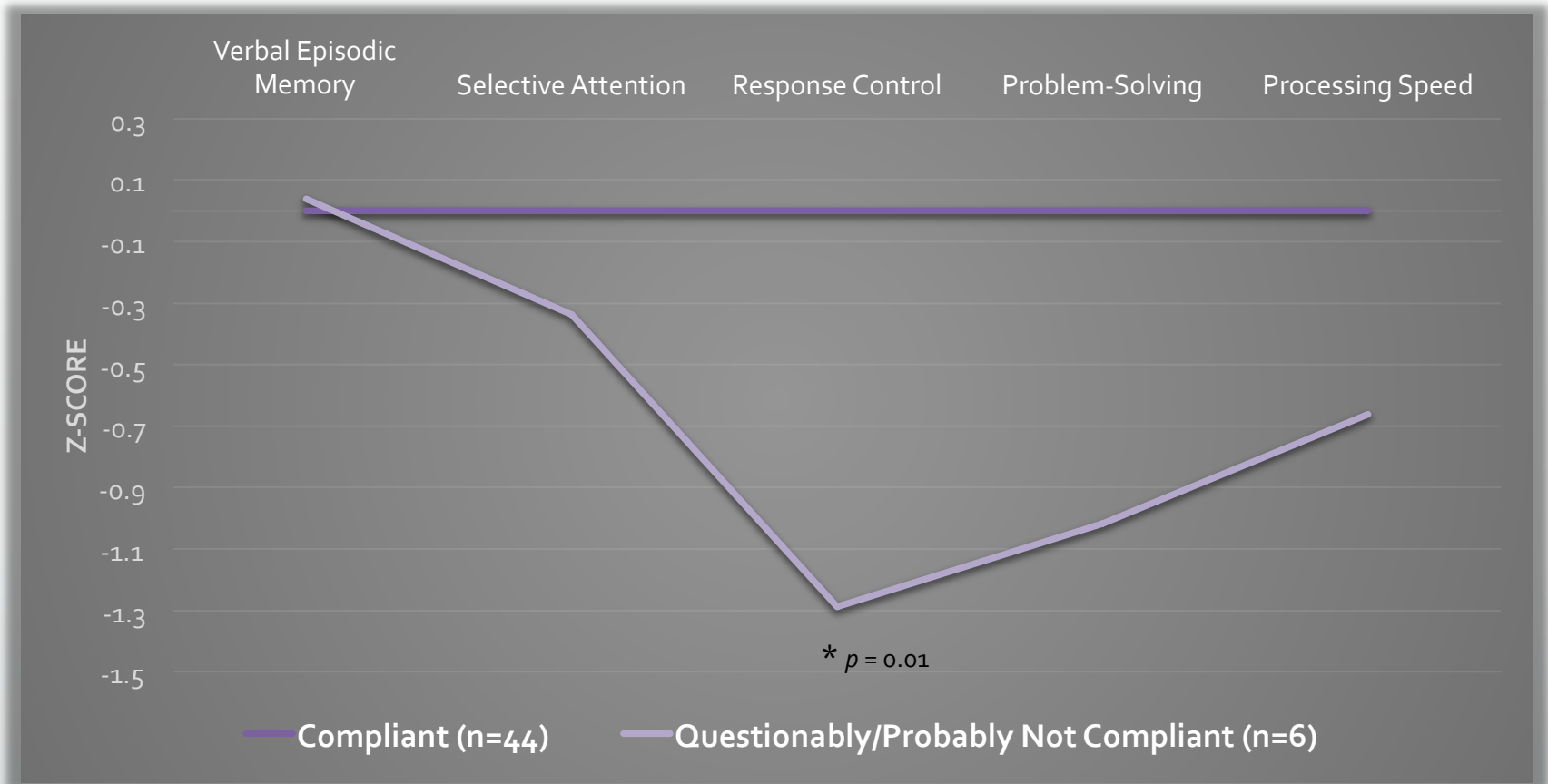
- ✓ Not all people with BPD have cognitive difficulties.
- ✓ These results present the averages of how people with BPD perform on standardized tests of cognition.
- ✓ Some people with BPD have difficulties with many cognitive abilities, whereas others perform in the average or even superior range.
- ✓ There may be many reasons that a person with BPD may experience cognitive difficulties—for example, due to sedating medications, fatigue caused by poor sleep, and other physical and mental disorders.
- ✓ Understanding what might be a significant or problematic weakness in cognition for any one individual should be made in consultation with a psychologist with expertise in neuropsychology.

People With BPD And Their Relatives Report Many Cognitive Limitations



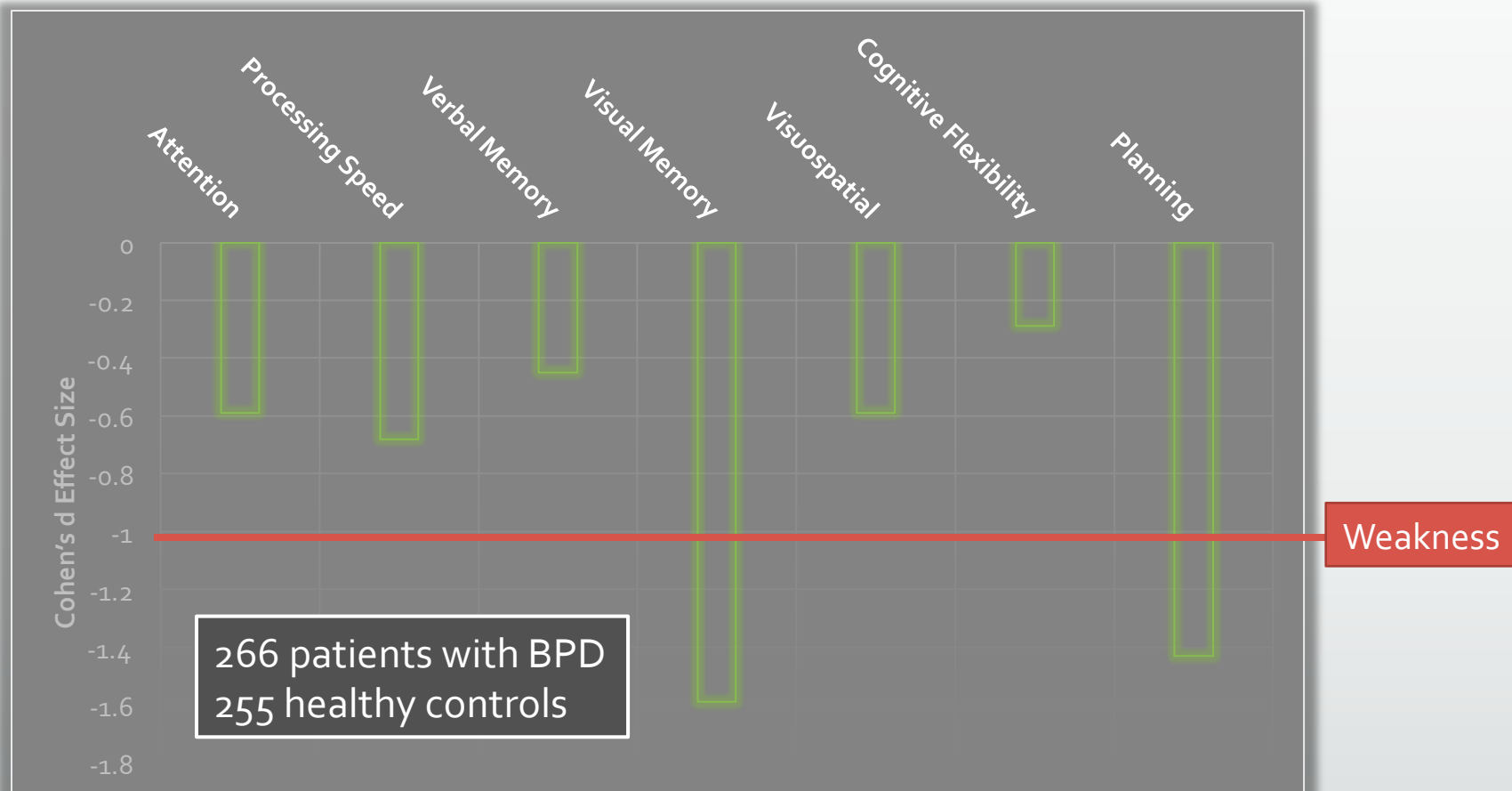
Ruocco et al. (2014)

Most Research Participants with BPD Put Forth Good Effort on Cognitive Testing



Ruocco (in revision)

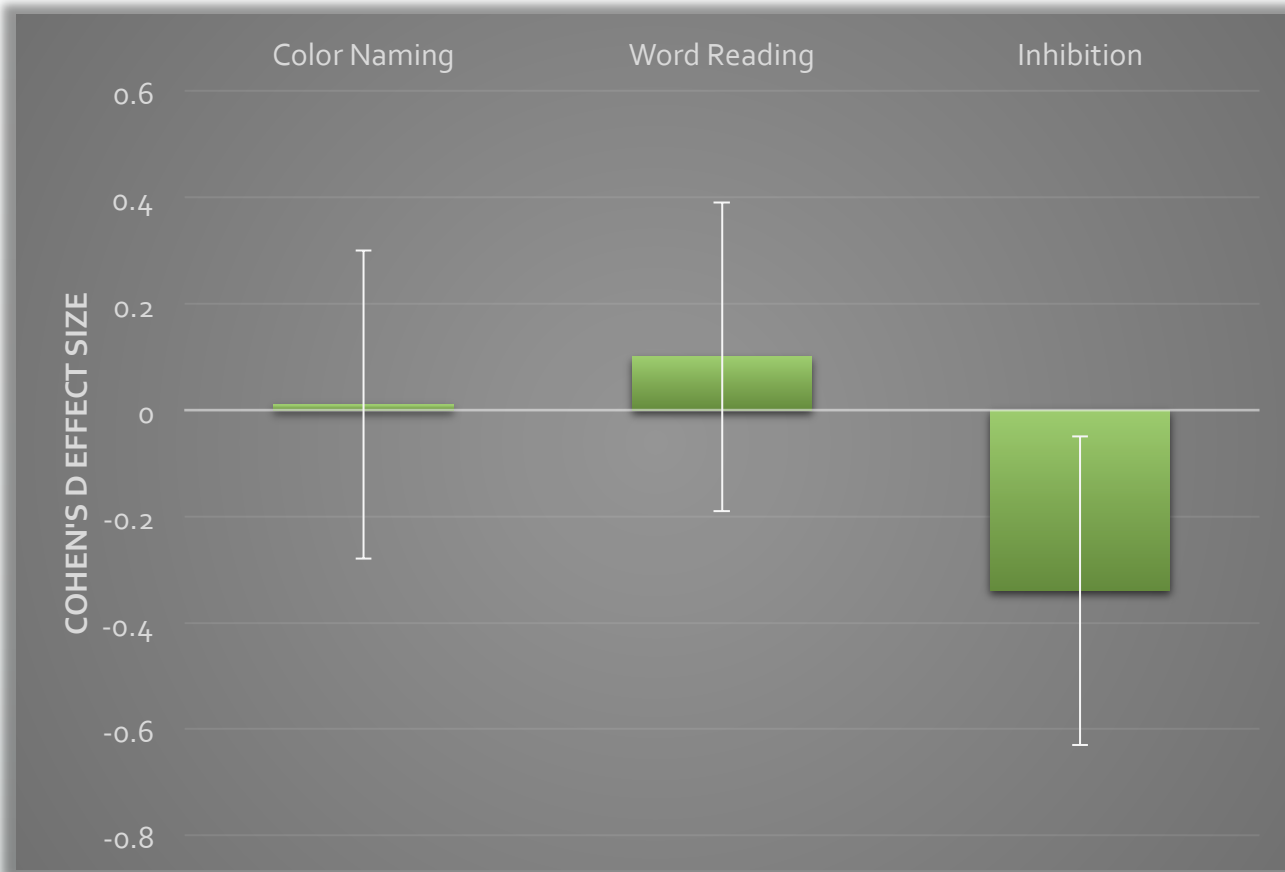
People With BPD Have Cognitive Deficits Affecting A Range of Abilities



People With BPD May Also Have Greater Variability In Their Cognitive Abilities

- Some research suggests that patients with BPD (as well as those with schizophrenia and depression) may show high degrees of variability in how quickly they respond to visual information (e.g., press a button to a specific letter of the alphabet) (Kaiser et al., 2008).
- Ruocco and Bahl (2014) extended this research to memory functioning in patients with BPD. They showed that patients showed larger than average discrepancies in their verbal and visual memory abilities, but neither one was consistently better or worse than the other.

Poorer Executive Functions May Be Associated with More Medically Lethal Self-Injurious Behavior



Worse performance for high lethality patients (n=18) vs low lethality patients (n=40)



Cognitive Deficits May Run In Families With BPD

- We recently showed that subjective complaints of cognitive disturbance run in families with BPD and co-segregate with the disorder (Ruocco, Hudson, Zanarini, & Gunderson, 2015).
- First-degree relatives of patients with BPD may also be at risk for deficits in executive functions, especially planning and response inhibition (i.e., impulse control ability) (Gvirts et al., 2012; Ruocco et al., 2012).

Functional Abilities In People With BPD And Their Relatives

Many Ways To Measure Functional Abilities In People With Mental Disorders

Work/ Employment	Interpersonal Relationships	Family	Household Responsibility
Academics	Recreation	Physical Functioning	Vitality
Self-Esteem	Relation to Self	Economic Self- Sufficiency	Mobility

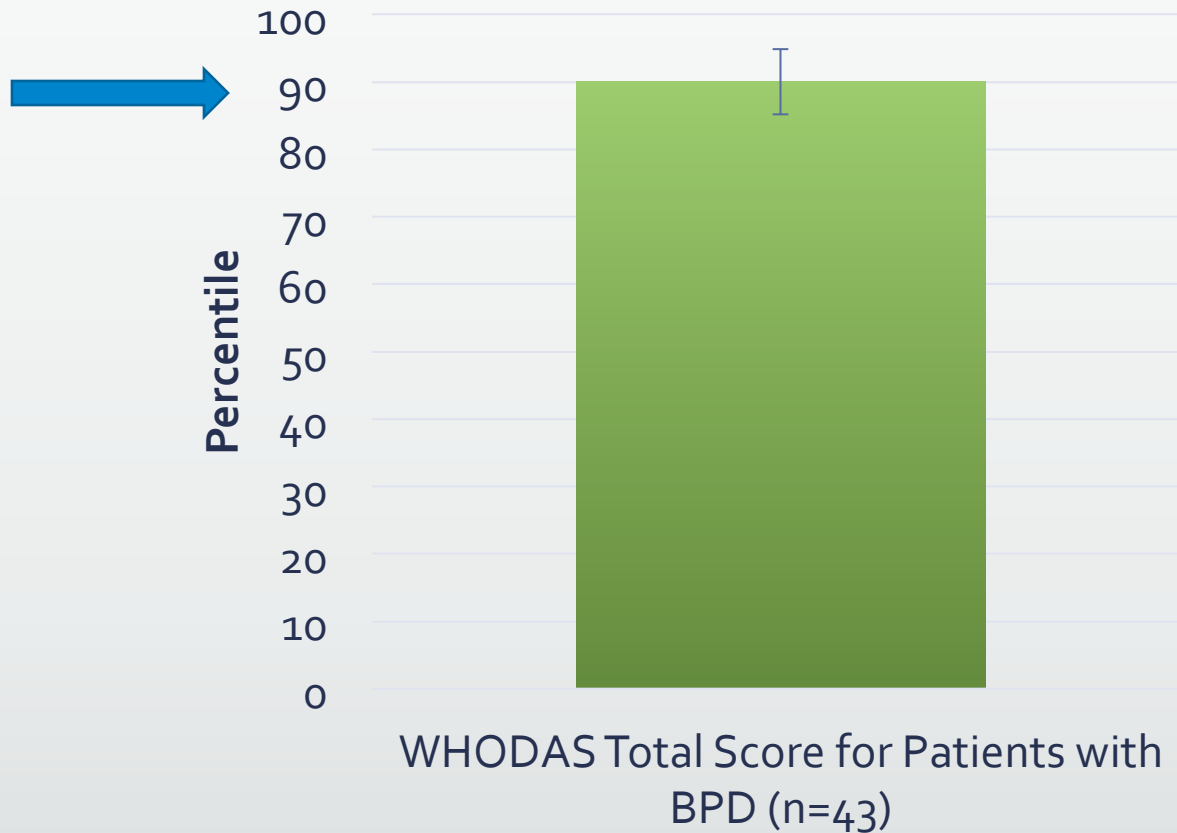
Functional Limitations Are Commonly Reported By People With BPD

- Individuals with BPD report greater disability than people without BPD, even when controlling for socio-demographic characteristics, physical conditions and other mental disorders (Grant et al., 2008).
- Patients with BPD (and those with schizotypal PD) report more impairment at work, in social relationships, and at leisure than other PD's or patients with depressive and anxiety disorders (Ansell et al., 2007; Skodol et al., 2002).
- Functional impairments (especially in social relations) are relatively stable at multi-year follow-up assessments (Gunderson et al., 2011; Skodol et al., 2005a; Zanarini et al., 2009).

World Health Organization Disability Assessment Schedule, Version 2.0 (WHODAS 2.0)



Patients With BPD Report Extremely High Levels of Functional Disability



Note: Error bar represents 95% confidence interval.

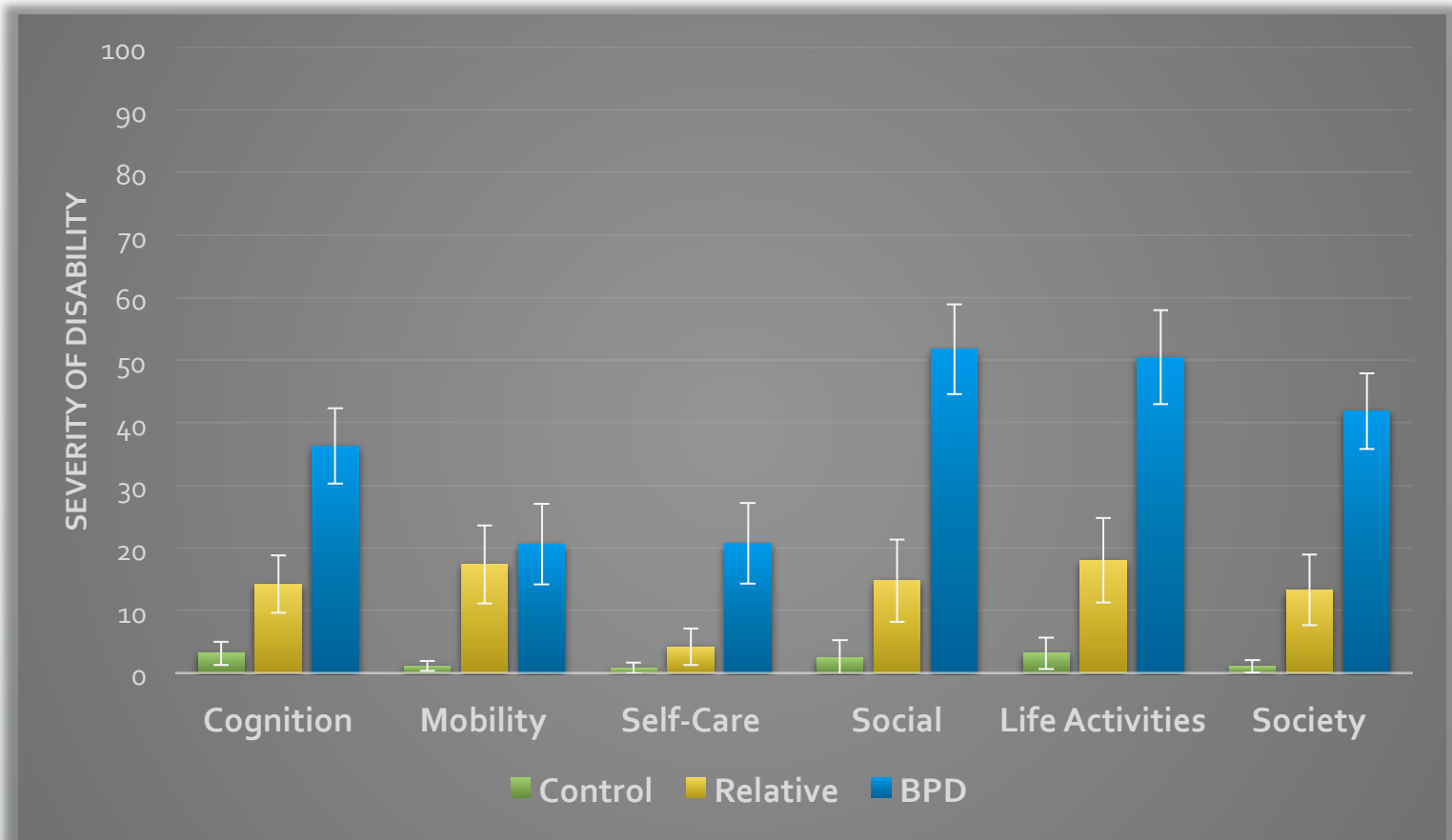
How Might Cognitive Deficits Affect Someone's Life?

- Difficulties with various aspects of cognition could impact a number of functional abilities.

For example,

- Caring for oneself
- Communicating effectively with other people
- Carrying out one's daily activities (work, school, household responsibilities)

Disability in Patients with BPD, Non-Affected Relatives and Controls



Problems With Attention And Memory Are Linked To Difficulties With Activities Of Daily Living In BPD

- After controlling for depressed mood in the two weeks prior to assessments, complaints of inattention and forgetfulness were associated with difficulties carrying out activities of daily living (including work, school, and household responsibilities) in patients with BPD and their non-affected relatives (Ruocco et al., 2014).
- Among patients with BPD (but not relatives), greater difficulties with social functioning were moderately associated with deficits on neuropsychological measures of attention and speed of information processing (r 's $> .54$, p 's = .001).

Conclusions And Future Directions

Summary

- On average, people with BPD show subtle weaknesses in certain cognitive functions, especially attention/concentration, memory, and executive functions (e.g., planning, problem-solving, and impulse control).
- In addition to weaknesses in specific cognitive functions, when comparing different people with BPD, there appears to be a high degree of variability in cognitive abilities (e.g., some people have strong verbal memory but weak visual memory, and vice versa). This is consistent with findings in other mental disorders, such as schizophrenia, depression, and ADHD.
- More severe deficits in impulse control and problem-solving may underlie more severely lethal self-injurious behaviours in people with BPD.

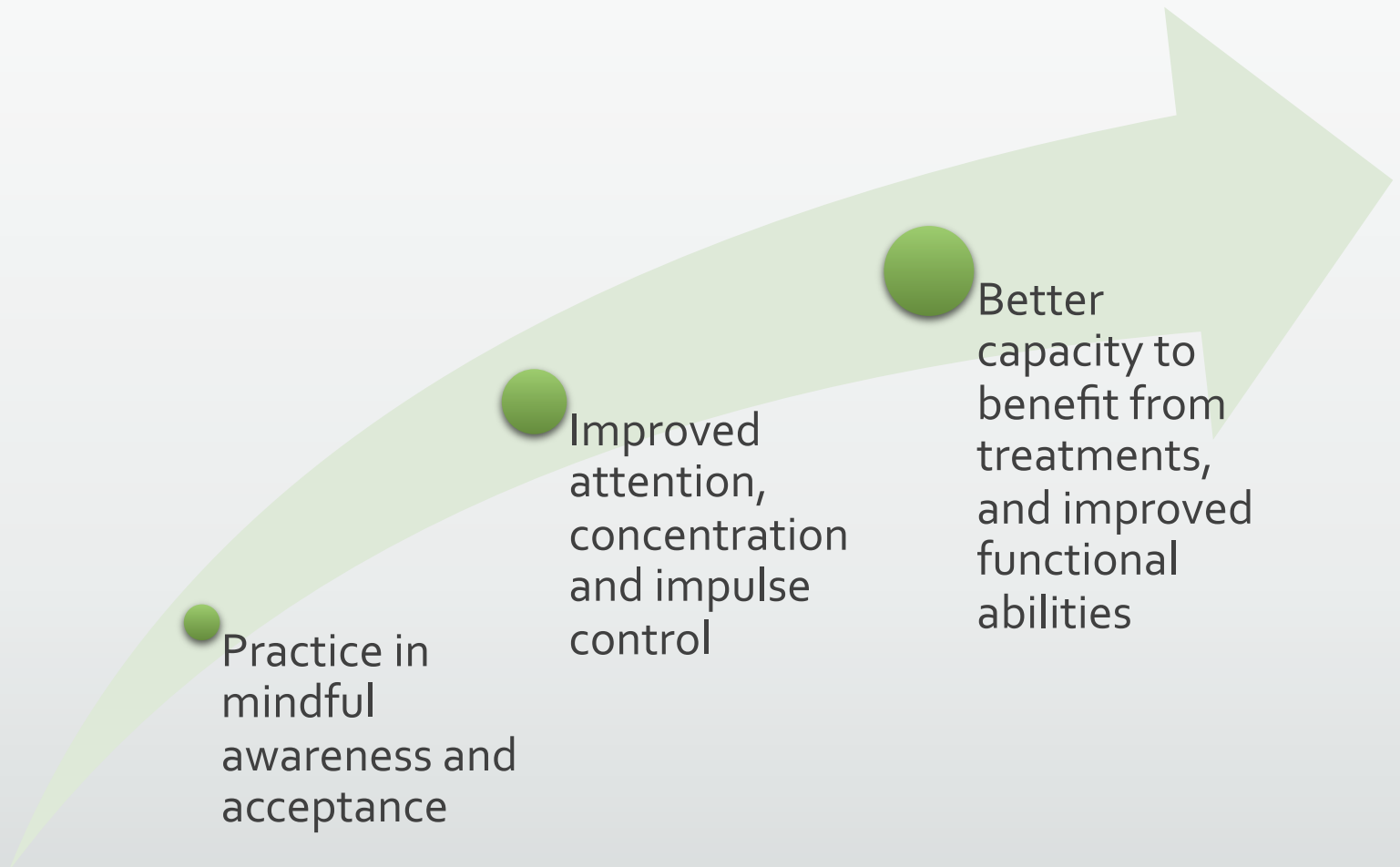
Summary

- Individuals with BPD and their relatives report elevated functional limitations across a wide range of life areas.
- Limitations in attention and memory may be linked to difficulties carrying out activities of daily living (e.g., work, school, and household responsibilities) in people with BPD and their relatives.

Implications for Treatment

- To effectively engage in psychotherapy, attention, concentration, memory and executive functions (e.g., planning, problem-solving and impulse control) must be intact.
- Problems may arise when any one of these cognitive functions are affected in individuals with BPD, and in turn, these difficulties could have downstream influences on therapy outcomes and functional abilities.

How Can Mindfulness-Based Psychotherapy Improve Cognition In BPD?



Future Directions

Promising New Research Is Underway To Investigate Many Compelling Questions About Cognition And BPD

- How and in what ways do cognitive limitations impact psychotherapy outcomes for patients with BPD?
- Can we use cognitive deficits as potential biomarkers to identify genetic factors involved in BPD?
- Are cognitive deficits inherited in families affected with BPD?
- How might cognitive limitations impact functional abilities in patients with BPD and their relatives?
- Do brain stimulation therapies to improve depression in BPD impact cognitive abilities?

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