A SYSTEMS APPROACH TO SUPPORTING THE PERSON, ENVIRONMENT & SALIENT TASKS OF COLLEGE STUDENTS WITH LEARNING DISABILITIES
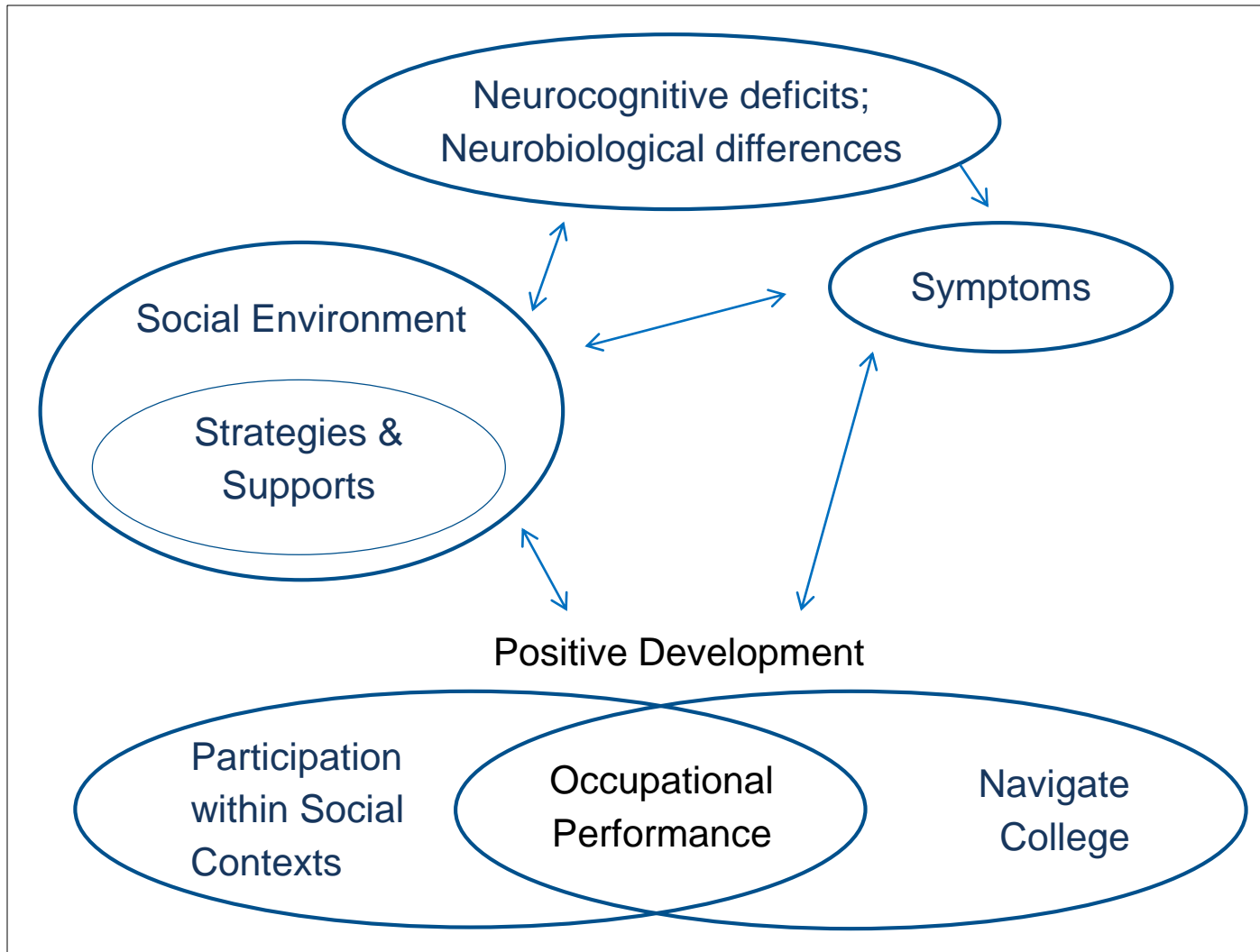
UF

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Disclosures

1. HRD 1246587 National Science Foundation

2. K12 HD055929 National Institutes of Health – National Center for Medical and Rehabilitation Research (NICHD) and National Institute for Neurological Disorders & Stroke.

Research Frame: Big Picture

Neurocognitive deficits; Neurobiological differences

Symptoms

Social Environment

Strategies & Supports

Positive Development

Participation within Social Contexts

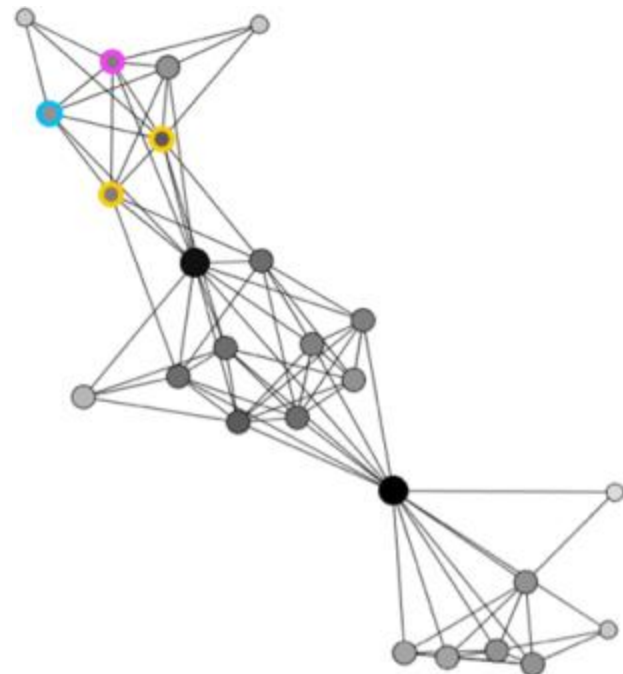Occupational Performance

Navigate College

- Transition age
- LD, ADHD, ASD-HF
  - EF, Arousal regulation, working memory
- Attention, communication, impulsivity, restlessness
- Social roles, supports, strategies

- Systems approach

Network visualizations/maps

Clinical
15-16 year old
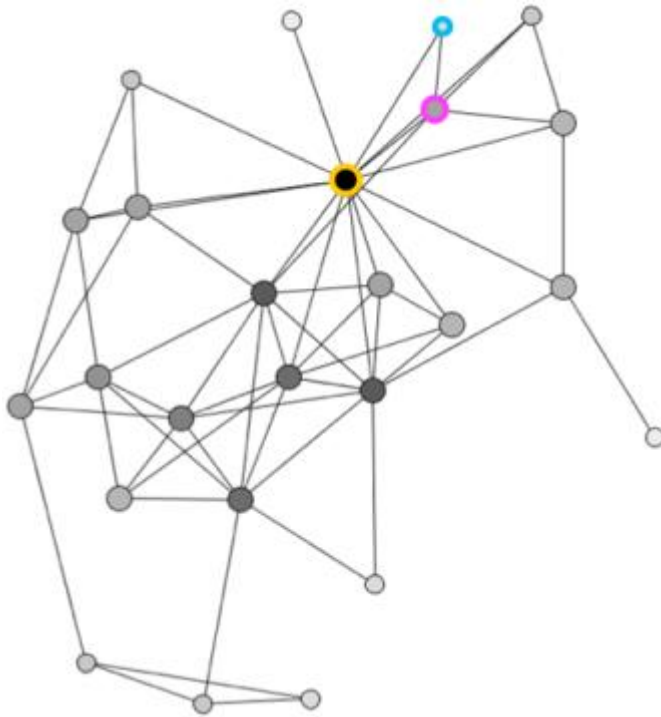
Comparison
15-16 year old

Learning Disabilities (LD)

- Highly prevalent disorder on college campuses
  - ~60 % of students reporting a disability[1]
- Life long disorder; Invisible disability
  - A neurological disorder that affects the brain's ability to receive, process, store, and respond to information[2]
- Learning Disabilities = "umbrella" term
  - Specific LD diagnosis can vary from person to person
- ~ 31-45% of individuals with LD or ADHD have both[3]
- ~33% of ASD with co-morbid ADHD[4]

1. U.S. Department of Education, National Center for Education Statistics. (2015). Digest of Education Statistics, 2013 (2015-011), Chapter 3.
2. Cortiella, Candace and Horowitz, Sheldon H. The State of Learning Disabilities: Facts, Trends and Emerging Issues. New York: National Center for Learning Disabilities, 2014.
3. DuPaul, et al., 2013. DOI: 10.1177/0022219412464351
4. Rao, et. al., 2013. DOI: https://doi.org/10.1177/1362361312470494

Undergraduate students with Disabilities

- 11% of undergraduates estimated to have a disability[1]

- Students with LD
  - ½ rate (21%) attendance at 4 year college versus general population (40%); 2x rate attendance at 2-year college[2]
  - **Lower college completion rates**: 41% (LD) / 52% in general population[2]
  - 11% of Students with LD report disability to college/university[3]

- Tough Transition to College: IDEA >> ADA

1. https://nces.ed.gov/fastfacts/display.asp?id=60 retrieved Aug. 11, 2016
2. Cortiella, Candace and Horowitz, Sheldon H. The State of Learning Disabilities: Facts, Trends and Emerging Issues. New York: National Center for Learning Disabilities, 2014.
3. NLTS-2, 2011 : http://www.nlts2.org/data_tables/tables/14/np5S5i_K8g_YNfrm.html retrieved August 11, 2016

# COMPREHENSIVE SUPPORT FOR STEM STUDENTS WITH LEARNING DISABILITIES (CS³LD)

http://stemscholar.phhp.ufl.edu/
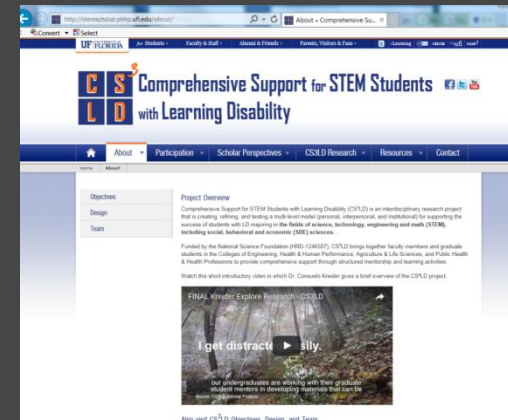
Design

- Comprehensive Support for STEM Students with Learning Disabilities (CS^{3}LD)
  - Design: One-group multi-method Implementation study
  - Theoretically informed *conceptual model* → Participant informed ***implementation model***

  - Continuous improvement process
    - ✓ Outcome surveys
    - ✓ Feedback surveys
    - ✓ Focus groups
    - ✓ Interviews
    - ✓ Case reports
    - ✓ Implementation data
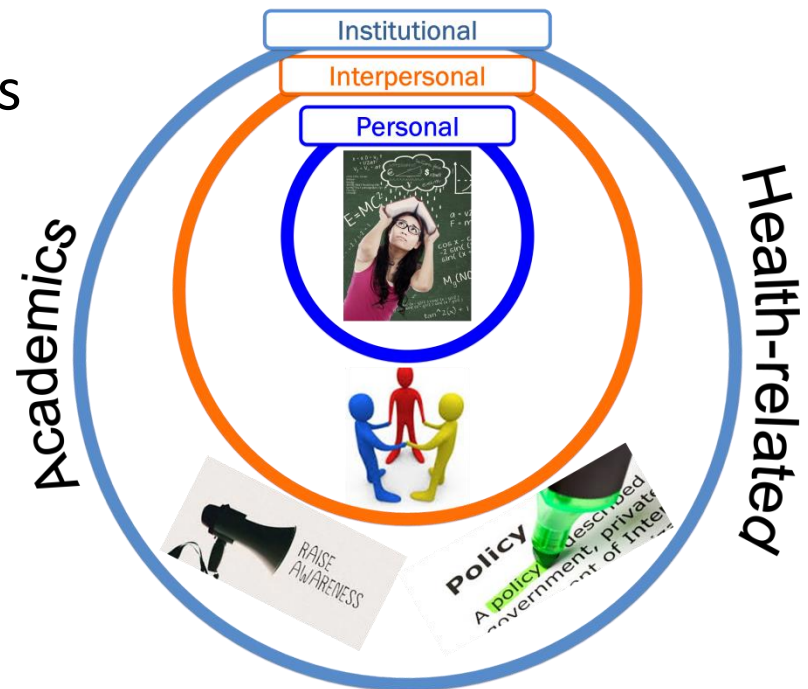
CS3LD Goals
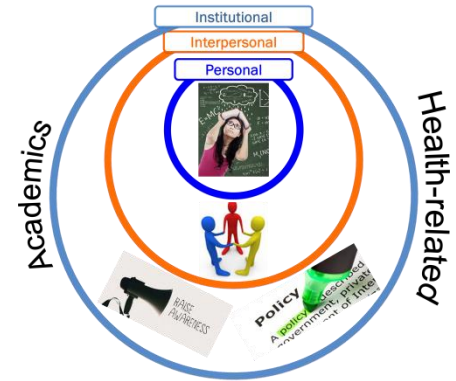
- # Personal
  - ◦ Create mechanisms for CS^{3}LD undergraduate engagement designed to foster **self-advocac**y, **self-efficacy**, and increased **campus connection**.

- # Interpersonal
  - ◦ Create multi-disciplinary mentorship teams for each CS^{3}LD scholar that will improve mentoring and **professional enculturation** to STEM disciplines.

- # Institutional
  - ◦ Create a campus-wide **network of health and STEM faculty**, staff, graduate students, and academic units **knowledgeable** and coordinated in facilitating success of students with LD.
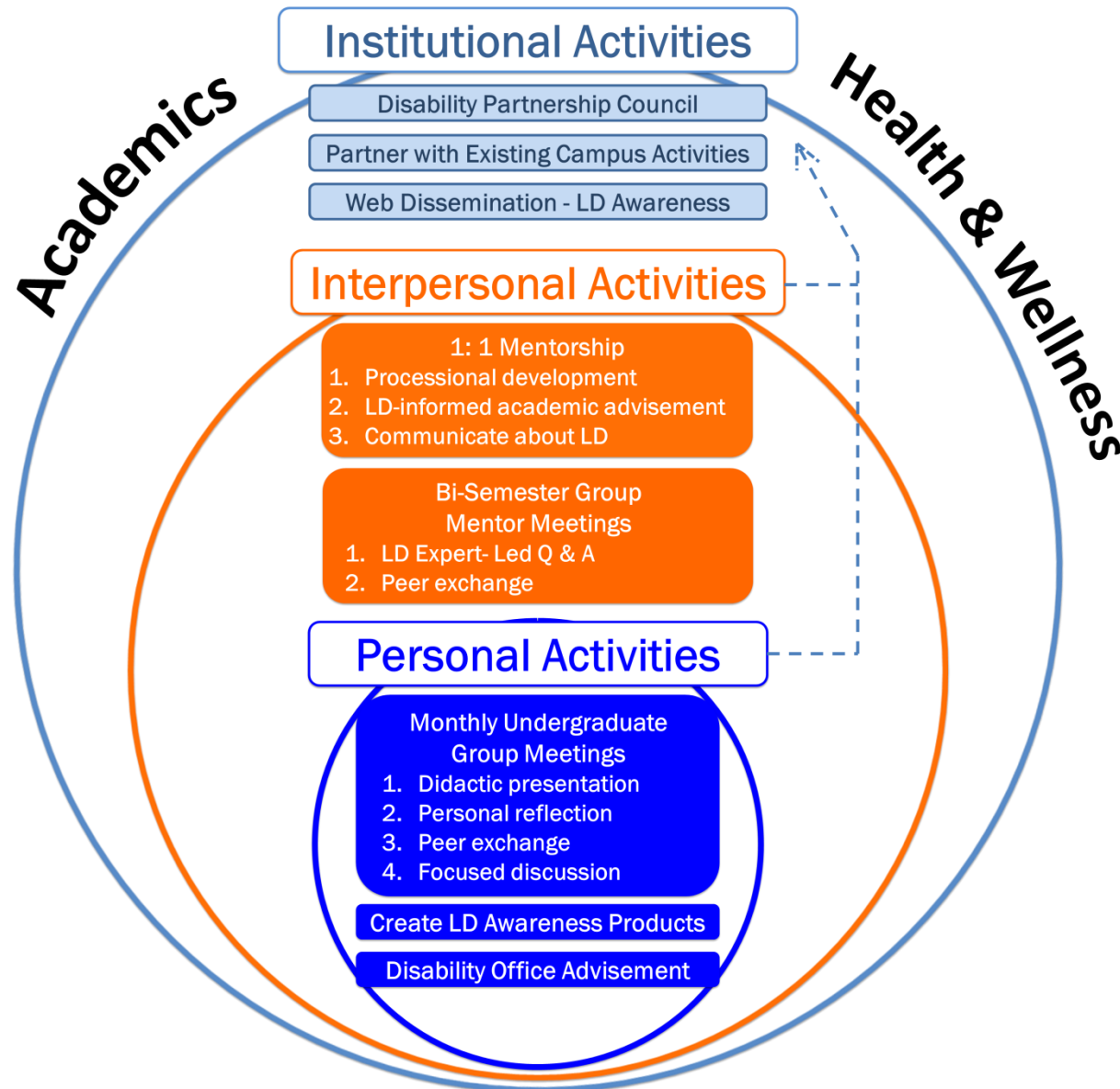
Our Challenge

- Can we operationalize this model of holistic supports at a large institution
  - In a coordinated way across the multiple levels
  - In ways that are acceptable and valuable to both
    - University stakeholders
    - Students needing the supports

Implementation Framework
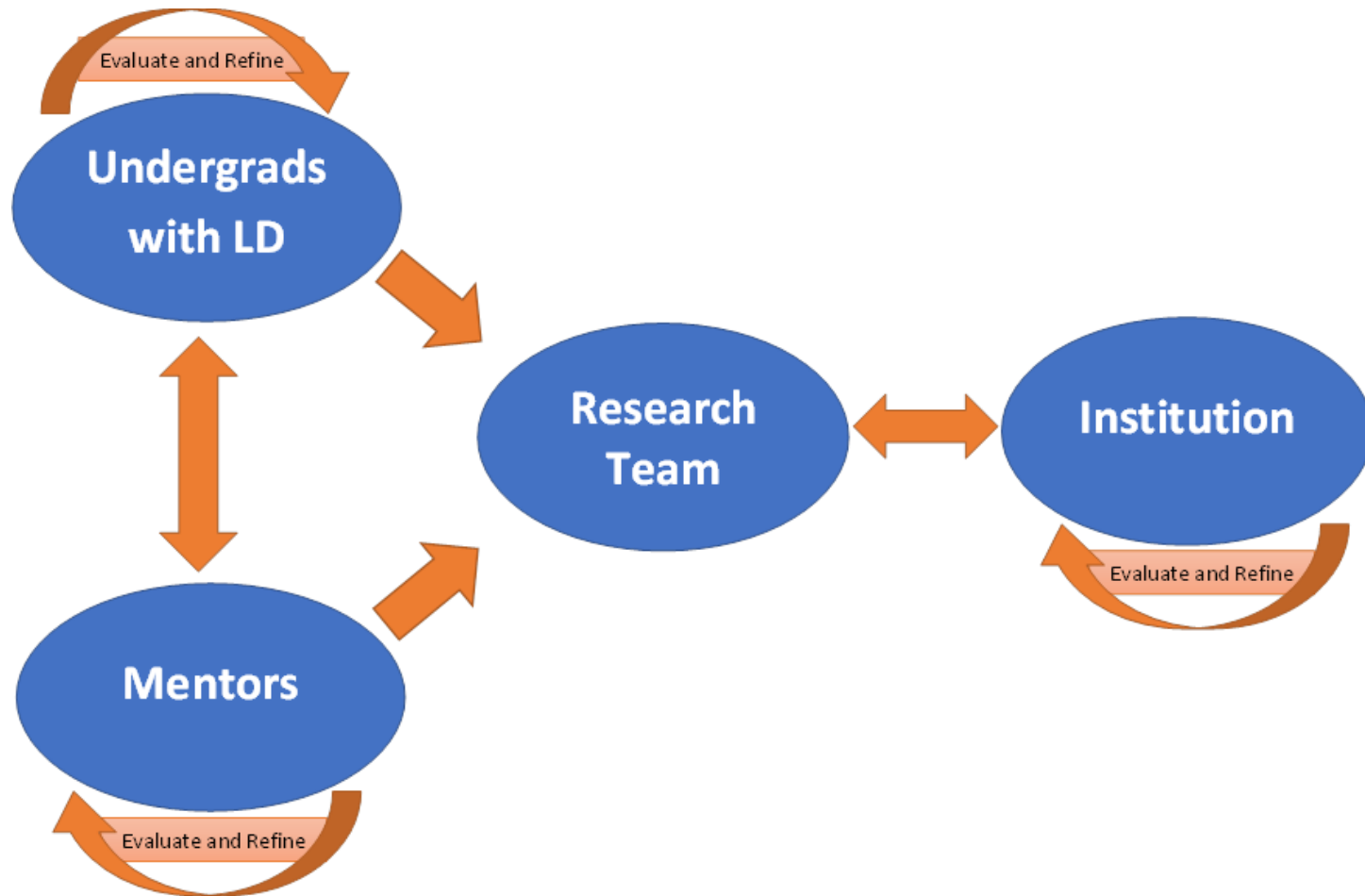
Implementation Activities

Participant Engagement

Participants (*n*)	Undergraduate Completion (%)	Graduate Student Engagement (*n*)
Partnership Council (32)	Completed all available semesters (75)	Withdrew (9)
Faculty mentors (36)		Mentored more than 1 (4)
Graduate student mentors (52)	Withdrew in Year 1 (15)	Volunteered (8)
Undergraduates with LD (52)	Withdrew in Year 2 (10)	Volunteered but eventually withdrew (4)

Implementation Engagement
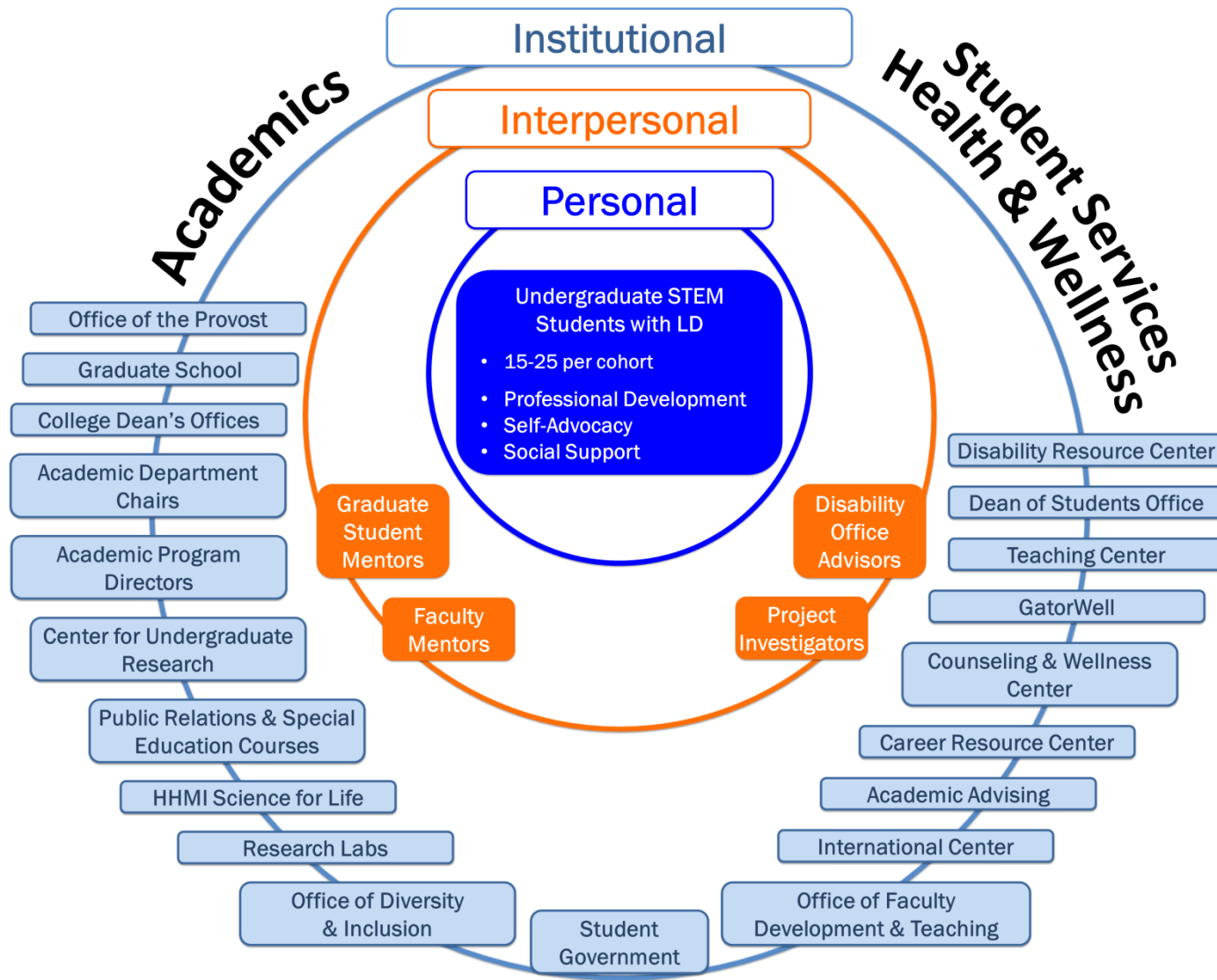
The dataset

- Transcripts:
  1. Undergraduate group discussions (monthly meetings)
  2. Graduate student group discussions (2-3/semester)
  3. Project improvement focus groups (annual; undergraduates and graduate student mentors)

- Surveys & Questionnaires
  1. Baseline, After 2 semesters (1 academic year), After 4 semesters
  2. Mentorship activity logs (6/semester – every other week)
  3. Implementation records (e.g., attendance)

- LD Awareness/Advocacy Projects
  1. 1 project per semester from undergraduate

PERSON

What our undergraduates with LD have told us

Undergraduate Sample (*n* = 52)

| Sex (%)	Race (%)	Field of Study (%)	Age (years)	Age Diagnosed (years)	Other College Prior (%)
Male (50)	White (71)	Science (32)	median (20)	median (18)	Yes (29)
Female (46)	Black (15)	Technology (6)	min (18)	min (4)	No (69)
No report (4)	Asian (2)	Engineering (23)	max (33)	max (29)	No report (2)
	Other (8)	Mathematics (6)			
	No report (4)	Social/Behav. (33)			

Undergraduates' symptoms

- Digital visual analogue scale
- 0=no difficulty, 100=extreme/constant difficulty

| Difficulty with…	Median (Inner Quartile Range)
Staying focused	75 (62, 94)
Managing time	65 (50, 81)
Extensive writing assignments	65 (31, 85)
Reading comp. - textbooks/academic publications	64 (50, 81)
Organization	62 (47, 79)
Memorizing and retrieving information from memory	57 (23, 85)
Following multi-step directions	56 (34, 70)
Expressing thoughts or opinions clearly	53 (22, 71)
Following others when they speak in conversation	50 (21, 73)
Applying different approaches to one problem	38 (18, 56)
Initiating activities, tasks, or independent ideas	34 (18, 63)

Meaningful Discussion Topics

- Neuroscience of LD/AD[1]

Controls 2-back [on-off]   Dyslexics 2-back [on-off]
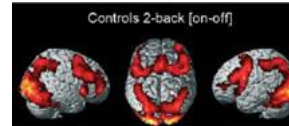
- Cognitive Styles Common to LD/AD[2,3]

  1. Big Picture Thinking (Interconnected Reasoning)
  2. Dynamic Reasoning
  3. Narrative Reasoning
  4. 3-Dimensional Spatial Reasoning
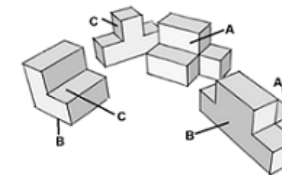
- Sharing experiences and strategies
  - Symptom contextualization within their everyday life experiences
  - Group problem solving/brain storming for coping & compensatory strategies
  - **Wanted more anticipatory guidance

1. Beneventi et al., Int J Neurisci, 2010
2. Eide, B. L., Eide, F. F. (2011) The Dyslexic Advantate Unlocking the Hidden Potential of the Dyslexic Brain. Plume: New York.
3. http://www.dyslexicadvantage.org/mind-strengths-in-dyslexia-what-are-they/

Undergraduate's Perceptions of Strategies for Self-Advocacy

Mastery of Experiences

Fall 2013	Spring 2014
Not efficient	Make lists of even simple things
Do things too fast	Take breaks
Misplace things	Keep track
Can't concentrate	Focus on what I am good at
Can't multi-task	Use a planner
Procrastinate	Finish easy things first
Can't comprehend	Read aloud

Social Persuasion

Fall 2013	Spring 2014
People don't understand	Provide education
Can't express myself	Practice speaking
Don't raise my hand	Ask questions
Don't like to talk about it	Talk to professors
Disrespectful	Be positive
People can't identify	Show them how our brains work
Shut down	Don't be afraid

- Themes of students' initial perception of mastery of experiences and social persuasion trended from problem statements to strategies for improved performance.

Select Personal Level Measures

Shapiro-Wilk & Wilcoxon Signed Ranks test

- Baseline and after two semesters
- Online survey administration

Medians and Ranks

Instrument (*n* Available for Analysis)	Score Difference (test statistic, *probability)*	Baseline Total Score	2nd Semester Total Score	*n* Positive Difference	*n* Negative Difference
ABCS* (39)	6 ($z = -.170$, ***p = .03***)	87	95	24	15
IIS† (38)	8 ($z = -3.677$, ***p < .001***)	101	116	29	9

Note: higher scores desirable

*ABCS = Academic Behavioral Confidence Scale

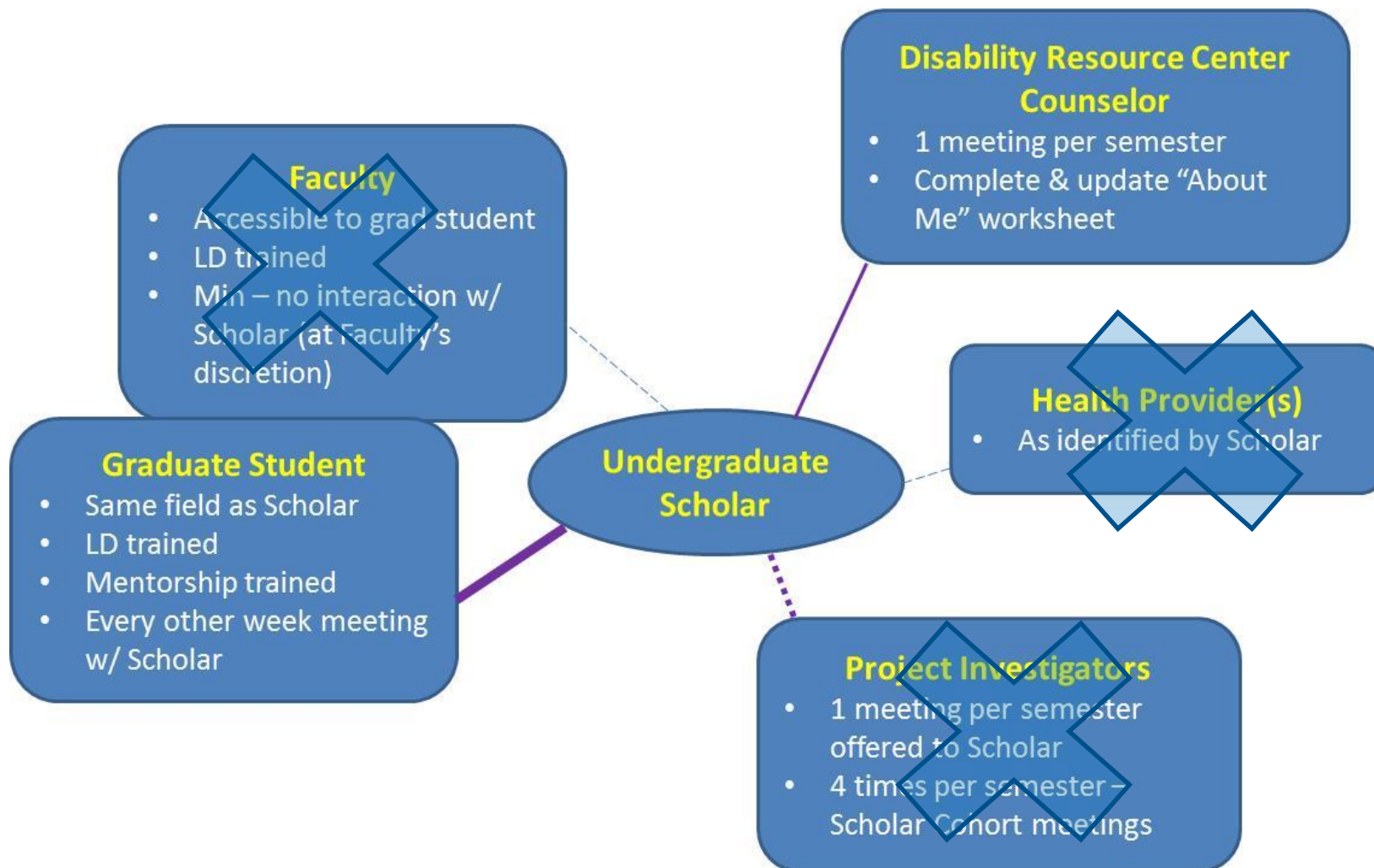†IIS = Institutional Integration Scale
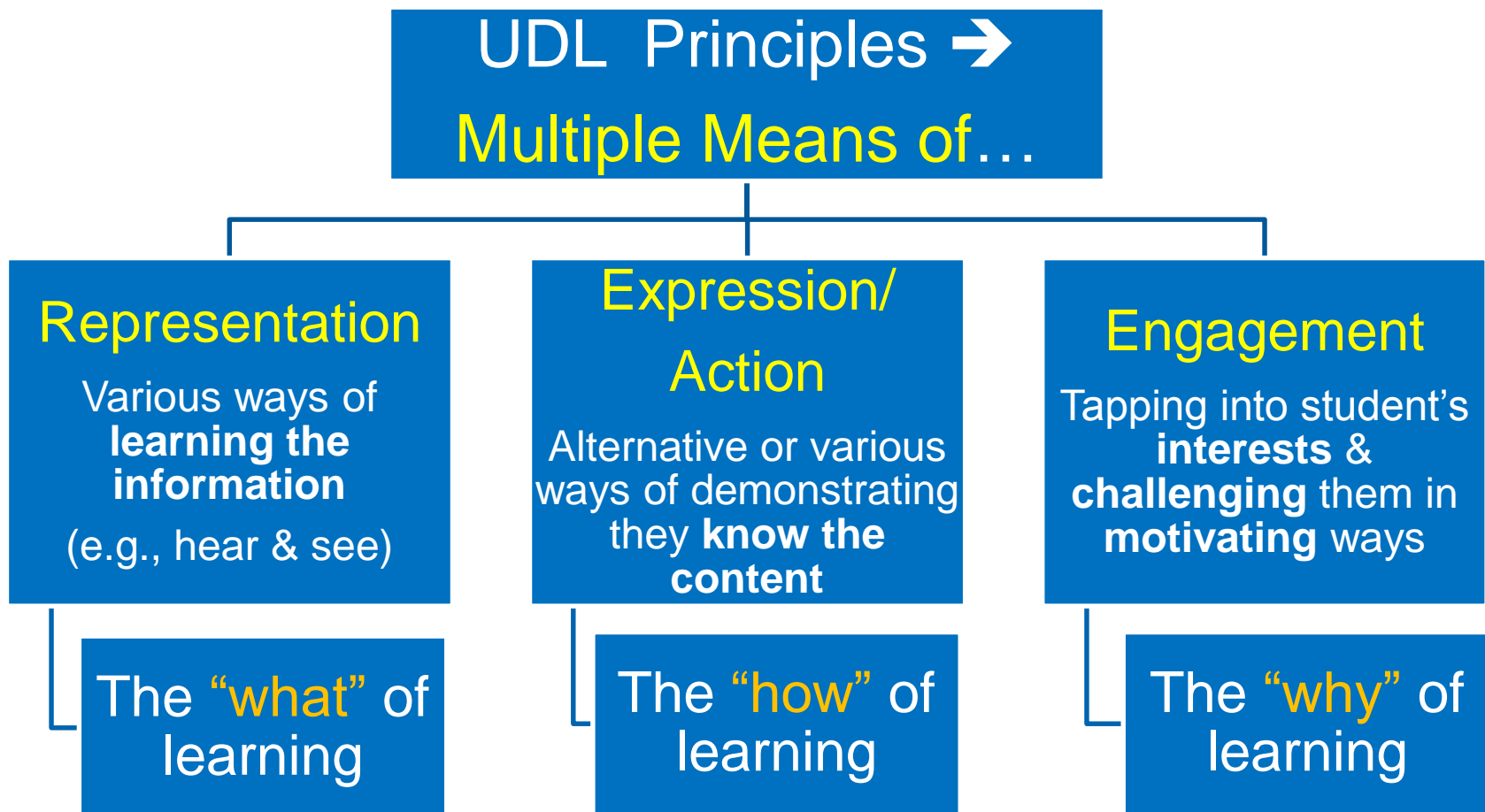
1. Cohort – others like them

Raising Awareness About LD

1. Mentors
2. Instructors
3. Academic Advisors
4. Student Service Providers
   - Tutoring Center, Writing Center, Student Health
5. Classmates

ENVIRONMENT

1) Mentorship

Faculty
- Accessible to grad student
- LD trained
- Min – no interaction w/ Scholar (at Faculty's discretion)

Graduate Student
- Same field as Scholar
- LD trained
- Mentorship trained
- Every other week meeting w/ Scholar

Undergraduate Scholar

Disability Resource Center Counselor
- 1 meeting per semester
- Complete & update "About Me" worksheet

Health Provider(s)
- As identified by Scholar

Project Investigators
- 1 meeting per semester offered to Scholar
- 4 times per semester – Scholar Cohort meetings

2) Instructors - What is UDL?

UDL Principles ➔

Multiple Means of…

Representation

Various ways of **learning the information**

(e.g., hear & see)

The "what" of learning

Expression/ Action

Alternative or various ways of demonstrating they **know the content**

The "how" of learning

Engagement

Tapping into student's **interests** & **challenging** them in **motivating** ways

The "why" of learning

Multiple means of **<u>representation</u>**: The "what" of learning

- "can you explain this in a different way?"

- "Recapping at the end of class…"
  - "…just a real quick recap"

- "..he just talks, I draw what he says."

- "leave it on the board just a little bit longer"
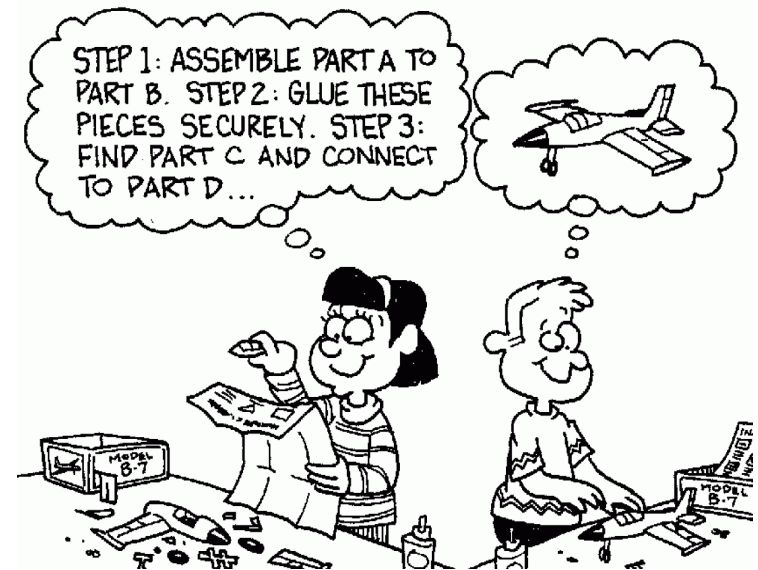
Multiple means of **<u>expression</u>**:
The "how" of learning

- "Please bear with me…It takes me longer to understand"

  - "Studying takes longer, taking my exams takes longer…"

- "Clear directions, in the right order…and all parts of the instructions in one place"

- "…looking around when I took my tests and getting accused of cheating when I wasn't. I need a small testing environment…"

Multiple means of **<u>engagement</u>**: The "why" of learning

- *"…not a copout or an excuse"*
- *"I thought I wasn't good enough for UF"*
- *"I tended to just blame it on myself for being stupid"*

- *"I never procrastinate. I don't trust myself. I do it early."*
  - Course calendar very important

3) Academic Advisors – Course Counselors

- Temporal Sequencing

- Poor time management
  - Strategic class/instructor selection

- Visual learning
  - Visual Rubric
  - Course mapped out visually instead of with language

SALIENT TASKS

College student role

Self-advocacy

LD Impacts Related to Stages of Information Processing

Stage	Academic Impacts	Social Impacts
Input Perception	Difficulty **Reading or Listening to Lectures**	Difficulty **Perceiving Social Nuances & Subtle Communication**
Integration Processing & Storage	Difficulty **Applying Concepts & Remembering Details for Tests**	Difficulty **Keeping-Up with Complex Social Interactions & Social Details** (e.g., Names, Times)
Actions Responding to Information	Difficulty **Explaining Verbally or in Writing**	Difficulty with **Appropriate Social Responsiveness**

Diagnoses such as **Dyslexia, Dyscalculia, Dysgraphia, Auditory Processing Disorder**

Tasks – College Student Role

Social Impacts

Difficulty **Perceiving Social Nuances & Subtle Communication**

Difficulty **Keeping-Up with Complex Social Interactions & Social Details** (e.g., Names, Times)

Difficulty with **Appropriate Social Responsiveness**

Garnering supports and
Creating, deploying & adjusting strategies

Professional Role Performance	**Inter-personal Performance**	**Daily Life Performance**
• Understanding the culture/fit	• Awareness – communication, impulsivity	• Managing stress & anxiety
• "Future" planning	• Blurting things out → working memory	• Creating & managing daily, weekly & semester calendar
• Contributing to & staying on point during team discussions	• Finding friends who understand	• Healthy routines – sleep, diet
• Walking others through their "different" reasoning style	• Finding friends to assist with symptom management	• Preventing symptoms/antic ipating

Advocacy in Action: Concerns

- Academic Misunderstanding
  - "…you're just playing the disability card… oh you're just not trying hard enough and I'm trying, like a lot"

- Different Learning Styles
  - "…no one knows how hard it is to accommodate me having a learning disability because we all learn in different ways"

- Health/Wellness
  - "ADHD can contribute… and that of course affects my overall health…without consistent medication and then when I'm down I don't want to exercise."

Project Themes:

1. "living with LD"
2. "overcoming an LD"
3. "advantages to LD"
4. The campus Disability Resource Center
5. "seeking help for LD"
6. accommodations
7. "being judged for having LD"

Overt Advocacy

LD Awareness Project Engagement	($n = $ 52 undergrads)
≥ 1 product	69%
≥ 2 products	58%
More products than required	10%

Most Frequently Included Topics	($n = $ 104 products)
LD/ADHD experiences	52%
Explaining LD/ADHD	35%
Pros and Cons	27%
Strategies	27%

Disability Identity Development (Gibson, 2006) Awareness > Realization > Acceptance ($n = $ 30 undergraduates)	
22 (73%) topic shift in positive directions	

Bob's Story – Living with LD
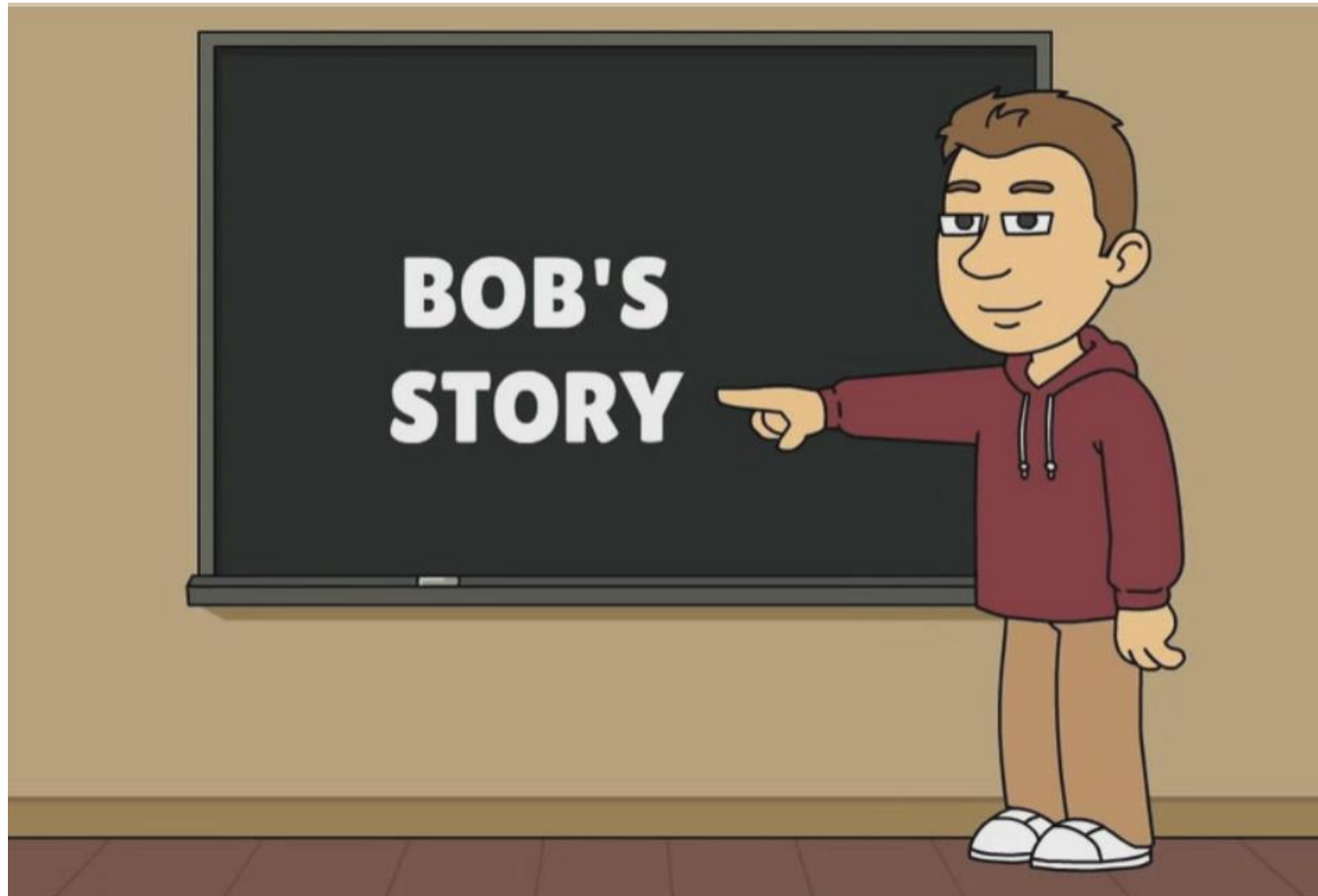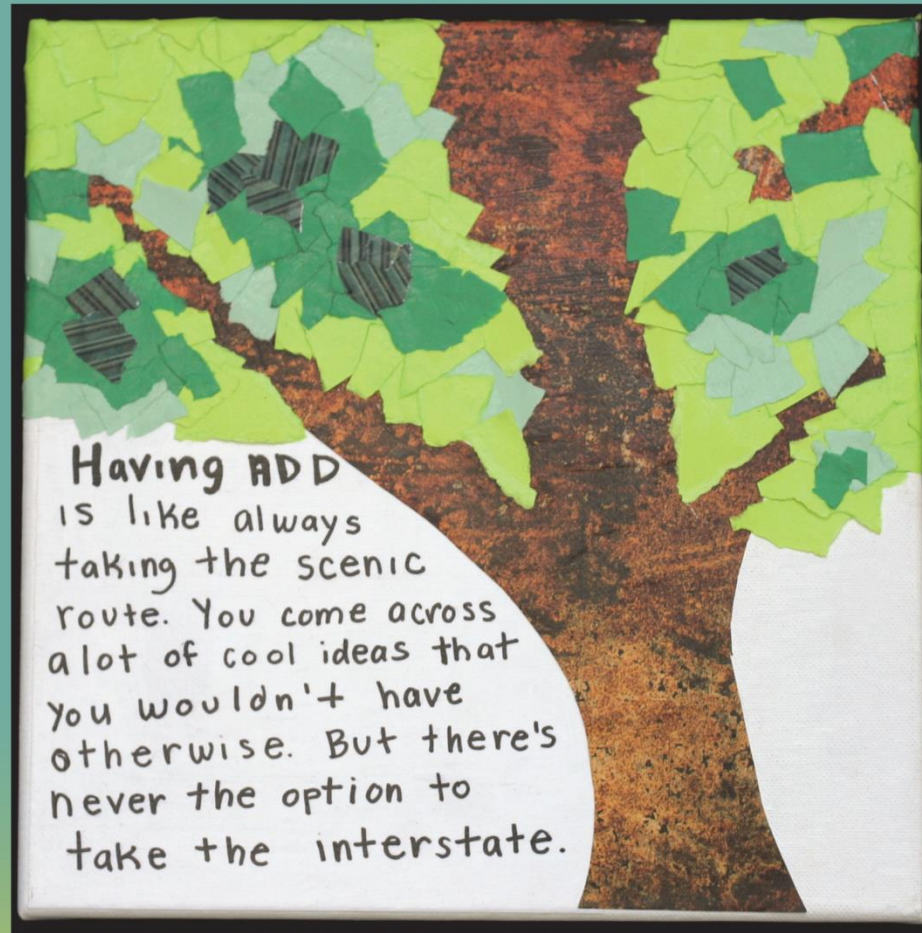
The Scenic Route

"Having ADD is like always taking the scenic route. You come across a lot of cool ideas that you wouldn't have otherwise, but there's never the option to take the interstate."

– Artist with a learning disability
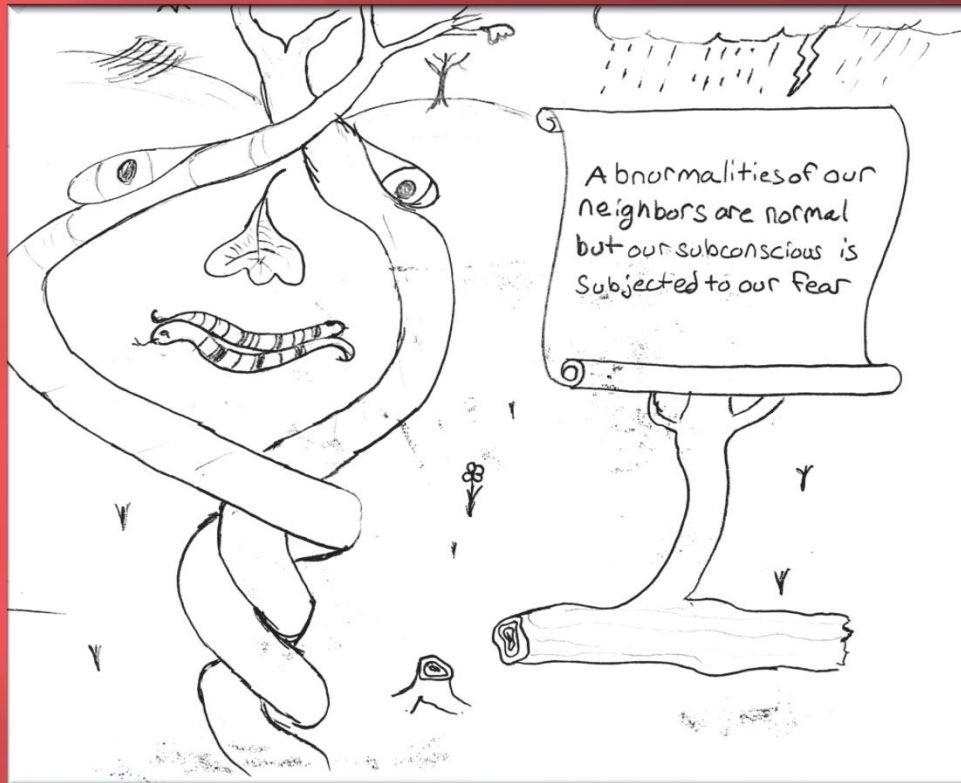
Normality

"When we see each other, we should realize that there is something different in all of us. We should not fear the difference. We should embrace it, and educate others so that there will be no difference."

– Artist with a learning disability

Advantages

- Most people who have ADHD have tons of energy. This can be good because they can put this energy into playing games and playing sports.

- Having ADHD also lets you focus really well on things you love, this means that you could be better at picking up details that other people would miss.

- Thinking outside the box is also something that people with ADHD are good at. You are able to look at problems differently and find new ways to fix them because your brain works differently.

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ADHD is a common brain disorder that causes the brain to work differently than the average persons' brain.

ADHD Success for Kids

Quotes From Famous Individuals with Learning Challenges:

"Continuous effort- not strength or intelligence – is the key to unlocking your potential."
Winston Churchill

"All the adversity I've had in my life all my troubles and obstacles, have strengthened me…."
Walt Disney

"I have not failed, I've just found 10,000 ways that don't work."
Thomas Edison

Questions?

Who to Contact:

If you have any questions or concerns regarding learning disabilities and services available you can contact the University of Florida's Disability Resource Center (DRC)

Website: https://www.dso.ufl.edu/drc/

Phone Number: (352)-392-8565

Address: 001 Reid Hall
PO Box 114085
1316 Museum Rd
Gainesville, FL 32611

Learning Disabilities at the University Level

UF UNIVERSITY of FLORIDA

Everyday Advocacy

| Everyday Advocacy				
Strategies		**Forced Advocacy**	**Confidence**	
Time Management	Health & Wellness	Accommodation	CS3LD Project	
Symptom Awareness & Understanding		Threats to Sense of Supports	Personal Strengths Self-Awareness	
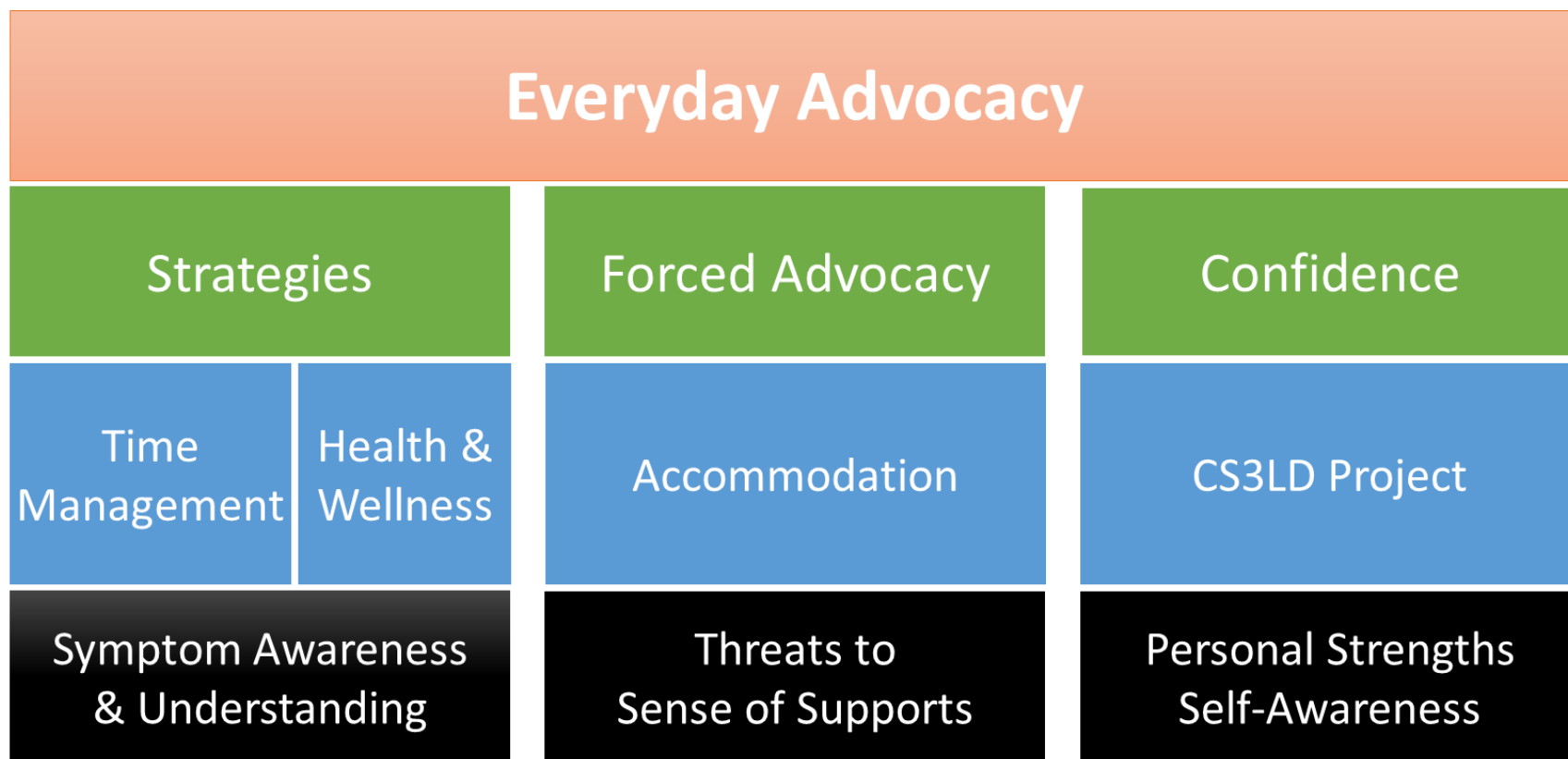
Discussion & Conclusion

What this research adds:

1. Role expectations & needs regarding
   - Developmental transition to adulthood via college pathway
   - LD chronic condition self-management

2. Implementation test of Bandura's social cognitive theory
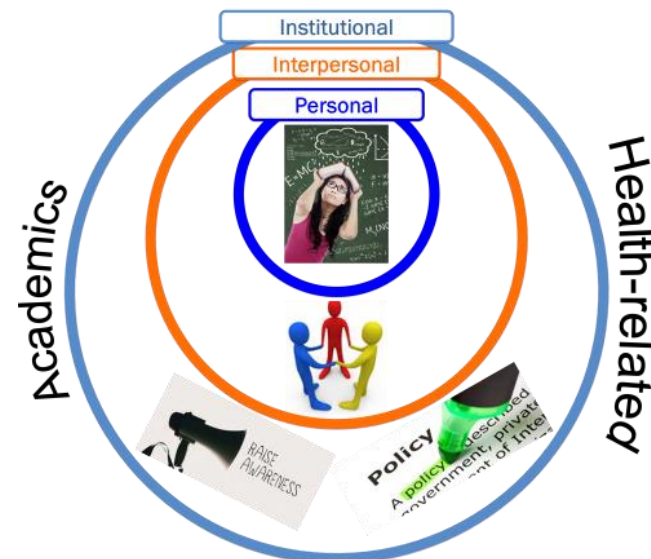
Immediate next steps:

1. Systems approach intervention >> Individual client-centered intervention
2. Toolkits

Research Questions

- Who needs individualized vs. generalized program?
  - What is this person's clinical (bio-psycho) and environ. profile?

- What are the strategies that people use?
  - Within what contexts? What are the overarching strategies? What is the process for self-tailoring strategies? How do strategies impact role performance in social contexts?

- How do the strategies impact the symptoms?

- Are there bio-physiological predictors of strategy generalization? Cognitive functioning? HRV?
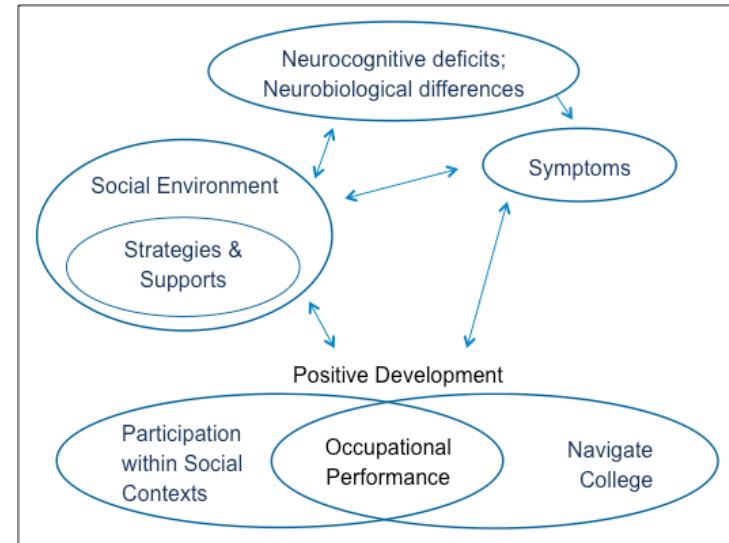
CS3LD Team – it takes a village…

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- CY Wu, PhD, Environmental Engineering Sciences
- Charles Byrd, PhD, Center for Assessment, Strategic Planning, Evaluation and Research
- Anthony DeSantis, PhD, Associate Dean of Students
- Beth Roland, M.A. C.A.G.S., Disability Resource Center
- Mei-Fang Lan, PhD, Counseling & Wellness Center
- William Mann, PhD, OTR/L; Anthony Delisle, PhD; Jim Gorske, MEd