

Exploring The Efficacy of Integrated Inquiry for Doctoral Students: A Training Program Designed to Reduce Stress and Anxiety and Increase Critical Thinking Dispositions

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NAGAP Annual Conference

PROBLEM STATEMENT

Stress & Anxiety

- Competes for cognitive resources
- Pulls from structures/networks localized for executive functioning
- Limits higher order thinking and academic achievement

Critical thinking

- Not improving in 2- and 4-year graduates (Arum & Roksa, 2011)
- Not improving in pharmacy students (Cisneros, 2009)

Little is known about graduate education success

- Persistence to graduation
- Employer expectations
- Critical Thinking

PURPOSE STATEMENT

Bresciani, et al. (In Press) - Integrative Inquiry

- Replicate and extend
- Doctoral student population
- Multi-method approach

Reduce Stress & Anxiety

Improve Critical Thinking

Persistence & Academic Achievement

SIGNIFICANCE OF STUDY

Integrative Inquiry

- Further explore the parameters of its effectiveness
- Refine and guide the training program's development

Graduate Education Literature

- Expand information on critical thinking, stress, anxiety
- Recommend practices to guide future decisions

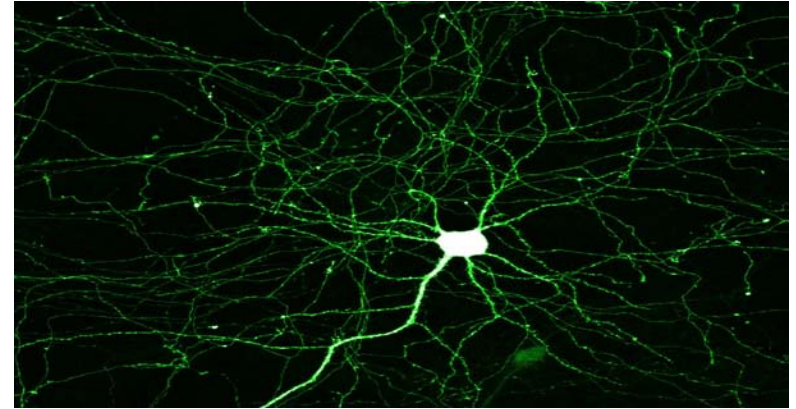
Higher Education Neuroadministration

- Contribute to an emerging field between neuroscience and higher education administration

LITERATURE REVIEW

The Brain has...

- 90 Million Neurons
- 100 Million Synapses

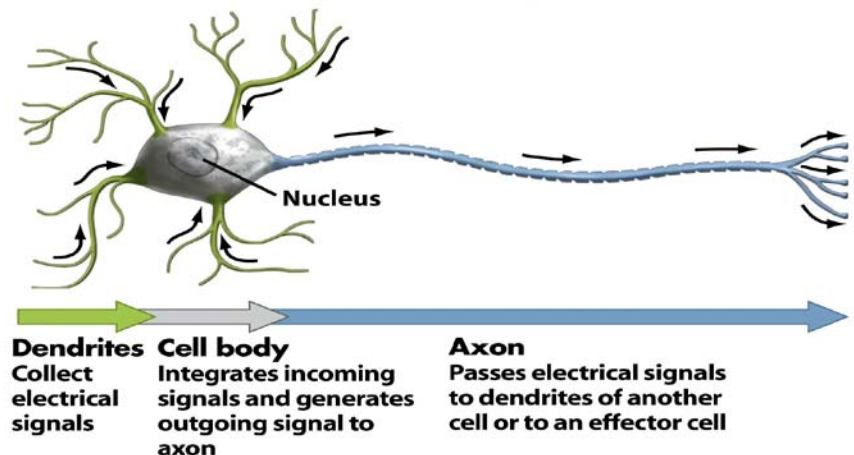


The Brain has the ability to...

- Give birth new neurons in a single day
- Generate and alter connections between neurons through a single experience

Anatomical Divisions of the Brain

- Traditional
- Connectionism

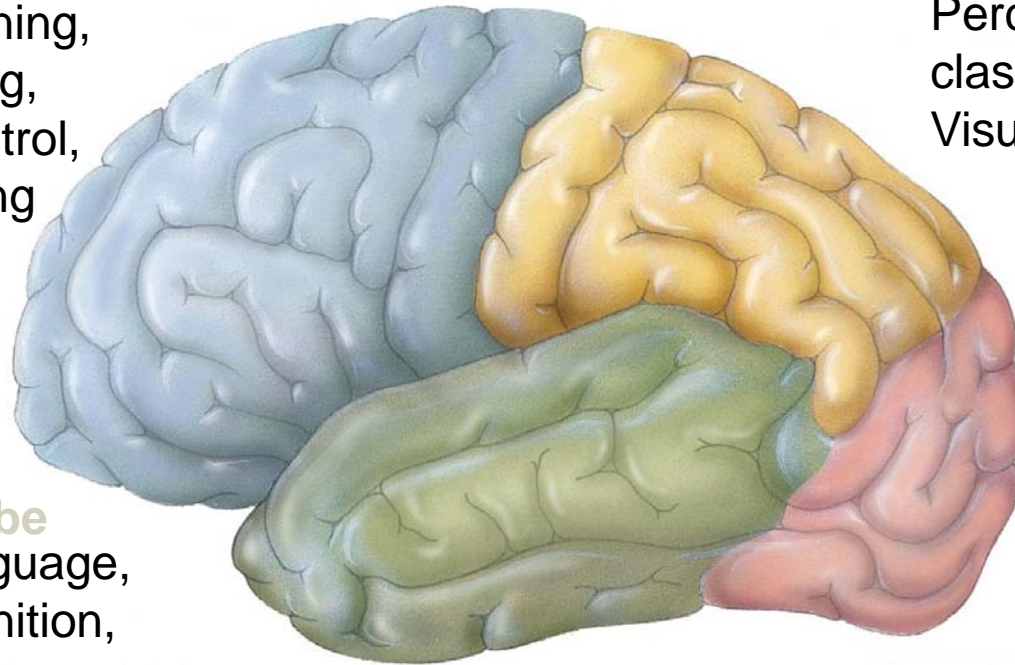


LITERATURE REVIEW

Frontal Lobe

Executive functions:
Thinking, planning,
problem solving,
behavioral control,
decision-making

Cerebral Cortex



Parietal Lobe

Perception, Object
classification, Spelling,
Visuospatial processing

Temporal Lobe

Memory, Language,
Facial Recognition,
Hearing, Vision,
Speech, Emotion

Occipital Lobe
Vision

LITERATURE REVIEW

Limbic System

Hippocampus

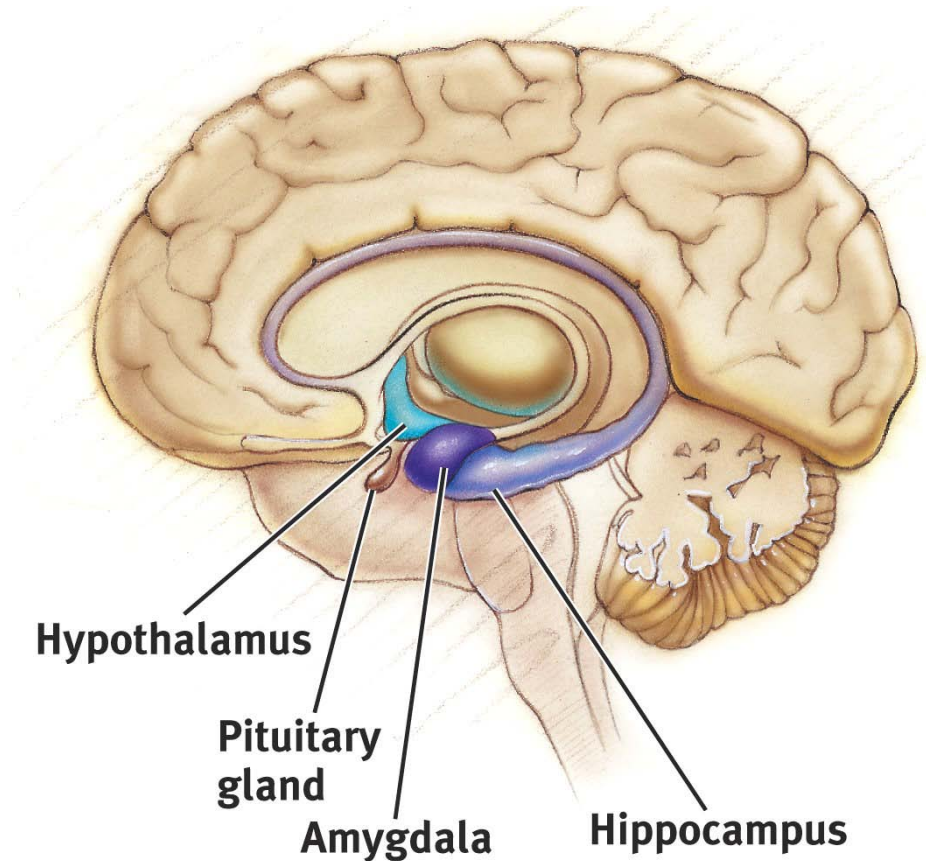
- Memory Processing

Amygdala

- Fight and Flight (Stress)

Hypothalamus

- Integrates information
- 4 F's
 - Fleeting
 - Fighting
 - Feeding
 - Fornicating



LITERATURE REVIEW

Attention, Emotion, Cognitive Regulation

- Decrease Stress & Anxiety
- Increases attention
- Better decision making
- Changes cognitive perspective

Self-Authorship

- Individuals who are able to self-author display similar competencies to those demanded by employers

Critical Thinking

LITERATURE REVIEW

If Integrative Inquiry can...

Decrease

- Stress
- Anxiety

Increase

- Critical thinking dispositions
- Behavioral regulation

Then students will be better able to...

- Manage stress and anxiety
- Make better decisions that are aligned with their intentions
- Engage meaningfully in opportunities that promote student learning and development

RESEARCH QUESTIONS

1. How do the quantitative findings of this study **compare** to the quantitative findings of undergraduate and graduate students?
2. Did the learning artifacts that were produced **reveal, explain, support or contradict** the researchers' hypotheses or reveal other learning?

HYPOTHESIS 1

Doctoral students will report **lower** levels of **stress and anxiety** upon completing INIQ as measured by the Perceived Stress Scale and Beck Anxiety Index.

HYPOTHESIS 2

Doctoral students will report **higher levels**, as measured by the Five Facet Mindfulness Questionnaire, of:

- **observing,**
- **describing,**
- **acting with awareness,**
- **non-judging of inner experience,**
- **non-reactivity to inner experience,** and
- **mindfulness.**

If certain constructs of the FFMQ can be heightened, it will be assumed that students were able to engage in **attention regulation, emotion regulation,** and **cognitive regulation.**

HYPOTHESIS 3

Doctoral students will **increase**, as measured by the California Critical Thinking Disposition Inventory (CCTDI), in

- **truth-seeking,**
- **open-mindedness,**
- **analyticity,**
- **systematicity,**
- **confidence in reasoning,**
- **inquisitiveness, and**
- **maturity of judgment**

SITE & SUBJECT SELECTION

Public, non-profit, university

- Educational Leadership (Ed.D) Program
- First semester doctoral students
- Participants all enrolled in the same course
- Dr. Bresciani (course developer) instructed required course
- INIQ was integrated into the course requirements
- IRB Approval

Demographics (n = 12)

- Gender (3 Male, 9 Female)
- Race (5 Caucasian, 3 Hispanic, 3 Multi-Racial, 1 African-American)
- Age (M = 42, SD = 9.2, LL = 30, UL = 60, Med = 40)

METHODOLOGY

Pre / Post Design

Multi-method design

Quantitative (dependent t-test's)

- Stress & Anxiety
- Attention regulation, Emotion regulation, Cognitive regulation
- Critical thinking dispositions
 - Truth-seeking
 - Open-mindedness
 - Analyticity
 - Systematicity
 - Confidence in reasoning
 - Inquisitiveness
 - Maturity of judgment

Qualitative

- Document analysis of journals
- Check the validity of critical thinking dispositions
- Identify other student learning

DATA COLLECTION

Inventories

- IRB Consent Form
- Perceived Stress Scale
- Beck Anxiety Index
- Five-Facet Mindfulness Questionnaire
- California Critical Thinking Disposition Inventory

Assessment Packets (Self-Report)

- Pre-Assessment, Week 1
 - Consent forms & Demographics
- Post-Assessment, Week 16
 - Journal articles pulled from website

QUANTITATIVE ANALYSIS

Dependent t-test

- Compare pre- and post- means on all inventories
- Effect sizes calculated for reported significant differences
- Bonferroni correction

QUALITATIVE ANALYSIS

Document Analysis

- Weekly Reflective Journal Entries
 - Average of 27 per student
 - Median of 16
 - Range 7 – 47 entries

Methodology

- All entries read three times
 - Determine parameters
 - Critical thinking characterized by CCTDI
 - Assessed critical thinking from an entry in the beginning and end of the training program

KEY FINDINGS

Stress and Anxiety

- Unable to assess stress
- No significant difference in anxiety

Attention, Emotion, and Cognitive Regulation

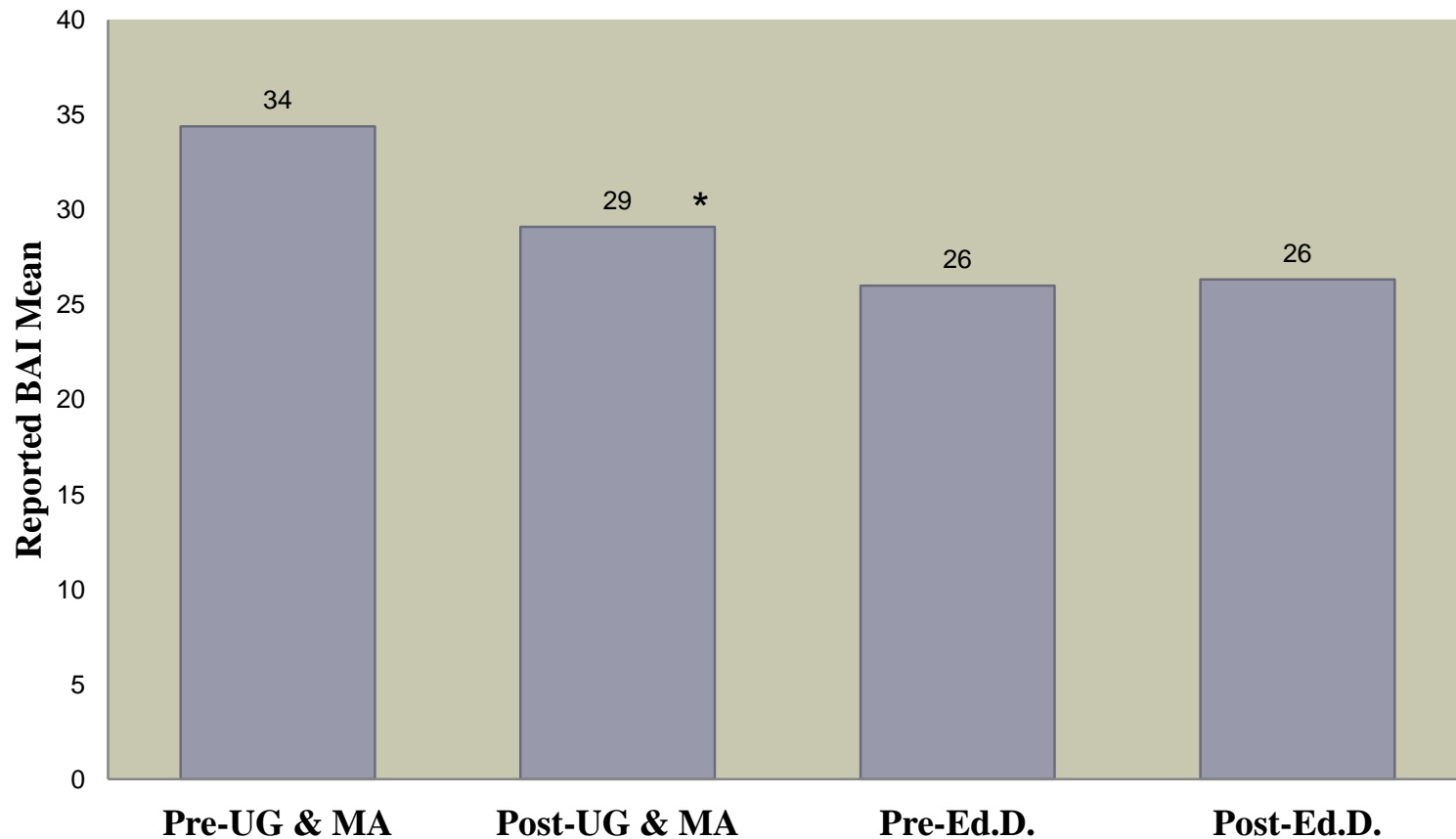
- Improvement on FFMQ and all subscales except Observing and Non-Reactivity of Inner Experience
- Concluding, students exhibited trait-behavioral regulation

Critical Thinking Dispositions

- No significant increases in any dispositions
- Pre-assessment levels were “strong” indicating above average
- The CCTDI is not a good tool for doctoral students

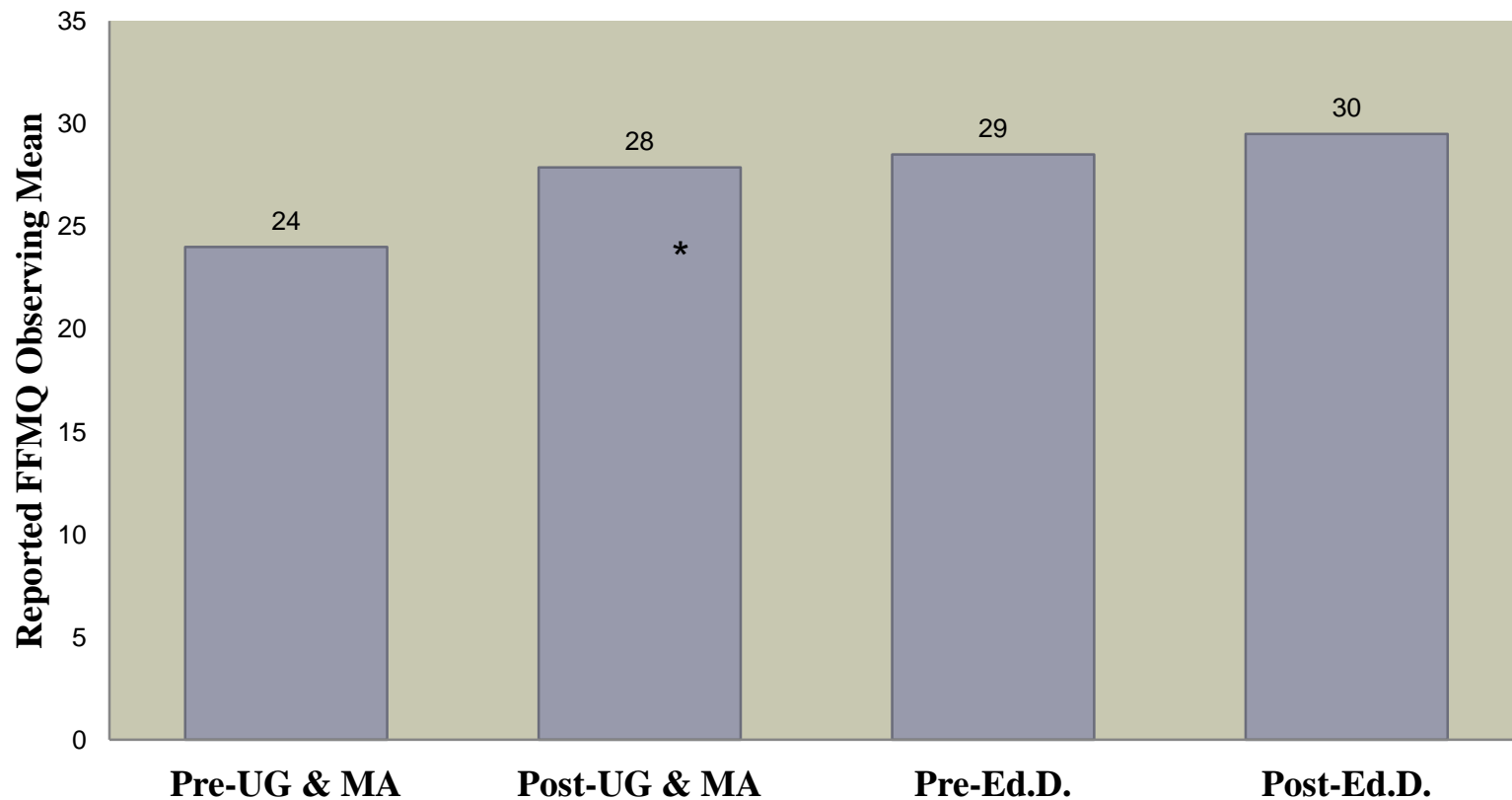
DISCUSSION FINDING 1: ANXIETY

Levels of Anxiety Pre-Post Integrative Inquiry



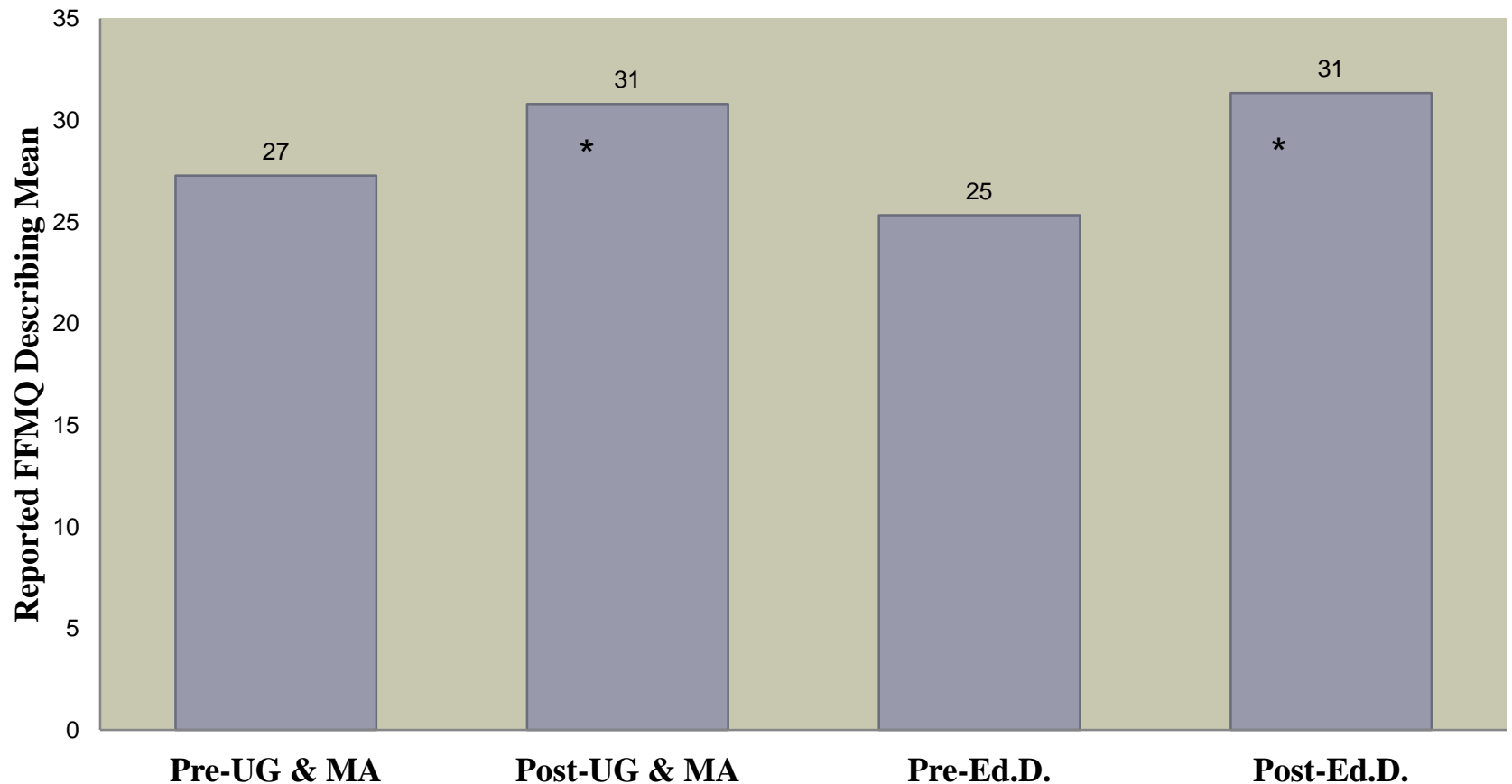
DISCUSSION FINDING 2: ATTENTION REGULATION

Levels of Attention Regulation Pre-Post Integrative Inquiry



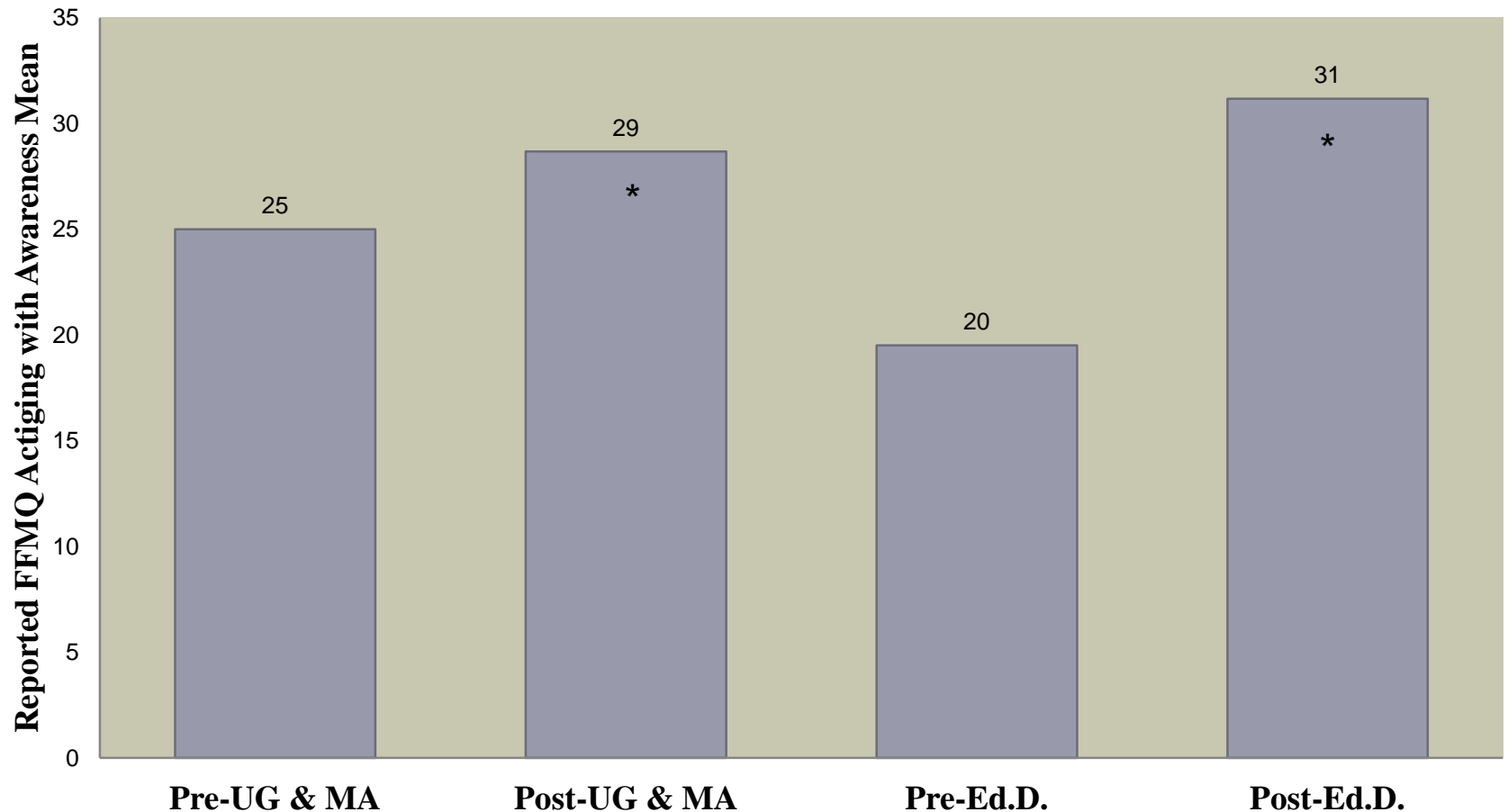
DISCUSSION FINDING 2: EMOTION REGULATION

Levels of Emotion Regulation (Describing) Pre-Post Integrative Inquiry



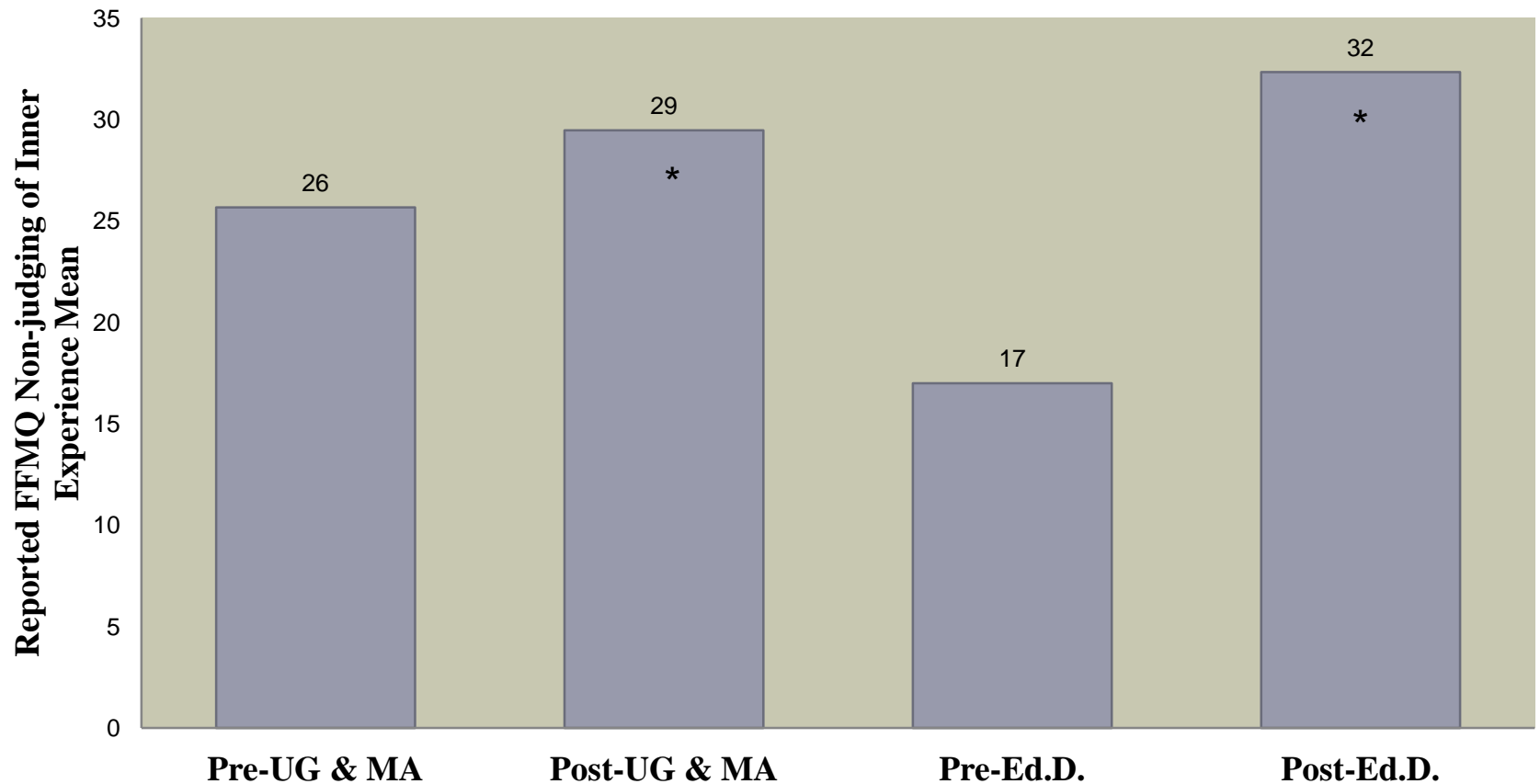
DISCUSSION FINDING 2: EMOTION REGULATION

Levels of Emotion Regulation (Acting with Awareness) Pre-Post Integrative Inquiry



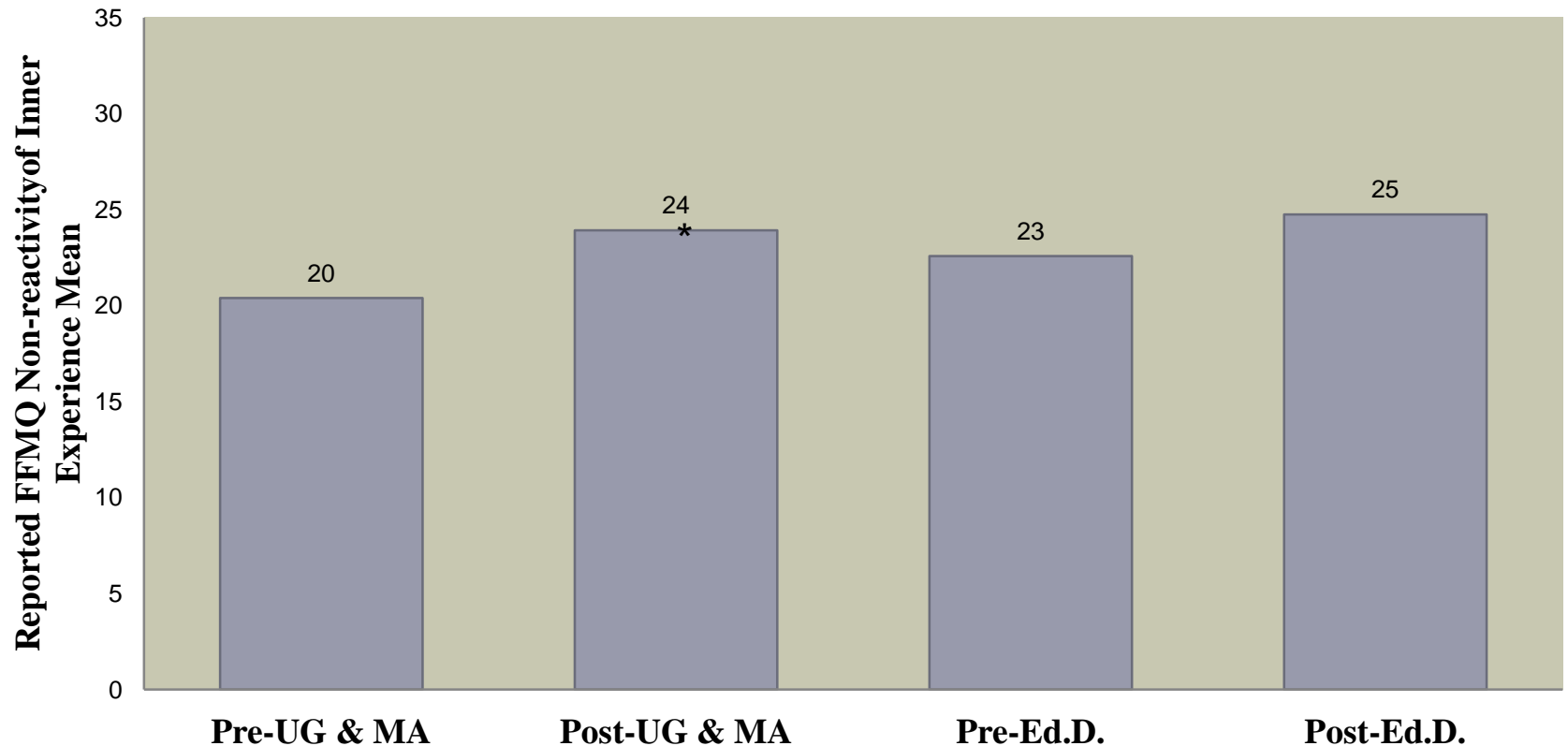
DISCUSSION FINDING 2: EMOTION REGULATION

Levels of Emotion Regulation (Non-judging of Inner Experience) Pre-Post Integrative Inquiry



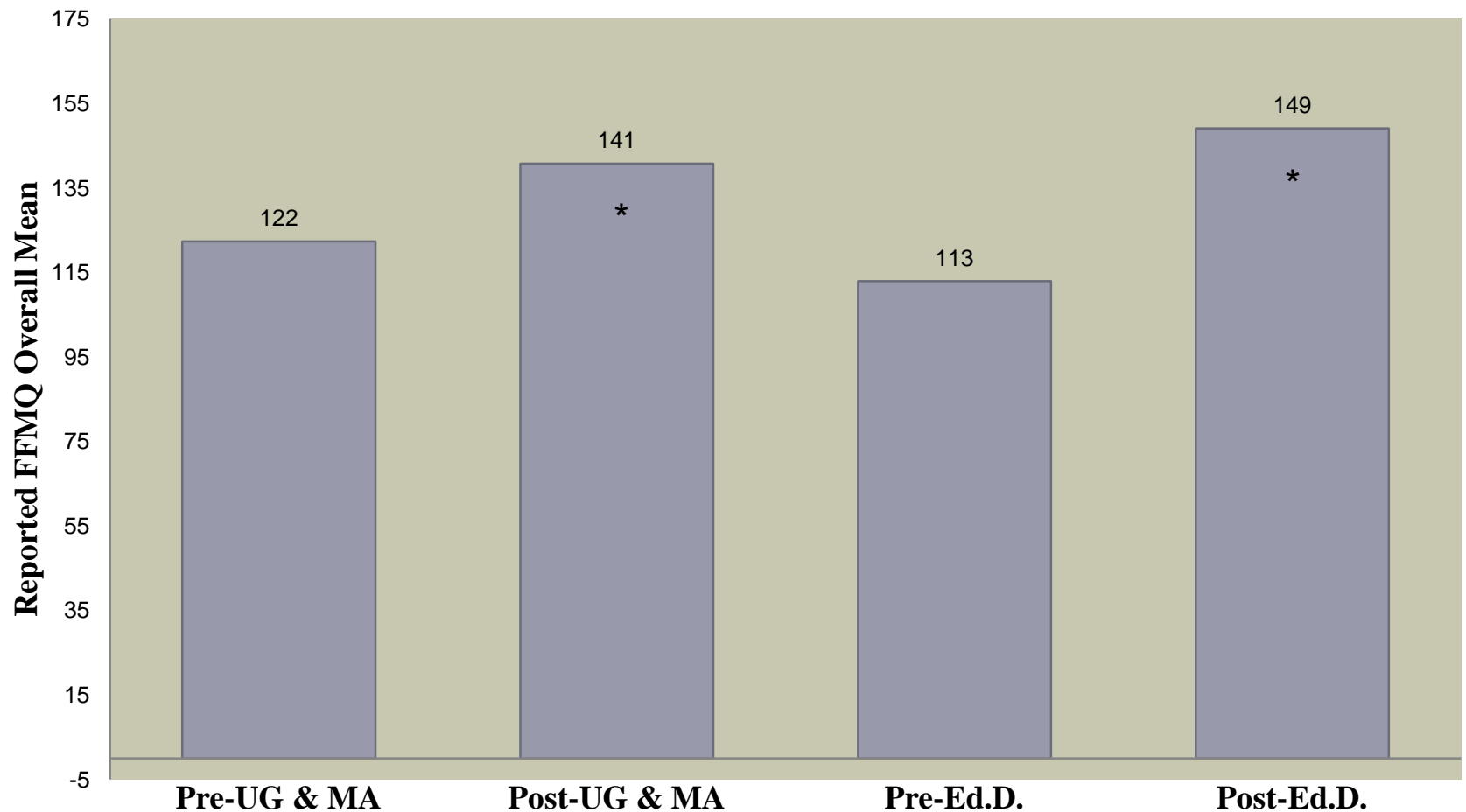
DISCUSSION FINDING 2: EMOTION REGULATION

Levels of Emotion Regulation (Non-reactivity of Inner Experience) Pre-Post Integrative Inquiry



DISCUSSION FINDING 2: EMOTION REGULATION

Levels of Cognitive Regulation Pre-Post Integrative Inquiry



DISCUSSION

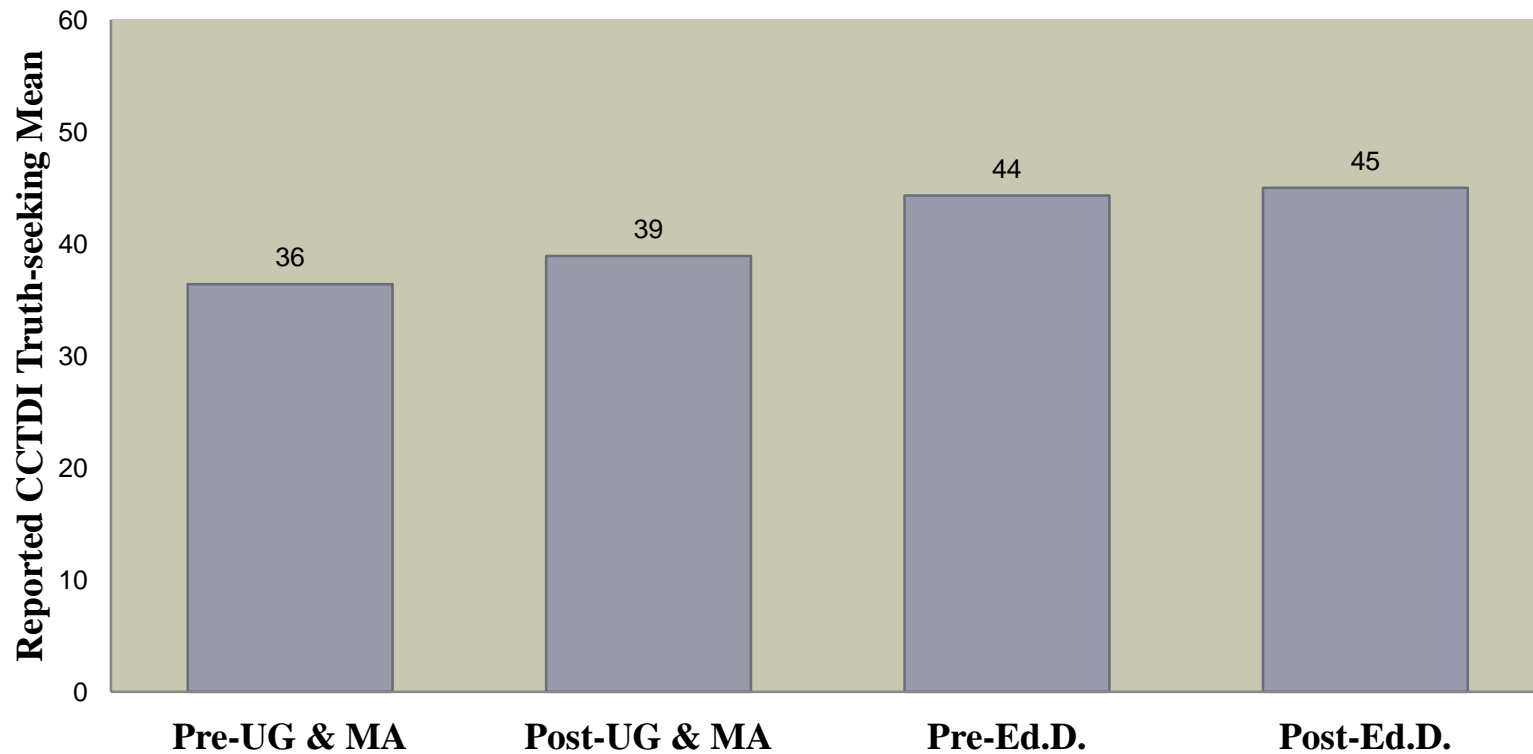
FINDING 2: AR, ER, CR

Interpretation

- INIQ effectively trained trait-level emotion and cognitive regulation despite one subscales not reaching significance.
- However, on the subscales that did not reach significance, the reported mean mirrored post-means reported in Bresciani, et. al. (In Press) which suggests students were engaging in the strategies prior to engaging in INIQ.

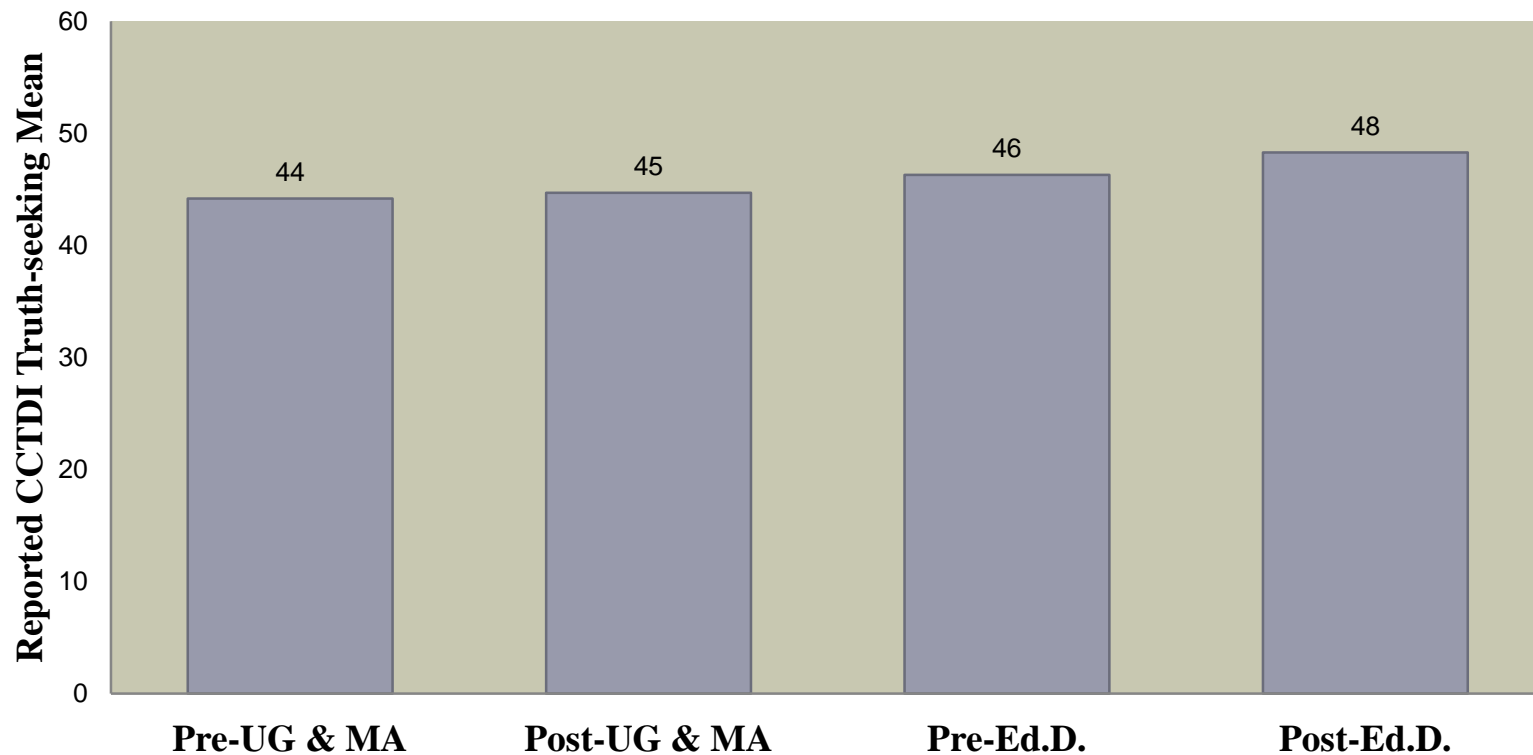
DISCUSSION FINDING 3: CRITICAL THINKING

Critical Thinking Truth-seeking Disposition Pre-Post Integrative Inquiry



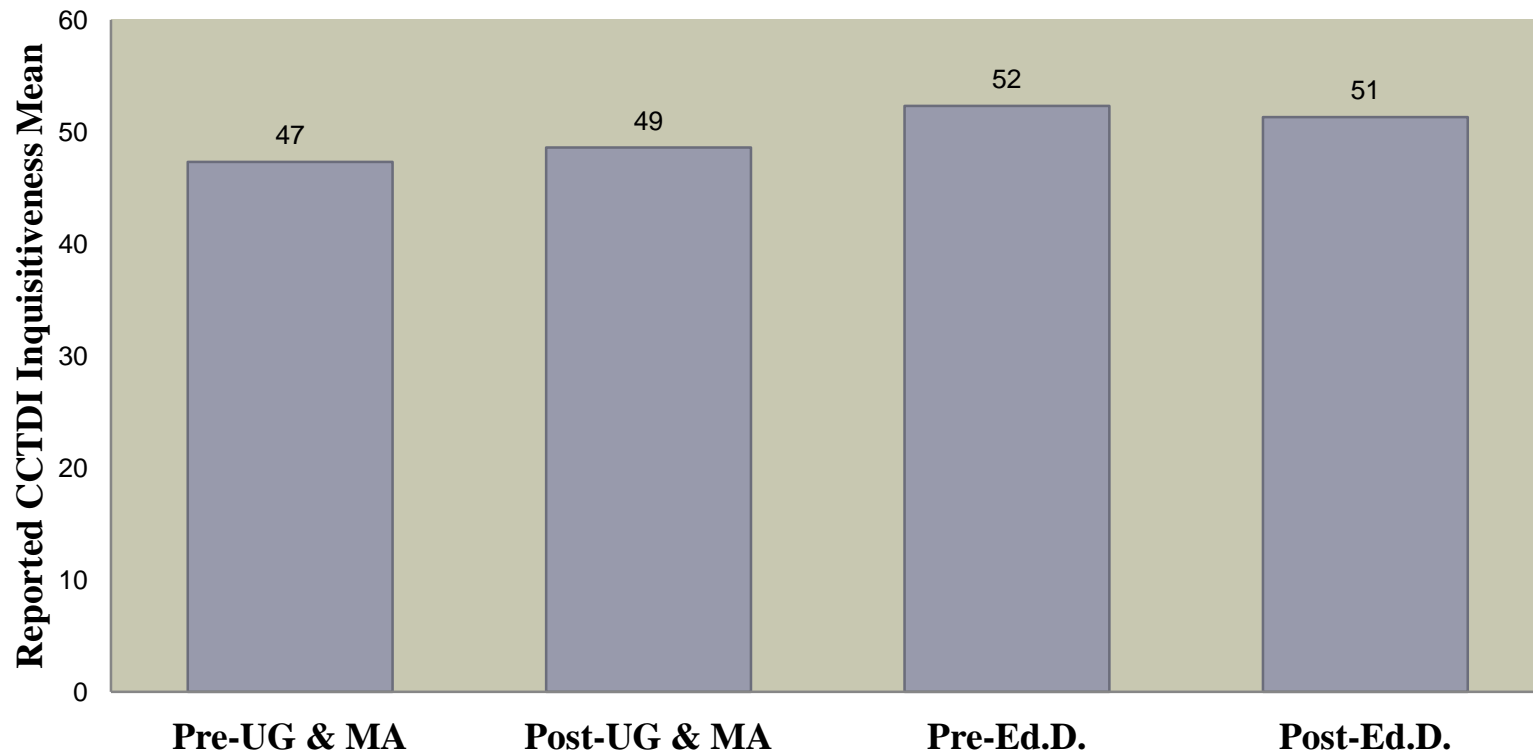
DISCUSSION FINDING 3: CRITICAL THINKING

Critical Thinking Open-mindedness Disposition Pre-Post Integrative Inquiry



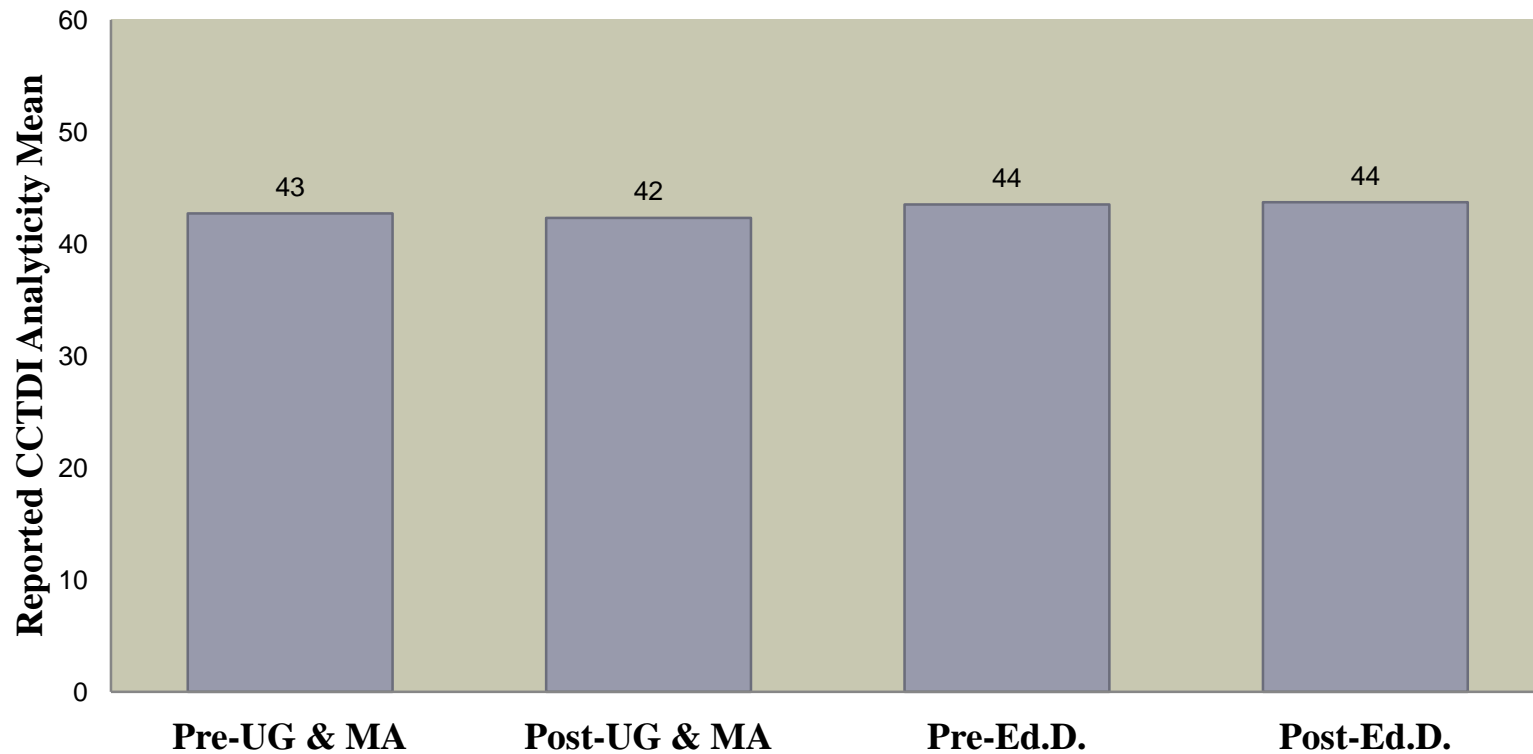
DISCUSSION FINDING 3: CRITICAL THINKING

Critical Thinking Inquisitiveness Disposition Pre-Post Integrative Inquiry



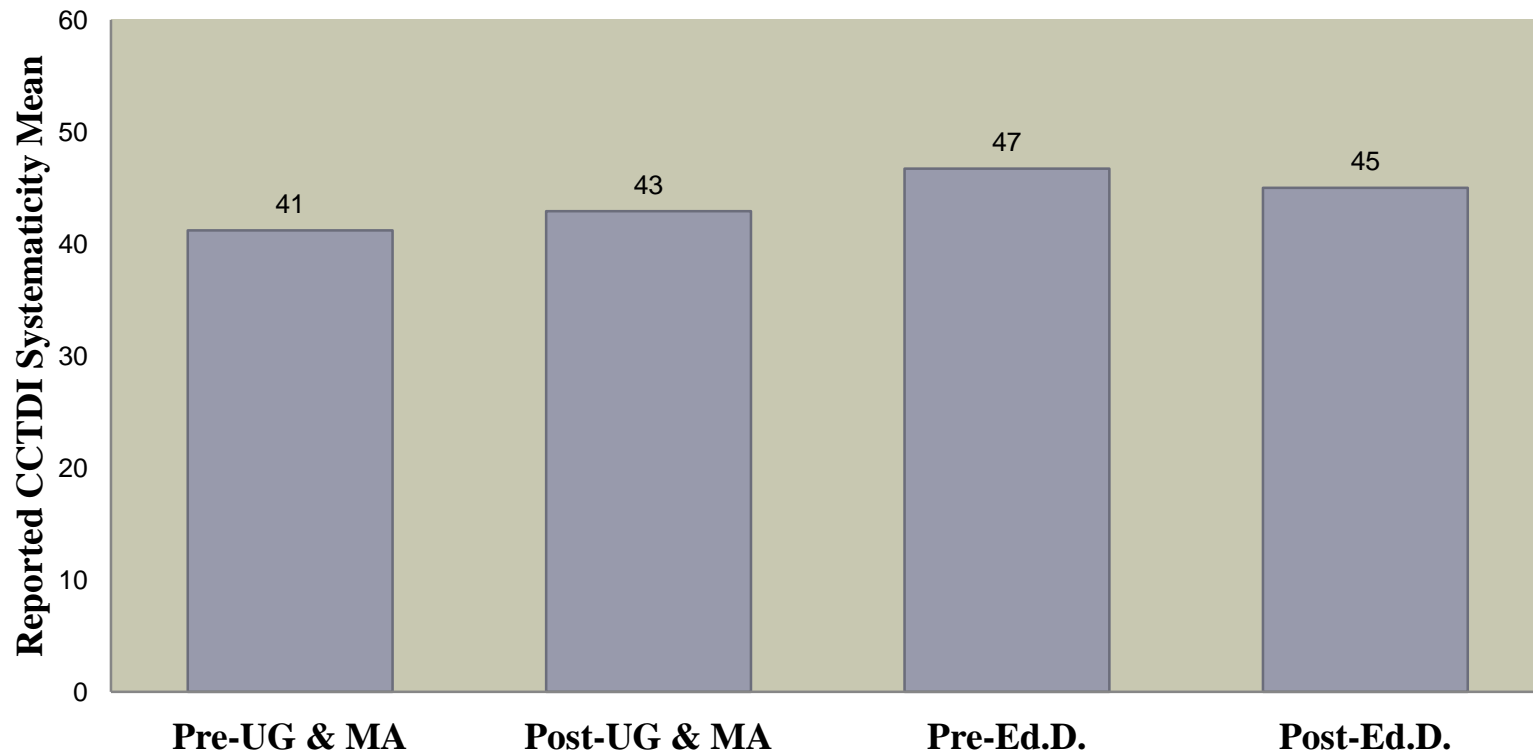
DISCUSSION FINDING 3: CRITICAL THINKING

Critical Thinking Analyticity Disposition Pre-Post Integrative Inquiry



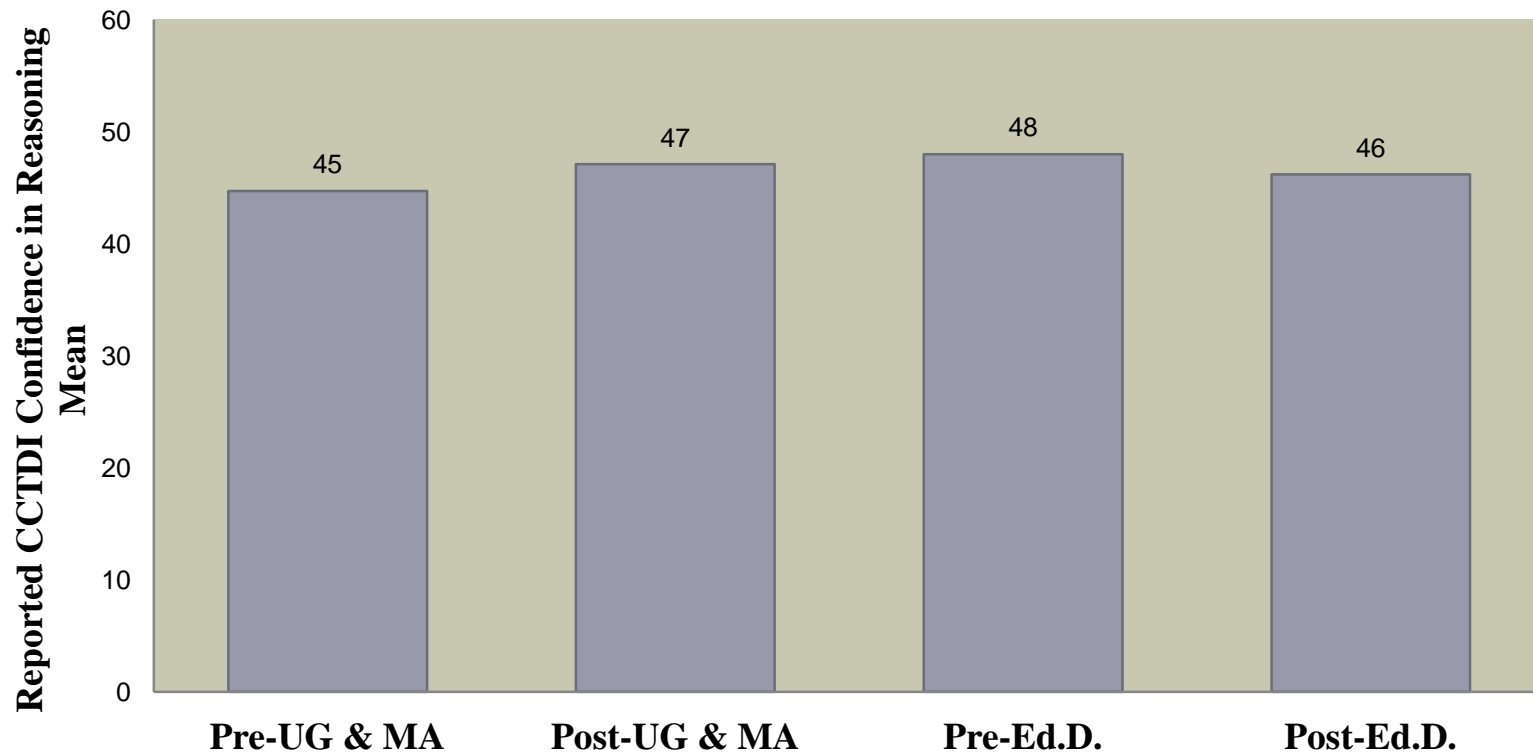
DISCUSSION FINDING 3: CRITICAL THINKING

**Critical Thinking Systematicity Disposition
Pre-Post Integrative Inquiry**



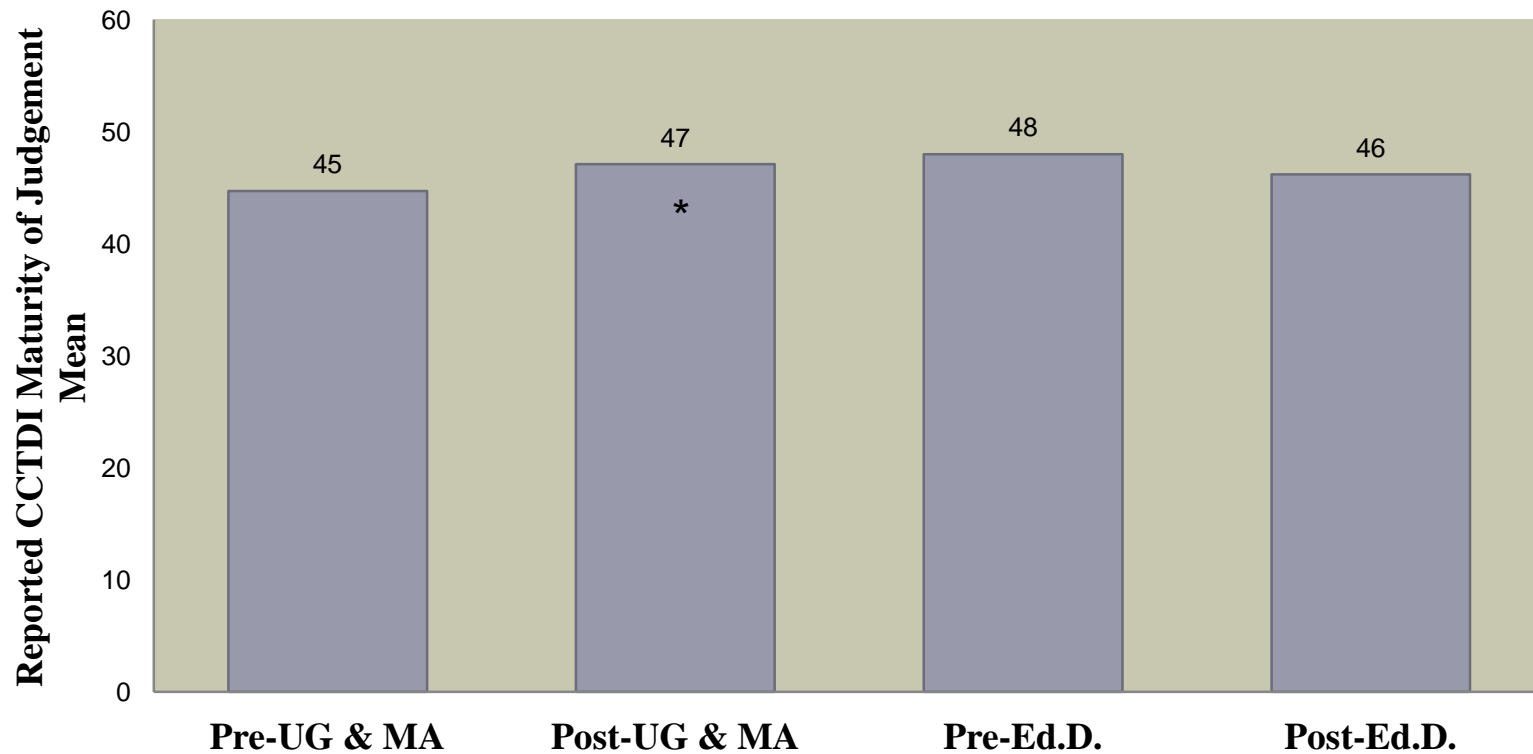
DISCUSSION FINDING 3: CRITICAL THINKING

Critical Thinking Confidence in Reasoning Disposition Pre-Post Integrative Inquiry



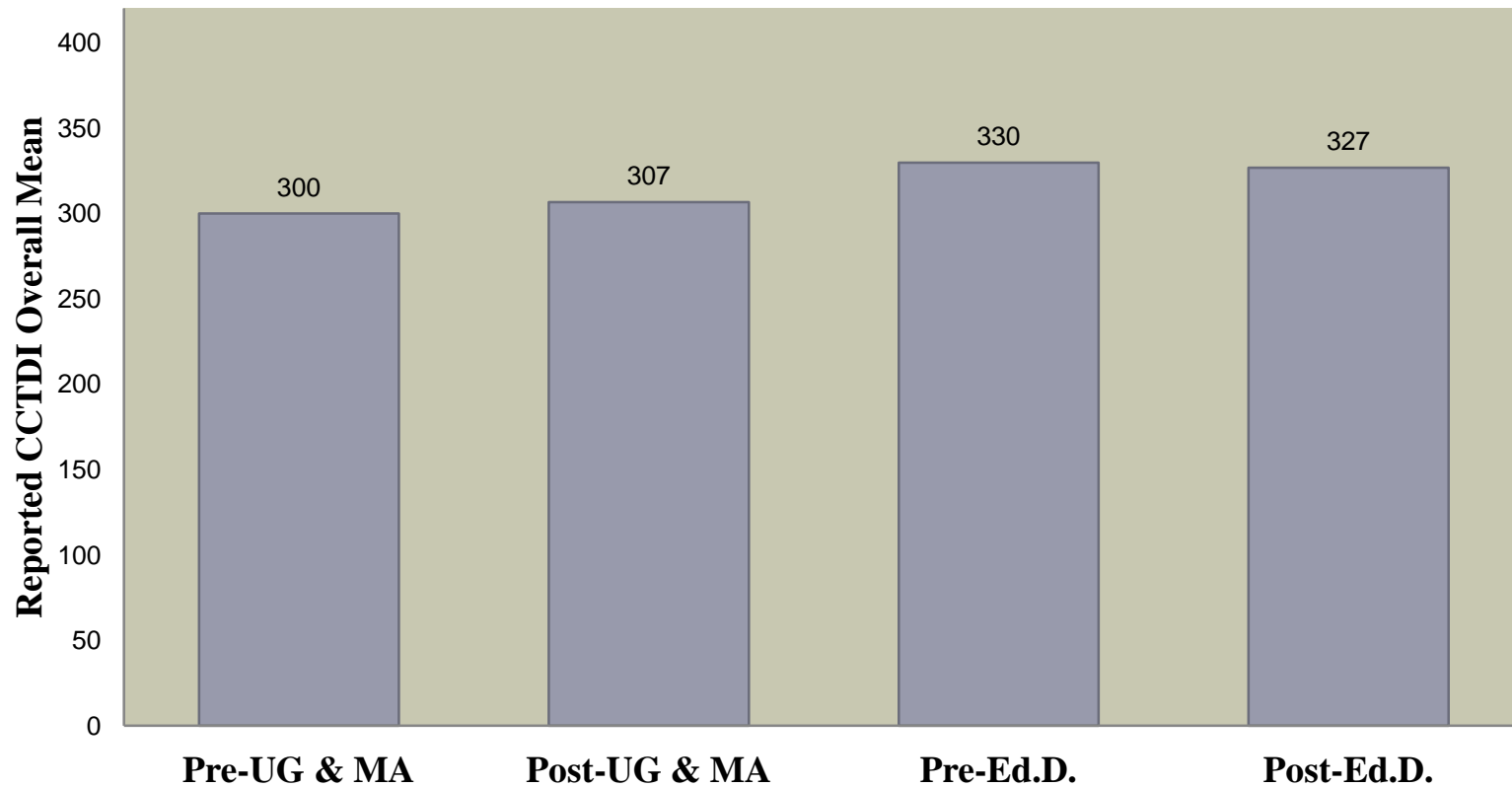
DISCUSSION FINDING 3: CRITICAL THINKING

Critical Thinking Maturity of Judgement Disposition Pre-Post Integrative Inquiry



DISCUSSION FINDING 3: CRITICAL THINKING

Critical Thinking Overall Pre-Post Integrative Inquiry



DISCUSSION

FINDING 3: CRITICAL THINKING

Interpretation

- Students did not show a significant increase in critical thinking dispositions
 - “strong” critical thinking dispositions (above average)
 - critical thinking had little room to improve.
- Mean scores of UG and MA students mirrored that of the doctoral students pre- and post-assessment.
 - Increase critical thinking for UG and MA students to a level expected of first-semester doctoral students.

DISCUSSION

QUALITATIVE FINDINGS

Interpretation

- Students relationship with time changed
- Better able to articulate their subject and objective mental processes
- Connectedness with their environment and others

DISCUSSION

QUALITATIVE FINDINGS

Pre:

“My life’s purpose is to lead. I see myself as a teacher and head administrator. I will be speaking to large audiences. My purpose is to serve as a teacher and leader at a university.”

Post:

“My life’s purpose is to give to my community through education, through philanthropy and giving of resources. I am to provide for myself and my community in ways that will help youth identify and pursue their dreams.”

CONCLUSION

INIQ is an **effective** solution to **curb increasing levels of anxiety** associated with entering a doctoral education, and training trait-level **emotion and cognitive regulation** in doctoral students.

INIQ is **more effective in an undergraduate and graduate** population than a doctoral population.

- Self authorship?

RECOMMENDATIONS

INIQ Specific for its target population

- Observing
- Non-reactivity to inner experience

Scales

- Remove CCTDI
- Include Perceived Stress Scale in Post-Assessment
- ACC&U Rubrics

Assessment of INIQ

- Record Face-to-Face

FUTURE RESEARCH

Randomized control trial

Assess other constructs

- Intelligence (e.g., Wechsler IQ Test)
- Personality (e.g., NEO/BIG-5)

Inclusion of bio-feedback

Inclusion of administered psychological tests

- Stroop Color-Word Task

Include a diverse, more representative, population

- Age, Area of Study, Gender

THANK YOU



SAN DIEGO STATE
UNIVERSITY

Leadership Starts Here



*The Leader in Graduate
Enrollment Management*