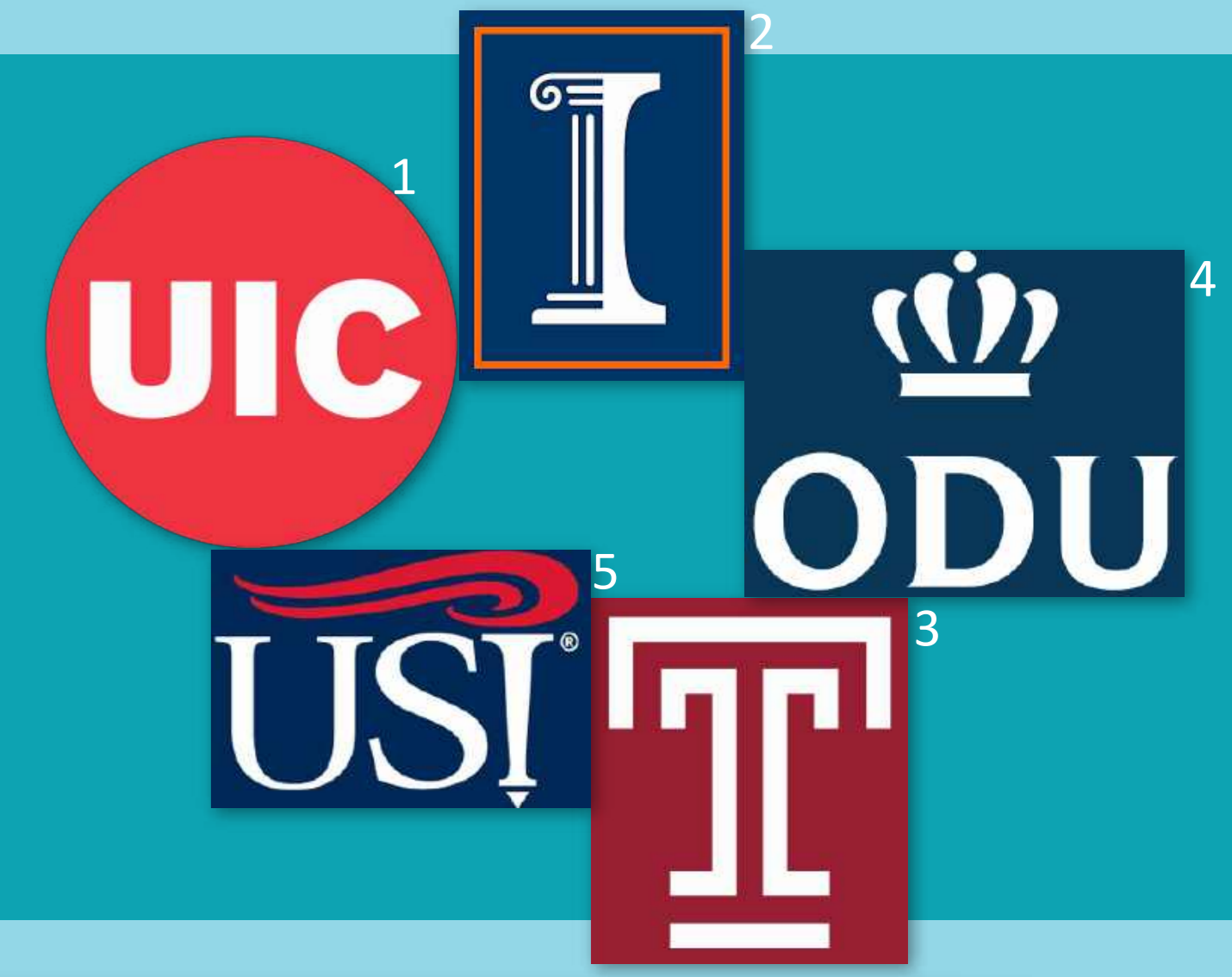# Differential **Engagement** in an Online Learning Support Module: How May It Affect Biology Grades?

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MOTIVATION & AIMS

➤ How engaged were undergrads in an online intervention for biology learning?

➤ Could engagement determine the effect of a semester-long intervention on grade?

METHODS

➤ Urban univ. in Mid-Atlantic, intro biology.

➤ Participants: N=386 (63.5%♀, 23.1% URM, 34.7% 1st-gen college, 19.4 years [sd=2.1])

➤ Intervention: bio learning strategy videos

➤ Pretest→ Videos→ Posttest→ Grades

➤ Data: online footprints & survey answers

• On time? Watched video? Time spent?

• Word count? Narrative (5 aspects coded)

➤ Analyzed data on watching *each* of 4 videos (before benchmark exams over a semester)

TAKE HOME

➤ In online learning, engagement is crucial— esp. cognitive & affective engagement.

➤ Online footprint data & student narrative are excellent measures of engagement.

➤ Engagement data show the "as-treated" effects of online learning intervention.

KEY FINDINGS

1. Online footprints & written narrative showed three aspects of engagement in watching each video [by multi-dimensional scaling]:

2. Students differed in **behavioral**, **cognitive**, & **affective** engagement in watching each video; formed 3 profiles [by latent class analysis of footprints & narrative codes]:
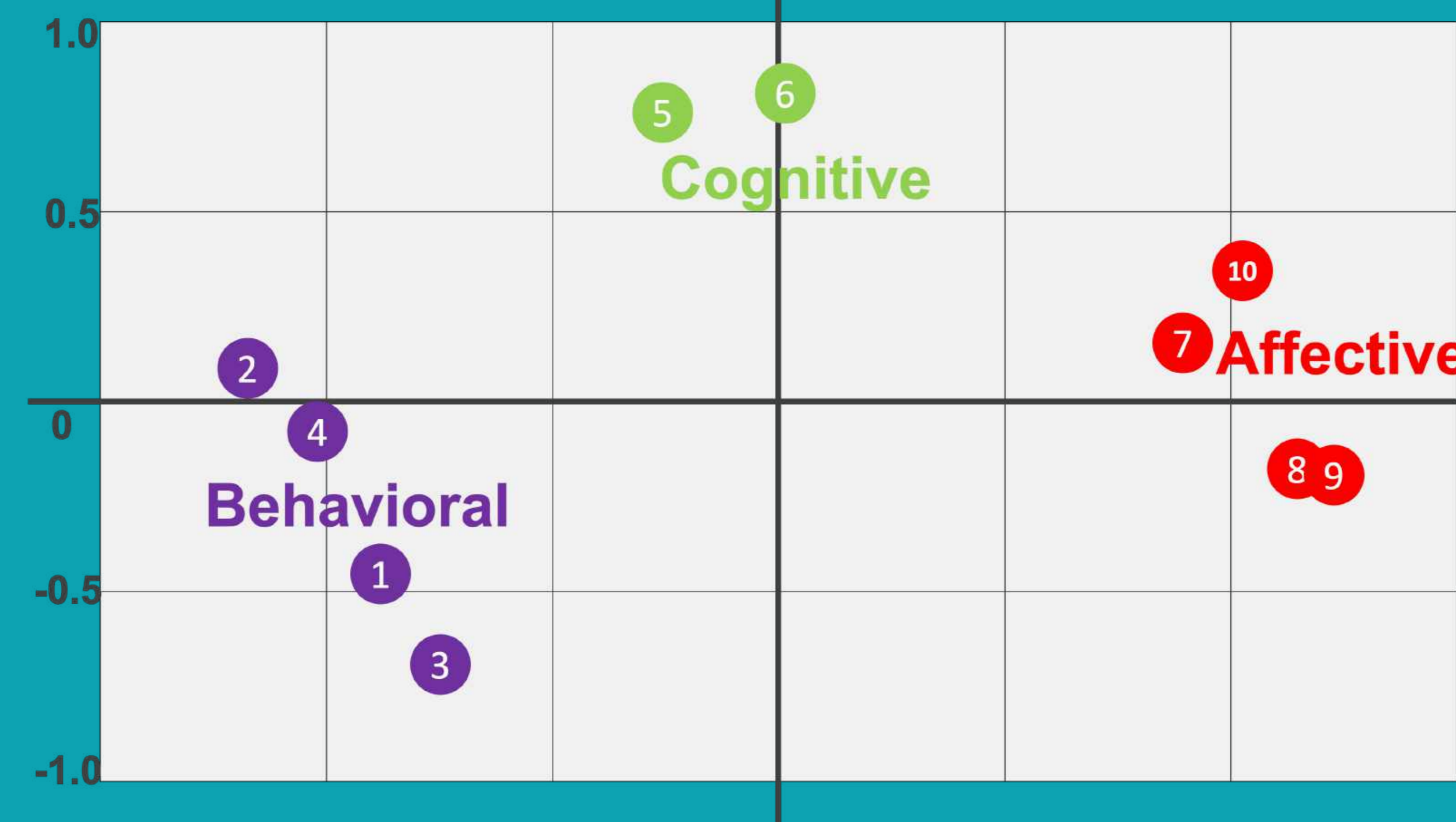
Profile	Behavioral	Cognitive	Affective
1 (n ~ 20)	✗	✗	✗
2 (n ~ 100)	✓	✗	✗
3 (n ~ 90)	✓	✓	✓

3. Profile 3 is **fully engaged** in watching 1 video. Were students always fully engaged over a semester (in 4 videos)?

Control (n=62)   Assigned to watch videos (n = 324)

Control (n=62)   Fully engaged in <2 videos (n=132)   Fully engaged in ≥2 videos (n=192)

$g_{vs\ ctrl}$ = .32, $g_{vs\ <2}$ = .47
*p = .027

p = .52

68.8 (11.8) — Control Group n = 62

66.8 (13.0) — Fully engaged in <2 videos n = 132

72.2 (10.2) — Fully engaged in ≥2 videos n = 192

Biology Course Grade