SELF-REGULATION STRATEGIES & BELIEFS OF UNDERGRADUATE BIOLOGY STUDENTS

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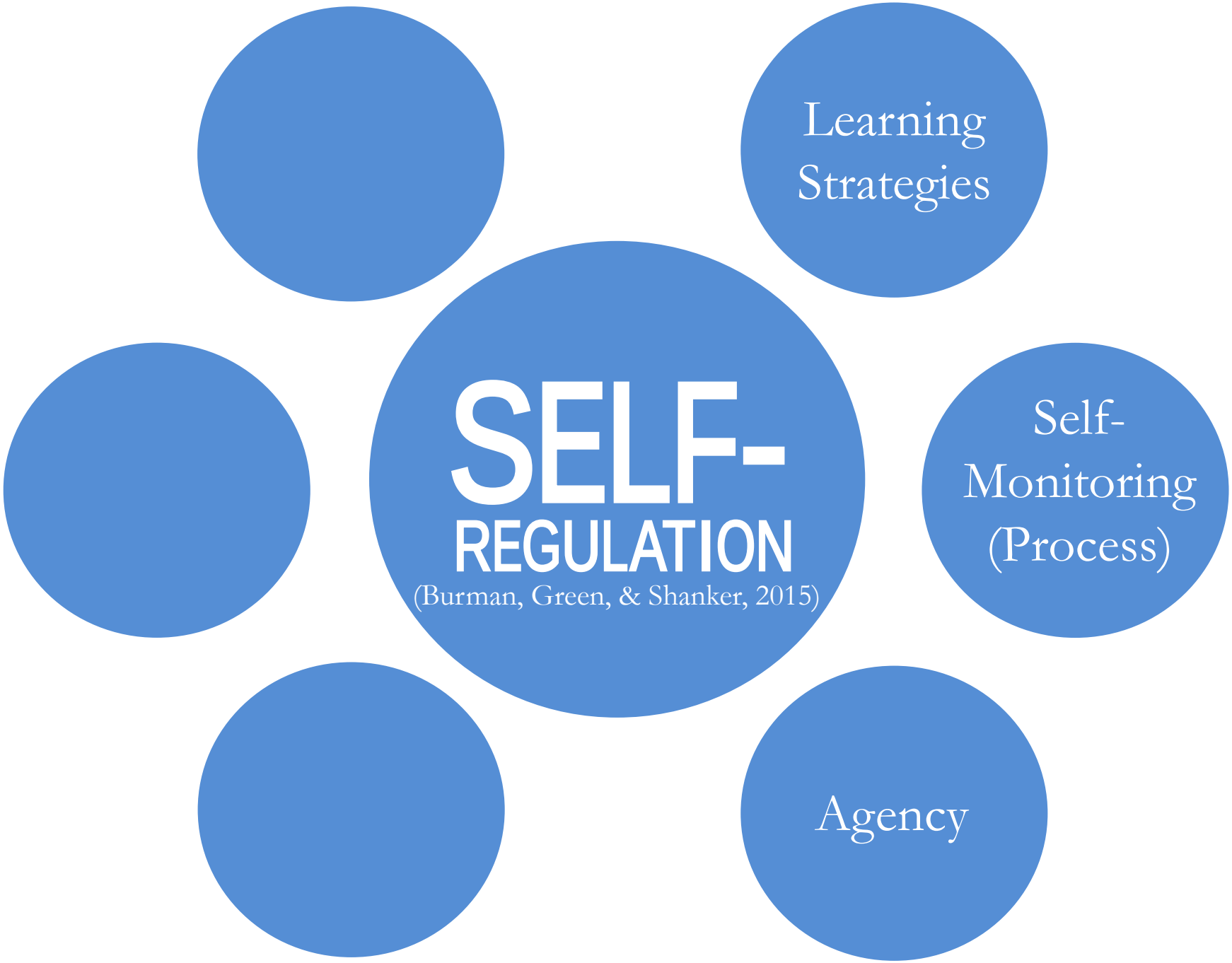
What is SELF-REGULATION

Systematically organizing
thoughts,
actions,
and feelings
to meet a set goal

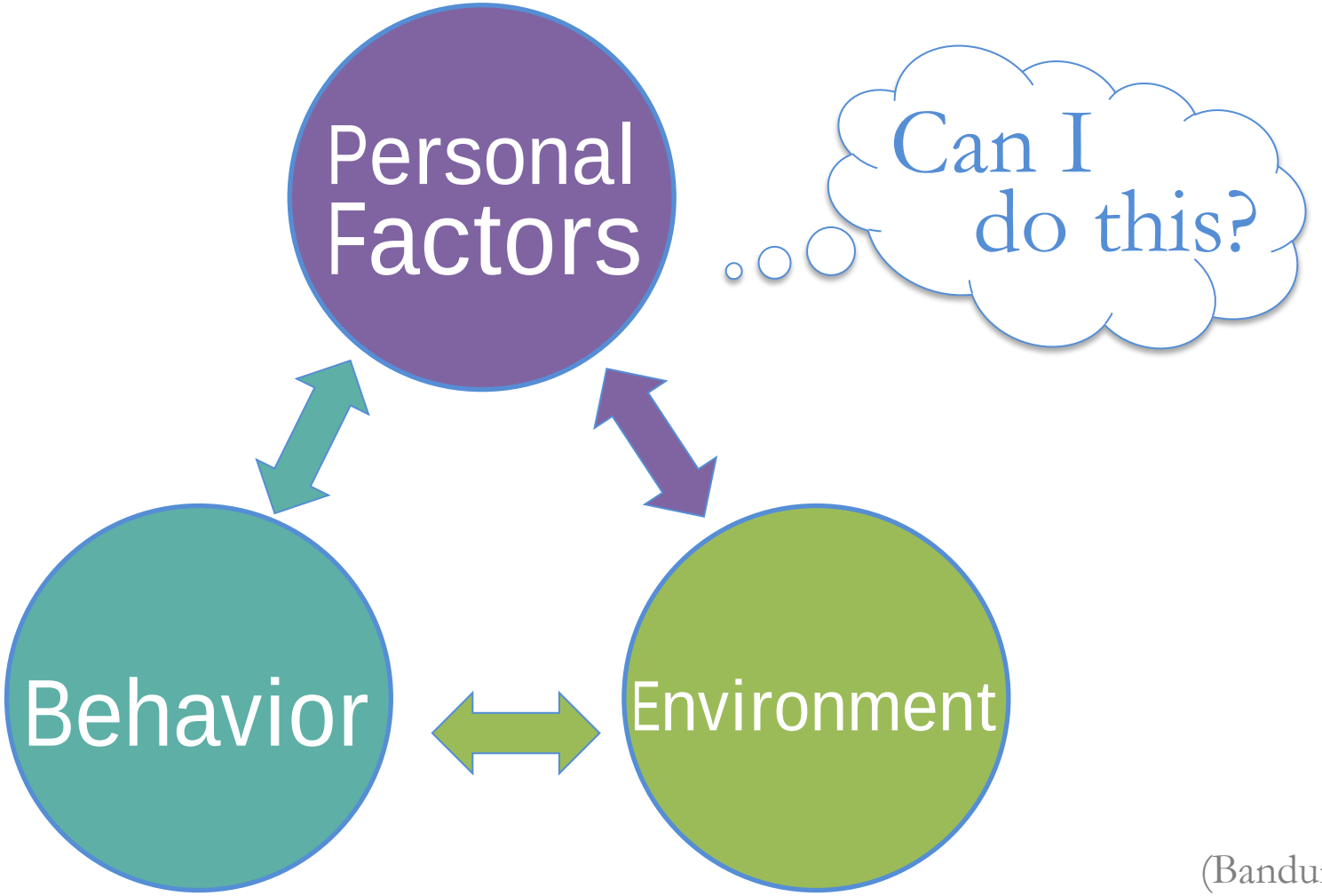
(Nilson, 2013; Usher & Schunk, 2018)


Monitoring (Personality Trait)
Learning Strategies
Social Behavior
SELF-REGULATION
(Burman, Green, & Shanker, 2015)
Self-Monitoring (Process)
Self-Control
Agency


Learning Strategies
SELF-REGULATION
(Burman, Green, & Shanker, 2015)
Self-Monitoring (Process)
Agency

Theoretical Framework

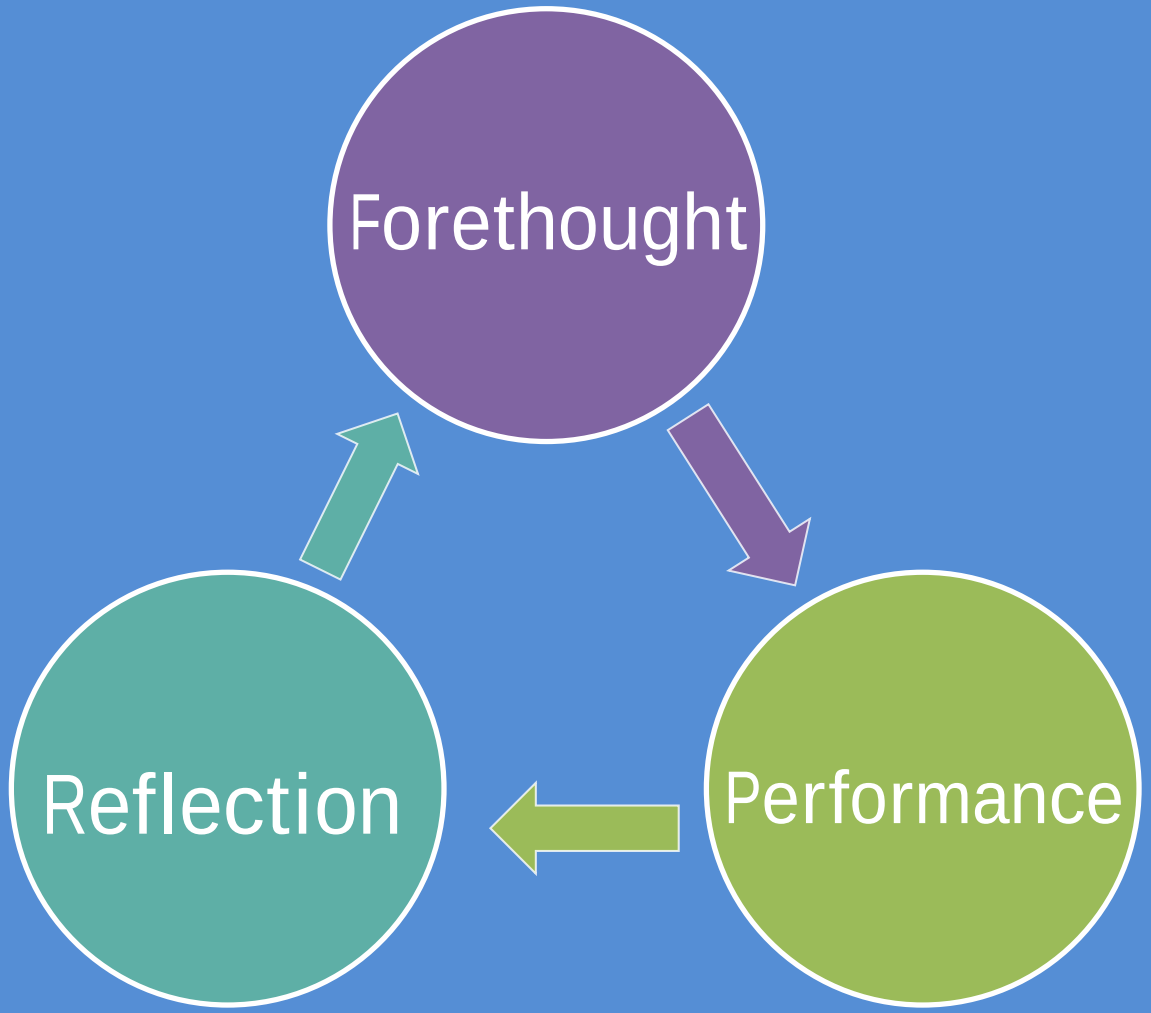
SOCIAL COGNITIVE THEORY & SELF-EFFICACY



(Bandura, 1986)

Theoretical Framework

SELF-REGULATION PHASES



Metacognition

(Zimmerman, 1989)

LITERATURE REVIEW

(Stanton, Neider, Gallegos, & Clark, 2015; Dent & Koenka, 2016)

LIMITED RESEARCH

(Dunn & Lo, 2015)

INDIVIDUAL STUDY

STRATEGIES

COLLECTIVE

STRENGTH

HIGH USE OF SELF-REGUALTION

STRATEGIES

STRONGER SELF-EFFICACY

BELIEFS

BETTER *STUDENT PERFORMANCE*

(Eilam & Reiter, 2014; Nelson, Shell, Husman, Fishman, & Soh, 2015 ; Seo & Ilies, 2009; Zusho, Pintrich, & Coppola, 2003)

THE PURPOSE

of this study was to identify self-reported study strategies by high, average, or low self-regulators and to examine their beliefs about their capabilities to self-regulate and perform in an introductory biology course.

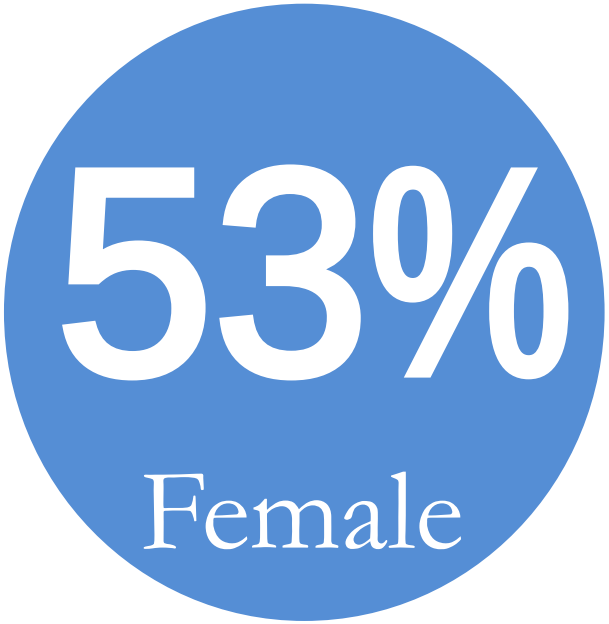
QUESTIONS

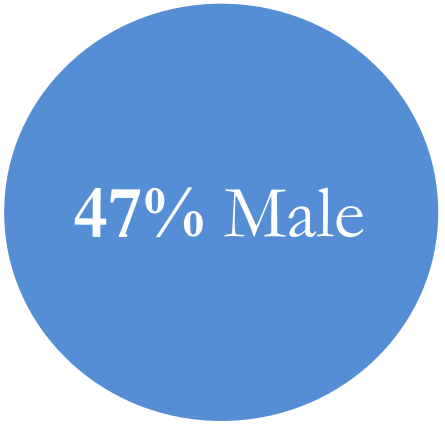
What study strategies are used by high, average, and low self-regulating students enrolled in an introductory biology course?

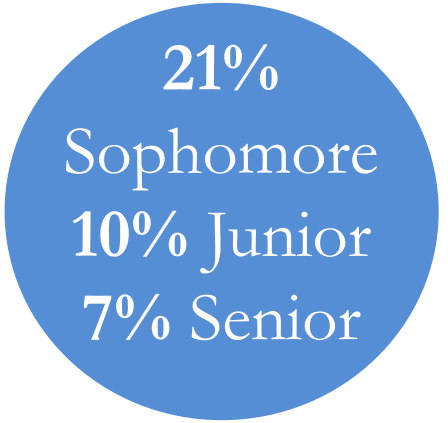
Is self-efficacy different for high, average, or low self-regulators?

What is the relationship between self-regulation, self-efficacy for self-regulation, and self-efficacy for biology?

Participants







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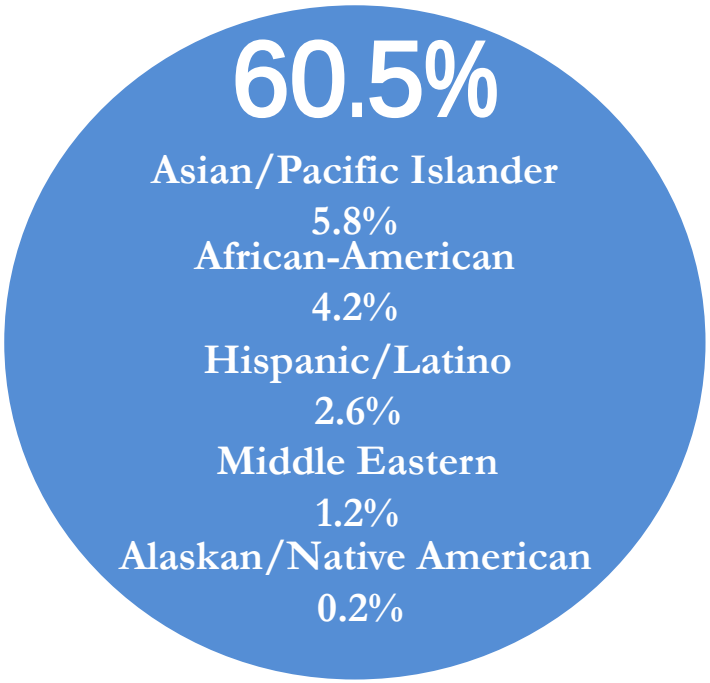
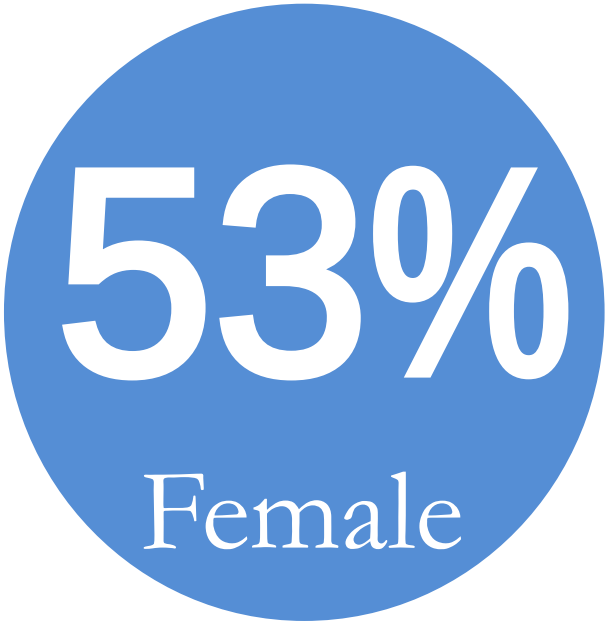
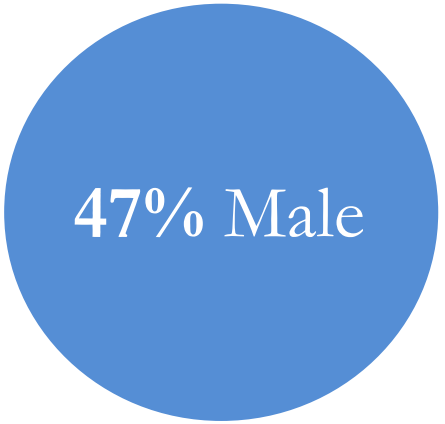
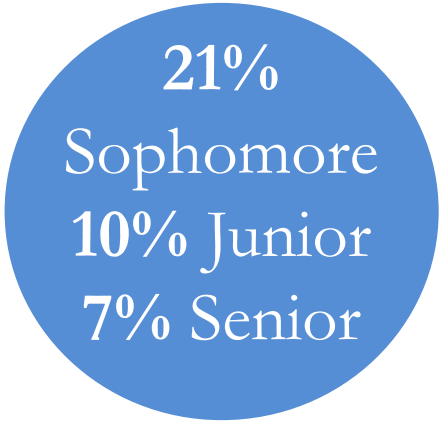








Measures

Self-Regulation

(Pintrich & DeGroot, 1990; Pintrich, Smith, Garcia, McKeachie, 1991)

- 12 items for **metacognitive self-regulation**
- Motivated Strategies for Learning Questionnaire ($\alpha = .77$)
- 6 point Likert-type scale
  1 (Definitely False) to 6 (Definitely True)

Student Performance

- Overall Course Grade

Study Strategies

- Students select from a list

"If course materials are difficult to understand, I change the way I read the material."

Measures

Which of the following resources did you use while studying? (check all that apply)

- ❑ PowerPoint Presentations
- ❑ Textbook
- ❑ Learning Strategies Handout
- ❑ Reviewing Learning Objectives
- ❑ Clicker Questions
- ❑ Lecture Recordings
- ❑ Studying in a Group
- ❑ In-Class Notes
- ❑ Practices Exams
- ❑ Unit Study Recommendations
- ❑ Online Resources
- ❑ Other

Measures

Self-Efficacy

HOW CONFIDENT ARE YOU...

- **Self-Efficacy for Self-Regulation** ($\alpha = .93$)
  - 11 items (Zimmerman, Bandura, & Martinez-Pons, 1992)
    - Pre-course survey only
- 6 point Likert-type scale
  - 1 (Not at all confident) to 6 (Completely Confident)

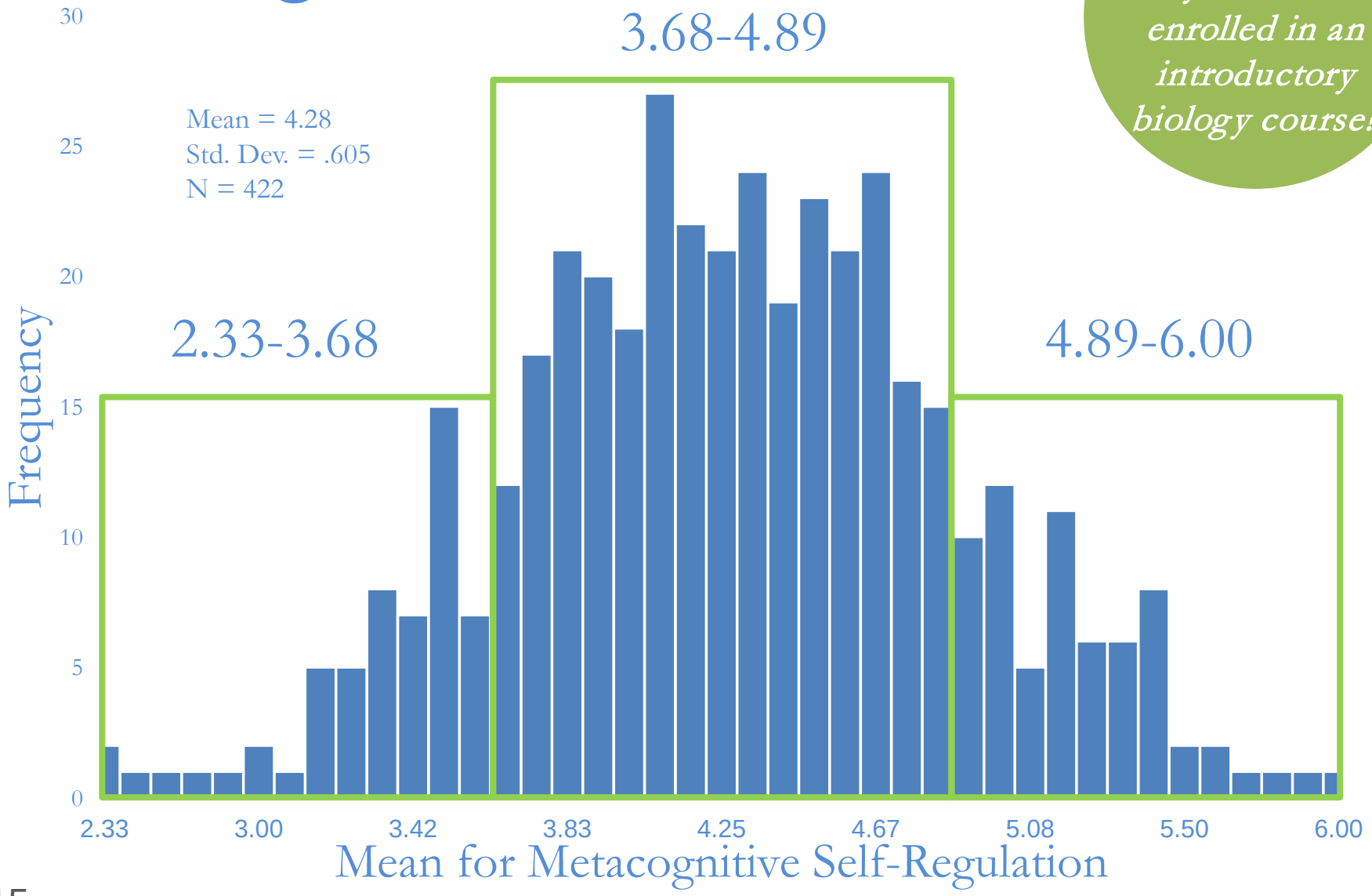
... that you can get back on track with your biology work if you are distracted?

- **Biology Self-Efficacy** (Bandura, 2006)
  - 8 items Pre-course survey ($\alpha = .91$)
  - 7 items Post-course survey ($\alpha = .95$)
- 6 point Likert-type scale
  - 1 (Not at all confident) to 6 (Completely Confident)

...that you can learn materials taught in biology class?

Findings

What study habits are used by students enrolled in an introductory biology course?



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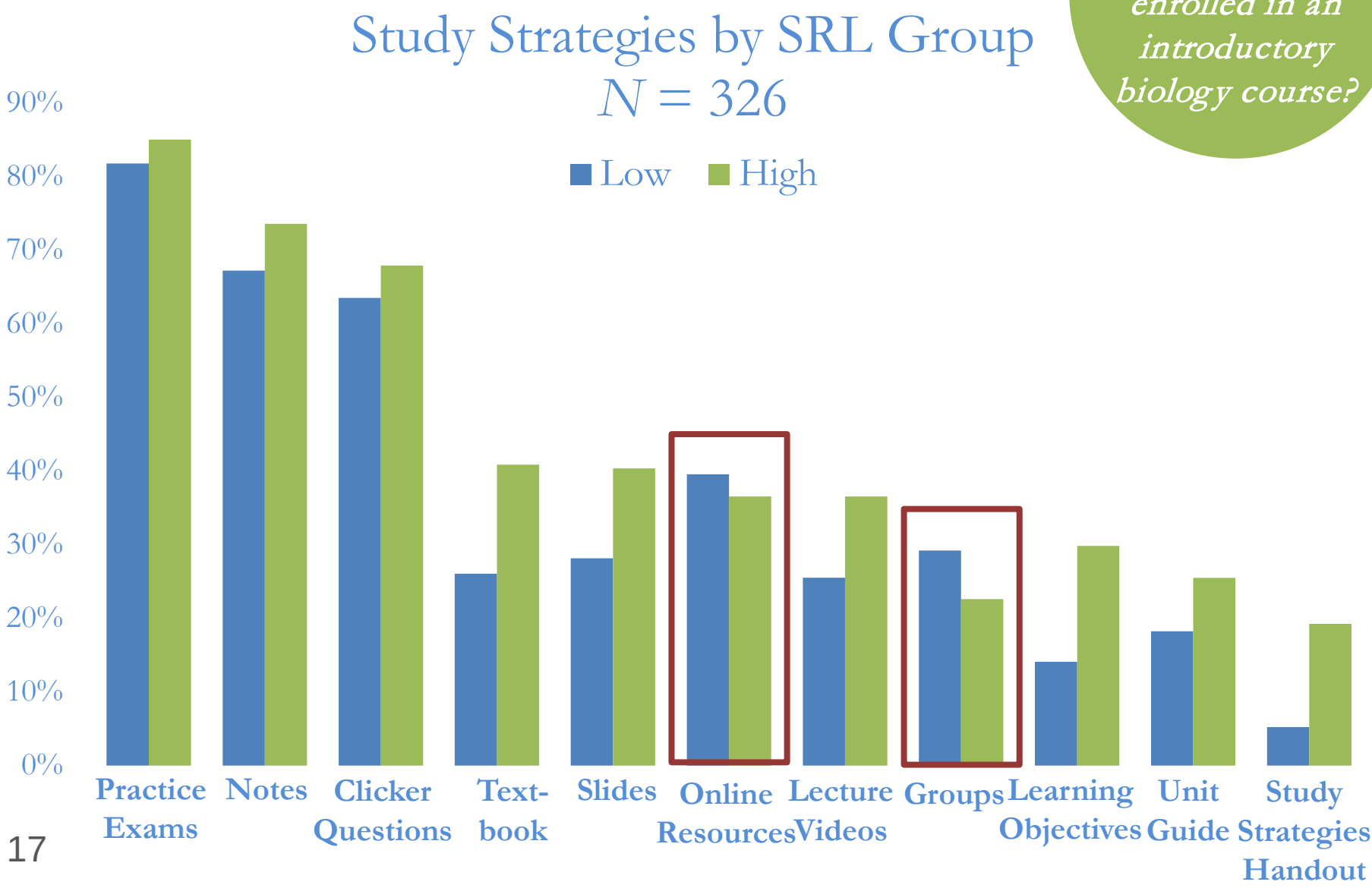
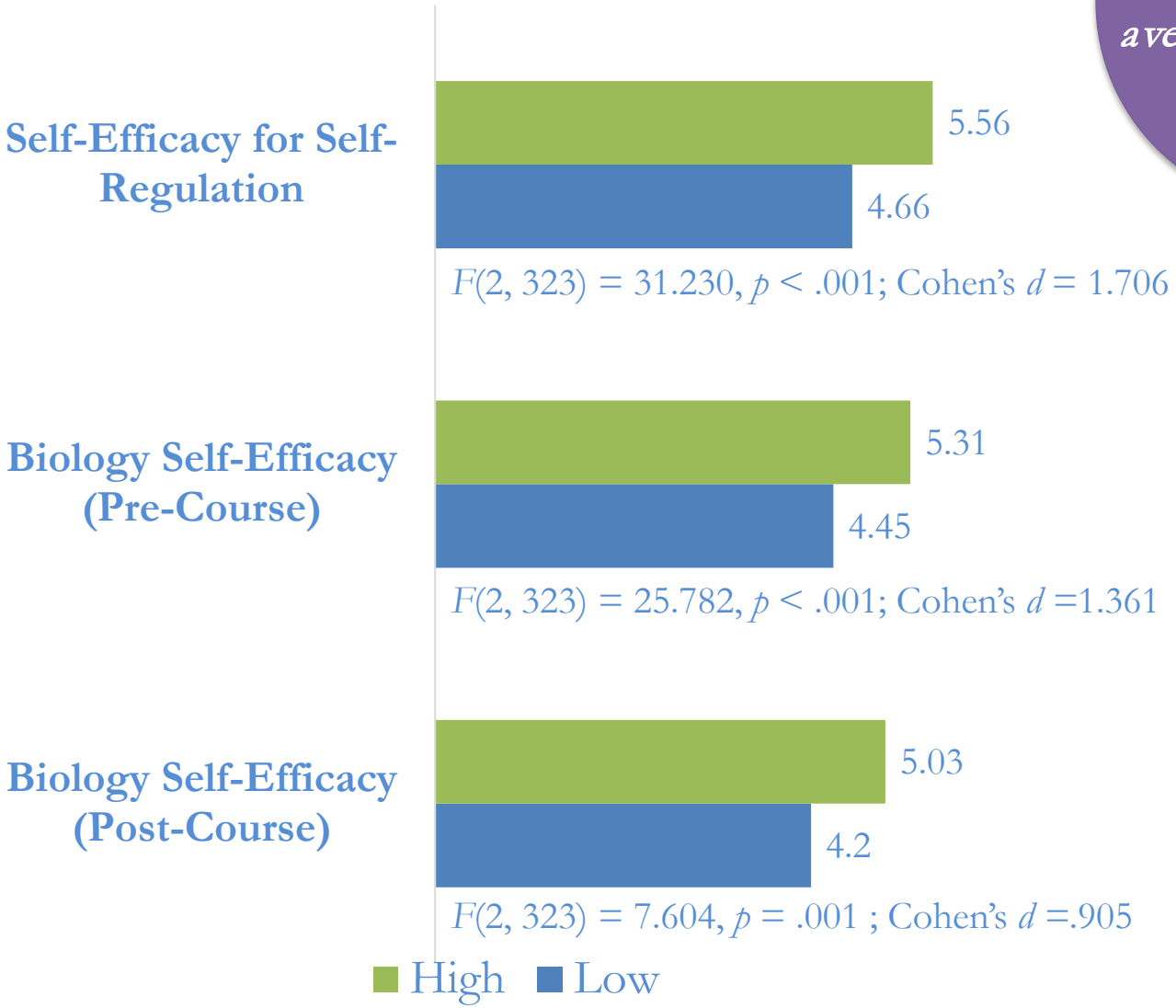


Findings

Variables Compared by Self-Regulation Groupings

Is self-efficacy different for high, average, or low self-regulators?



Findings

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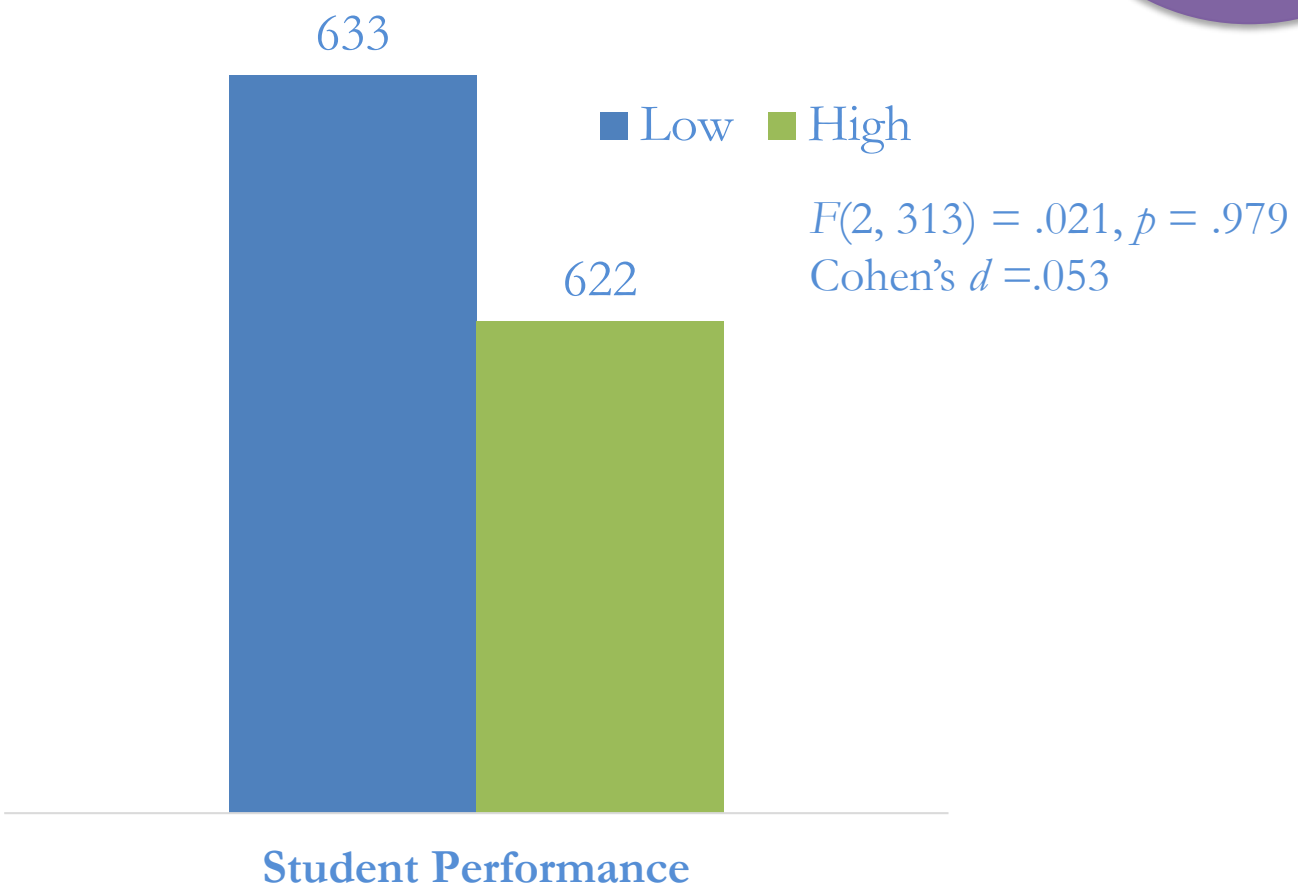
Student Performance by Self-Regulation Groupings



Findings

- Student performance, self-regulation, and self-efficacy for self-regulation are not related.
- Biology self-efficacy is correlated to all variables.

What is the relationship between self-regulation, self-efficacy for self-regulation, and self-efficacy for biology?

Correlations and Descriptive Statistics for Student Performance, Metacognitive Self-Regulation, Self-Efficacy for Self-Regulation, and Biology Self- Efficacy (Pre- and Post-Course)

Measures	*n*	*M*	*SD*	Correlations				
				1	2	3	4	5
1. Student Performance	320	631.29	87.255					
2. Metacognitive Self-Regulation	422	4.28	.605	-.033				
3. Self-Efficacy for Self-Regulation	328	5.09	.626	.080	.436**			
4. Biology Self-Efficacy (Pre-Course)	328	4.93	.650	.221**	.401**	.631**		
5. Biology Self-Efficacy (Post-Course)	254	4.41	.843	.440**	.294**	.244**	.408**	

** $p < .01$.

Discussions

Takeaways

Limitations

Future Directions

- Biology students adapt, change, and replace strategies
- Self-regulation groupings reflected self-efficacy biology and self-efficacy for self-regulation mean scores
- Biology self-efficacy is predictive of student performance
- Further research for self-regulation in Science courses

Questions and Answers

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