Who Am I and Where am I Going: Self and Agentic Action

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- I began my research work on gender and motivation with a quite specific question posed by the National Institute of Education in 1977:

- WHY ARE FEMALES LESS LIKELY TO GO INTO MATH AND PHYSICAL SCIENCE THAN MALES?

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  We were greatly influenced by the following theoretical and political perspectives.

Intellectual Influences: The 60's and 70's

- The cognitive revolution in social psychology
  - Rotter – Locus of Control
  - Bandura - Social Cognitive Behaviorism
  - Heider, Kelley, Weiner – Attribution Theory
  - Bandura – Self Efficacy Theory

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- And in motivational psychology
  - Expectancy Value theorists (e.g., Atkinson; Feather; Heckhausen; Vroom)
  - Fishbein and Ajzen – Theory of Reasoned Action

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- Movement of Feminist Perspectives into Academia
  - Beginnings of women's studies and gender studies

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  - Beginnings of women's studies and gender studies
  - Acute awareness of role of socialization in recreating gendered behavior patterns and choice
  - Acute awareness of structural barriers to women's life choices

Two Aspects of Choosing One's Life Path

- Personal Agency = Picking One's Path
  - Expectancy-value models of rational choice
  - Identity development
- Structural Forces = Opportunities and Barriers to Picking One's Own Path
  - Social forces that shape and restrict one's choices

Developing a Theory to Explain Gender and Achievement-Related Choices

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- WHY ARE FEMALES LESS LIKELY THAN MALES TO GO INTO THE PHYSICAL AND ENGINEERING SCIENCES?

Common Explanations

- Biological Differences
  - Brain differences –
    - Hemispheric Specialization
      - May be linked to verbal and spatial skills
    - Specialized Sensitivities for Learning and Interests
      - Such as preferences for speech input and faces versus mechnical objects
      - Do not know the actual mechanisms but genetic studies suggest these may be heritable and may be sex-liked
    - Disabilities
      - Learning particular types of materials
      - Social intelligence
      - Anxieties

Social Experiences

- Family and Peers
  - Role Models
  - Expectations
  - Provision of Differential Experiences

Social Experiences

- Family and Peers
  - Role Models
  - Expectations
  - Provision of Differential Experiences
- Schools and Larger Society
  - Differential Treatment
  - Discrimination
  - Differential Teaching Practices for Different Subject Areas

Psychological Differences

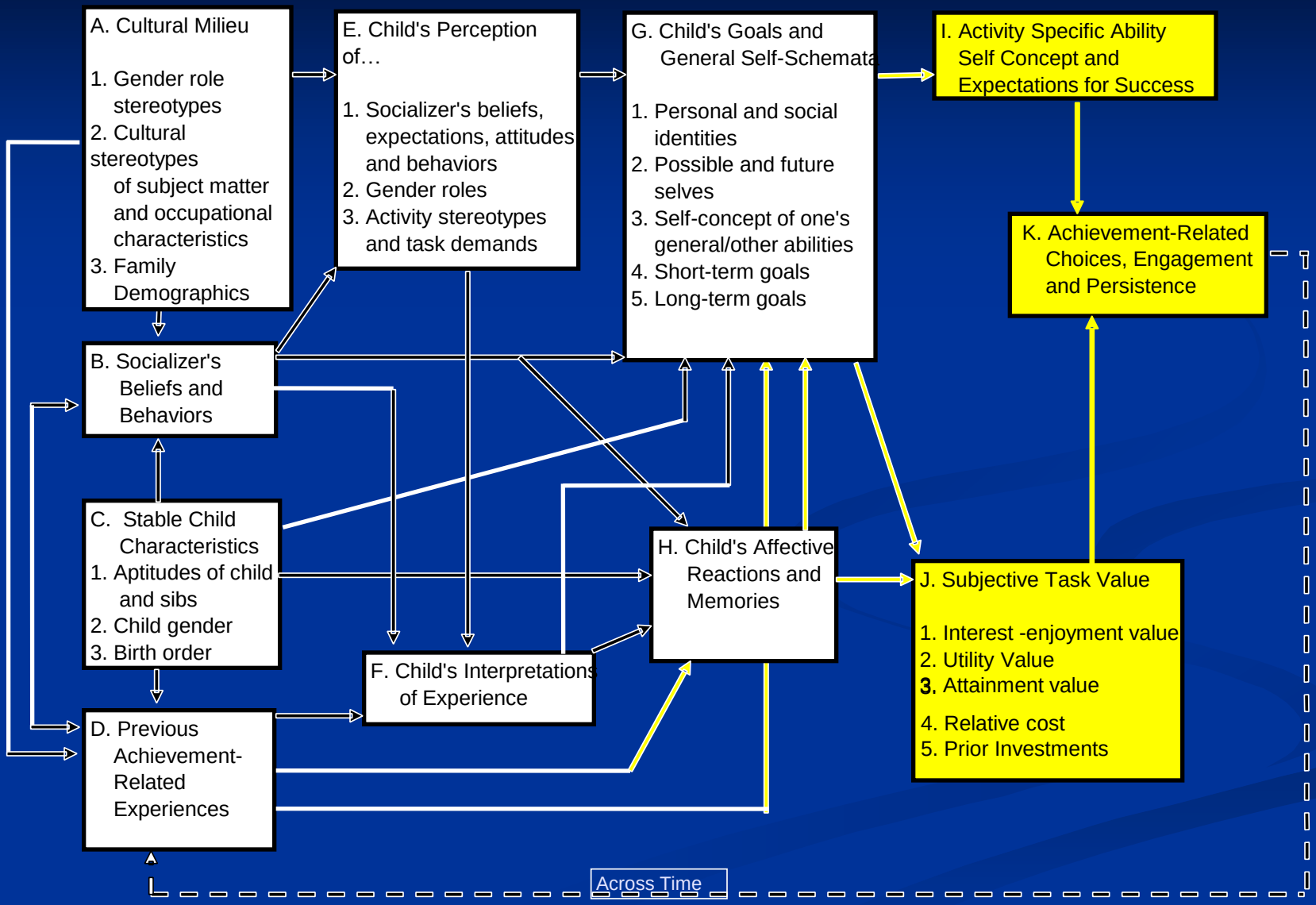
- Ability Self Concepts for Different Skill Areas
- Domain Specific Interests and Preferences
- More General Differences in Values and Goals
- Anxieties
- Susceptibility to Stereotype Threat
- Implicit Self Concepts and Stereotypes
- Theories of Intelligence
- Personal and Social Identities
- Expectations of Differential Treatment

- Very Difficult to Distinguish These Hypotheses
- All are Likely Influences
- In addition, People Self-Socialize into the Culturally Approved Social Roles and Niches

Final View

- So my colleagues and I wanted to create a comprehensive model to guide our research into the wide range of possible influences on such critical life defining choices as one's occupation.

Eccles et al. General Expectancy Value Model of Achievement Choices:



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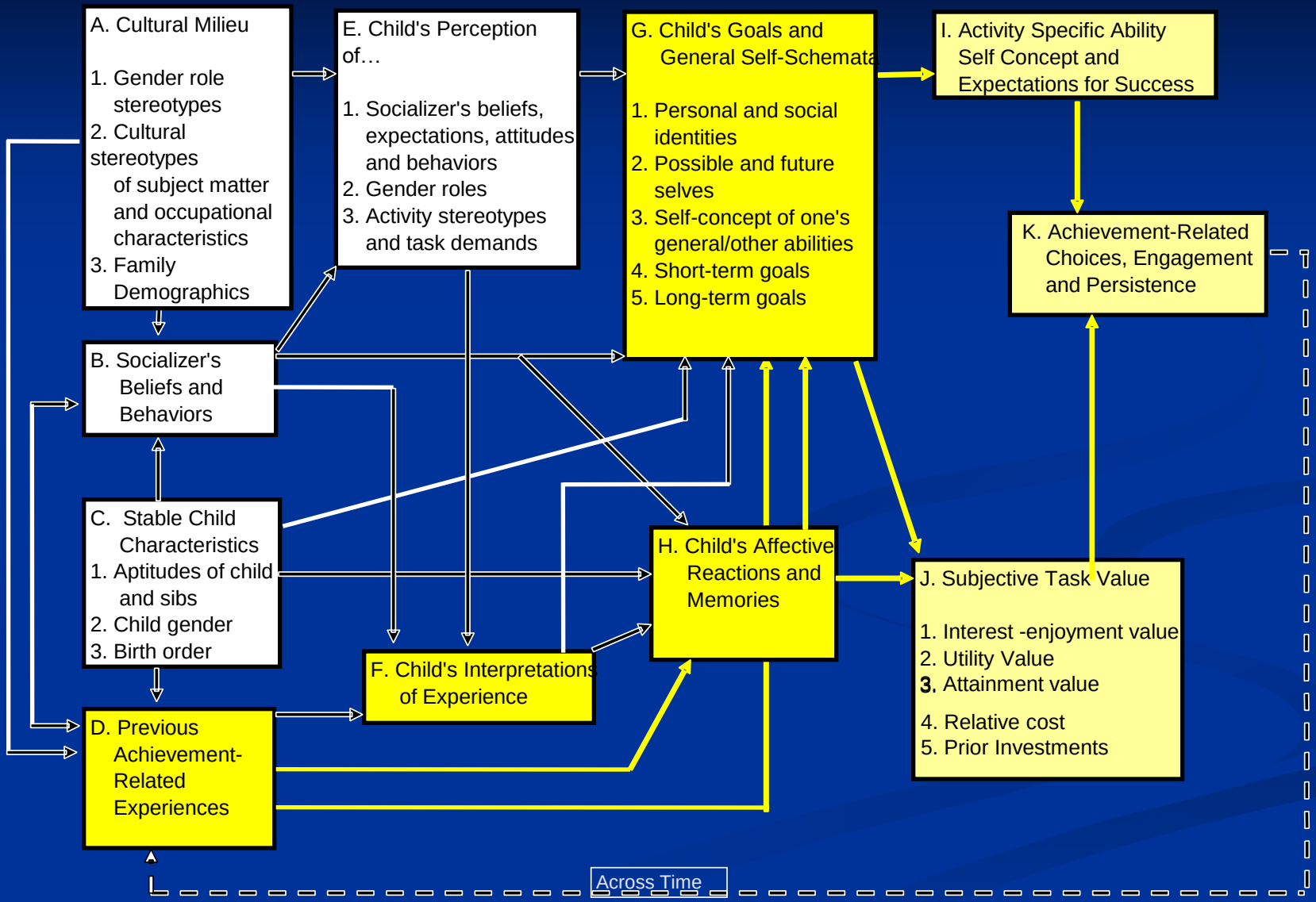

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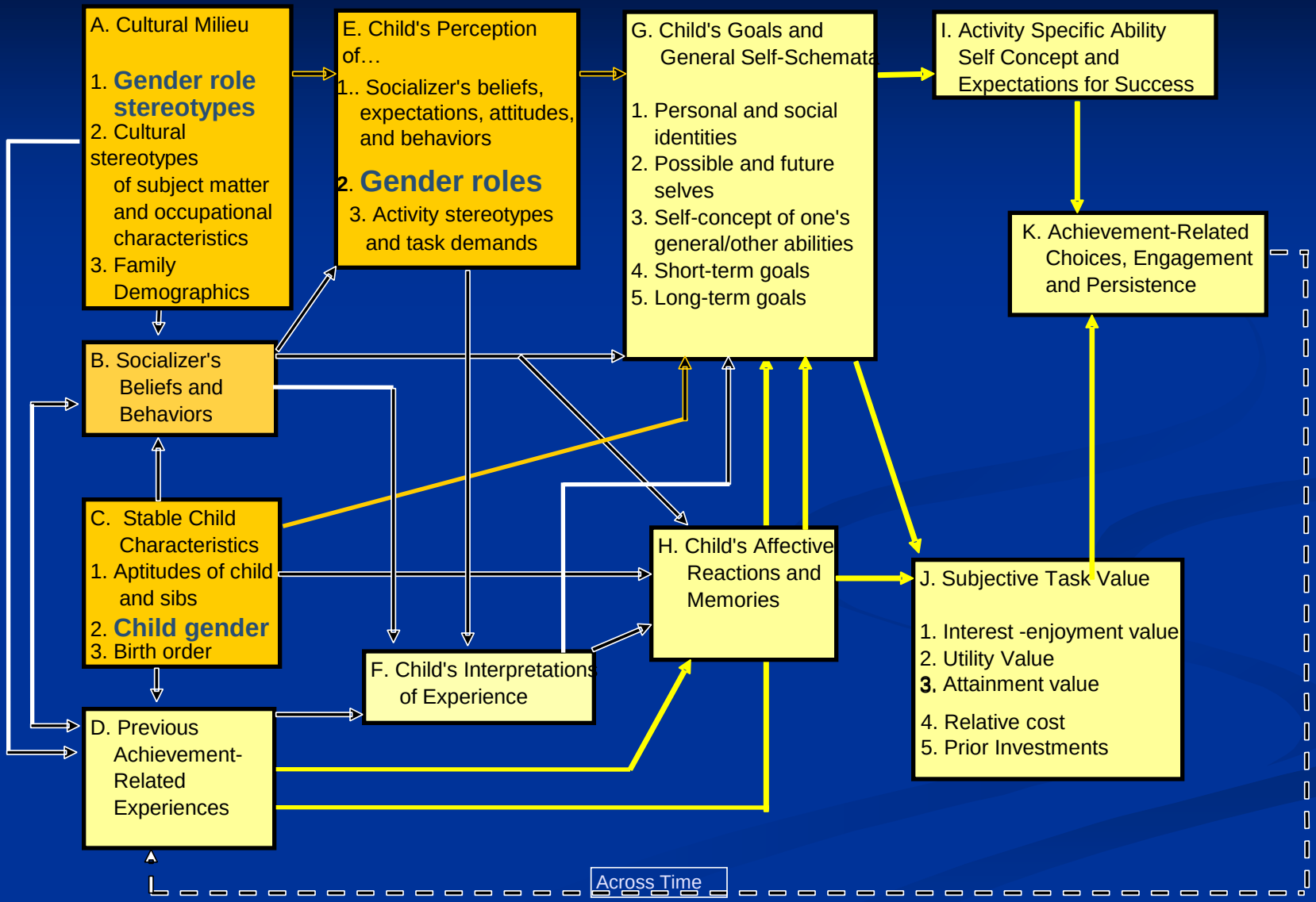

Self and Identity

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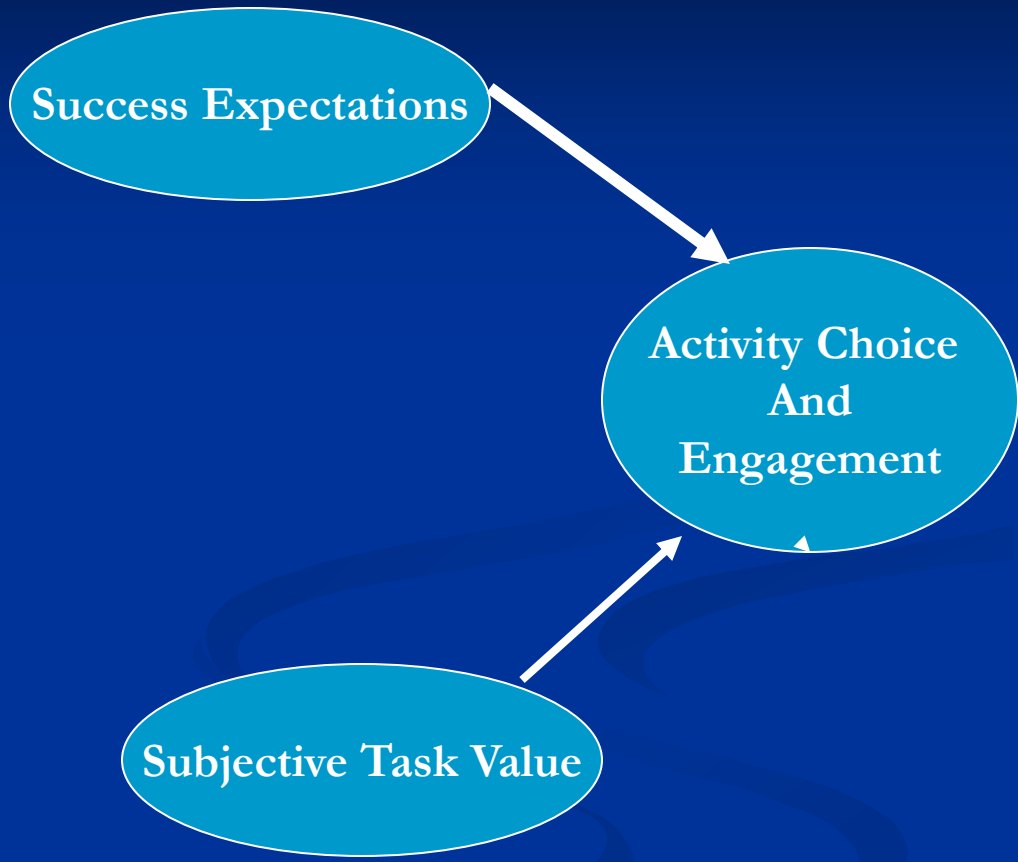
- Focus most on the components of subjective task value.

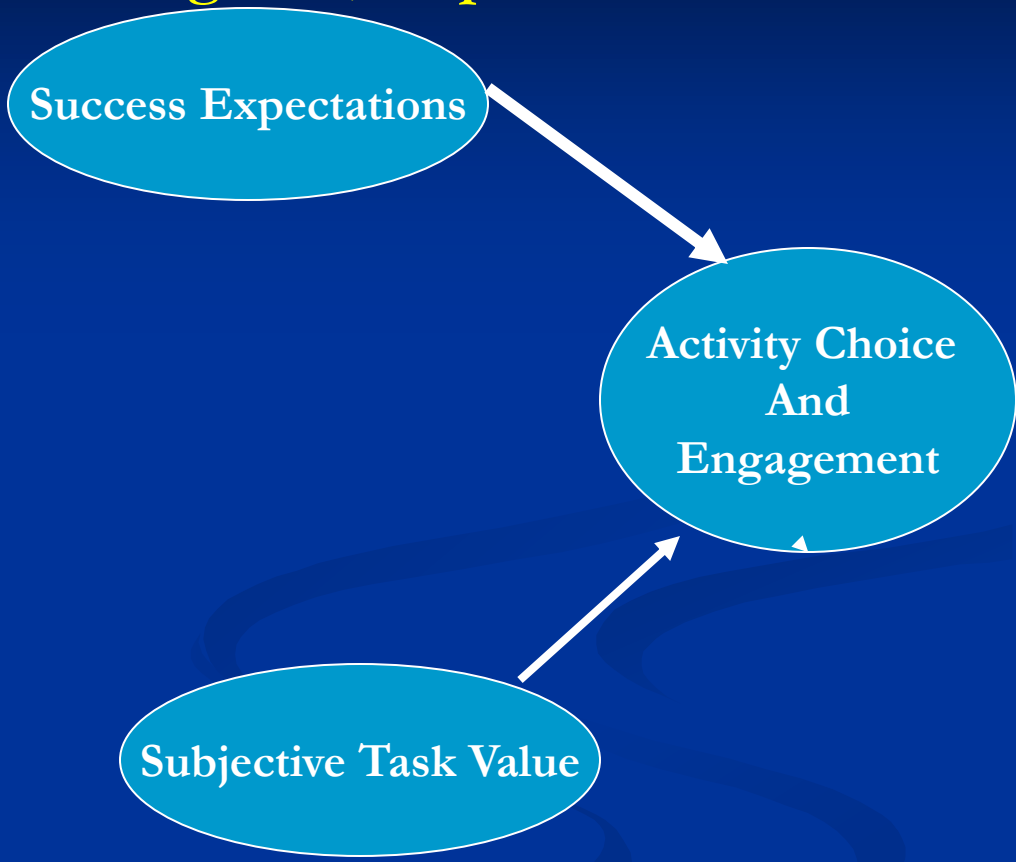
Can I Succeed?



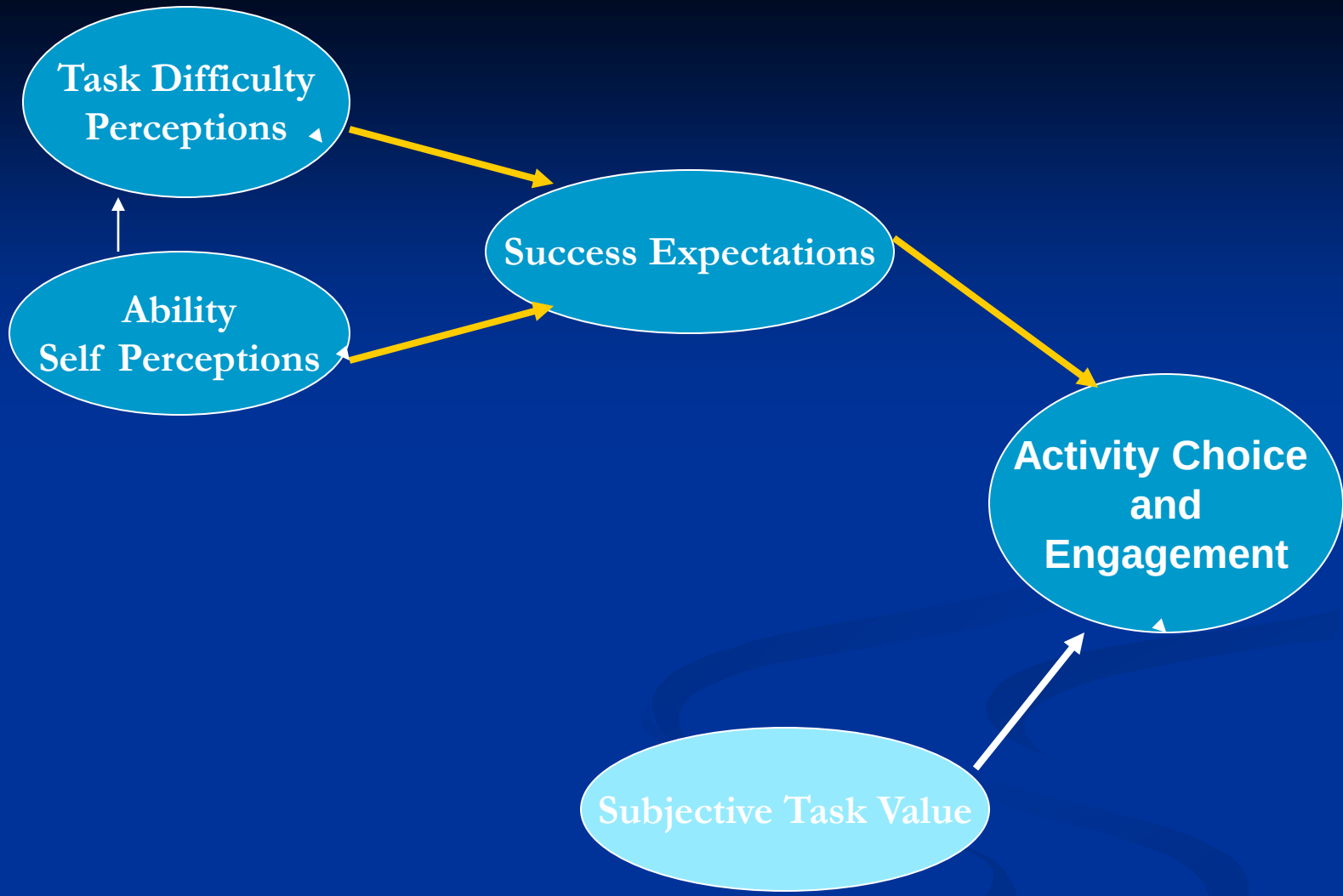
Do I want to do the task?

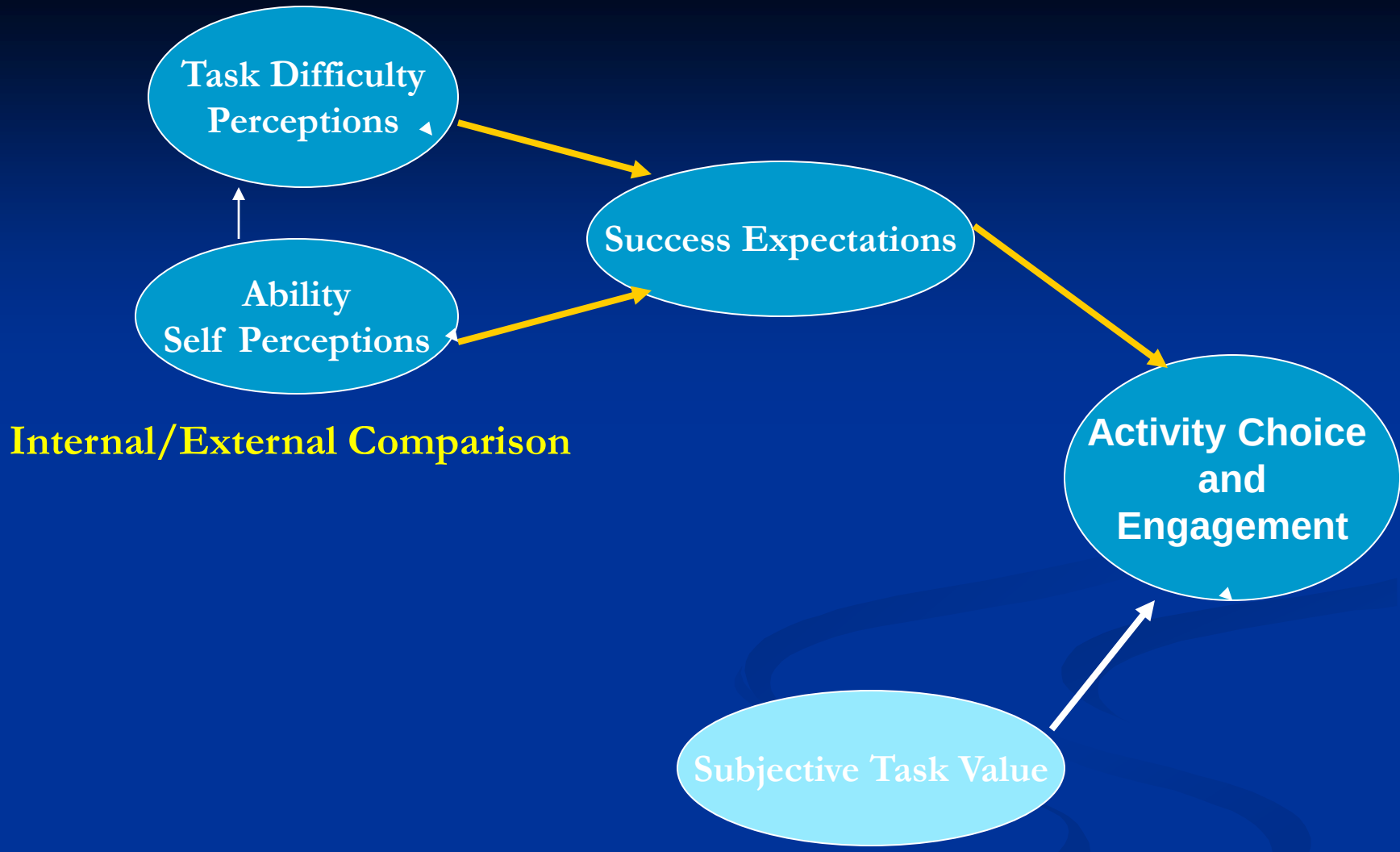
Can I Succeed?

Personal Efficacy, Theories of Intelligence; Implicit Self Beliefs



Do I want to do the task?


Task Difficulty Perceptions
Ability Self Perceptions
Success Expectations
Activity Choice and Engagement
Subjective Task Value


Task Difficulty Perceptions
Ability Self Perceptions
Internal/External Comparison
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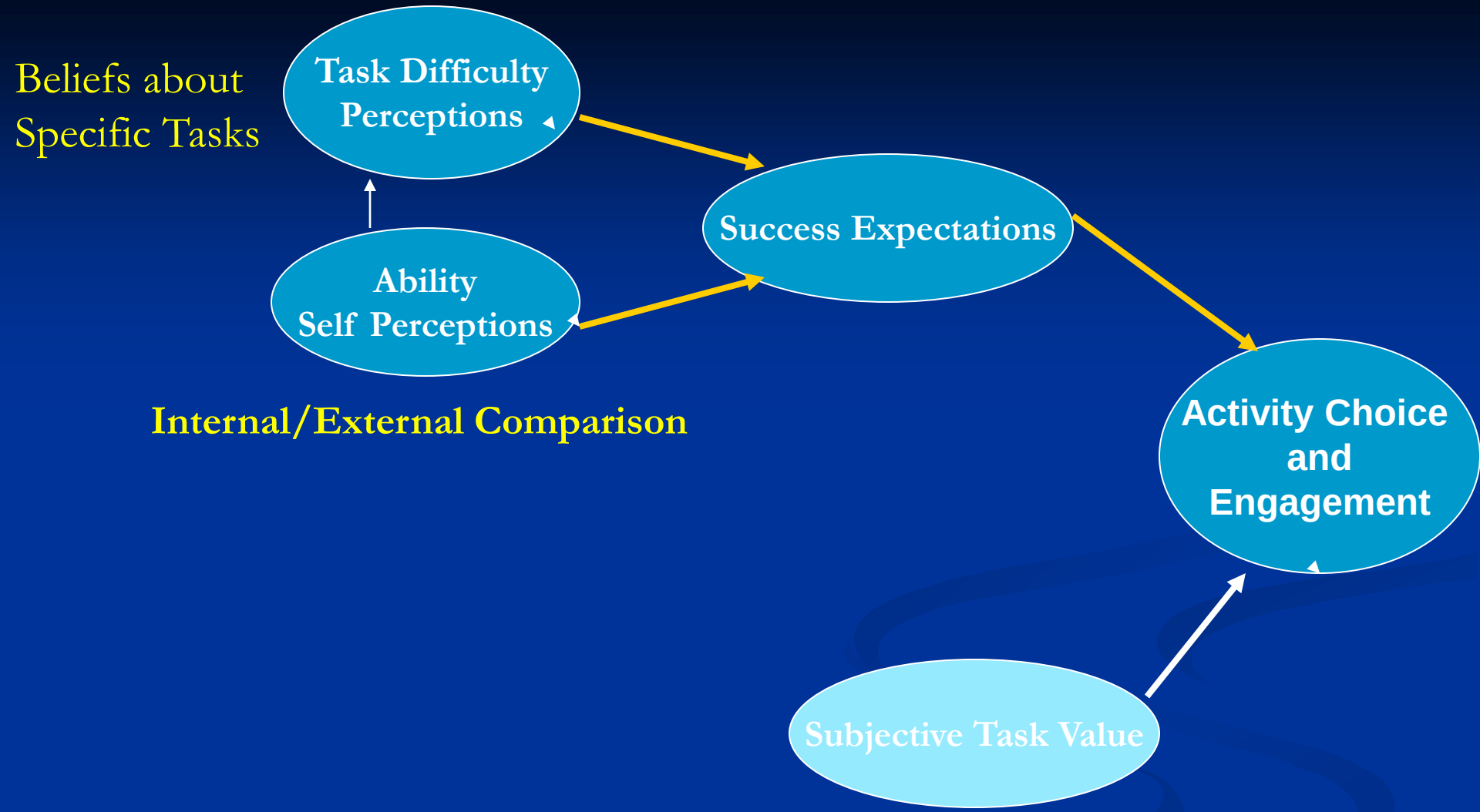
Beliefs about Specific Tasks
Task Difficulty Perceptions
Ability Self Perceptions
Success Expectations
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Subjective Task Value
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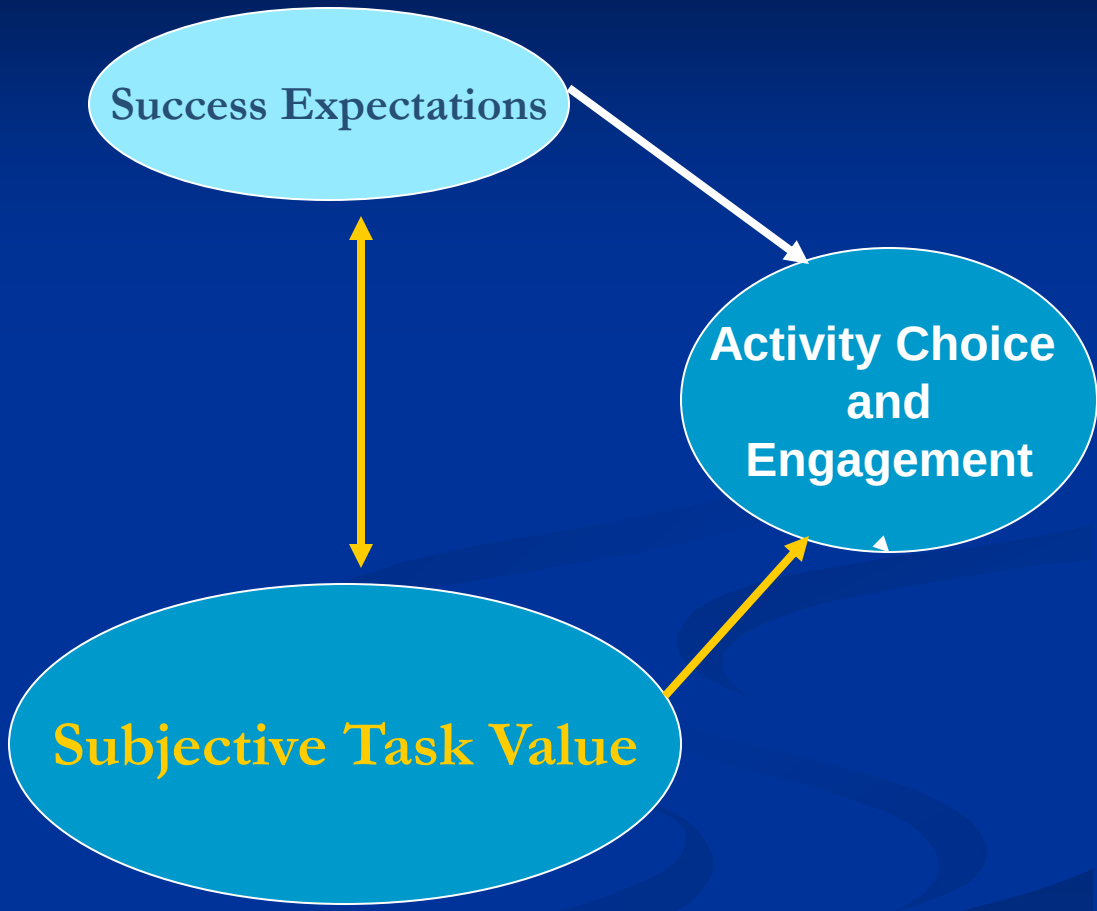
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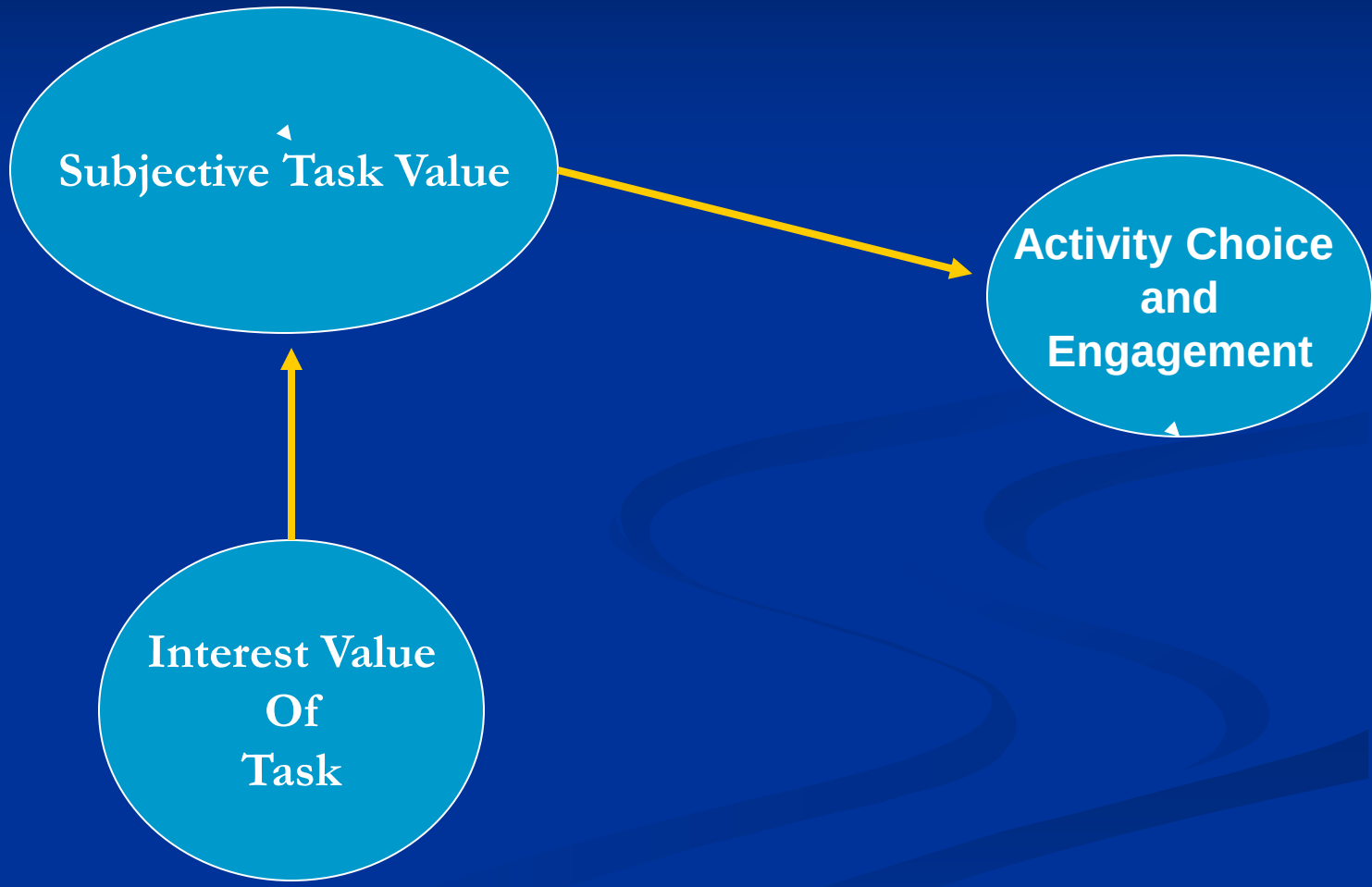
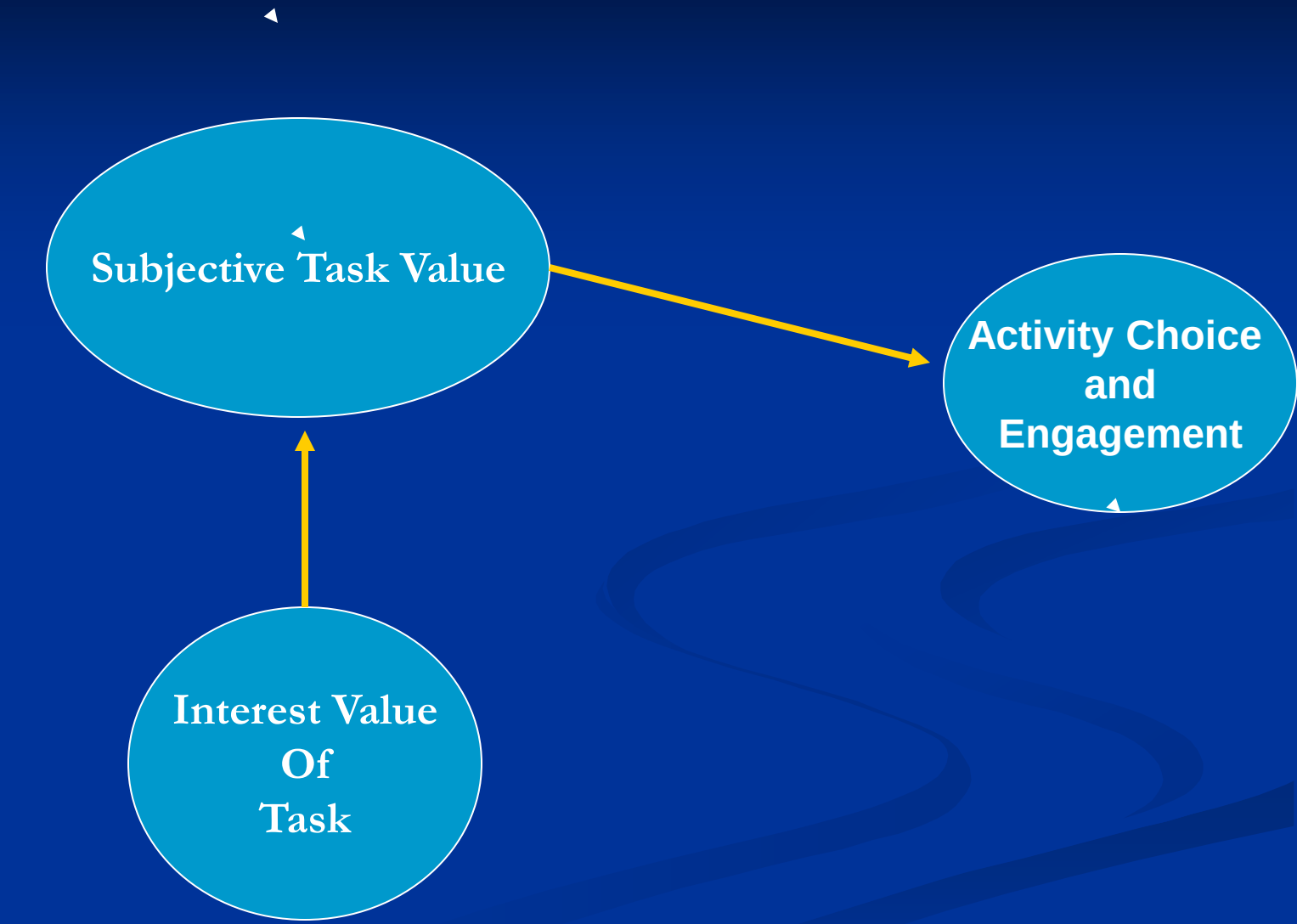
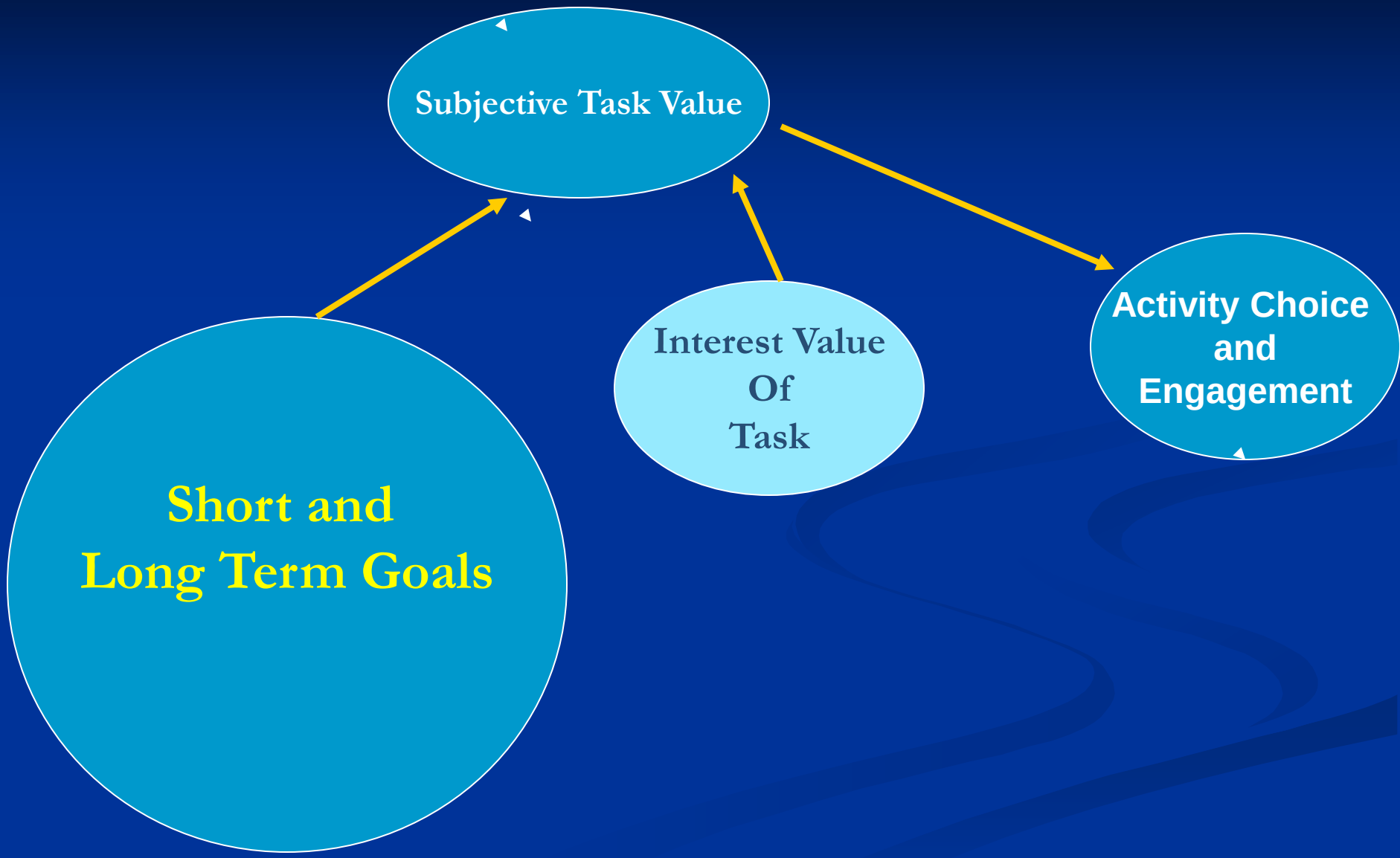

Subjective Task Value
Activity Choice and Engagement
Interest Value Of Task



Self Determination Theory/Interest Theories


Subjective Task Value
Short and
Long Term Goals
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Of
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and
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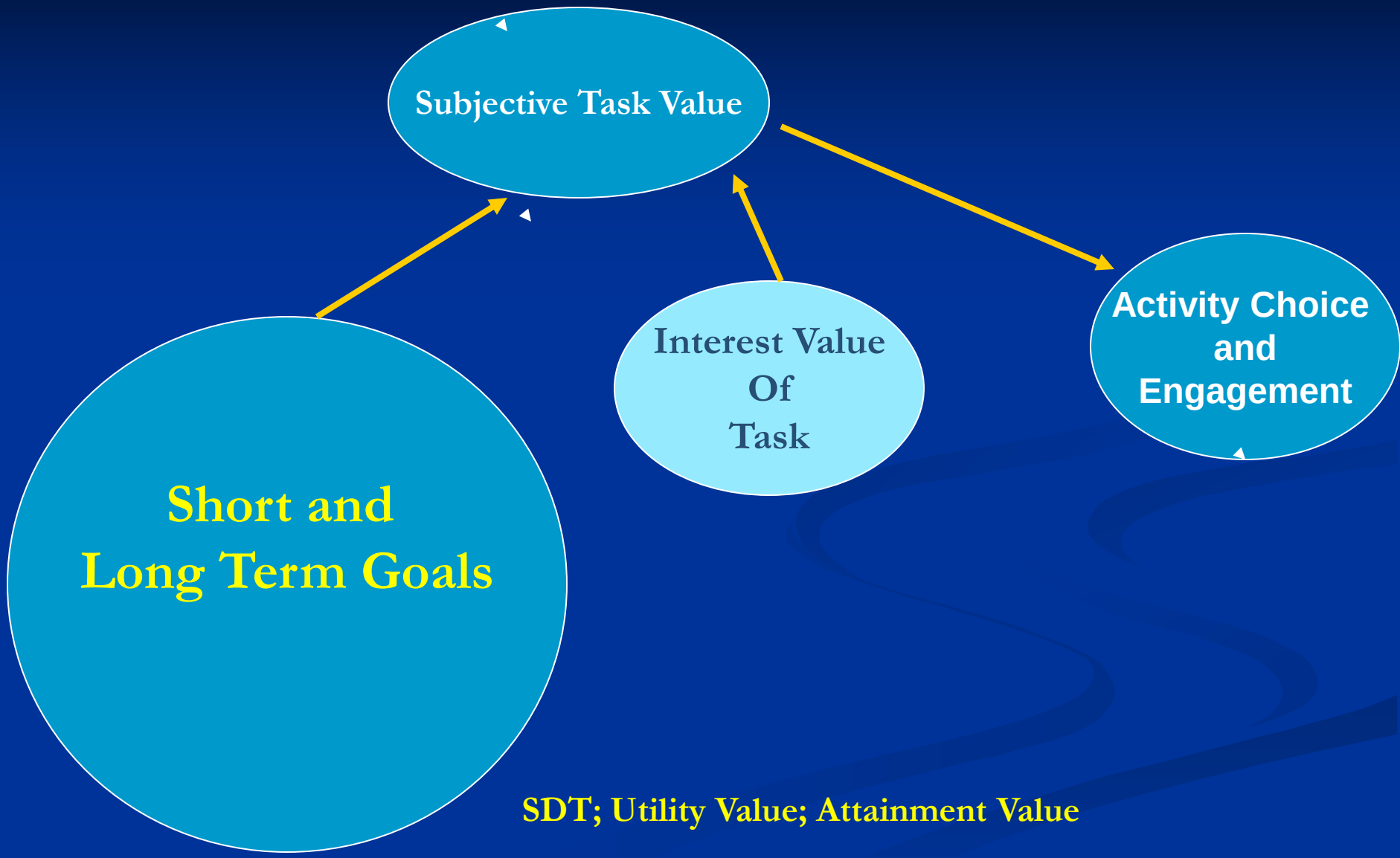
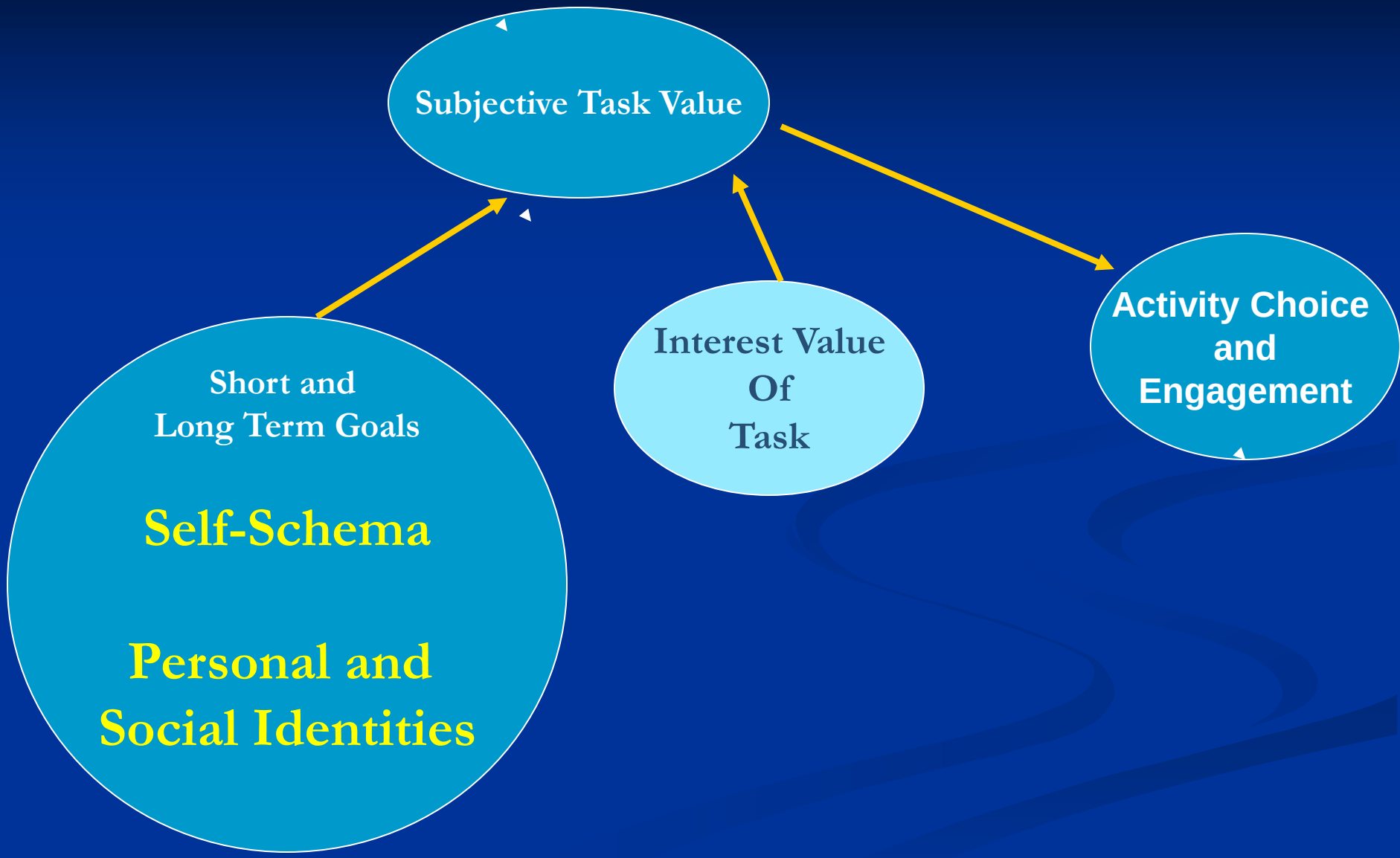


SDT; Utility Value; Attainment Value


Subjective Task Value
Short and
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Self-Schema
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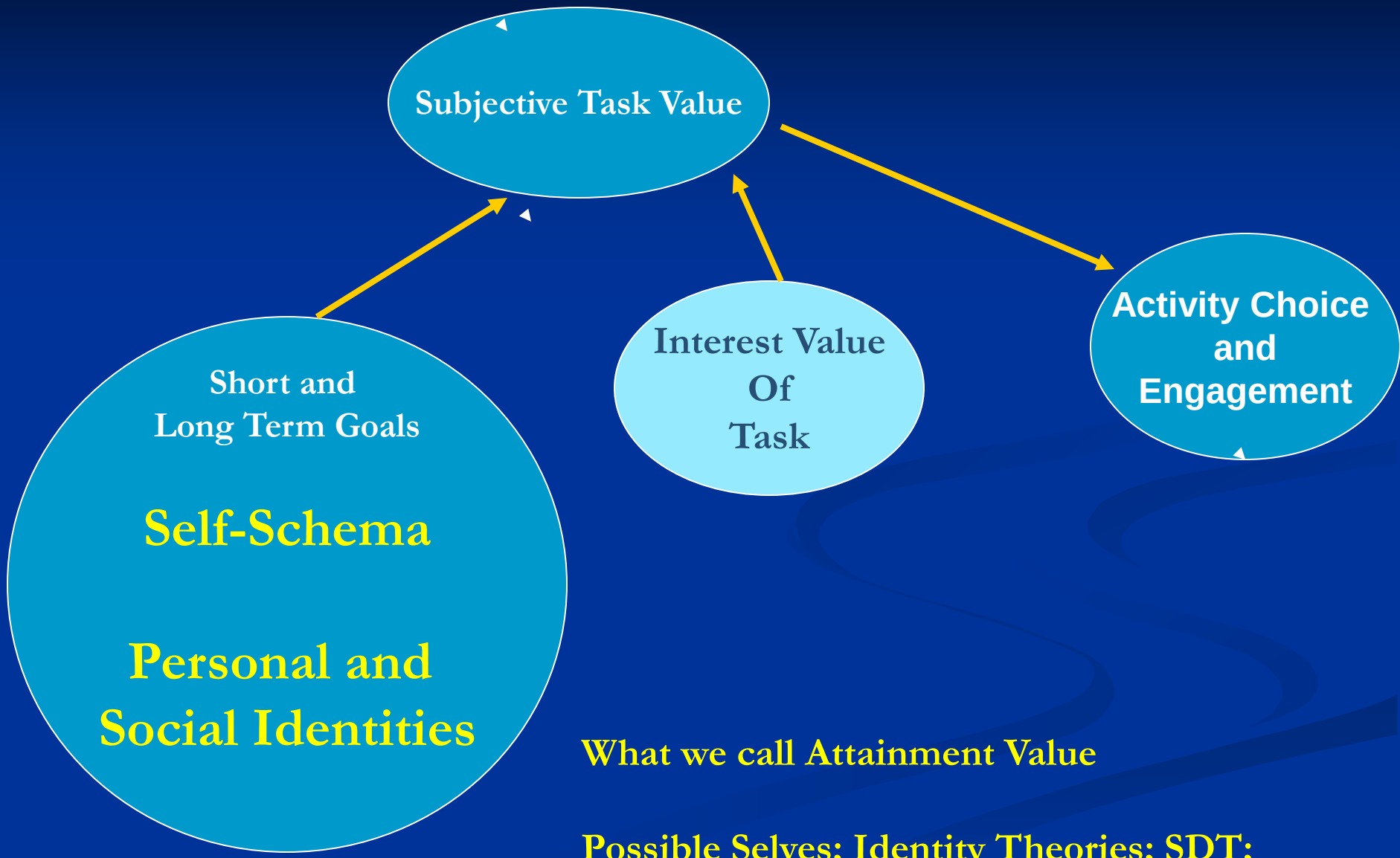
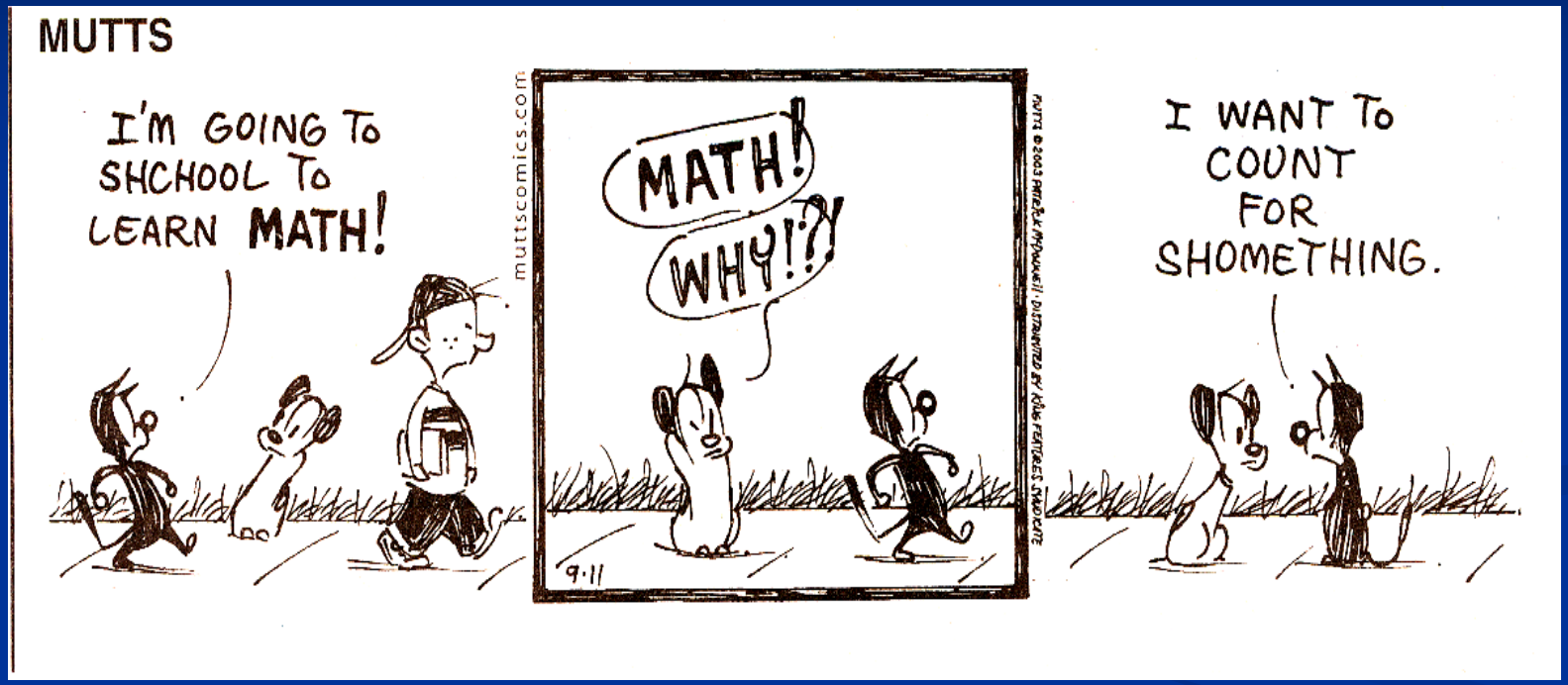
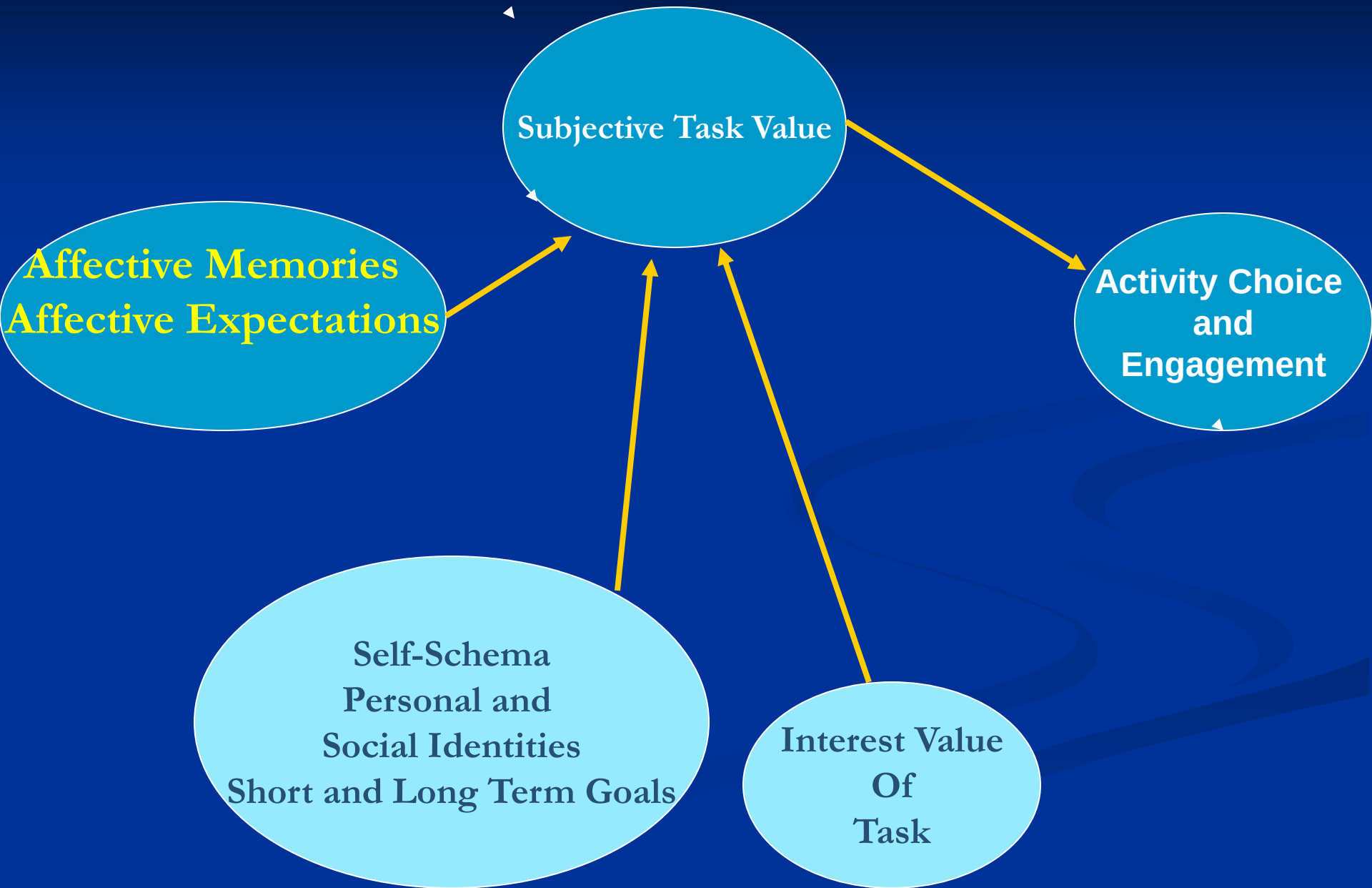


What we call Attainment Value

Possible Selves; Identity Theories; SDT;


MUTTS
I'M GOING TO SHCHOOL TO LEARN MATH!
muttscomics.com
MATH! WHY!?!
9-11
I WANT TO COUNT FOR SHOMETHING.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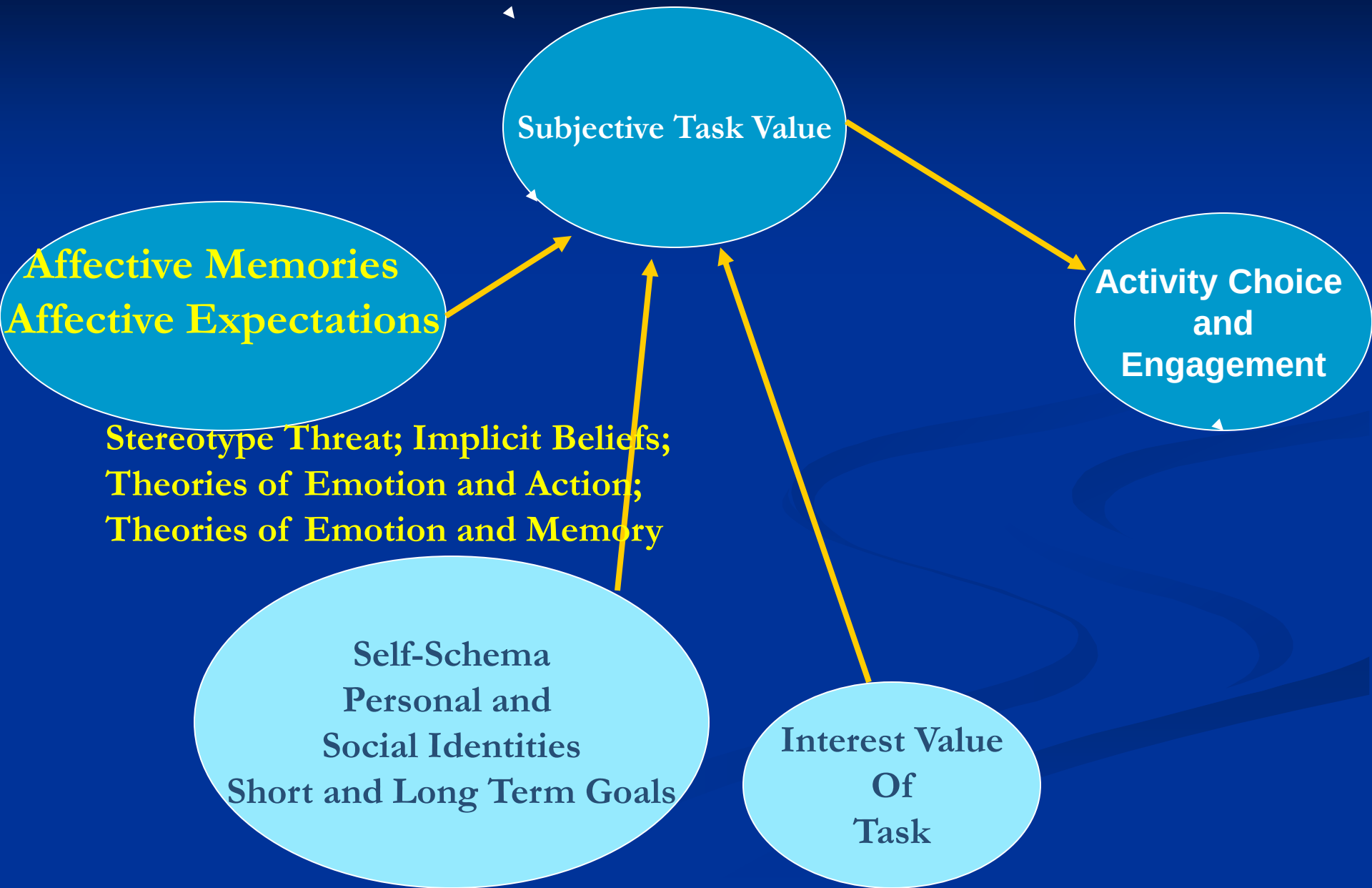
Subjective Task Value
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Stereotype Threat; Implicit Beliefs;
Theories of Emotion and Action;
Theories of Emotion and Memory
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Interest Value
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Task


Success Expectations
Cost
Subjective Task Value
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Short and Long Term Goals
Task Interest
Value

Subjective Task Value: Cost

- Psychological Costs
  - Fear of Success/Failure
  - Anticipated Anxiety
  - Stereotype Threat
  - Link of Task Demands to Temperamental "Traits" - leading to activation or anticipated activation of fear and anxiety

Subjective Task Value: Cost

- Psychological Costs
  - Fear of Success/Failure
  - Anticipated Anxiety
- Financial Costs
- Lost Opportunities to Fulfill Other Goals or to do Other Activities (Amy)
  - Implicit Beliefs (Me; Not Me)
  - Theories of Intelligence

Subjective Task Value: Cost

- Psychological Costs
  - Fear of Success/Failure
  - Anticipated Anxiety
- Financial Costs
- Lost Opportunities to Fulfill Other Goals or to do Other Activities
- **Social and Psychological Costs of Punishment or Rejection and of Violating Norms**

Key Features of Model

1. Focuses on Choice not on Deficits

2. Points Out Importance of Studying the Origins of Individuals' Perception of the Range of Possible Options

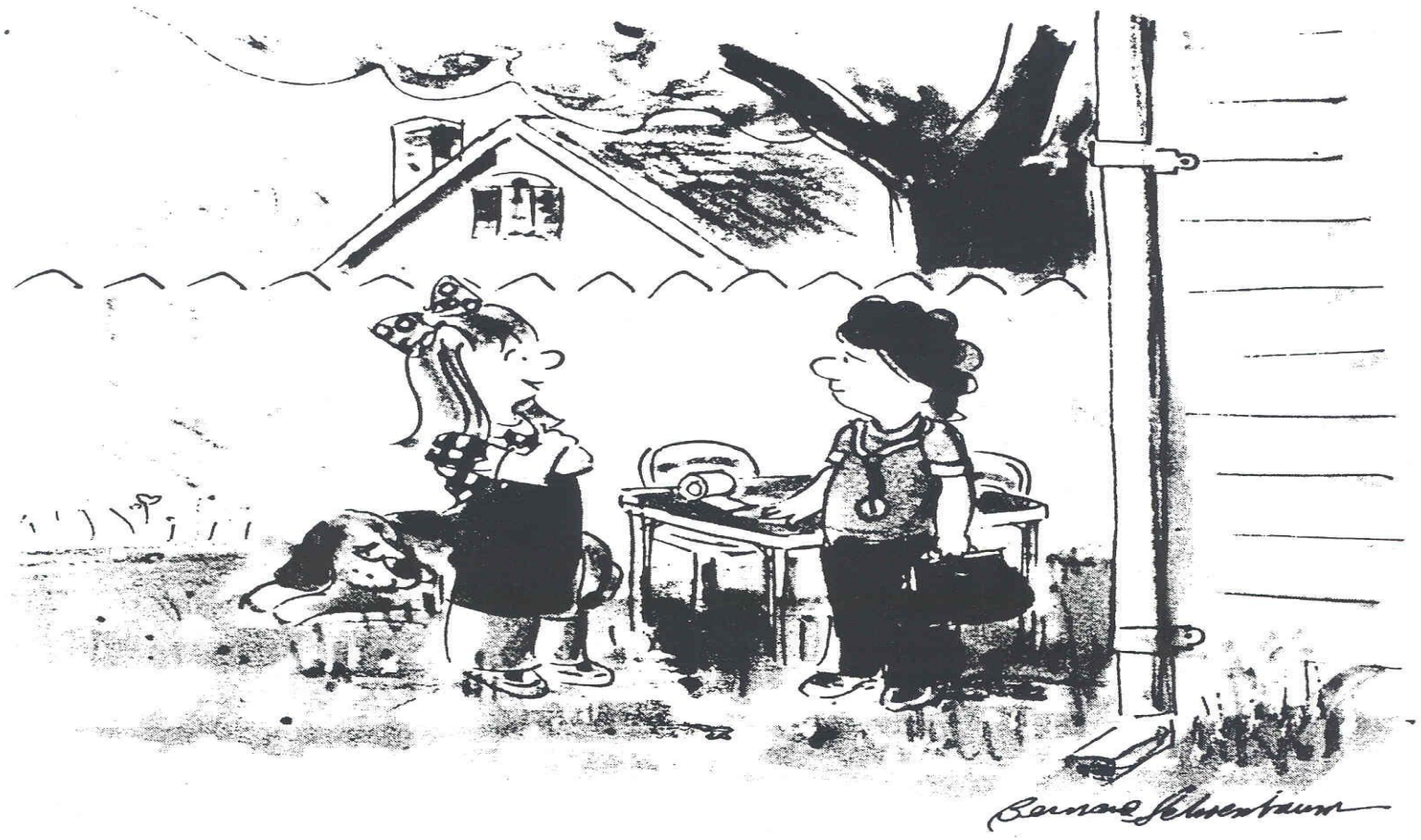
Key Features of Model

1. Focuses on the Fact that Choices are made from a Wide Range of Positive Options

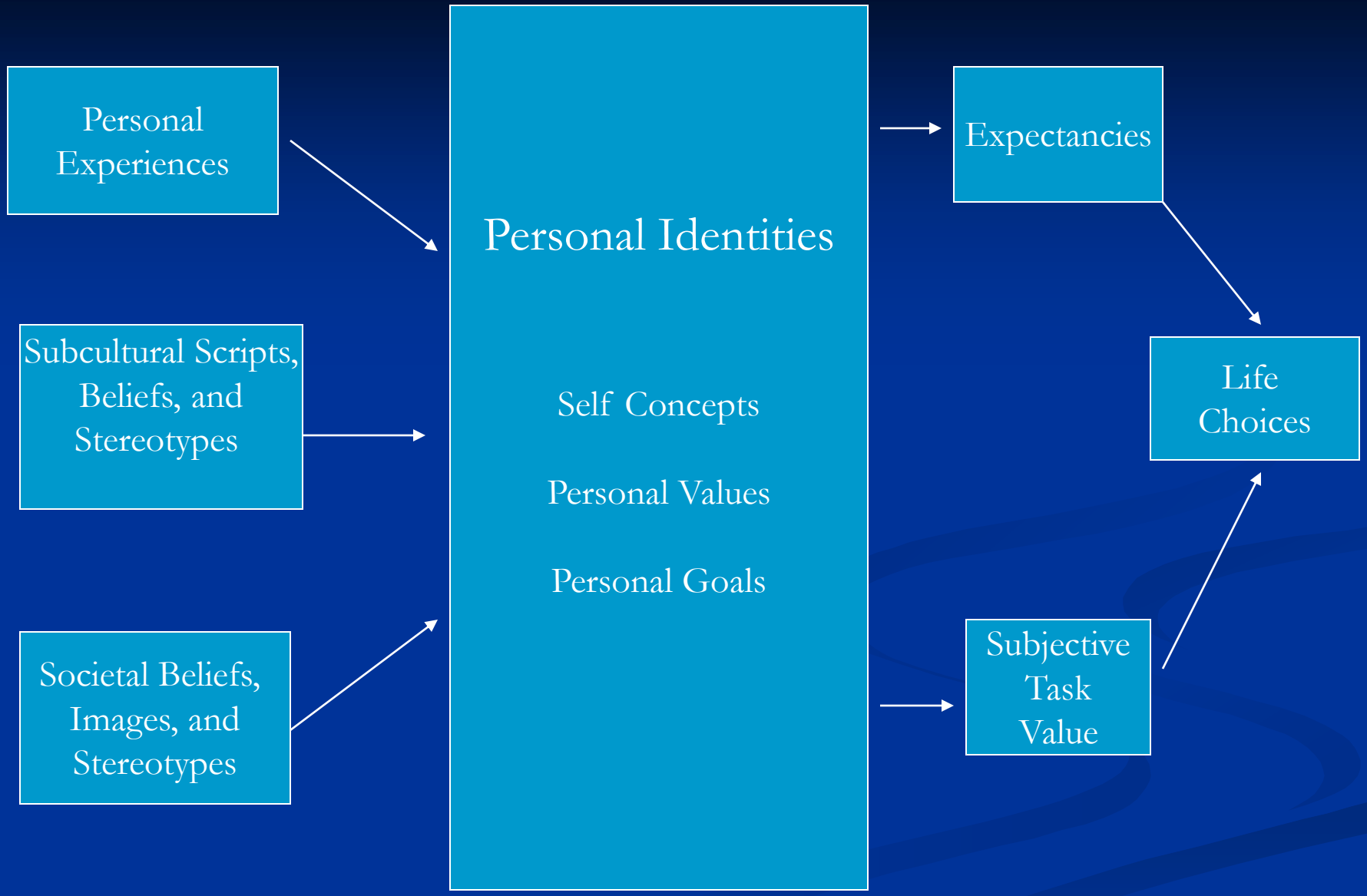
2. Focuses on the Hierarchical Nature of Both Expectancies and Subjective Task Values

3. These Hierarchies are Labile, Being Influenced by Immediate Social Context, and Developmental Tasks

- How Does This Relate To Gender?



"O.K., you be the doctor, and I'll be the Secretary of Health and Human Services."


Personal Experiences
Subcultural Scripts, Beliefs, and Stereotypes
Societal Beliefs, Images, and Stereotypes
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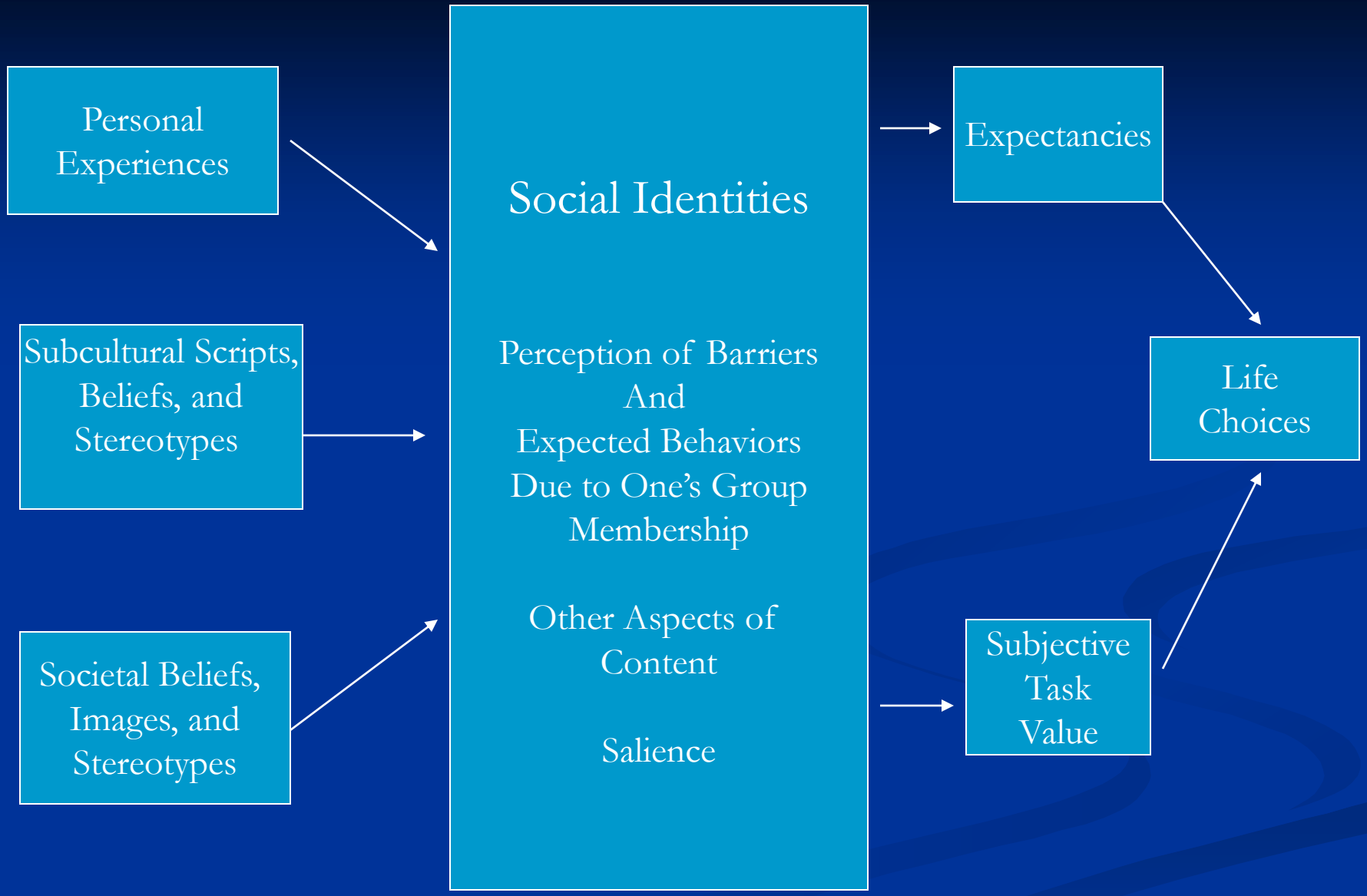
Personal Values
Personal Goals
Expectancies
Subjective Task Value
Life Choices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Social Identities
Perception of Barriers And Expected Behaviors Due to One's Group Membership
Other Aspects of Content
Salience
Expectancies
Subjective Task Value
Life Choices

Gender and Ability Self Concepts and Personal Expectations

- Cultural Stereotypes about Which Gender is Supposed to be Good at Which Skills
- Extensive Socialization Pressures to Make Sure These Stereotypes are Fulfilled

Gender-Roles and Subjective Task Value

1. Different Hierarchies of Core Personal Values
    a. Concern with Social Goals versus Concern with Power or Achievement Goals;
    b. Concern with Social Relationships versus concern with Individual Achievement and Status.
    c. Interest in Things versus Interest in People.
    d. Interest in Cooperation versus Interest in Competition
2. Density of Hierarchy
    a. Single-mindedness versus Diverse Interests

Gender-Roles and Subjective Task Value Continued

3. Different Long Range Goals

4. Different Definitions of Success in Various Goals and Roles.

    a. What does it take to be a successful father versus a successful mother?

    b. What does it take to be a successful professional?

    c. What does it take to be a successful human being?

Gendered Achievement-Related Choices: STEM

- My colleagues and I then used this framework to design a longitudinal study of gendered educational and occupational choices related to the mathematical, physical and engineering sciences.

- I have time to give you only a couple of examples of this work.

Michigan Study of Adolescent Life Transitions (MSALT)

Waves 1-4

Jacque Eccles
Carol Midgley
Allan Wigfield
Jan Jacobs
Connie Flanagan
Harriet Feldlaufer
David Reuman
Doug MacIver
Dave Klingel
Doris Yee
Christy Miller Buchanan

Waves 5-8

Jacque Eccles
Bonnie Barber
Lisa Colarossi
Deborah Jozefowicz
Pam Frome
Sarah Lord
Mina Vida
Robert Roeser
Laurie Meschke

OVERVIEW OF DESIGN AND SAMPLE: MICHIGAN STUDY OF ADOLESCENT LIFE TRANSITIONS – MSALT

DESIGN:

- On-going Longitudinal Study of One Birth Cohort
- Data Collected in Grades 6, 7, 10, 12; and again at Ages 20 and 25
- Data Collected from Adolescents, Parents, and School – Most Using Survey Forms

SAMPLE:

- Nine School Districts
- Approximately 1,200 Adolescents
- Approximately 90% White
- Approximately 51% Female
- Working/Middle Class Background

MSALT DESIGN

Wave	1,2	3,4	5	6	7	8	9
Grade	6	7	10	12	12+2	12+6	12+9
Age	12	13	16	18	20	24	27
Year	83-'84	84-'85	88	90	92	96	99

MSALT Sample General Characteristics

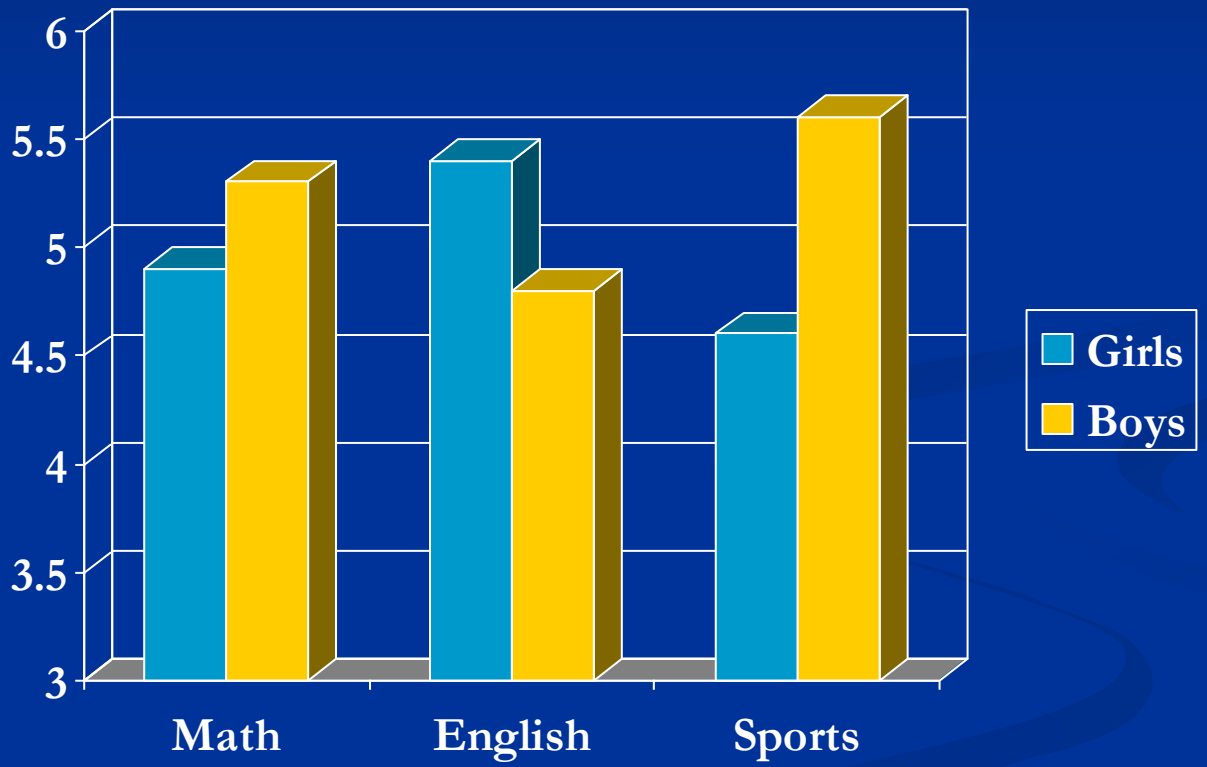
- School based sample drawn from 10 school districts in the small city communities surrounding Detroit.
- Predominantly White, working and middle class families
- Approximately 50% of sample of youth went on to some form of tertiary education

Two Basic Initial Questions

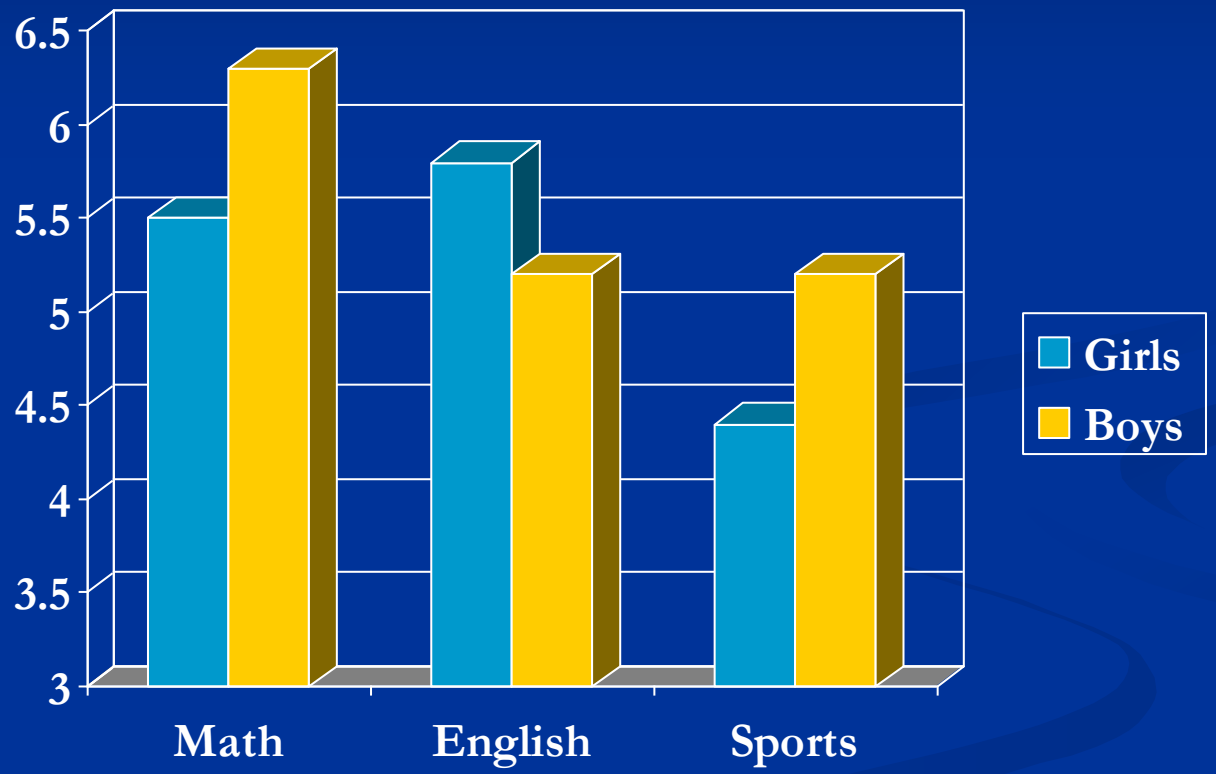
ARE THERE GENDER DIFFERENCES ON THESE SELF AND TASK BELIEFS?

DO THE GENDER DIFFERENCES IN THESE SELF-RELATED BELIEFS MEDIATE THE GENDER DIFFERENCES IN INVOVLEMENT?

Gender Differences in Ability Self Concepts – 7th Grade



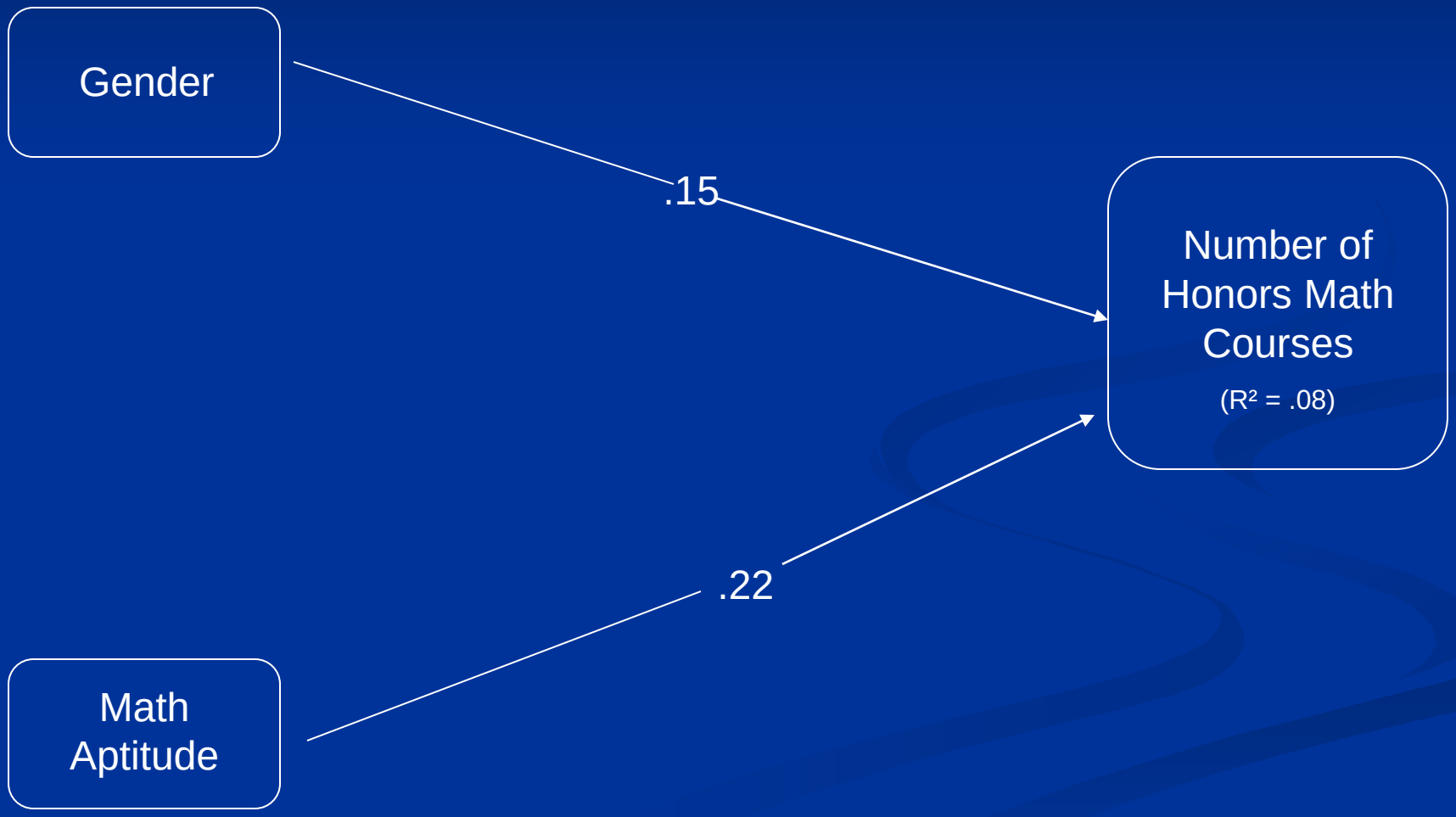
Gender Differences in Subjective Task Value – 7th Grade



Conclusions

- Gender Differences Occur across Several Domains for Both Ability Self Concepts and Subjective Task Values
- Gender Differences Emerge Quite Young
- But Do These Differences Mediate Gender Differences in Course Taking and Activity Involvement?

Predicting Number of Honors Math Classes (sex, DAT)
N = 223 (honors students)



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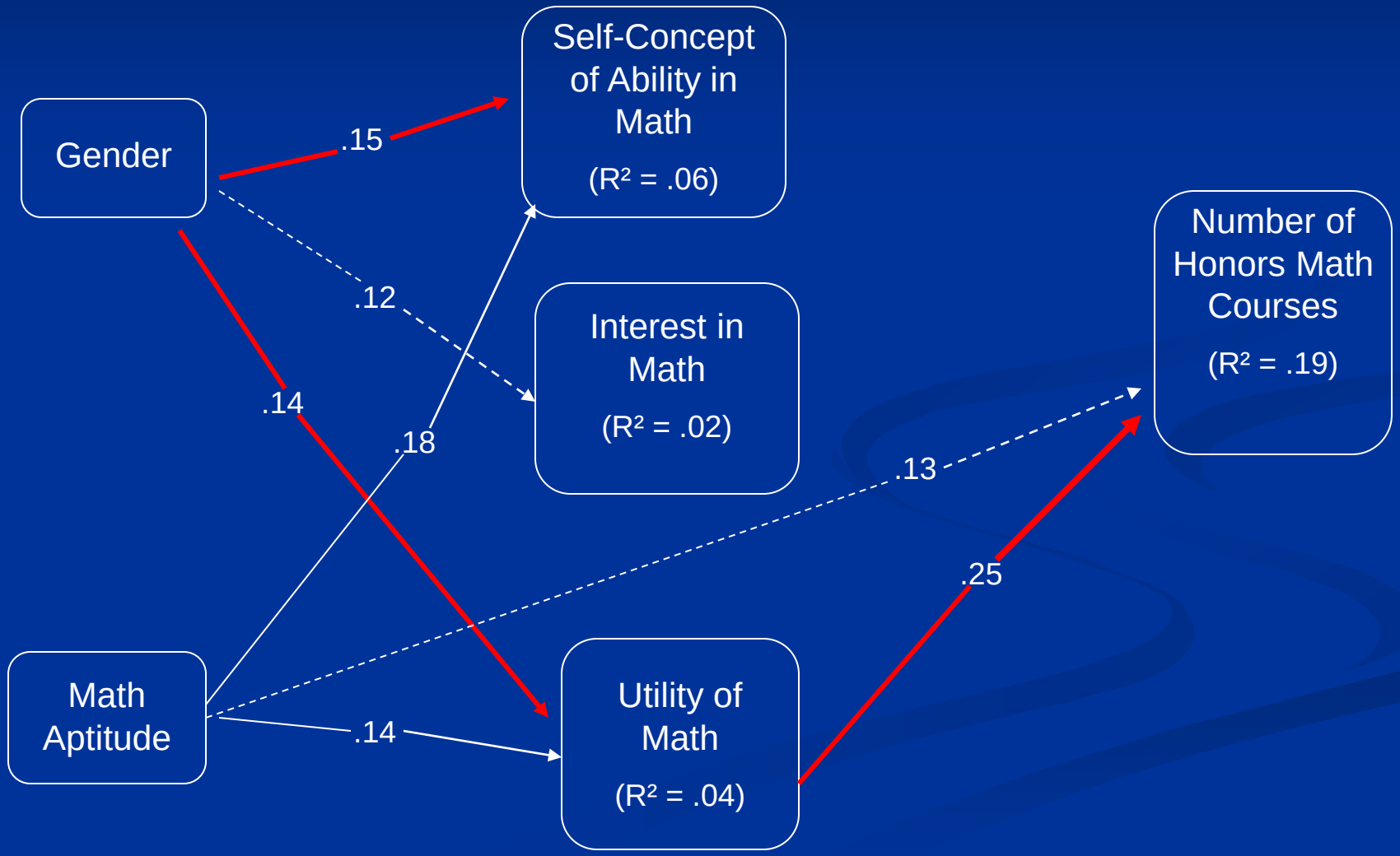
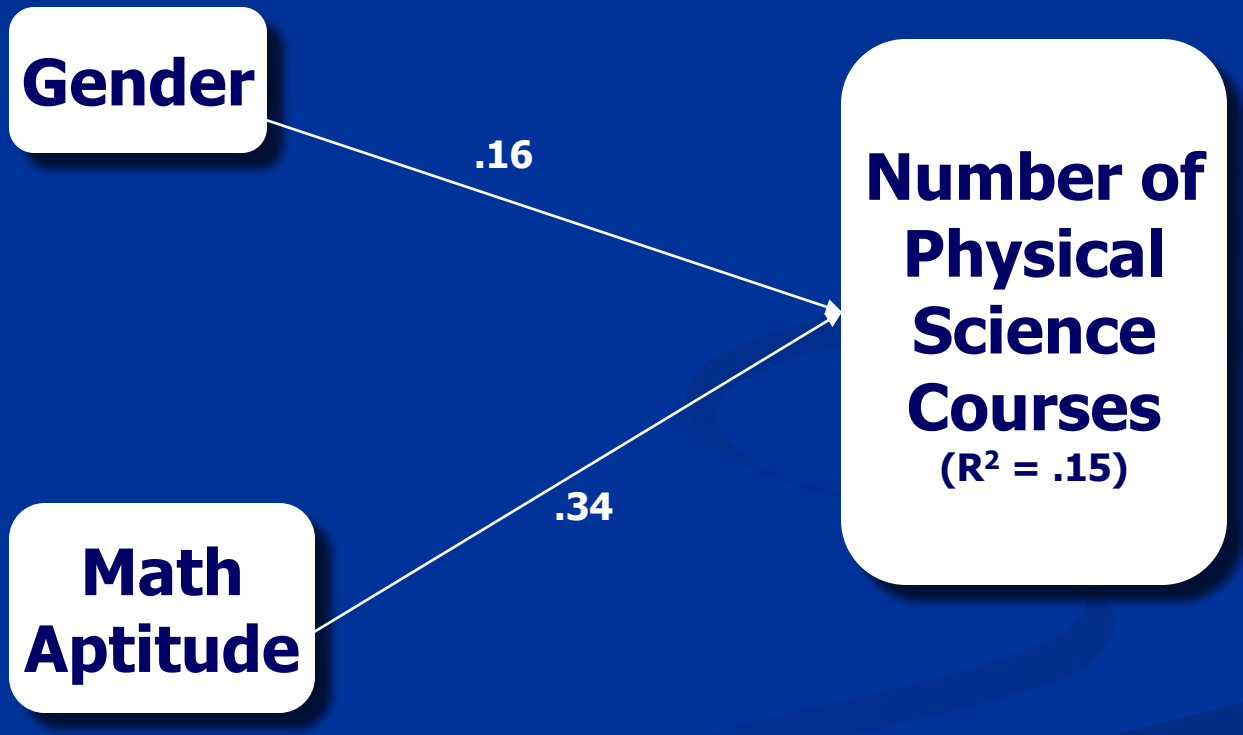


Predicting Physical Science Class Enrollments



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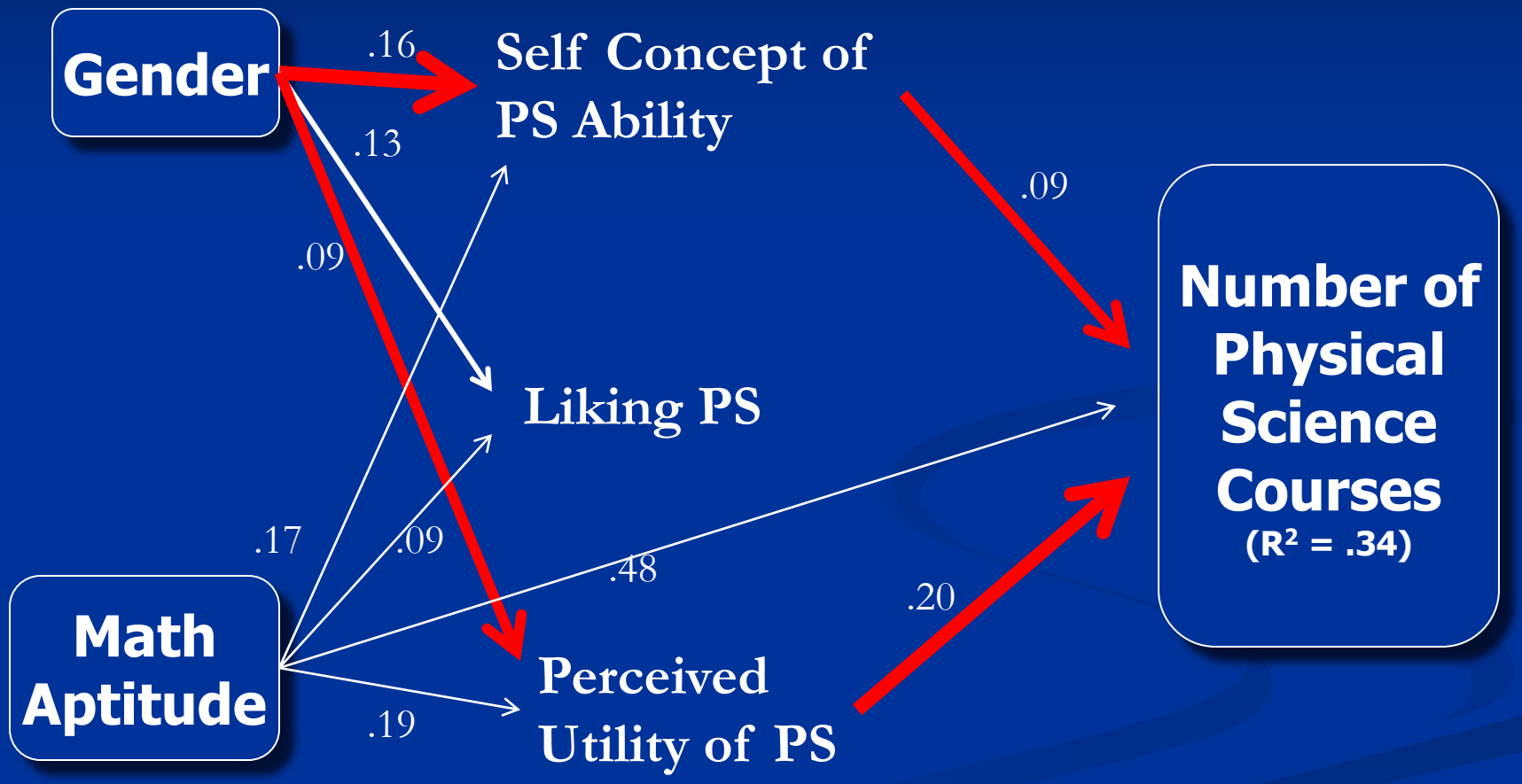


Conclusion

- In this sample, the gender differences in utility value were the strongest mediators of gender differences in math and physical science course enrollments.
- A slightly different pattern is emerging for math in the CAB study: Math Ability Self Concept is having a stronger effect.
- In this sample, the gender differences in all three expectancy – value beliefs mediated the gender differences in involvement in sports.

What about College Course Choices?

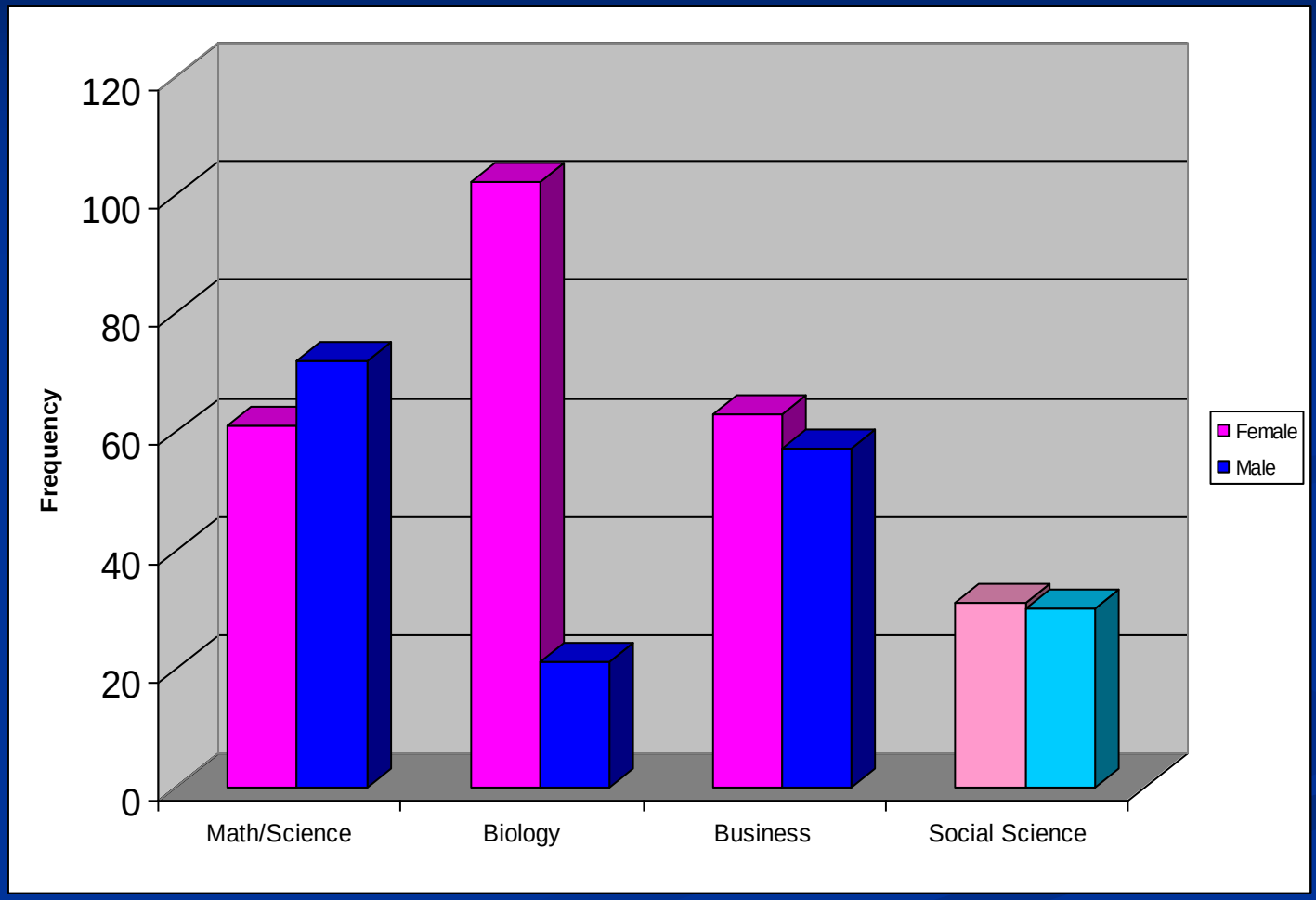
MSALT DESIGN

Wave	1,2	3,4	5	6	7	8	9
Grade	6	7	10	12	12+2	12+6	12+9
Age	12	13	16	18	20	24	27
Year	83-'84	84-'85	88	90	92	96	99

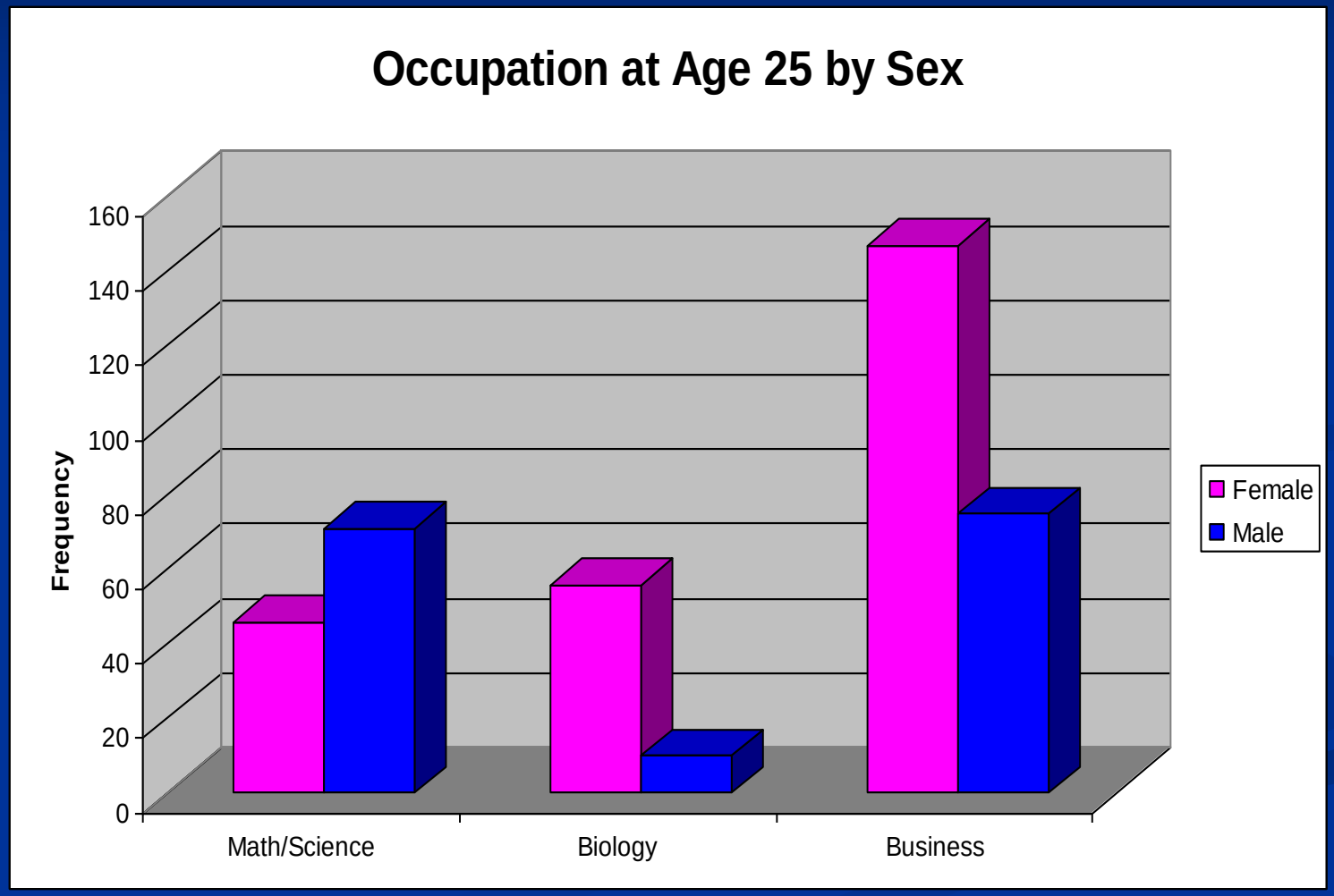
Specific Sample Characteristics for Analyses Reported Today

- Those who participated at Wave 8 (age 25)
  - Female N = 791 Male N = 575
- Those who completed a college degree by Wave 8
  - Female N = 515 Male N = 377

Sex Differences in College Majors



Sex Differences in Occupations



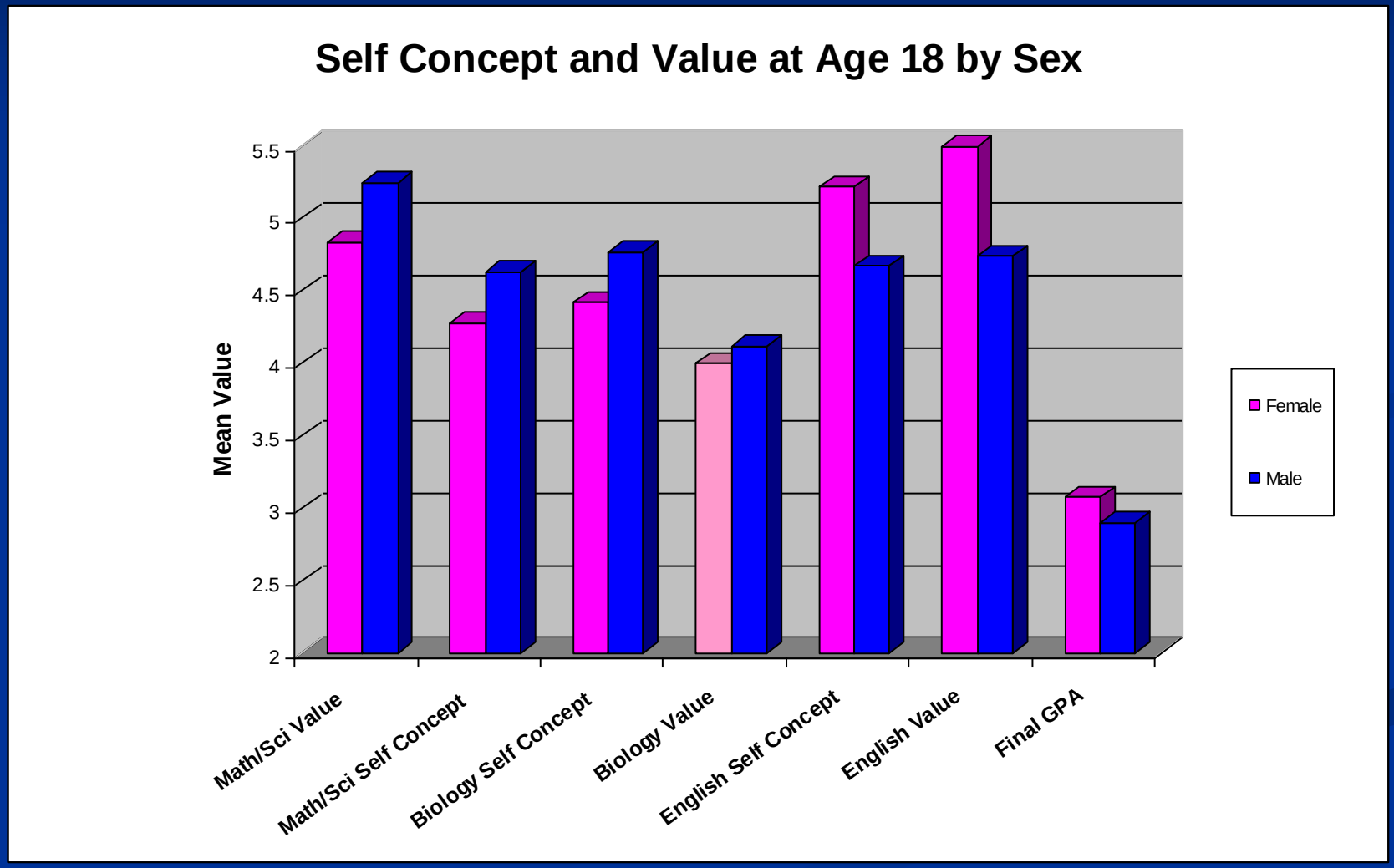
Analyses 1: Between Sex

- Logistic regression to test for mediators of sex differences in college Math/Engineering/Physical Science majors

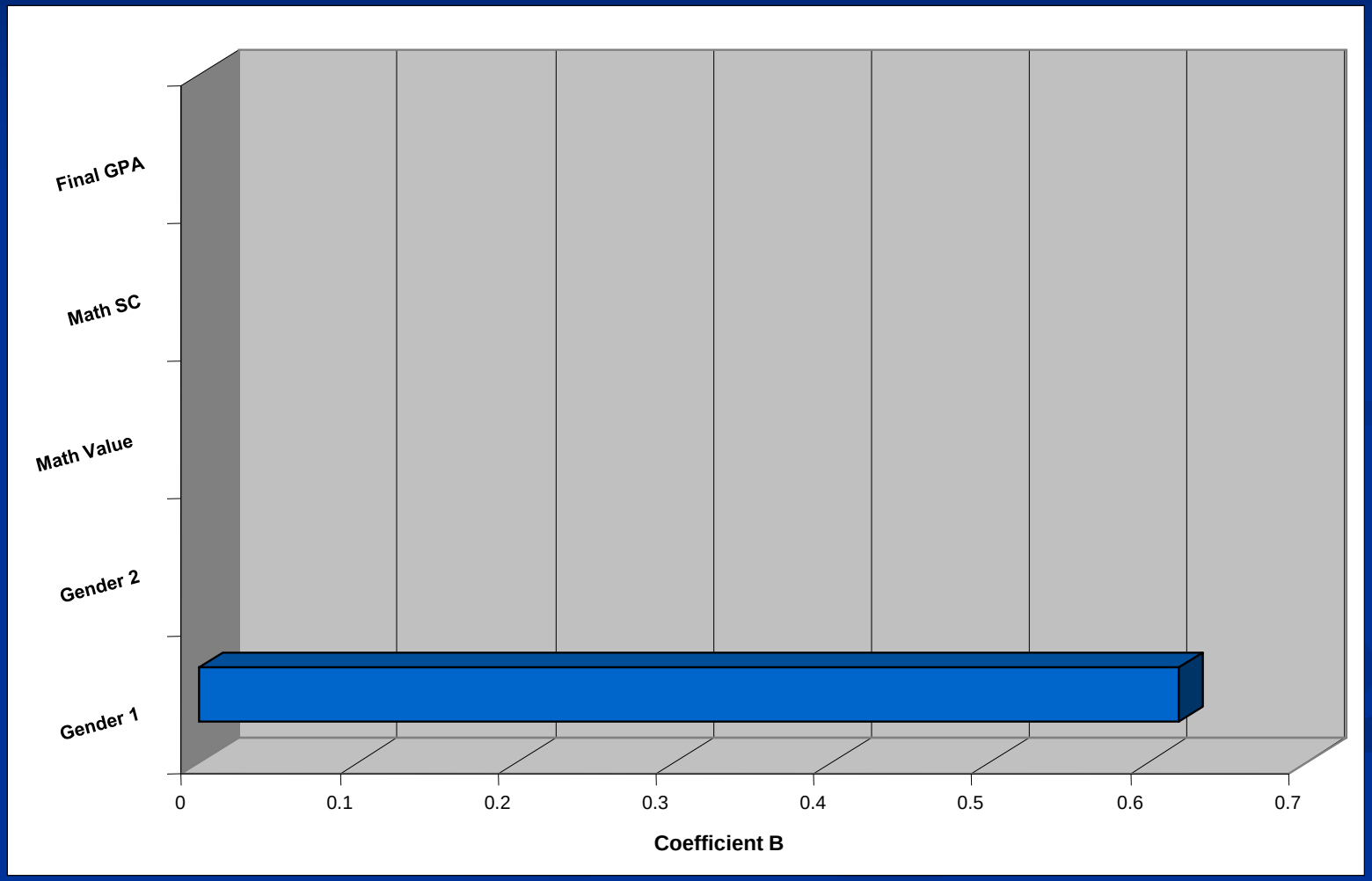
Time 1 Measures: 12th Grade

- Math/Physical Science Self-Concept of Ability
- Math/PS Value and Usefulness
- Biology Self-Concept of Ability
- Biology Value and Usefulness
- English Self-Concept of Ability
- English Value and Usefulness
- High School Grade Point Average

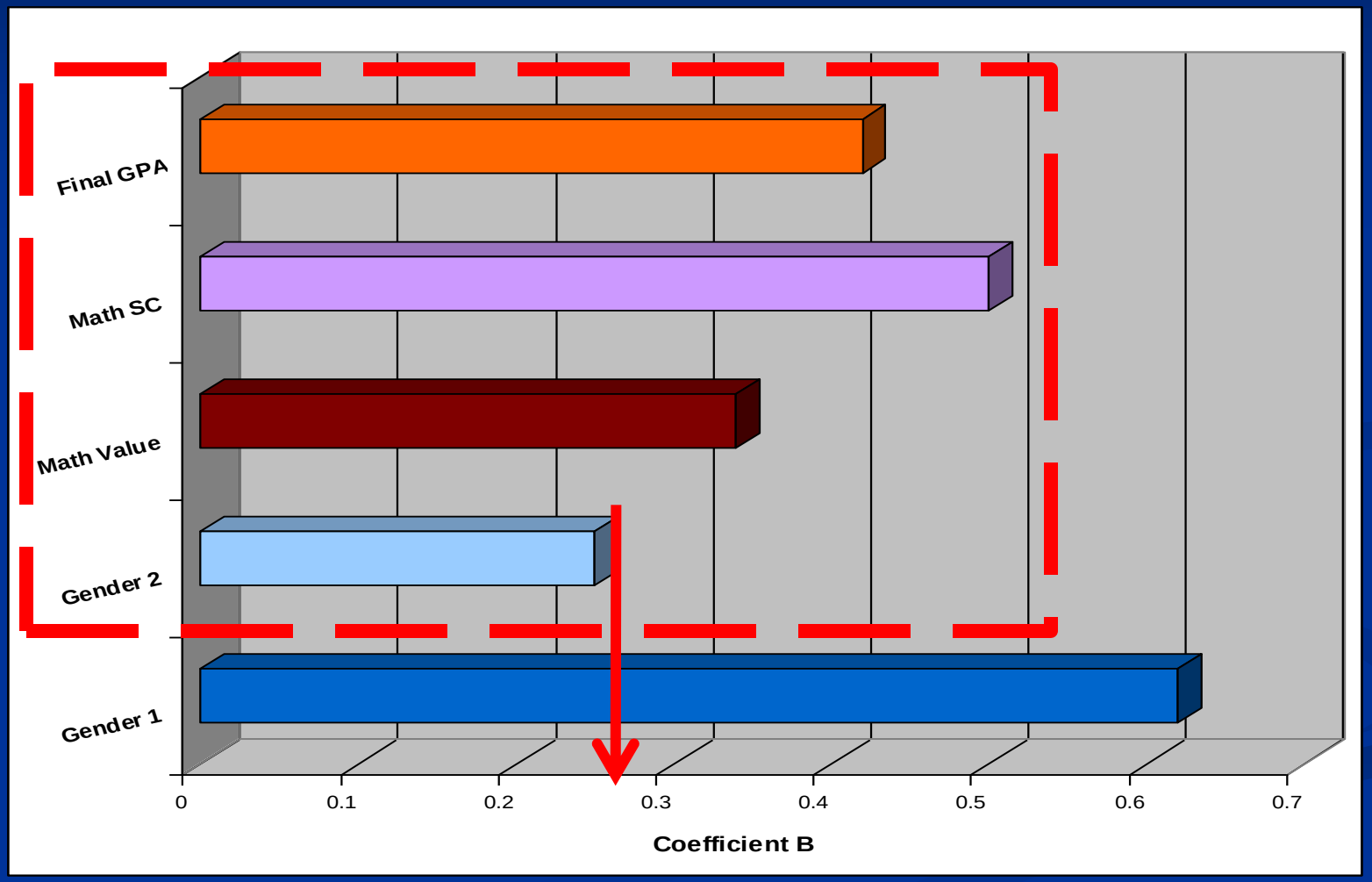
Sex Differences in Domain Specific Self Concepts and Values



Time 1 Predictors of Physical Science and Engineering College Major

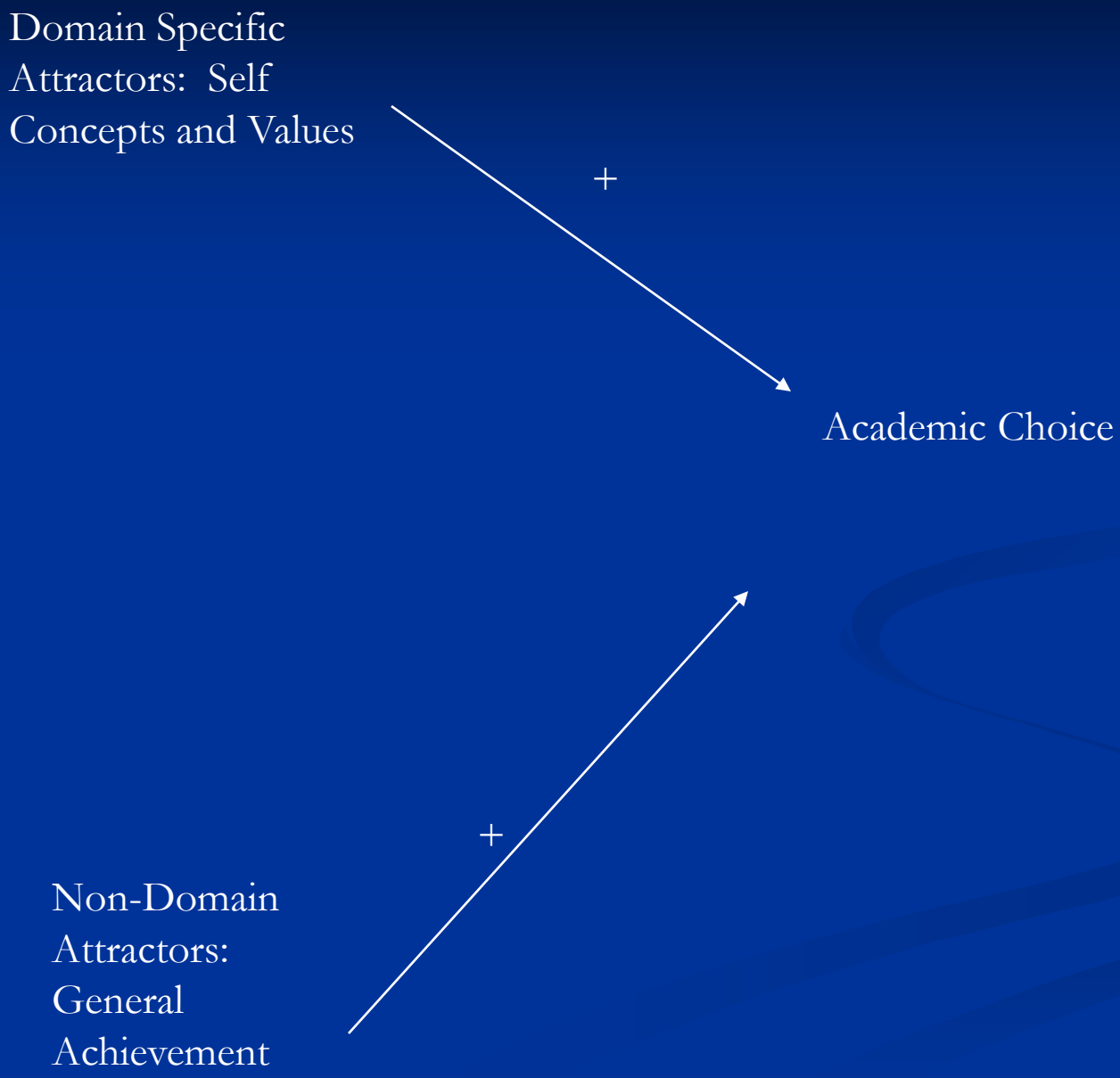


Time 1 Predictors of Science College Major



Analyses: Within Sex Discriminant Function Analyses

- Use age 20 General Ability SCs and Occupational Values to predict College Major at age 25


Domain Specific Attractors: Self Concepts and Values
+
Academic Choice
+
Non-Domain Attractors: General Achievement


Domain Specific Attractors: Self Concepts and Values
+
Domain Specific Detractors: Specific Costs
-
Academic Choice
Non-Domain Detractors: Other Values and Self Concepts
-
Non-Domain Attractors: General Achievement
+

Time 2 Measures: Age 20 Ability-Related

- Math/Science General Ability Self Concept
  - Efficacy for jobs requiring math/science
- Intellectual Ability Self Concept
  - Relative ability in logical and analytical thinking
- High School Grade Point Average

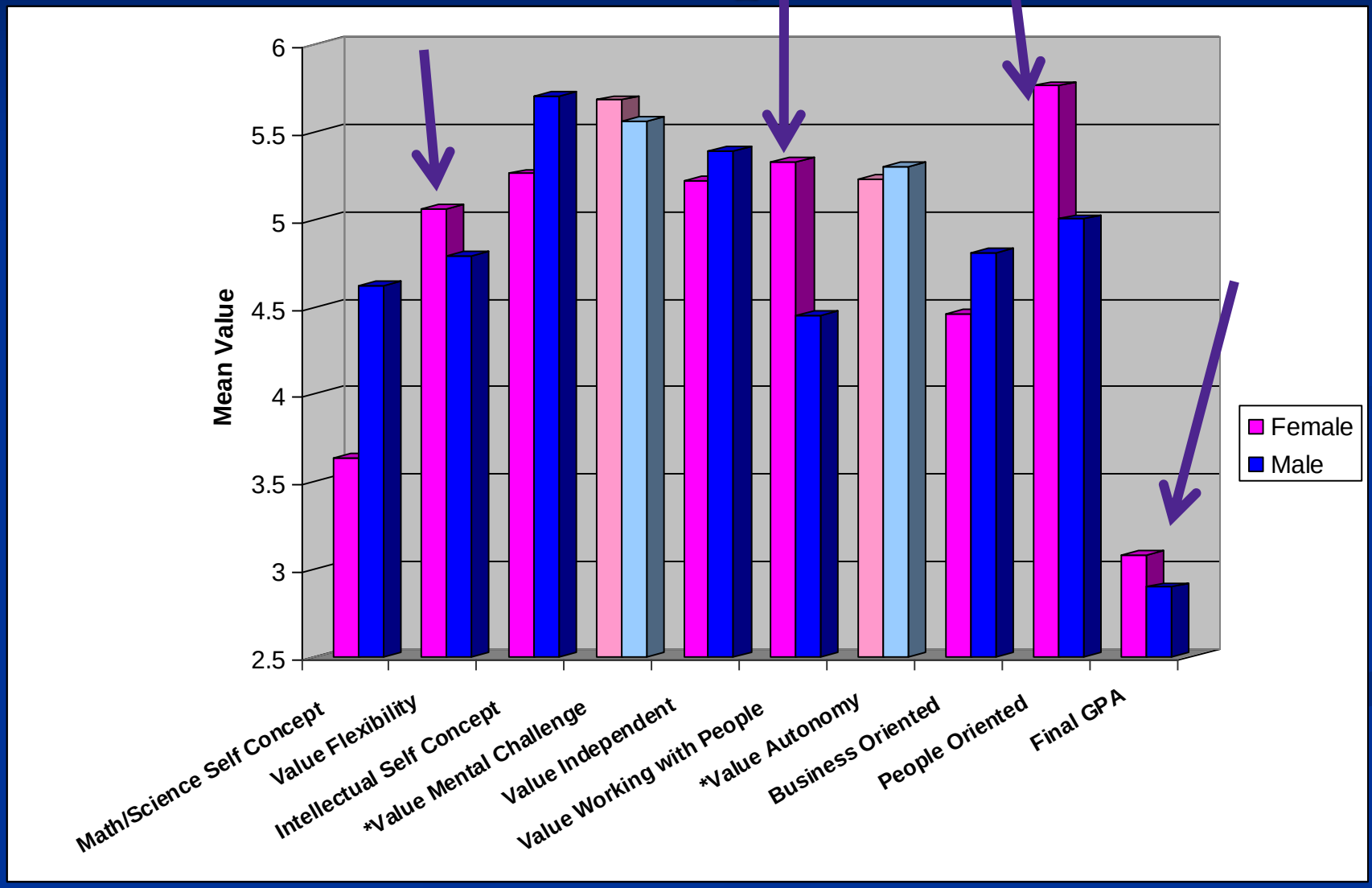
Time 2 Measures: Occupational Values

- Job Flexibility
  - Does not require being away from family
- Mental Challenge
  - Opportunity to be creative and learn new things
- Working with People
  - Working with others
- Autonomy
  - Own Boss

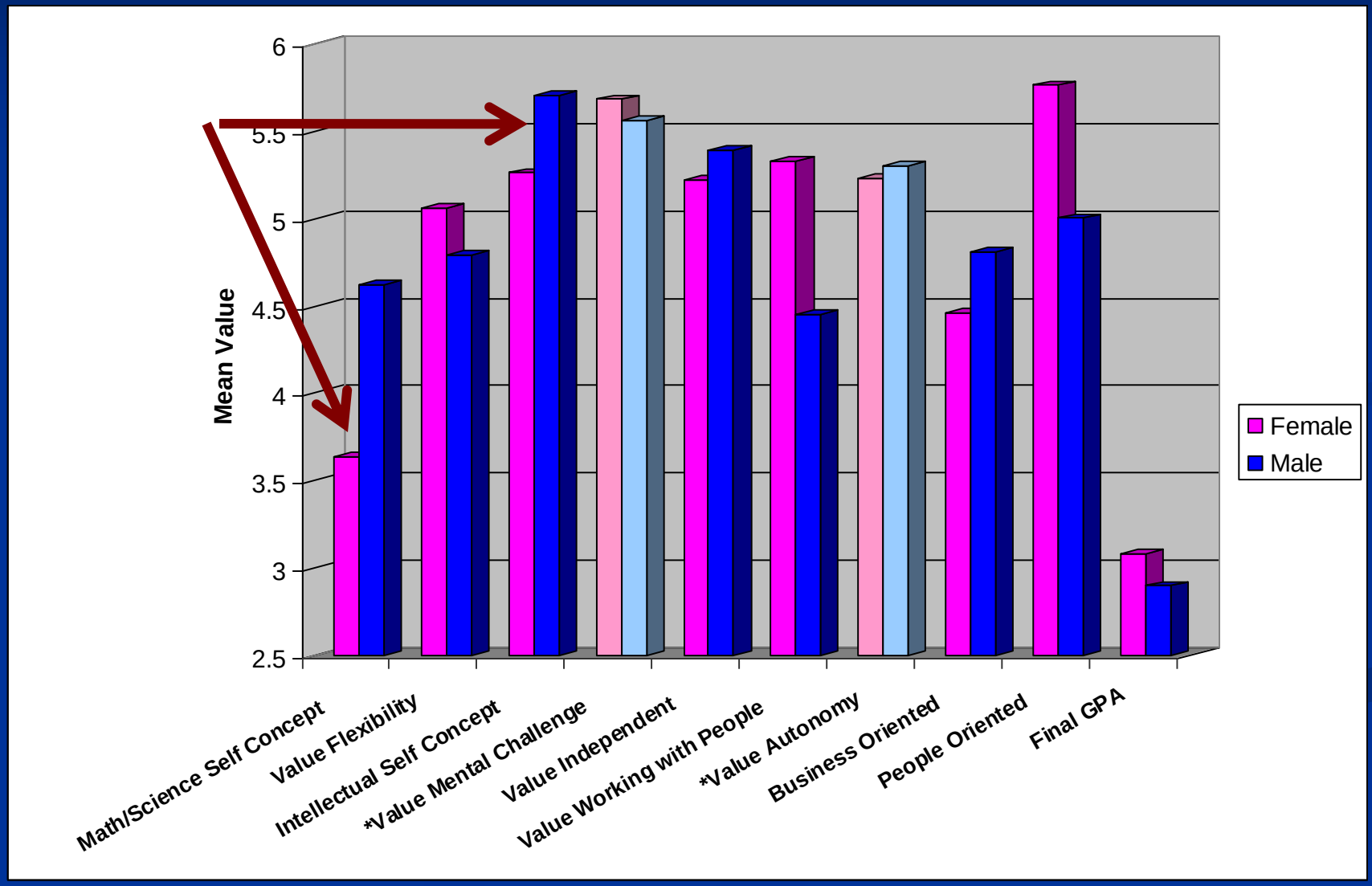
Time 2 Measures: Comfort with Job Characteristics

- Business Orientation: Comfort with tasks associated with being a supervisor
- People Orientation: Comfort working with people and children

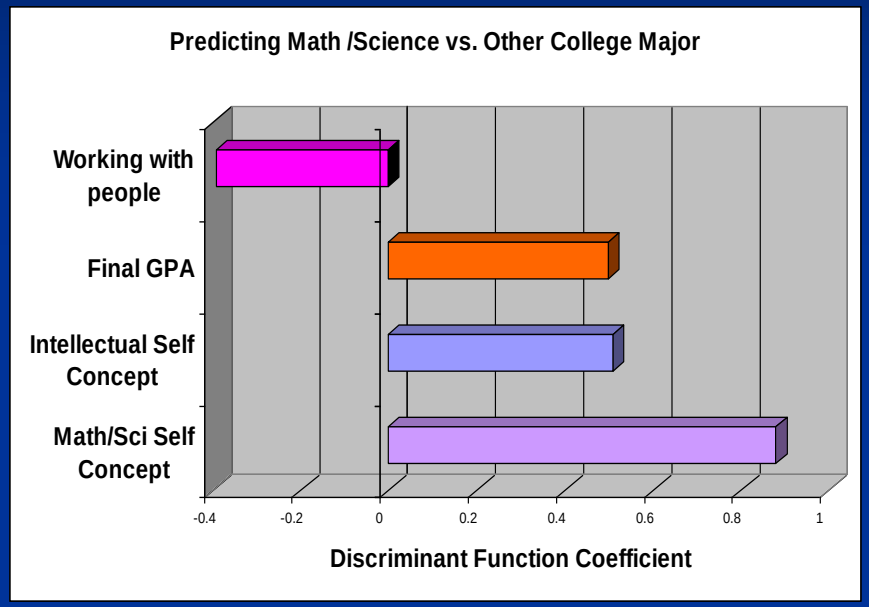
Sex Differences in Age 20 General Self Concepts and Values

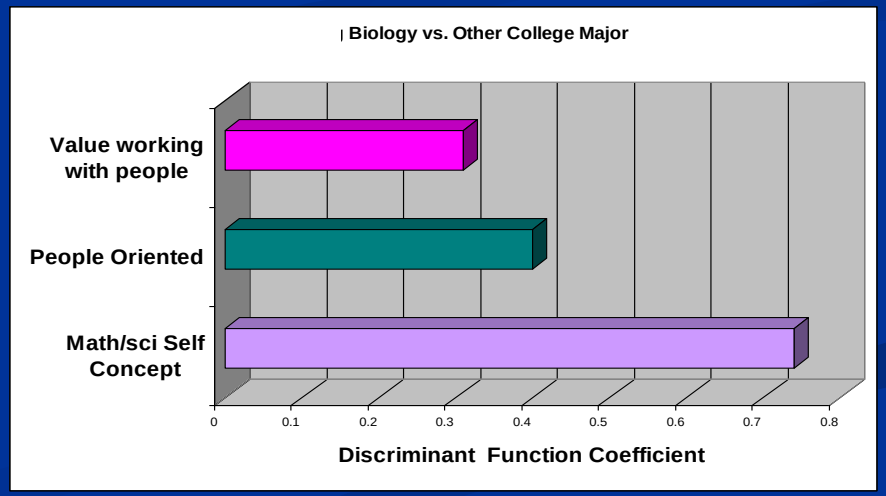


Sex Differences in Age 20 General Self Concepts and Values

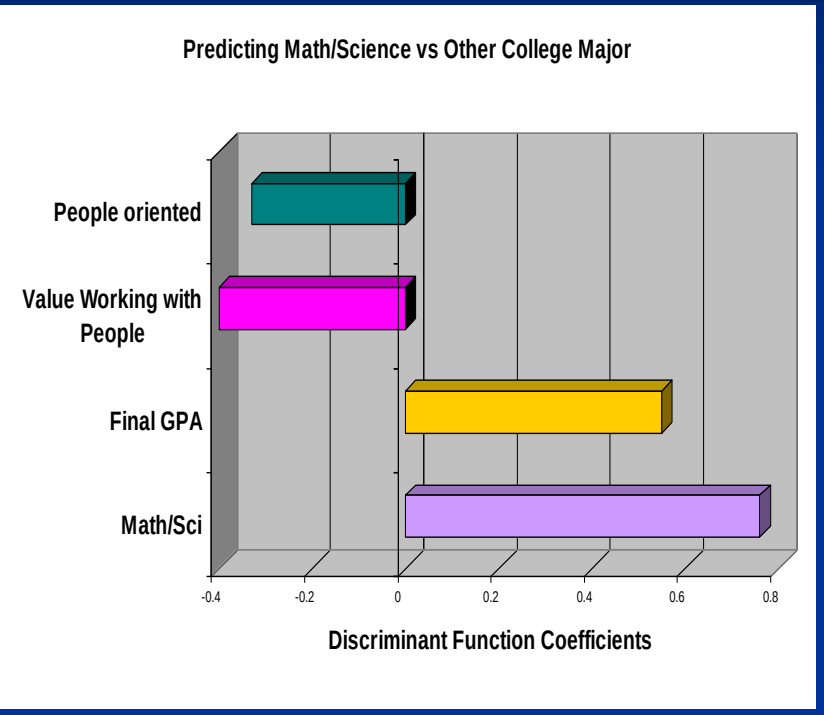


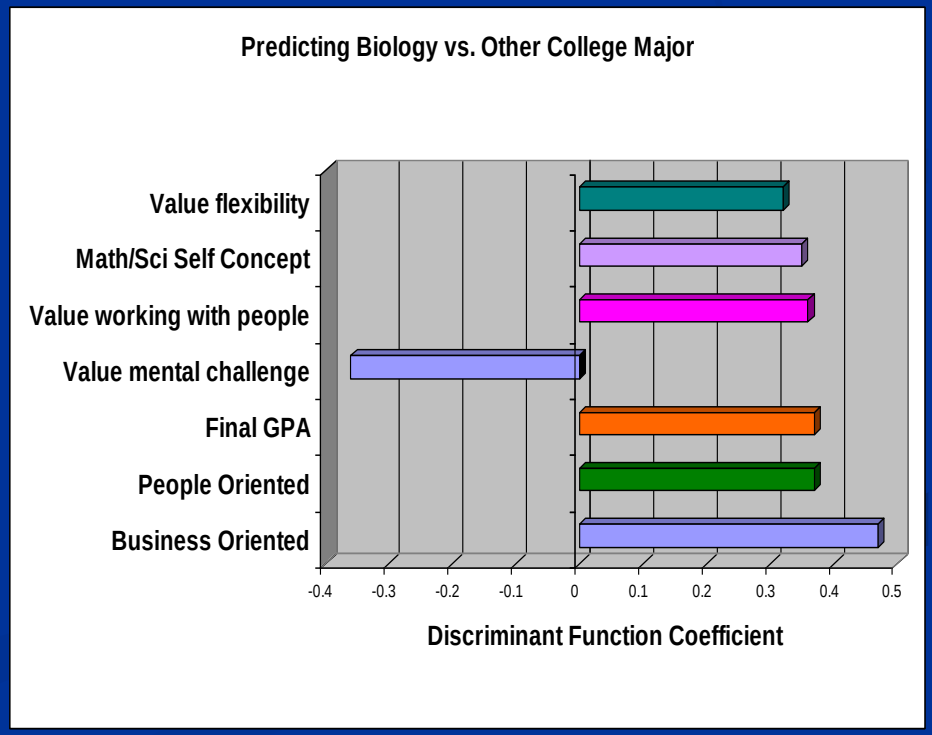
Predicting Women's M/E/PS and Biological Science College Major from General Self-Concepts and Values at 20



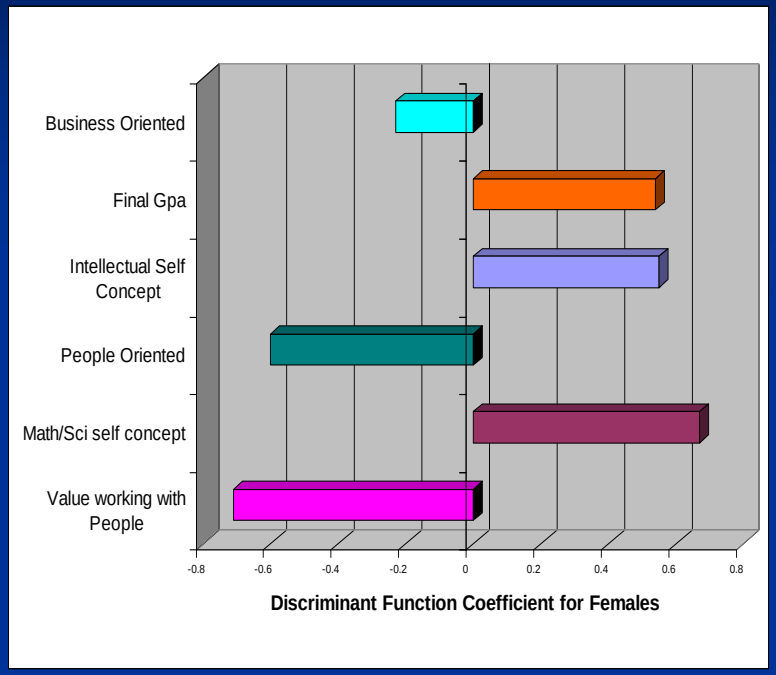


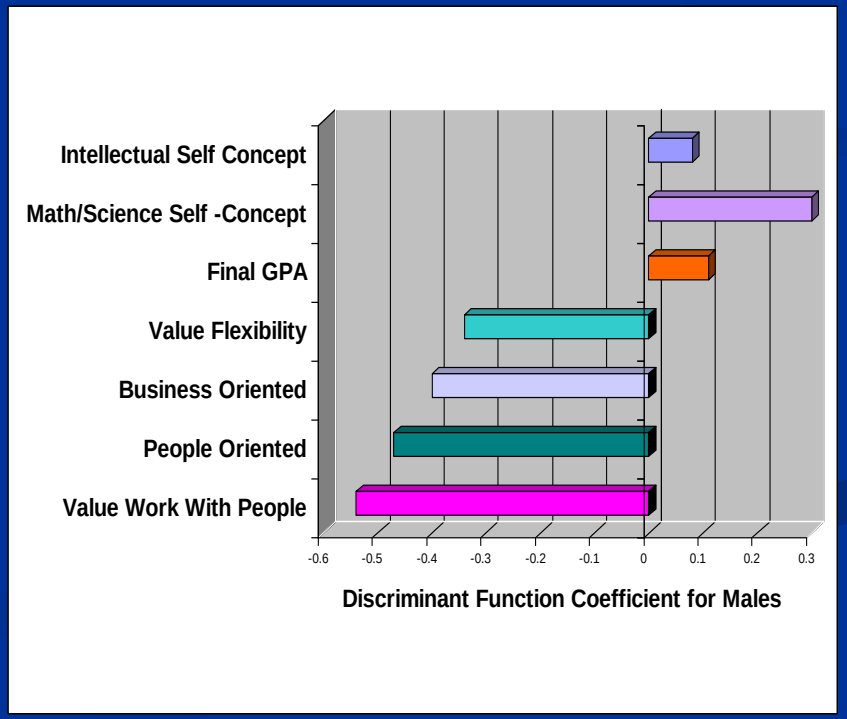
Predicting Men's M/E/PS and Biological Science College Major from General Self-Concepts and Values at 20



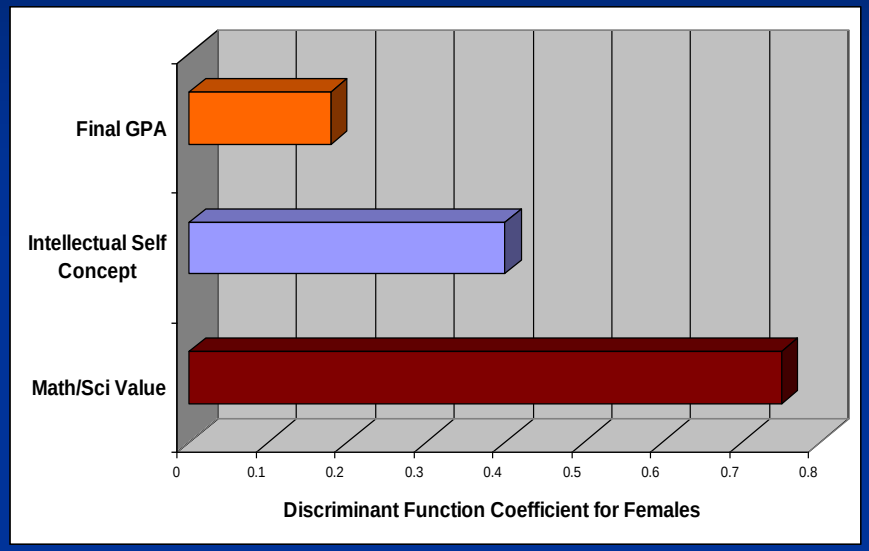


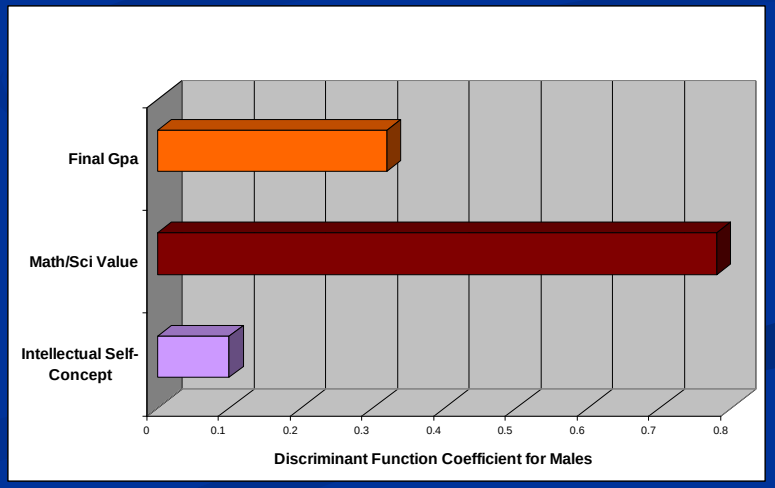
Predicting M/E/PS vs. Biology Major From General Self-Concepts and Values at 20





Predicting M/E/PS vs. Social Science Major From General Self-Concepts and Values at 20





Conclusions 1:

- Strong support for the predictive power of constructs linked to the Expectancy Value Model.
  - Domain Specific SCs and Values push both women and men towards the related majors
  - Some evidence that more general values can also push people away from M/S/PS majors and towards Biology-Related majors
- Sex differences in selection of M/E/PS college major are largely accounted for by Expectancy Value Model

Conclusions 2

- Even stronger support for both the push and pull aspects of the Eccles et al. Expectancy Value Model

- Strong evidence that valuing having a job that allows one to work with and for people pushes individuals away from M/E/PS majors and pulls them toward the Biological Sciences

Applications

- Interventions to increase the participation of females in M/E/PS need to focus on increasing women's understanding that M/E/PS and Informational Technology jobs can help people and do involve working with people as well as increasing their confidence in their ability to succeed in these fields.

What have I Left Out?

- Critical roles of parents and teachers
  - We have this information on this in this sample and another sample.
  - Both are key in shaping gender differences in all aspects of this model.
  - On average, these processes reinforce traditional gender role self images and choices.

What have I Left Out?

- The other psychological and social processes that drive women and men out of non-traditional fields
  - I am particularly interested in the processes that influence interest in and intense passion for particular activities.
    - The role that ongoing emotional experiences play in shaping more stable and enduring interests, "passions", and thus the differential Subjective Task Value of various activities.

The End

Thank You

More details and copies can be found at
www.rcgd.isr.umich.edu/garp/