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Prepared for Life?
Reading Competence and
Personality Characteristics -
findings from PIRLS and PISA

**Paper presented at the first National Reading
Conference of MARA, January 2010**

- In the international literacy surveys not only reading competence is measured but also motivational variables (self-concepts, intrinsic motivation) as well as cognitive and affective aspects of attitudes to school.
- These personality characteristics are linked to reading competence but are also **important aims in themselves because they are relevant for lifelong learning**. Up to now, these personality factors have not gained much attention.
- In this presentation some of the often wide-spread results of PISA 2000 and 2003 and of PIRLS 2001 and 2006 will be reviewed.

Topics of the presentation

1. General remarks about aims of education and schooling
2. Some Results of PISA and PIRLS
 - 2.1 Motivation and self-concepts
 - 2.2 Learning approaches
 - 2.3 Attitudes towards school
 - 2.4 Gender differences
3. AIDA: a theoretical framework for a longitudinal study

Unesco: Education for the twenty-first century

„Education

- has a fundamental role to play in personal and social development.
- is an important mean to attain the ideals of peace, freedom and social justice, and thereby
- to reduce poverty, exclusion, ignorance, oppression and war“.

Unesco: Education for the n the twenty-first century

◇ The Four Pillars of Education

Learning to know

Learning to do

Learning to live together

Learning to be



The Four Pillars of Education

Learning to be

- „Education should enable each person >to be able to solve his own problems, make his own decisions and shoulder his own responsibilities<
- to ensure that everyone has the **personal resources** and intellectual tools needed to understand the world and behave as a fair-minded, responsible human being“.
- **Personal resources**: self-confidence, self-efficacy, positive attitude towards learning

School-related personality characteristics

Dimensions:

- Relevant for **academic** learning:
motivation, self-concepts, self-efficacy
- Relevant for **social** skills and successful participation in groups:
well-being, positive attitudes toward school, sense of belonging

School-related personality characteristics

Research areas

- Psychology of personality
- Educational Psychology
- Developmental Psychology
- Sozialisation theory

We have many studies in the following dimensions: achievement motivation, self-concepts, self-esteem, anxiety, well-being, attribution of success and failure

School-related personality characteristics

Desiderata of research :

Synthesis of the various dimensions – synchron and in development

Comprehensive theoretical models to explain the development of the personality characteristics in school and their interrelationship, influenced by external conditions

Some general information about PIRLS and PISA

PIRLS 2001/2006 – Progress in International Reading Literacy Study

- 9-year-old students from 35 countries
- Assessed reading comprehension strategies for two major reading purposes – literary & informational
- One-hour, paper-and-pencil literacy test
- Student questionnaire - individual, home, & school factors
- Parent questionnaire – support & literary resources
- Teacher questionnaire – individual factors, instruction & materials
- School principal questionnaire - organization of teaching & learning

PISA 2000 (2003) – Programme for International Student Assessment

- 15-year-old students from
- 32 (41) participating countries
- Compared in their abilities to use literacy knowledge
- Two-hour, paper-and-pencil literacy test
- Student questionnaire - individual, home, & school factors
- School principal questionnaire - organization of teaching & learning

PIRLS / PISA: advantages

- Representative samples
- Findings on the relationship between student attitudes and performance and between various student characteristics
- Cross-cultural comparisons
- Differentiated analysis for subgroups (for gender, social background, immigration status, group of poor readers)

PIRLS / PISA: disadvantages

- PIRLS and PISA studies are not coordinated. Some tests use similar items, others quite different items.
- Self report measures: different cultural norms with respect to modesty and self-assertion, social desirability, different cultural meanings
- In the absence of longitudinal studies we have no evidence for causal relations.

PIRLS / PISA: results

- Motivation and self-concepts
- Learning approaches
- Attitudes towards school
- Gender differences

PISA 2000: Measures

MOTIVATION and VOLITION

Domain specific:

- Interest in reading/mathematics
- Engagement in reading

General:

- Instrumental motivation (*I study to get a good job*)
- Effort and persistence in learning (*When studying I work as hard as possible*)

PISA 2000: Measures

Self-related beliefs

Domain specific:

Self-concept of verbal/ mathematical competence

General:

Self-efficacy (*I am certain I can master the skills being taught*)

Academic self-concept (*I am good at most subjects*)

PIRLS instruments

- Student attitudes to reading (joy of reading): 5 items (4 items identical with PISA)
- Reading for fun outside school (1 item)
- Reading Self-Concept, 2001: 3 items
2006: 4 items
- Intrinsic/extrinsic motivation (IGLU-E)

Results from PIRLS and PISA engagement in reading and reading self- concepts

Not surprisingly, in nearly all countries reading competence was correlated with reading motivation and self-concepts.

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„I do not read for enjoyment out of school“ (% of students)

- PIRLS 2001:
International ?
- PISA 2000:
OECD ?

Comparing the age-groups (PIRLS-PISA)

Difficulty:

Different instruments, scales/index

Different measures

Motivation:

- Decreasing engagement in reading
- Widening gaps between females and males

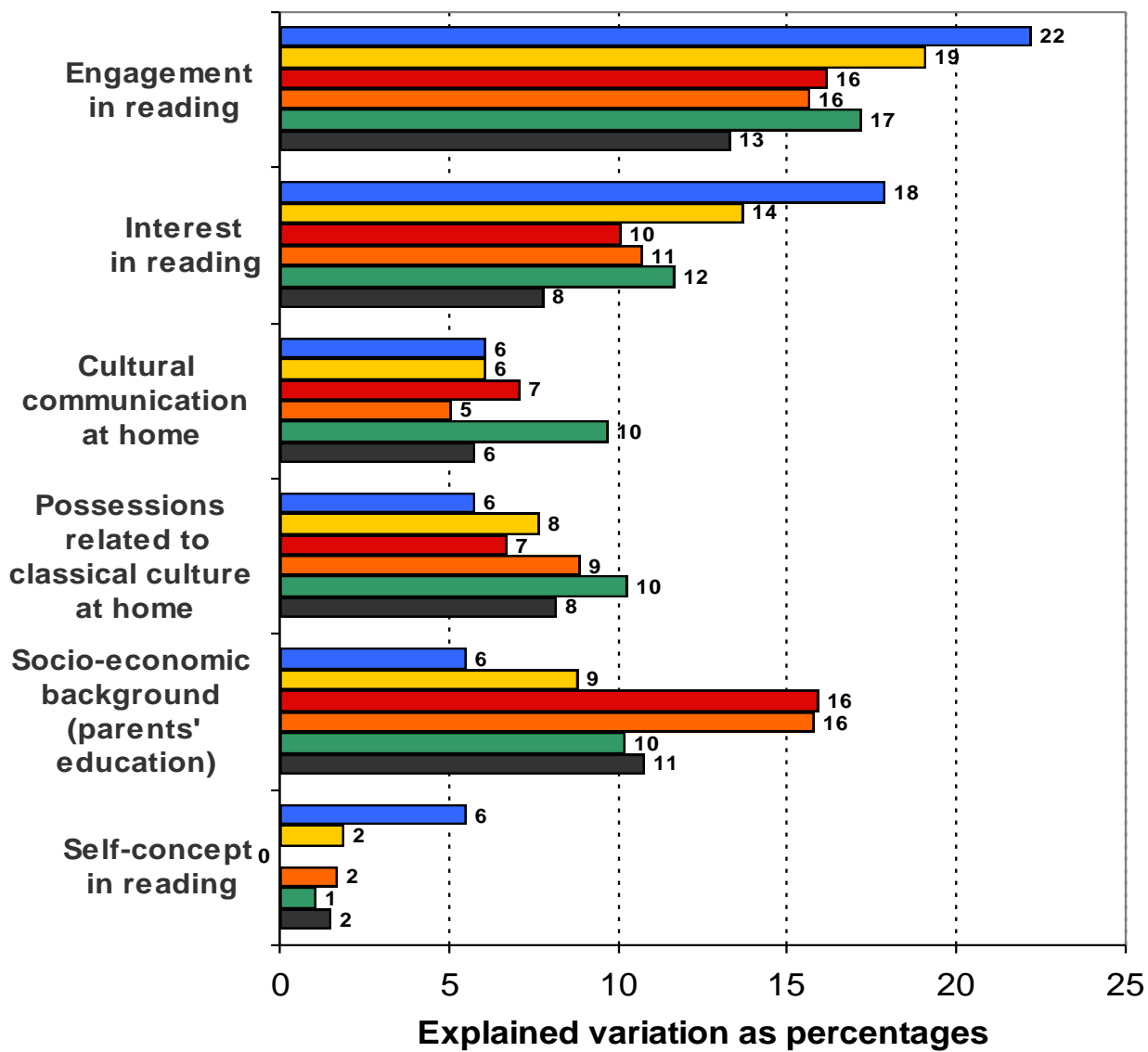
„I do not read for enjoyment out of school“ (% of students)

- **PIRLS 2001:**
International **18**
Russian Federation 6, Germany 14
Macedonia 13
- **PISA 2000:**
OECD **31**
Russian Federation 13, Germany 40

PISA: Important result for engagement in reading

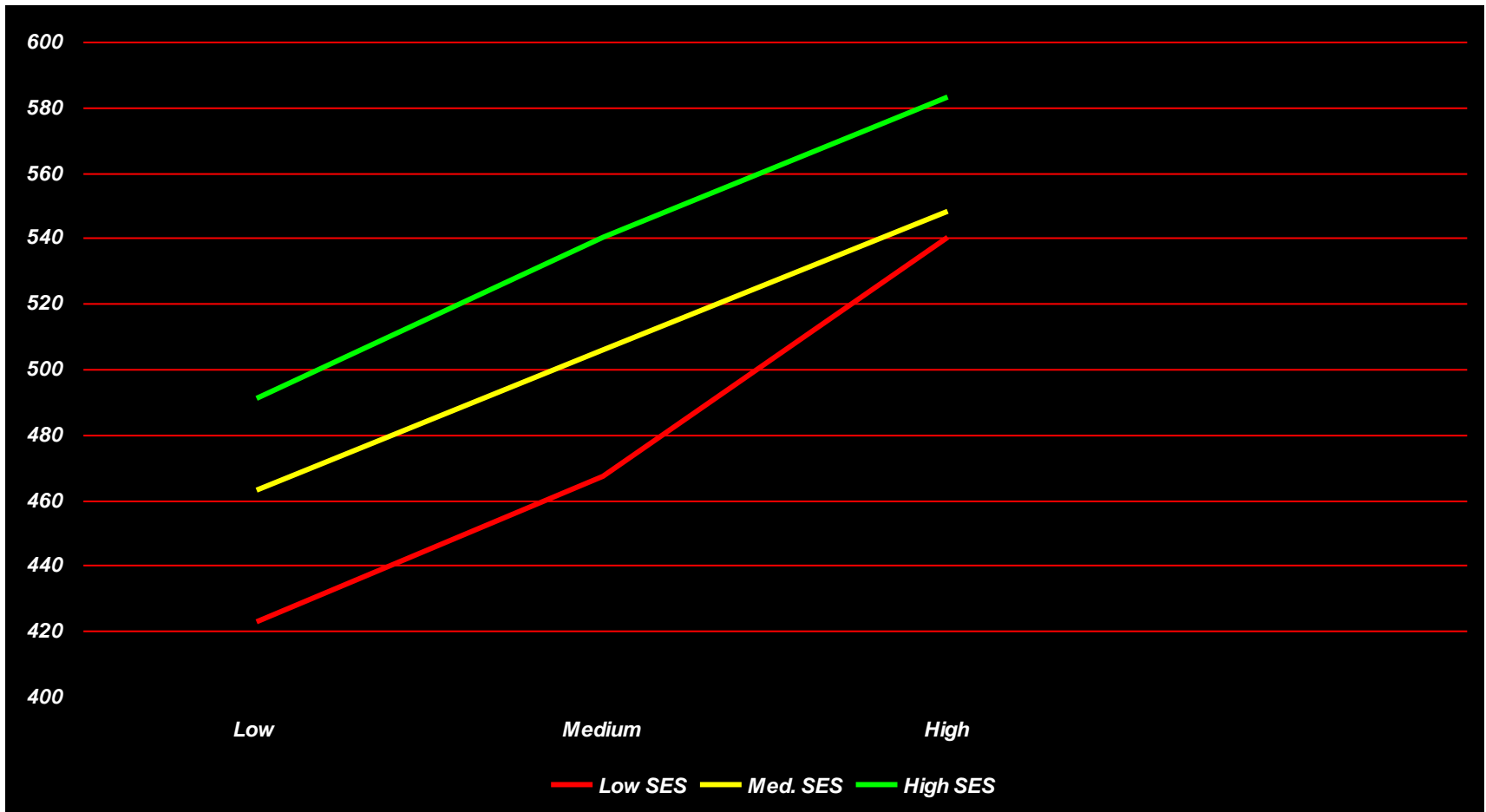
Student engagement in reading has a greater influence on achievement than socioeconomic status or parental occupation (see the next slide from Pirjo Lyynekylä)

Explained variation in student performance (R^2)



■ Finland ■ Sweden ■ Switzerland ■ Germany ■ Australia ■ OECD average

Reading Performance and Socio-Economic Background by Level of Reading Engagement on PISA



Student approaches to learning: Learners for Life, OECD 2003

Rationale:

Students who are able and willing to **regulate their own learning** possess important preconditions for academic success and for lifelong learning

Hypothesis:

Students with **positive attitude towards learning** (high motivation, positive self-concepts and believing in one's own efficacy as learner) are more likely to use effective learning strategies.

Student approaches to learning: Learners for Life, OECD 2003

In this analysis 13 student characteristics were examined in 26 countries (120 740 students):

- Motivational preferences and volition
- Self-related beliefs
- Learning strategies (s. below)
- Preferences for learning situations (s. below)

PISA 2000: learning approaches

Learning strategies:

Elaboration strategies (*When I study, I figure out how the material fits in with what I have learned*)

Memorisation strategies (*When I study, I memorize all new material so that I can recite it*)

Control strategies (*When I study, I start by figuring out what exactly I need to learn*)

Preference for co-operative learning (*I like to work with other students*)

Preference for competitive learning (*I would like to be the best at something*)

PISA 2000: learning approaches

Results:

- ▶ Students who had high scores in motivational variables, self-related beliefs and learning strategies had higher reading competence, within each country.
- ▶ The quarter of students strongest in a particular characteristic perform on average higher between 30 and 100 points on the reading literacy scale (between one half and one and a half proficiency level of competence).

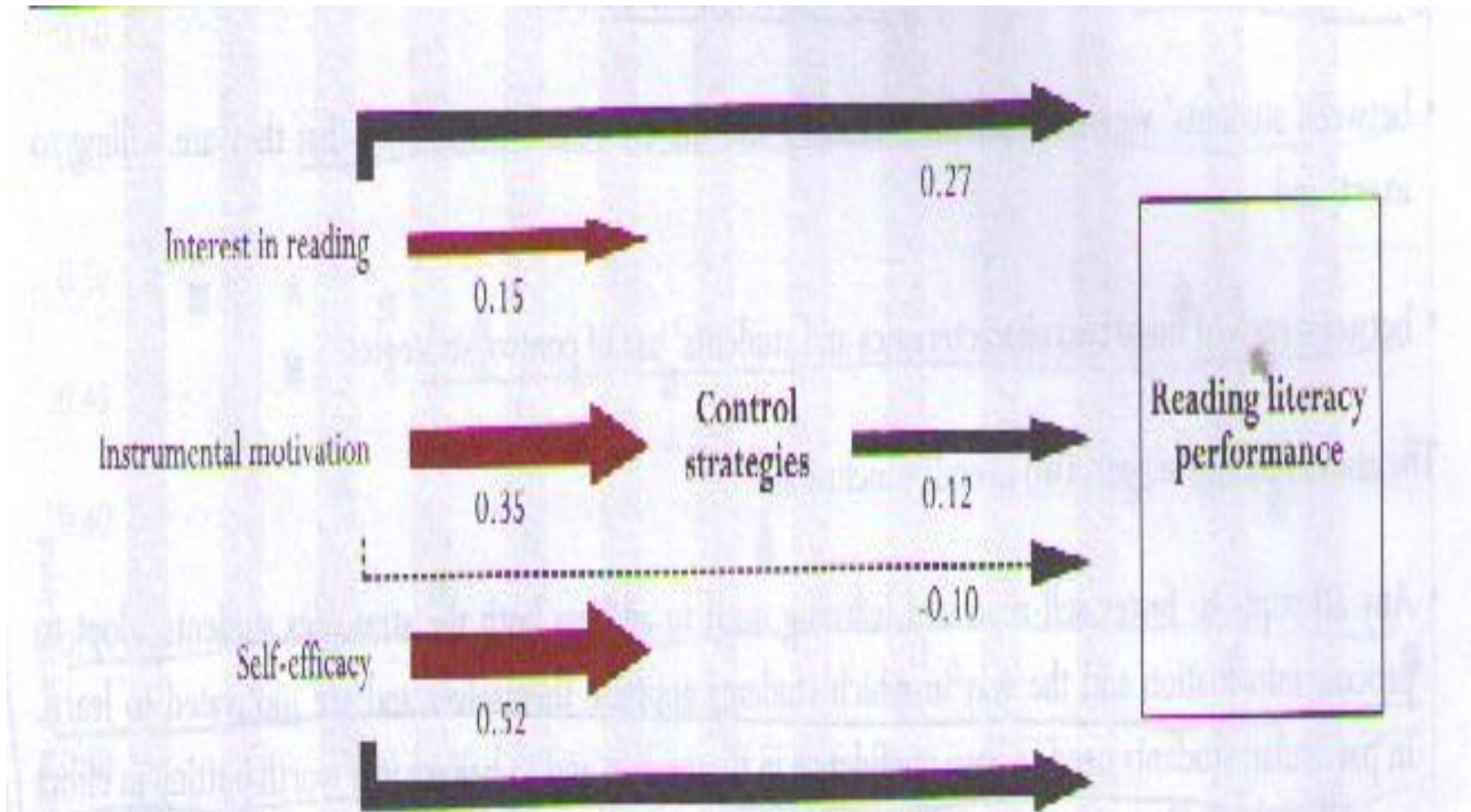
How student motivation and self-related beliefs are associated with learning strategies

Results :

Self-efficacy correlates to control strategies (0.54) and to memorization strategies (0.36)

Instrumental motivation correlates to control strategies (0.47) and to memorization strategies (0.40)

Individual factors associated with control strategies and performance, when controlling for other factors



Individual factors associated with control strategies and performance, when controlling for other factors

- Interest in reading and self-efficacy have direct effects on performance. Interest in reading is the strongest single predictor of performance in 15 countries.
- When other factors are controlled for, instrumental motivation has no clear association with performance (composition of groups).
- Some of the effect of self-confidence and motivation is mediated by the use of effective learning strategies.

Comparing countries: Profiles of student approaches to learning

Direct comparisons of the average strength of student characteristics in different countries are possible for:

- Use of memorization strategies
- Self-concept of reading/mathematics
- Self-efficacy
- Preference for cooperative learning

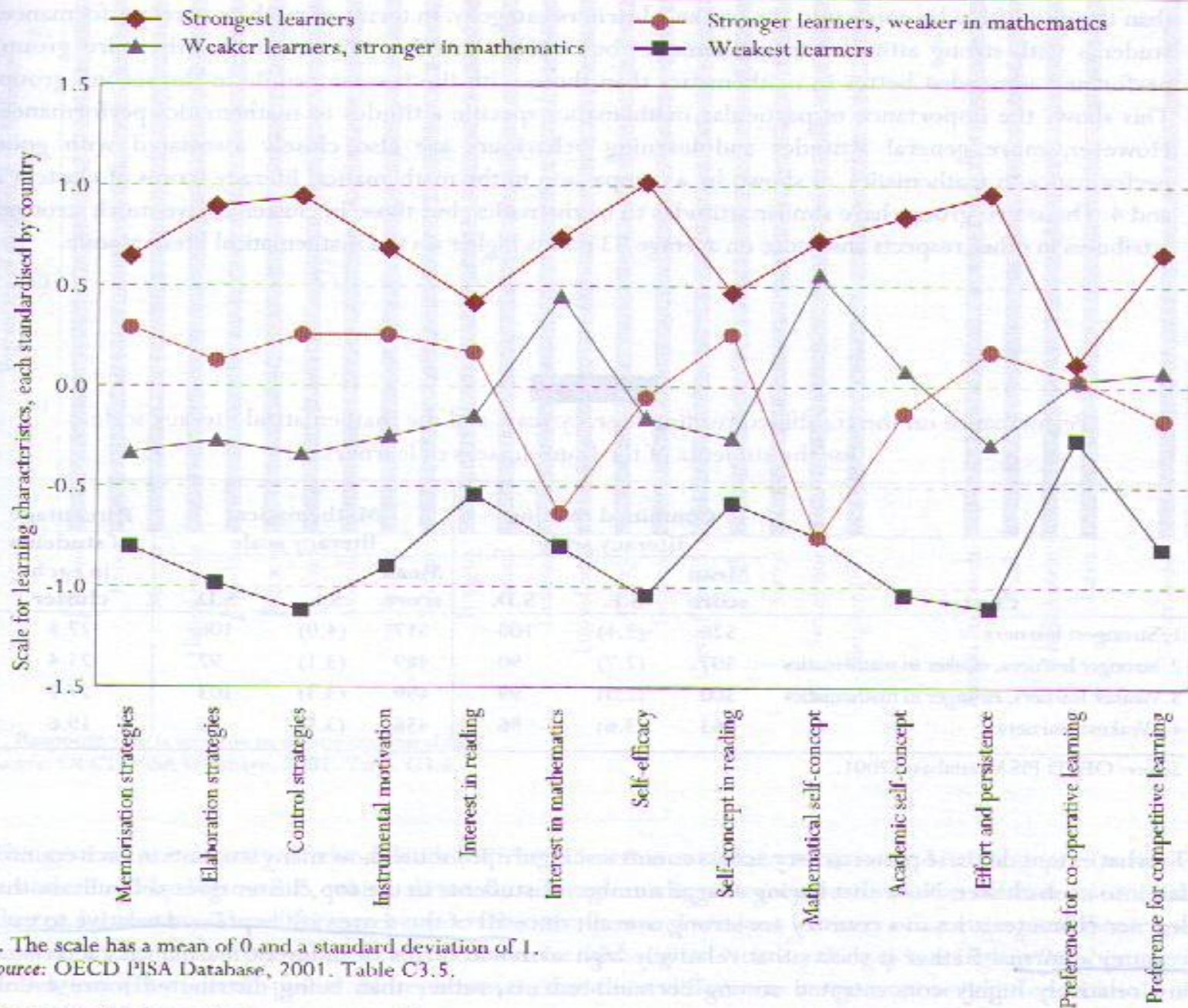
Comparing countries: Profiles of student approaches to learning

While it is not possible to compare all individual student characteristics across countries, cluster analysis may be used to compare the patterns of such attributes across groups of students in each country.

Method: cluster analysis with 13 learner characteristics, standardized for each country ($M=0$, $SD=1$).

Figure 3.6

OECD mean scores in terms of student learning characteristics for the four student clusters



1. The scale has a mean of 0 and a standard deviation of 1.

Source: OECD PISA Database, 2001, Table C3.5.

This analysis shows that:

4 Learner-Clusters

- **Strongest learners** (28%): high scores in all measures, use strategies employing comprehension (evaluation and control strategies), have high self-efficacy and effort and persistence.
Their reading competence is about one level higher as in the group of weaker learners.
- **Weaker learners** (20%), low scores in all learner characteristics, except preference for cooperative learning. Their mean reading score is 463 (mathematics 456).

4 Learner-Clusters

The other two groups:

- Stronger learners, weaker in mathematics
- Weaker learners, stronger in mathematics

- Reading competence of both groups is average (around 500)

Differences in learner characteristics by student background (21 countries) - top and bottom quarters of socio-economic status

Characteristic	In how many of the 21 countries is there a significant difference?	OECD average effect size
Self-efficacy	Top quarter stronger in 20 countries	0.40
Academic self-concept	Top quarter stronger in 17 countries	0.32
Self-concept in reading (mathemat.)	Top quarter stronger in 18 (13) countries	0.28 (0.28)
Control strategies (Elaboration)	Top quarter stronger in 18 (13) countries	0.26 (0.22)
Interest in reading	Top quarter stronger in 19 countries	0.26

Advantages for students from top quarter of socio-economic status

- Highest difference in self-related beliefs, more likely to believe in their ability to tackle learning challenges. Stronger confidence in their ability to perform verbal, mathematical and academic tasks (esp. in Norway, Finland and Sweden)
- Motivation: Students with higher socioeconomic factors show greater interest in reading, in some countries greater interest in mathematics – pattern for instrumental motivation not clear
- Learning strategies: make more use of control and elaboration strategies

Heuristic model: Attitudes towards School

- **Cognitive** reactions (opinions about school): „*Attitudes towards School*“
- **Affective** reactions (positive or negative feelings towards school):
 - „*Broader engagement in school*“
 - „*Sense of belonging*“
- **Behavioral** reactions: „*Sense of belonging*“ + „*participation*“ („*disaffection*“)

Attitudes towards school cognitive aspects

The PISA index was derived from students' reported agreement with the following statements

- *School has done little to prepare me for adult life when I leave school*
- *School has been a waste of time*
- *School helped give me confidence to make decisions*

Attitudes towards school cognitive aspects

The PISA index was derived from students' reported agreement with the following statements

- *School has done little to prepare me for adult life when I leave school (?%)*
- *School has been a waste of time (?%)*
- *School helped give me confidence to make decisions (?%)*

Attitudes towards school cognitive aspects

School has done little to prepare me for adult life when I leave school

(OECD 32%) Finland 21, Germany 43

- *School has been a waste of time*

(OECD 8%), Finland 7, Germany 7

- *School helped give me confidence to make decisions*

(OECD 72%), Finland 79, Germany 56

Attitudes towards school **cognitive** aspects

A relationship between students' attitudes to school and student achievement is not evident from the data.

But positive attitudes are important outcomes relevant to learning for life.

Affective aspects: Broader engagement in school / Sense of belonging

Students' reports on whether their school is a place where they:

- do not want to go
- often feel bored
- make friends easily
- feel like they belong
- other students seem to like them
- feel lonely (-)
- feel like an outsider (-)
- feel awkward and out of place (-)

Broader engagement in school **affective** aspects

Agreement of students that their school is a place where they *do not want to go*:

- ? %

Broader engagement in school

affective aspects

- In 20 of 28 OECD countries, more than **25 per cent** of students agree or strongly agree that their school is a *place where they do not want to go*.

Germany:

- PISA 2000: 25%
- PIRLS 2001: 24%
(boys: 29%, girls: 19%)

School is a place *where students
often feel bored*

- Nearly ? % of all students report feeling bored at school.

School is a place where students often feel bored

- Nearly 50 % of all students report feeling bored at school.
- No linear relationship with performance.
- Students who reported feeling bored in school had better performance in reading, mathematic and science than those who disagreed.

Broader engagement with school- **behavioral** aspects (Willms 2003)

Willms used a new index: „Engagement at school“ („disaffection“)

measured by

- „Sense of belonging“ and
- „Participation“- (*How many times in the previous two weeks did you ... miss school? skip classes? arrive late for school?*)

Broader engagement with school- behavioral aspects (Willms 2003)

- There is a high prevalence of students who can be considered **disaffected** from school.
- About **one in four** students has a low sense of belonging.
- About **one in five** students has very low participation.

5 clusters of engagement across all OECD-countries (Willms 2003)

1. **Top-students**: high levels of engagement and strong literacy skills (26%)
2. **Engaged students**: highly engaged at school and average levels of literacy skills (27%)
3. **Students feeling isolated**: low sense of belonging, but fairly high literacy performance (20%)
4. **Absent students**: regularly absent from school and moderately low levels of literacy performance (10%)
5. **Non-academic students**: very low literacy performance, but average levels of engagement (17%)

Engagement at school and external factors: **home**

Risk factors for student disaffection

- living in a family of low socio-economic status (i.e., in the lowest national quartile for the country)
- living in a single-parent family
- being foreign-born.

Engagement at school and external factors: school

- Students who attend schools where there is a concentration of students from low socioeconomic families are more likely to be disaffected from school.

Engagement at school and external factors: school climate

- Students are more engaged in schools where there is a
 - weak/strong? disciplinary climate,
 - positive student-teacher relations, and
 - low/high? expectations for student success.

Engagement at school and external factors: school climate

- Students are more engaged in schools where there is a
 - strong disciplinary climate,
 - positive student-teacher relations, and
 - high expectations for student success.

Differences between females and males

PISA 2000: Summary of gender differences in motivation and self-concepts

Characteristic	In how many of 21 countries is there a female advantage?	OECD average effect size
Reading interest	in 20 countries	0.53
Self-concept in reading	in 18 countries	0.29
Control strategies	In 16 countries	0.18
Effort and persistence	In 14 countries	0.16

PISA 2000: Summary of gender differences in motivation and self-concepts

Characteristic	In how many of 21 countries is there a male advantage?	OECD average effect size
Mathematical self-concept	in 17 countries	0.25
Self-efficacy	in 18 countries	0.22
Preference for competitive learning	in 16 countries	0.21
Interest in mathematics	In 14 countries	0.20

Gender differences for attitudes to school

PISA: Females have higher scores in

- Cognitive aspects of school attitudes
- Affective factors of school attitudes
- Behavioral aspects: higher participation

AIDA (Adaptation in Adolescence)

Valtin, König, Wagner, Humboldt University Berlin

Longitudinal study: 7th to 9th grade

focus: - psychosocial development of adolescents
- attitudes and beliefs of students

Sample: > 3000 students for each measurement point,
Longitudinal sample from grade 7 to 9 = 1500

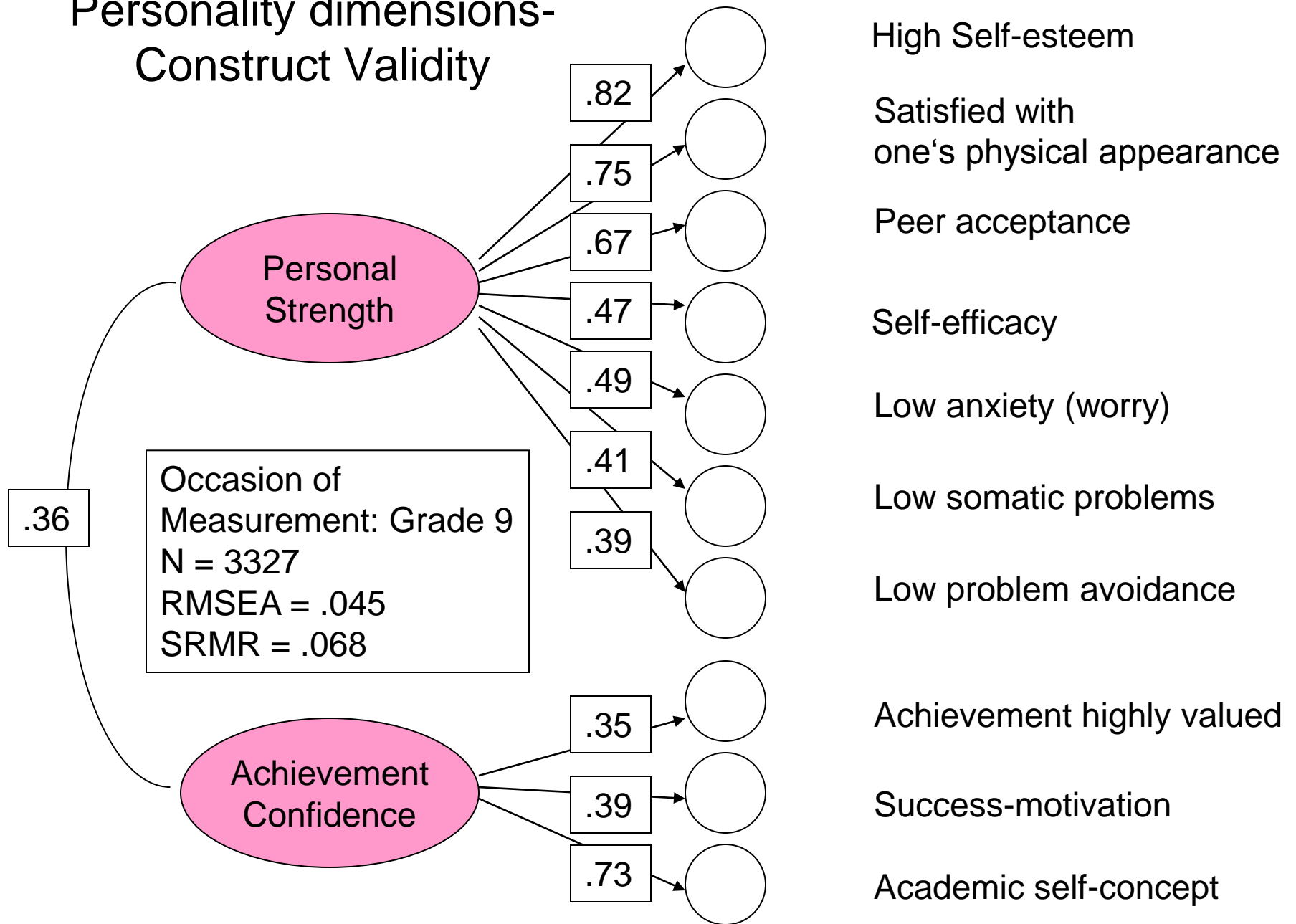
Aim of the study AIDA

AIDA tries to contribute to the two desiderata of research outlined above:

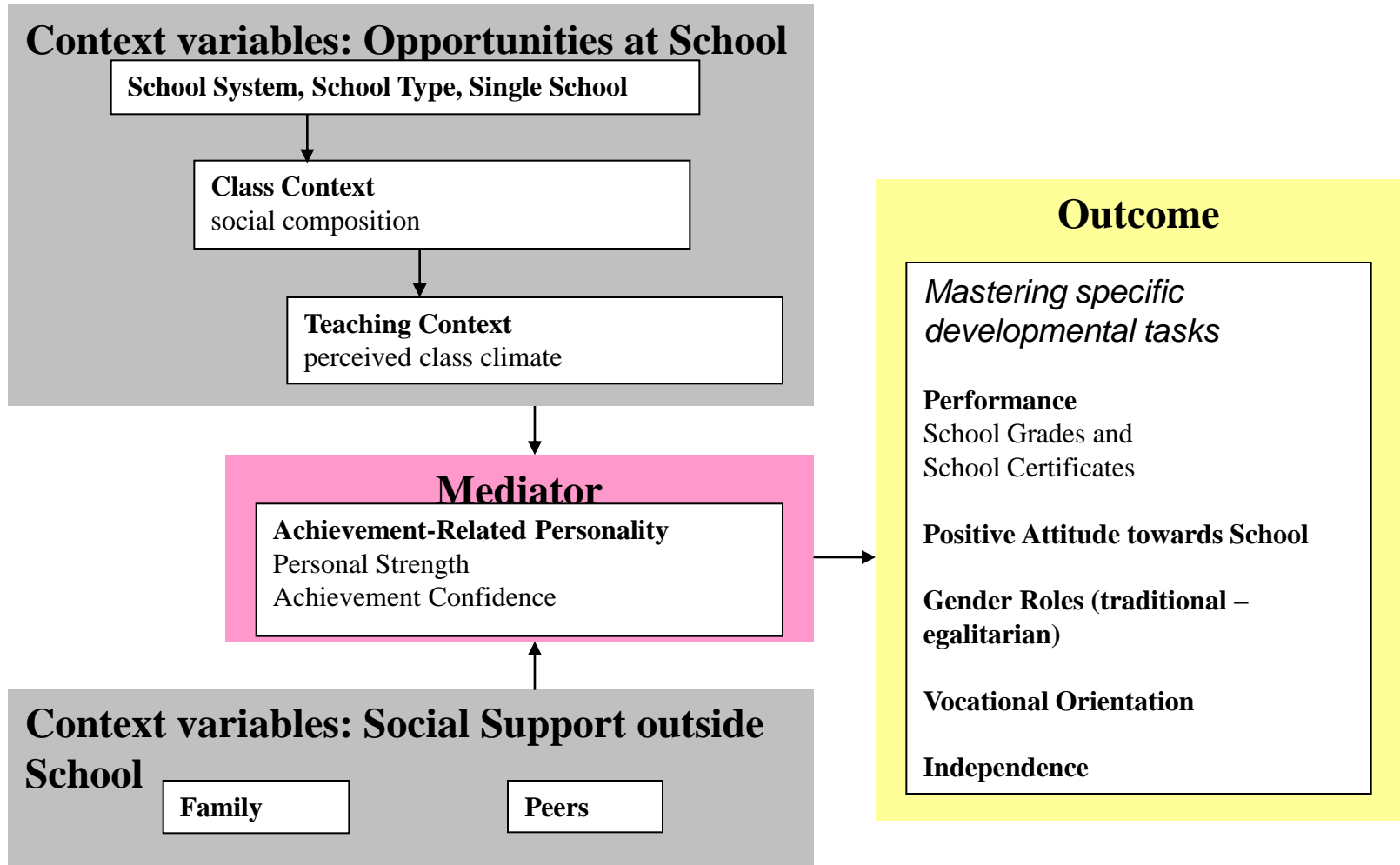
Synthesis of the various dimensions – synchron and in development

Comprehensive theoretical models to explain the development of the personality characteristics in school and their interrelationship, influenced by external conditions

Personality dimensions- Construct Validity



Theoretical model for the relation between school, personality and scholastic performance



Mediator Assumption: Research Question

Direct Relation

Opportunities at School → Outcome

Mediated by the Adaptation of Students

Opportunities at School → Adaptation of Students → Outcome

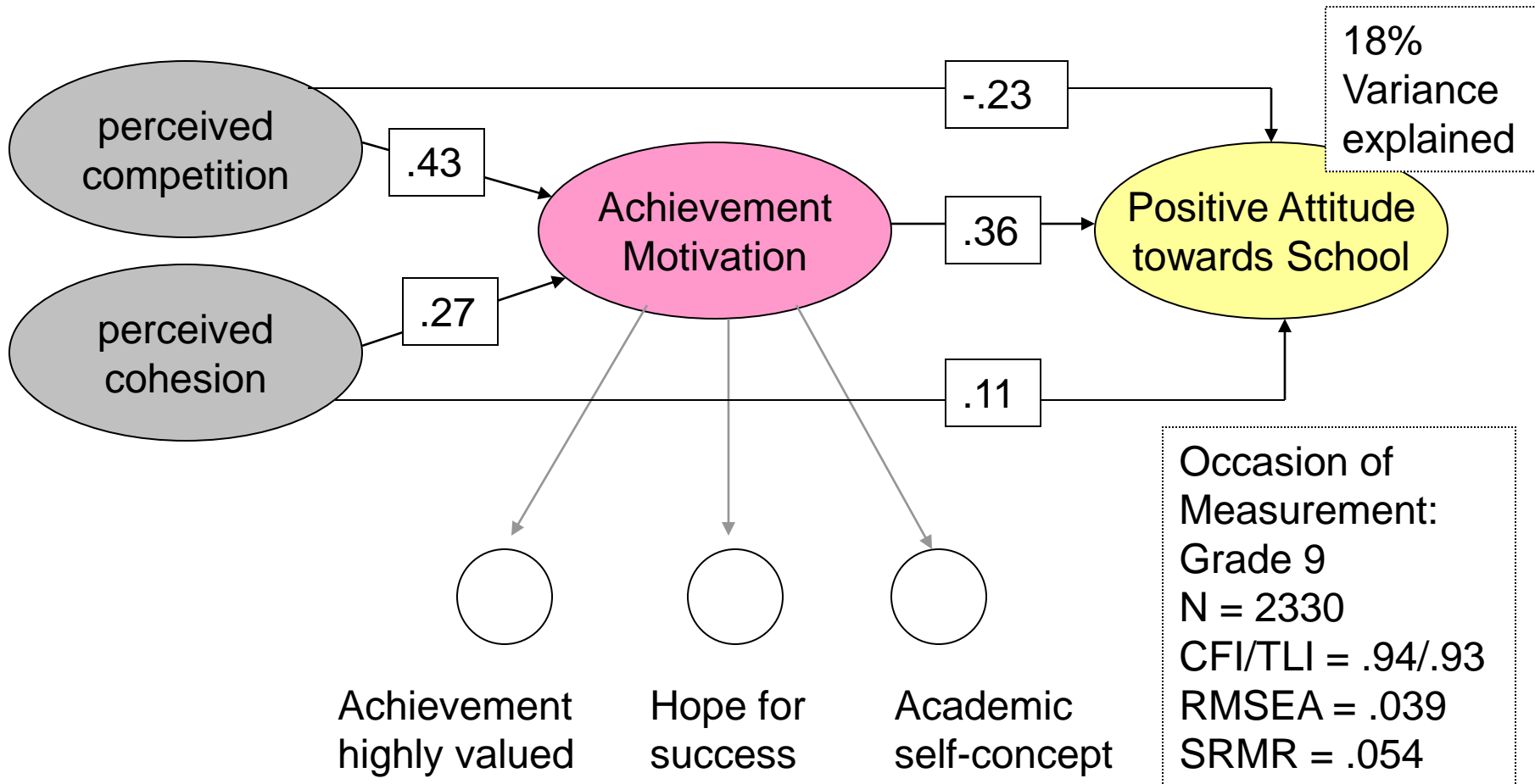
For example:

Is there a direct relationship between the perceived class climate of students and their positive attitude towards school?

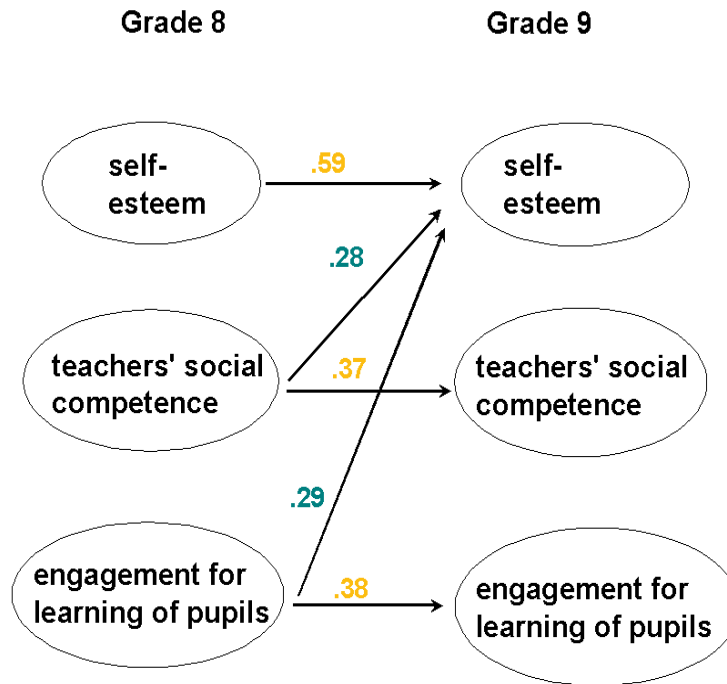
Or do we have to assume, that this relationship is mediated by the students' active development of achievement motivation?

Mediator Assumption: Path Model

Opportunities at School → Personality variables → Outcome



Effects of teachers' competence and engagement



$\chi^2 = 1142$; $DF = 149$; $CFI = .924$

Gender differences in AIDA

Adolescent girls had poorer scores in most of the variables combined in our constructs of

- personal strength, and
- Achievement confidence

Equally prepared for life?

Important results and problems:

UNESCO: "Education has to ensure that everyone has the personal resources and intellectual tools needed to understand the world and behave as a fair-minded, responsible human being".

Unfavourable attitudes towards school:

- More than 30% state: *School has done little to prepare me for adult life when I leave school*
- more than 25% of students agree or strongly agree that their school is *a place where they do not want to go.*
- Nearly 50 % report feeling bored at school.
- About one in four students has a low sense of belonging.
- About one in five students has very low participation.

Equally prepared for life?

- Advantages for students from top quarter of socio-economic status (self-related beliefs, motivation, learning strategies)
- Advantages for males regarding ego-strength and achievement confidence

OECD: „While female participation in tertiary education has grown rapidly in comparison to males, the choice of subjects remains very different.

This contributes in part to the result that women end up in low-wage sectors of the economy“.

- Thank you very much for your attention!

If you questions please write to
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