

$E=mc^2$ $\Sigma F=ma$ $E_k=\frac{1}{2}mv^2$ $pV=nRT$ $s(t)=s(o)+v(o)t+\frac{1}{2}at^2$ $Q=mc\Delta T$ $E_z=mgh$ $v(t)=v(o)+at$
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Balancing masculine and feminine learning strategies

Effective learning (in science) involves creativity and learning from one's mistakes.

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Introduction

The literature (and teachers) agree:
work attitude > work attitude

Higher education in general:

Higher education STEM:

WHY???

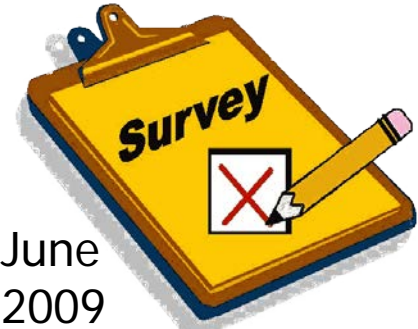


Method data



Sept
2008

Dutch **academic** freshman
science students:
approximately 18 years old
12 universities
including medical schools.



June
2009

respondents: 3212 (31%)
questions about high school:
• general capability
• (high school physics)

respondents: 1558 (57%)
questions about university:
• work attitude
• participation in classes
• academic success (AS)

Sample useable data:
: 699; : 759

interviews Physics Teachers

Analysis

Global gender differences: T-tests (PASW Statistics 18.0)

Relations work attitude and AS: coupled and SEM models (AMOS 19.0)



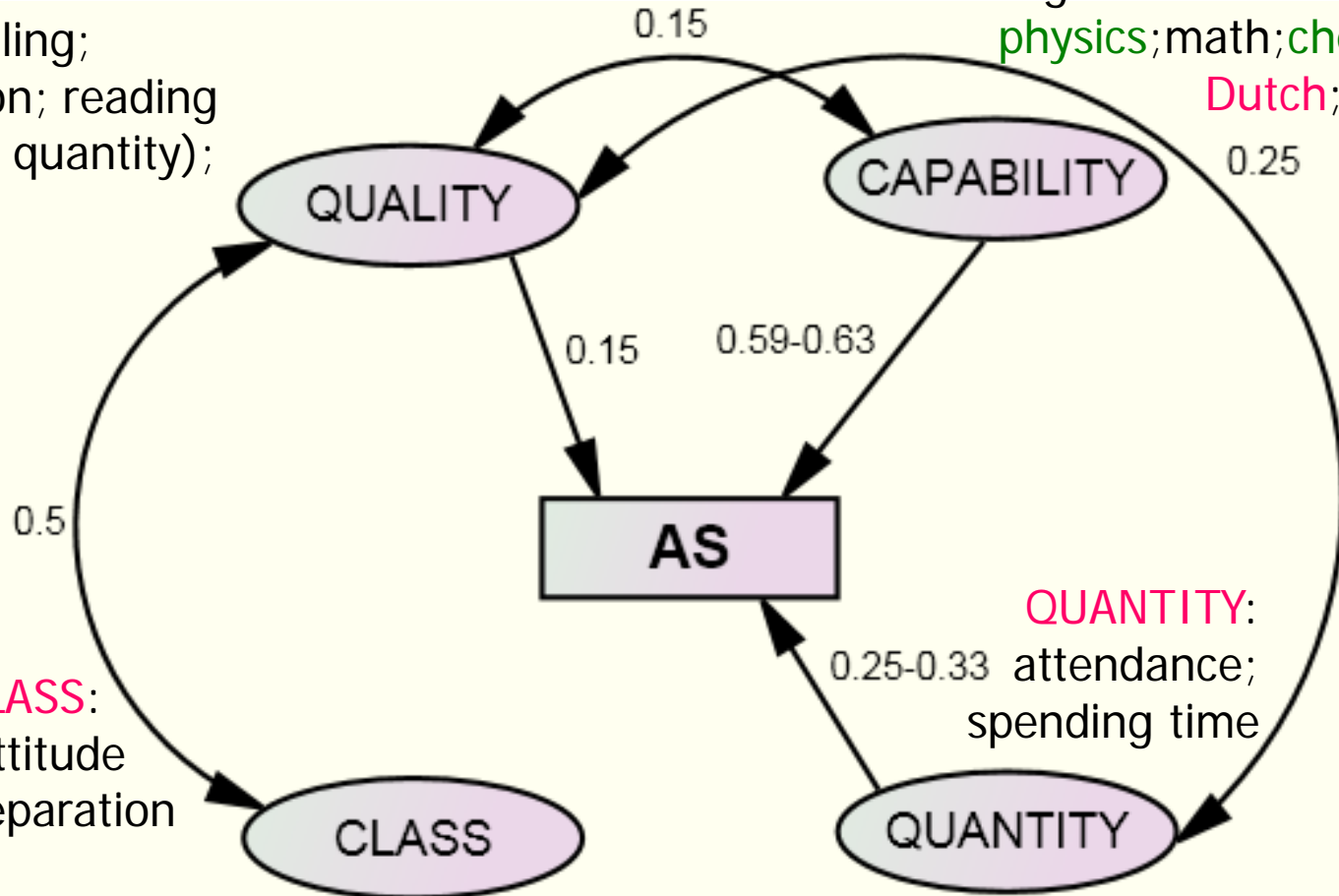
- model

QUALITY general:

time scheduling;
concentration; reading
(quality and quantity);
practice.

general CAPABILITY:
high school final exams
physics; math; chemistry;
Dutch; English

quality in CLASS:
attention; attitude
(active); preparation



QUANTITY:

attendance;
spending time

Confirmed

:
high work attitude in quantity and quality (traditional aspects).

:
higher correlation capability achievement
higher correlation quantity achievement

work harder, less effect



Discussion

work attitude: strongly correlated.
Girls do what is acquired not
always what is necessary.
'good student identity' (Carlone)

individual work attitude (less strongly
correlated). Boys do what is necessary
not what is acquired of them. Boys try
out and take risks.

baby (Gopnik): effective learning through trial and error (like science).



Consequences = parent responsibility. Mistakes




----- optimal for learning science

promoted in school
sir Ken Robinson



adult structured and planned. Consequences = own responsibility.

Mistakes 

sports and competition

In this study: females active in sports (> 8h. per week) achieve more and work less, similar to males.

Learning from sports how to help females to take the risks and the failure in order to eventually succeed.



solution?

Female students tend to avoid mistakes by keeping to what they know. They do not want to fail and abhor competition.

Male students tend to ignore their mistakes (laddishness, Jackson).

They like to be challenged though, because they like to win.

Both could benefit from focusing on their mistakes as the place where they can learn. In competition this is obvious, but why not in school?





Proposition

Females could achieve as well as males in STEM(M) if they could be stimulated to take the risk of making mistakes and learn from them.