Development of a Model of Competencies Required for Sustainability among Apprentices in Business and Administration

First Results from the Project KONWIKA

Structure

Theoretical Framework and research questions

Methods, techniques, and data source

Results

Theoretical Framework and research questions

The complex model „Sustainable Development" and Education for a Sustainable Development

Sustainable Development ➡️ *Culturally-critical point of departure :* Intergenerational Justice; normative framework (e.g. Rio Conference, 1992)

Requests to the (business) education system by Education for Sustainable Development (ESD):

• Chapter 36, Agenda 21: Education as significant basis for implementation sustainable development (United Nations, 1992).

• One of the normative concepts of ESD is the German concept of 'Gestaltungskompetenz': the ability to apply knowledge about sustainable development and recognize the problems involved in non-sustainable development (de Haan, 2008, P. 31).

• Only low priority of sustainability-related issues are given in the current curricula of VET, but increasing acceptance can be seen by modification of curricula and pilots projects in vocational school.

Competence model

Combination of tenets of Cognitive Psychology with Aijzen's Theory of Planned Behaviour (1985)

KONWIKA

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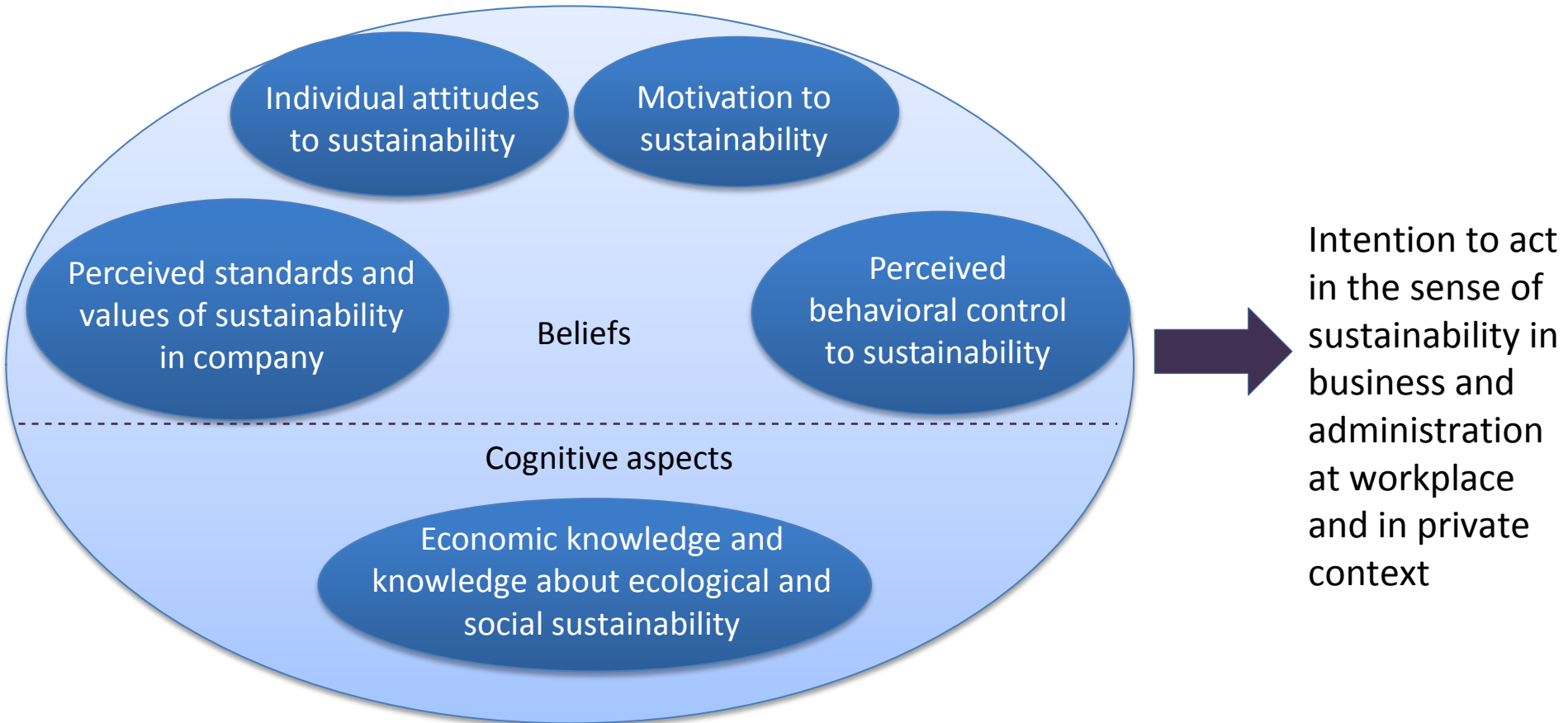
- In which working and business activities of apprentices in business and administration are aspects of sustainability highly relevant (domain modeling)?

- How can a competence model of sustainability for apprentices and clerks in business and administration be transferred into concrete empirical measurement procedures?

- Which structural relationships between individual beliefs, cognitive abilities and the intention to act in the sense of sustainability can be proved empirically in business and administration (as well as in the private context)?

Methods, techniques, and data source

Sample

	freight forwarding and logistics services clerk
Subsample	387
Average / median age	22,6 / 22
Proportion of women	152 (39 %)
3. training year	216 (56 %)
Native language German	281 (73 %)
University entrance qualification	268 (69 %)

Specific fields of possible sustainable activities:
- Resource management
- Internal and external procurement processes
- Transport & logistics

Period of the survey: July to September 2013

→ Survey in second and third training year

→ At four vocational schools in Lower-Saxony, Hamburg, Berlin and North Rhine-Westphalia

→ Paper and online based testing, depending on equipment of the school

Situational Judgment Test (SJT):

Your instructor asks you to recommend a ecological mode of transport. You should give a recommendation to the route Hamburg-south of Spain. On this route frozen vegetables for the frozen-food AG is transported regularly. The transport can take place via truck, plane, ship or train.

- **One assumption is, that the truck is the primary mode of transport to reach other modes.**
- **In addition, all modes of transport are fully loaded.**

Which mode of transport would you like to recommend?

a   Truck for the whole transport

b   Combination of truck and plane

c   Combination of truck and und maritime ship

d   Combination of truck and und train

Please justify your recommendation by at least two aspects!

Methodical-Triangulativ analysis:
content analysis (Mayring, 2010) &
Partial-Credit (Masters, 1982)

Scoring of the SJT

Recommendation for a behavior	Justification

No Idea

Irrational/wrong recommendation
final score : 0 points

No Idea/
misconception,
final score: 0 points

prestructural

uninstructural

Considering only one dimension:
Only profit orientated
or ecological/social dimension

Profit orientated rational
or
ecological/social rational
final score : 1 point

multistructural

Solo
Taxonomy
of Biggs
und Collis
(1982)

relational

extended abstract

Recommendation of a behavior,
that consider both, profit
orientation and the
ecological/social dimension

Profit orientated rational
and
ecological/social rational
final score : 2 points

Completely science-
based conception

Constructs

	Constructs	Reliability	Items
SJT	1. workplace 2. private life	Multidimensional Rasch model: 1. dimension (business context): EAP-PV-R.: .559; 2. dimension (private context): EAP-PV-R.: .490; Latent correlation: .608; Item-Total-Cor.: .25<=x<=.55	N=15 N=8
Knowledge	Declarative knowledge	EAP/PV-R.: .734 Item-Total-Cor.: .26<=x<=.62	N=27
Motivation: Learning/ working/ acting sustainable	1. Intrinsic & extrinsic motivation for learning/working at school and company as well as 2. acting sustainable (adoption of Prenzel et al., 1996)	1. Learning/working: .673<=α<=.730 2. Acting sustainable: .799<=α<=.879	N=3 per construct
Attitude	1. Individual attitude that companies take responsibility toward sustainability & 2. Individual general settings toward sustainability	1. Individual attitude that companies take responsibility toward sustainability : α=.633; CFI=1.000; RMSEA=.000 2. Individual general settings toward sustainability : α=.706; CFI=.983; RMSEA=.086	N=4 per construct
Subjective norm	•Ecology in company •Social fair acting in company •Buying certified organic and fair trade products •Sustainable travelling	604<=α<=.853; Ecology in company (2 scales á 5 Items) 960<=CFI<=.976 .089<=RMSEA<=.125	N=2-5 Items per construct
Perceived behavioral control	Control-factors: •In company: Money, information, time •In private context: Money	In company: .716<=α<=.786 In company – time: CFI=.985; RMSEA=.073 In private context: α=.729; CFI=.981; RMSEA=.087	N=3/4 Items per construct
Previous knowledge	Previous discussion of sustainability at general education, vocational school and company	.739<=α<=.873; .996<=CFI<=1.000; .000<=RMSEA<=.046	N=4/5 Items per construct
Personal data:	sex, year of birth, nationality, country of birth, native language, language at home, books in parent house, educational resources, graduation		

Results

Results – Structural Equation Models

SEM: Intention
N=382
CFI: .968
RMSEA: .032
χ²/df: 1.38

SEM: Knowledge
N=381
CFI: .981
RMSEA: .041
χ²/df: 1.63

level of significance:***<=.001; **<=.01 *<= .05;
Coefficients are standardized (STDYX); Standard Error in brackets

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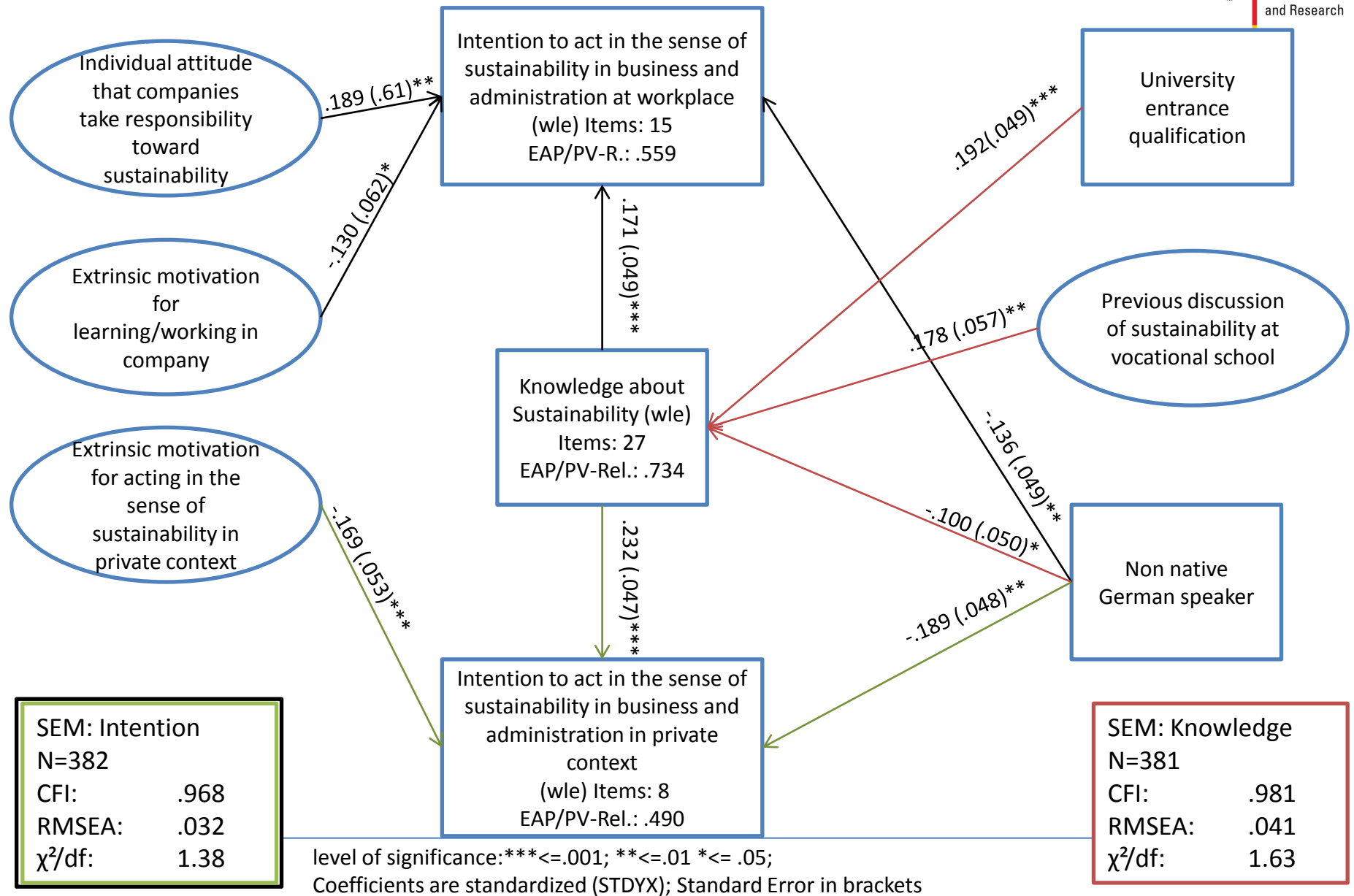
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