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ABSTRACT

A new cognitive intervention strategy was developed to improve teaching and learning in the workplace within the context of Germany's standard system of vocational training, a dual system of theoretical learning at school and practical learning in the workplace. The intervention was based on two elements: training apprentices to learn and work autonomously and training masters to support and promote autonomy. The cognitive development intervention was used with 62 apprentices and 37 masters working in 6 different occupations at 9 companies. The apprentices participated in training sessions and discussions on the following topics: planning strategies, social and communicative competencies, and learning by using multiple sources. The masters participated in training and discussions on the following topics: motivating for autonomy, multilevel teaching, planning work with apprentices, and supporting apprentices' self-evaluation and self-control. A pretest/posttest system was developed to evaluate the intervention's effectiveness. Changes in the apprentices' attitudes toward responsibility were evident even before the evaluation's completion. (MN)

Tina A. Hascher und Fritz Oser

# Promoting Autonomy in the Workplace - A Cognitive-developmental Intervention

## 1. Introduction

Young people develop by experience at school, during their free-time and also in the workplace. The standard of vocational training in German-speaking countries is a 3 to 4-year apprenticeship, which is a dual system combining theoretical learning at school and practical learning in the workplace. 3-4 days a week the apprentices are in their workplaces. Thus, most of their learning is influenced and stimulated by their working contexts. Therefore, we have to ask the question: How do adolescents learn at work?

## 2. Autonomous learning

In recent literature (e.g., Rottluff, 1992) the dominance of the one-way-mode of learning during apprenticeship is described, i.e.,

1) the master explains the work to the apprentice,
2) the apprentice practices a lot
3) as soon as this work is correct and familiar to her / him then the next step or the next work will be explained.

Thus, it is primarily a step-by-step, a sequential way of teaching and learning. Pilot studies of our project and direct observations during a working day in different factories confirmed this. The masters not only stick with traditional forms of teaching, the apprentices themselves don't know any other, and certainly no autonomous and responsible way of learning.

That is exactly the point from where our project and our intervention started: The objective of our cognitive intervention-program is to improve the ways of teaching and learning in the workplace by promoting an atmosphere and a context of autonomous learning.

## 3. Main Hypotheses and Empirical Design

Our main hypotheses are as follows:

1) Masters' teaching (instructional competence) can be improved by a critical, self-reflective evaluation of their own teaching and by acquiring new teaching styles that can serve to promote autonomy.

2) Apprentices' working methods (and learning procedures) can be improved (i.e., gain more autonomy) by a meta-cognitive training which reflects critically their ways of working and by acquiring new methods and competences for autonomous work.

Based on these hypotheses we selected the following aspects for a 9-session-program (2 hours training over 9 weeks):

Table 1: Main topics of the intervention program

| **Apprentices** (learning and working autonomously) (n=62)[1] | **Masters** (supporting and promoting autonomy) (n=37)[2] |
|---|---|
| **training and discussion of** | |
| - planning strategies | - motivating for autonomy |
| - aims of vocational training and the role of apprentices in companies | - multi-level teaching (e.g., project-method) |
| - project-method | - planning work with the apprentices |
| - social, communicative competences | - supporting self-evaluation and self-control of the apprentices |
| - multilevel learning and working (e.g., learning by using multiple sources) | |

For evaluating our intervention program (pre-post-design) for the adolescents and the masters, we proceeded the following assessment of developmental changes during intervention as described in Table 2:

[1] in 6 different vocations and from 9 different companies
[2] masters voluntarly participated in the study. Therefore, there was no equivalence between apprentices and masters.

Table 2: Assessment (Pre-Post-Post-Design)

| Apprentices | Masters |
|---|---|
| **questionnaires for assessing** | |
| - autonomy | - professional ethos (adapted from Oser & Zutavern, 1987) |
| - ambiguity tolerance (short version of Budner's scales, 1962) | - ambiguity tolerance (short version of Budner's scales, 1962) |
| - hypothetical problem-solving at work | - confidence and trust in apprentices |
| - self-efficacy belief (adopted from Schwarzer, 1991) | - participatory educational style |
| - attitudes toward responsibility | |
| **interviews about** | |
| - planning strategies | - promoting autonomy of apprentices |
| | - promoting apprentices' initiative |

All of the (very few) studies concerning autonomy at work reported in the literature primarily deal with methods and strategies for autonomous planning (e.g., structuring a complex task into hierarchical steps), autonomous action (e.g., doing the work by him-/herself) and autonomous quality control of the work (e.g., searching for and correcting mistakes). Thus, autonomous learning in the workplace hardly touches the field of moral development. In our study, the main focus is also on the functional aspects of work and learning at work. However, we tried to expand the concept of autonomy. Therefore, our definition of autonomy integrates one aspect of morality, namely responsibility.

In order to learn and act in an autonomous way apprentices need to develop a feeling for „good" work. That means, they have to develop not only a sense of quality standards and a sensitivity for error prevention but also criteria for working responsibility. For the time being it is still an open question, which criteria for own responsibility they have actually developed.

Our intervention-program is still running. Therefore, I can't report yet the results concerning developmental changes during our intervention. Thus, the (empirical) focus of my presentation will be our **apprentices' current attitudes towards responsibility.**

## 4. Responsibility and Self-efficacy Belief

Given the fact that self-efficacy belief (the personal sense of control) is an important component of human functioning in general, e.g., a factor influencing mental health, social integration and achievement (see Bandura, 1977; Flammer, 1990) we assume that the concept of responsibilty is also correlated to self-efficacy belief. As Schwarzer (1993, S.1) pointed out:

> "In terms of feelings, a low sense of self-efficacy is associated with depression, anxiety, and helplessness."..."People with high self-efficacy choose to perform more challenging tasks. They set themselves higher goals and stick to them."

Based on this, the following section focuses on two aspects:

1. First, I will describe the methods we used to assess self-efficacy belief and attitudes towards responsibility.

2. Second, I will present and discuss the correlational data regarding self-efficacy belief and attitudes towards responsibility.

### 4.1. Method

As was shown in Table 2, we assessed responsibility and self-efficacy belief by means of two questionnaires.

4.1.1 The questionnaire on self-efficacy belief consists of 29 items related to 3 aspects (answers ranging on a 4-point scale):

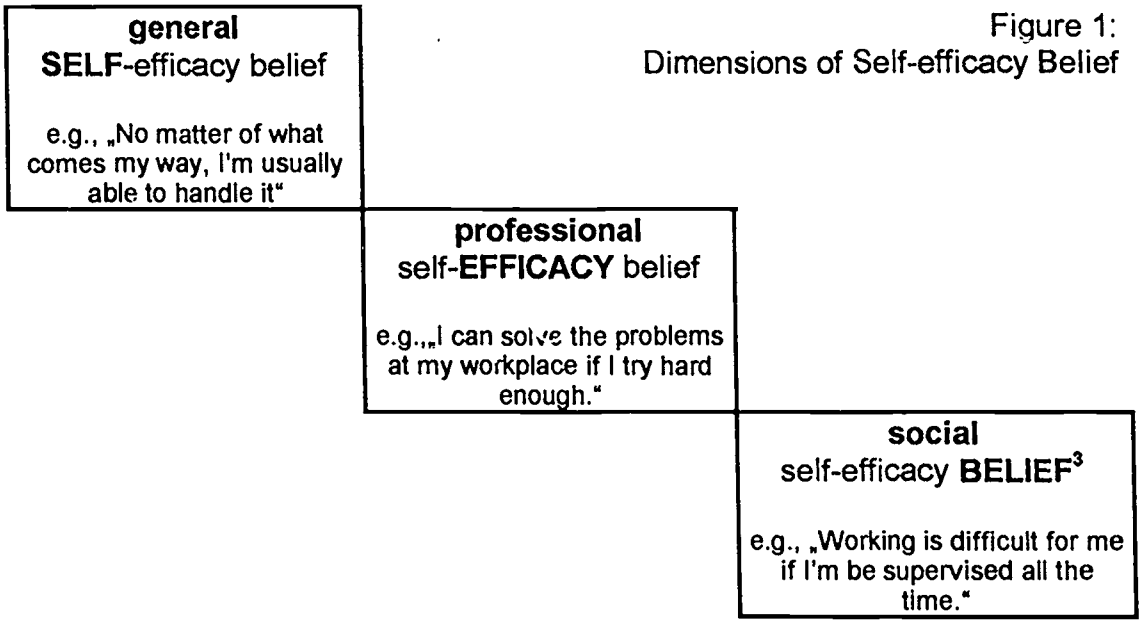
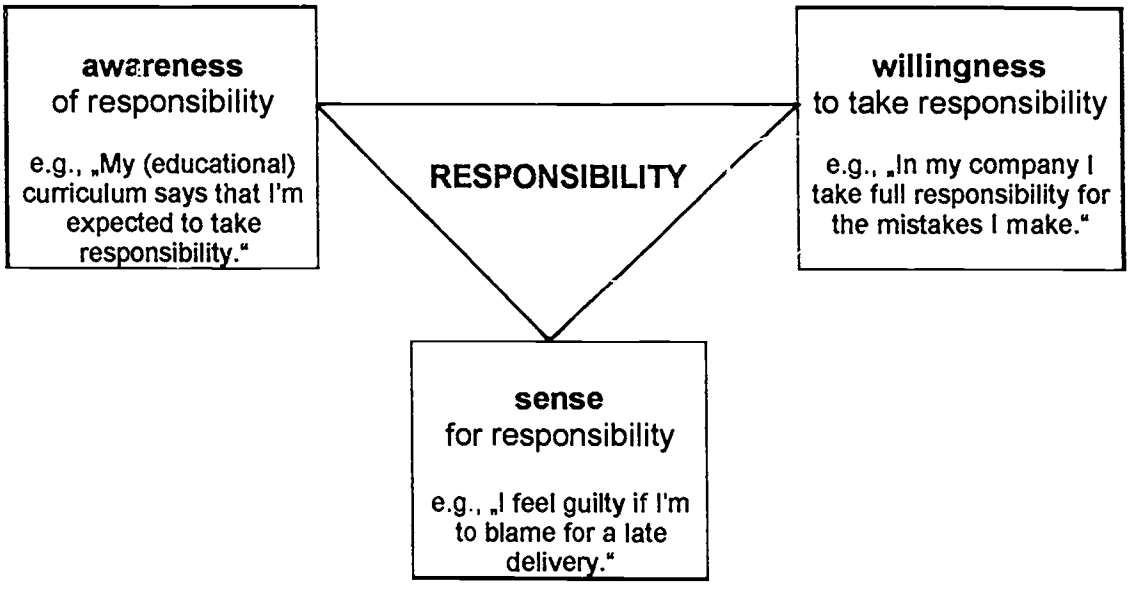



Figure 1:
Dimensions of Self-efficacy Belief

[3] social self-efficacy belief was conceptualized as self-efficacy belief during social interactions at work

4.1.2 The questionnaire on attitudes towards responsibility consists of 53 items concerning 3 dimensions of responsibility (cf., Mauermann, 1993) (answers also ranging on a 4-point scale):

Figure 2: Dimensions of Attitudes towards Responsibility




## 4.2 Results and Discussion

As can be seen in Table 3, factor analysis (of results from a larger sample with N=160) resulted in 12 factors for attitudes towards responsibility which correlate with the dimensions of self-efficacy belief.

Insert Table 3 about here

The results confirm our hypothesis: self-efficacy belief correlates significantly positive with attitudes towards responsibilty. In comparison of the 3 aspects of self-efficacy belief **professional self-efficacy belief** shows the highest correlations with 5 factors of responsibility:

- autonomy (e.g., „I have chosen my profession because here I have a voice".)
- quality of work (e.g., „I always do good work")
- confidence from others (e.g., „My master gives my the possibility to structure my work by my own")
- participation (see example above) and
- limits of responsibility (by persons and environment) (e.g., „Apprentices can not take responsibility if it is dangerous for themselves").

While **general self-efficacy belief** correlates significantly positive with the two factors self-realization (e.g., I have chosen my profession, because it is important and sensefull for the community") and participation (e.g., „Participation is important for taking responsibility"), **social self-efficacy belief** (i.e., self-efficacy belief in personal interactions during work) only correlates significantly positive with participation.

Taken all 3 aspects together, we find two more correlations in addition: **self-efficacy belief** and identification with work are related significantly and (that is the only significant negative correlation) self-efficacy belief significantly correlates negative with utilitarian reasons for job choice.

By comparing the 3 aspects of self-efficacy belief it becomes clear that an assessment of general self-efficacy belief is not sufficient to grasp the interaction between self-efficacy belief in apprentices and their attitudes toward responsibility. Obviously, they develop a more context specific form of self-efficacy belief which is closely related to their attitudes towards responsibility. Therefore, to educate adolescents as responsible and autonomous workers, masters have to give them optimal conditions for taking responsibility at work. By doing this, one of the important steps is to raise their awareness that they can control their actions and their learning at work. I'd like to assume that adolescents who feel encouraged and perceive themselves as competent workers will not only be able but also be willing to take responsibility. Further analyses of our datas, especially the analyses of developmental changes will help us to check this assumption.

Table 3: Correlations between Self-Efficacy Belief and Attitudes towards Responsibility

| Self-efficacy Belief<br><br>Attitudes towards Responsibility | general self-efficacy belief | professional self-efficacy belief | social self-efficacy belief | self-efficacy belief (all 3 dimensions) |
|---|---|---|---|---|
| 1. self-realization | **.3208*** | .2097 | .1976 | **.3182*** |
| 2. autonomy | .1306 | **.3009*** | .0654 | .2314 |
| 3. utilitarian reasons for job choice | -.2450 | -.2166 | -.1589 | **-.2765*** |
| 4. quality of work | .2557 | **.2809*** | .2484 | **.3414*** |
| 5. identification with work | .2056 | .1753 | .2474 | **.2625*** |
| 6. confidence from others | .2275 | **.2733*** | .1762 | **.2992*** |
| 7. supervision as experienced | .1710 | .0950 | .2272 | .2028 |
| 8. attitude towards work | .0974 | .0974 | -.0112 | -.0154 |
| 9. participation | **.4090**** | **.3519**** | **.3313*** | **.4755**** |
| 10. risk-taking | -.0810 | -.1190 | -.0003 | -.0958 |
| 11. limits of responsibility (persons and environment) | .2561 | **.2989*** | .0424 | **.2856*** |
| 12. limits of responsibility (company) | .1518 | .0176 | -.0403 | .0708 |

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