

Exposé for a master thesis with the working title

Influence of induced motto goals in comparison to S.M.A.R.T. goals on complex problem solving

1 Aim of the Present Research

In my master thesis, I aim to investigate whether the induction of motto goals in comparison to S.M.A.R.T. goals improves the performance in a complex problem solving task and whether this relationship is mediated by the processing style (global style for motto goals, local style for S.M.A.R.T. goals). Additionally, I plan to analyze the impact of several further possible moderators and mediators in an exploratory fashion.

2 Theoretical Background

In many cases we are confronted with certain challenges we are supposed to master, be it a salesperson that is expected to sell as many products as possible, a university student who has to pass certain courses to attain her degree or new parents who want to teach their children certain norms and values. As these situations are complex, intransparent and dynamic and as they exhibit many interconnected variables and various competing goals, we call them complex problems (Funke, 2006).

The first thought that probably comes to mind when facing such situations in daily life concerns the question of how the complex problem can be solved as efficiently and successfully as possible. In this respect, previous research focused on interindividual differences in complex problem solving (Barth & Funke, 2010; Schoppek & Putz-Osterloh, 2003), analyzing for example the influence of experience, intelligence and motivation (Frensch & Funke, 1995). However, also the impact of situational factors like for instance the complexity of the task, the problem context and the environment were taken into consideration (Frensch & Funke, 1995). The present study takes into account both perspectives: It aims to investigate the influence of individually specified goals in accordance with a certain externally defined goal setting strategy on complex problem solving.

2.1 S.M.A.R.T goals and motto goals

In their goal setting theory, Latham and Locke (1991) address the observation that the way a goal is formulated can either help or impede persons to perform well in a certain task.

More precisely, they assume that specific, difficult goals increase task performance – a hypothesis which is supported by a large amount of research (Latham & Locke, 2007). In many situations the acronym S.M.A.R.T., which was put forward by Doran (1981) and which stands for Specific, Measurable, Assignable, Realistic, Time-related objectives, is used to describe these very same goals.

All in all, specific and difficult goals often work very well in simple tasks (Locke & Latham, 2002). However, in complex environments the picture seems to be somehow different: When facing complex tasks, the necessary search for new strategies can be hindered by specific and difficult goals, so that they can even impede performance (Kanfer & Ackerman, 1989; Locke, 1996). Thus, the well-established concept of S.M.A.R.T. goals does not seem to apply to complex tasks.

As S.M.A.R.T. goals are apparently only appropriate for certain kinds of tasks, the question arises, which kind of goals can facilitate a good performance in complex environments. A study by Winters and Latham (1996) has shown that focus on learning goals instead of performance goals helps to increase the performance in complex tasks. However, a concept developed by Maja Storch and Frank Krause seems even more promising. With their Zürcher Ressourcen Modell (ZRM), which originated in the 1990s, Storch and Krause (2007) developed a well-established self-management training whose effectiveness was validated in several studies (e.g. Storch, Gaab, Küttel, Stüssi, & Fend, 2007). It aims to (1) combine theoretical research with psychological practice, (2) to focus on resources instead of pathology and (3) to ensure the transfer of the training contents into daily life (Storch & Krause, 2007). Based on the ZRM, Storch and Krause introduced a new kind of goal: The motto goal. This goal type aims to ensure intrinsic motivation, meaningfulness (the so-called "Sinnerleben") and attitudinal change. The concept of motto goals furthermore builds on the Personality systems interaction (PSI) theory (e.g. Kuhl & Strehlau, 2011) and focuses on the attitude ("Haltung") of the person instead of a particular outcome (as S.M.A.R.T. goals do) (Storch, 2009). In order to promote the development of the intention to implement the goal, motto goals have to fulfill three criteria: (1) They are approach (instead of avoidance) goals, (2) they must be completely controllable by the person and (3) they have to be associated with positive somatic markers (Storch & Krause, 2007). According to the authors, motto goals have proved successful in practice because they allow immediate goal directed behavior. It seems reasonable to assume that such a goal directed behavior is helpful not only when

facing difficult life situations, but also when confronted with a computer-simulated complex problem solving task.

As explained above, S.M.A.R.T. goals often lead to high performance in simple, but not in complex tasks and motto goals seem to be a promising approach regarding goal setting in complex environments. Furthermore, research has shown that non-specific goals lead to a better understanding of the structure that underlies a complex task environment than specific goals (Vollmeyer, Burns, & Holyoak, 1996). From these findings, I derived the following hypotheses, which are based on an interaction between goal setting and task environment and assume an advantage of motto goals over S.M.A.R.T. goals in complex but not in simple tasks. In order to analyze if goal setting per se influences performance – which I only assume in simple tasks – a control group is added which just is instructed to work on the task without having developed a certain goal.

Hypothesis 1a: In the complex task, participants in the motto goal condition show a better performance than participants in the S.M.A.R.T. goal condition.

Hypothesis 1b: In the complex task, participants in the S.M.A.R.T. goal condition do not differ from participants in the control condition.

Hypothesis 2a: In the simple task, performance does not differ between participants in the motto goal condition and participants in the S.M.A.R.T. goal condition.

Hypothesis 2b: In the simple task, there is an advantage of goal setting per se, so that the mean performance in the two experimental conditions exceeds the performance in the control condition.

2.2 Processing style as a possible mediator variable

Since many decades, human processing has been assumed to rely on two different styles. In this regard, Navon (1977) differentiates global from local processing, Kimchi (1992) speaks of wholistic as opposed to analytic perception and Kahneman (2012) distinguishes between the automatic System 1 and the effortful System 2 – just to name a few approaches. With regard to goal setting, the assumption seems reasonable that the induction of general, attitude-related motto goals might facilitate global processing, whereas the induction of specific, outcome-concerning goals should promote local processing. As a global processing style can influence creativity (Förster & Dannenberg, 2010), which seems to be necessary for successful performance in complex environments (Schmid & Funke, 2013), a positive

association between a global processing style and complex problem solving is expected. Thus, it is assumed that the relationship between goal setting and complex problem solving is mediated by the processing style. More specifically, the following hypotheses are derived:

Hypothesis 3a: Motto goal induction, when compared to the control condition, facilitates a global processing style that in turn leads to a higher performance in a complex problem solving task.

Hypothesis 3b: S.M.A.R.T. goal induction, when compared to the control condition, facilitates a local processing style that in turn leads to a lower performance in a complex problem solving task.

2.3 Further possible moderator and mediator variables

Apart from that, I plan to analyze the impact of further variables that might moderate or mediate the relationship between goal setting and complex problem solving. In this respect, I am going to regard goal commitment, self efficacy and locus of control as possible mediator variables and personality factors, school grades, grit, creativity and state vs. action orientation as possible moderator variables. As several relationships between the different variables seem plausible, these analyses will be conducted in an exploratory fashion.

3 Method

The study is planned to be conducted in an experimental setting in a 3 x 2 factor design. The first factor is based on the three different goal setting types (motto goals/ S.M.A.R.T. goals/ control group) and varies between subjects. The second factor varies within subjects and refers to the complexity of the task (simple task/ complex task). The participants will be divided into the experimental groups and the control group randomly.

3.1 Pretest

In order to receive feedback on the goal setting manipulation, to investigate whether the goal induction indeed influences the processing style and to generate associations for the pictures in the motto goal condition, I plan to conduct an online-pretest with at least 20 participants.

3.2 Participants

I aim to recruit a minimum of 80 participants to ensure that there are at least 20 subjects in each condition, even if I had to exclude some participants from the analyses. For this purpose, I would like to recruit first-semester psychology students, but also students from other subjects.

3.3 Procedure

The experiment is planned to take place in the lab of the psychological institute of Heidelberg University. The proposed procedure is depicted in figure 1.

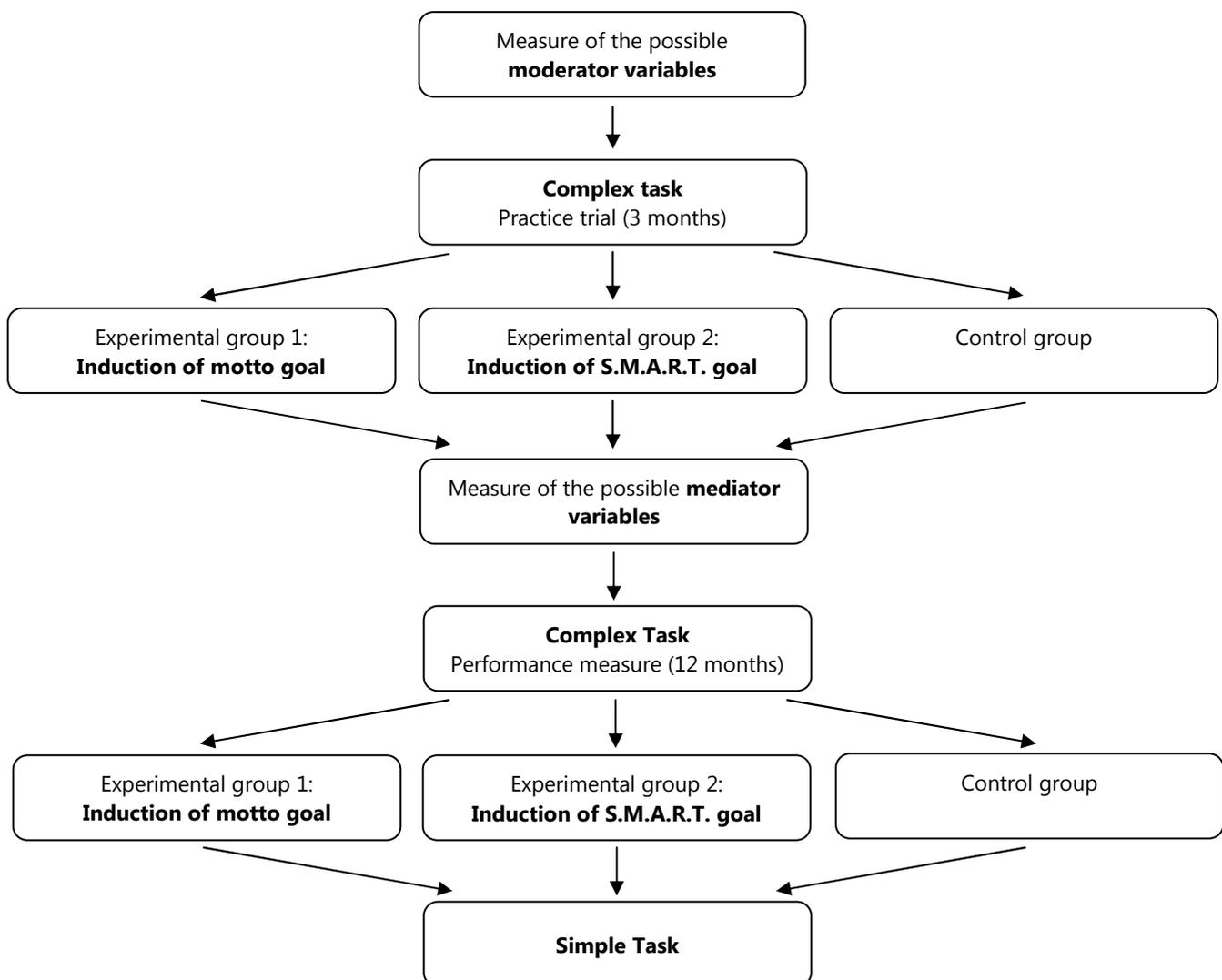


Figure 1. Proposed procedure of the experiment.

3.4 Material and measures

In order to induce the different goals, my aim is to develop a computer-based goal manipulation. Participants in the motto goal condition will be instructed how to generate a personal motto goal for the *Tailorshop* simulation (e.g. Barth & Funke, 2010; Danner et al., 2011). Participants in the S.M.A.R.T. goal condition will be asked to develop a personal difficult and specific goal in form of a particular outcome. Participants in the control condition will be asked to work on the task.

For the measurement of the moderator and mediator variables, I plan to use well-established scales, which I have yet to collect. In order to assess performance in a complex task, participants will work on the *Tailorshop* simulation. In this computer simulation, the subjects are the managers of a fictional organization which produces and sells T-Shirts over a fictional period of 12 months. They can control several variables (e.g. the amount of workers), whereas other variables (e.g. the customer interest) cannot be controlled (Danner et al., 2011). As the variables are interconnected and have intransparent relationships, as several goals compete and as the situation is complex and dynamic, the simulation fulfills the criteria of complex problem solving tasks. The main measures of the dependent variables in the complex task, namely complex problem solving performance, are going to be based on an outcome measure (total profit) and a process measure (trend of profit, c.f. Danner et al., 2011). Moreover, the broadness in which the participants influence the variables is going to be analyzed. For this purpose, I plan to count the number of variables which are manipulated by the participants per month. Variation in the broadness of the manipulation might indicate a certain flexibility in complex problem situations. Additionally, I plan to include analytic processing as dependent variable, consisting of time spent per month and information retrieval (Barth & Funke, 2010). As a simple task, I am going to apply a short and well-defined problem like for instance the Tower of Hanoi task (e.g. Miyake et al., 2000). The performance measures in the simple task are yet to be developed, but might, for example, consist of the time spent for the problem solving and the number of steps that the participants need to solve the problem.

4 References

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