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„Teachers' Emotions' Relationship with Self-Efficacy,
Implicit Theory of Ability and Classroom Goal Structures“

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Nicole Sitkovich, BSc

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1. Introduction

Teachers play an essential role in our society and carry great responsibility. Each teacher transfers knowledge to and shapes the minds of numerous young people. Austrian citizens and most people in other (western) countries have been taught at school by several teachers. Teachers have to prepare students for their exams and guide them through their time in school, which will influence their following life decisions and career choices. Because of this extensive contact with teachers as well as the far-reaching consequences and in order to facilitate a good school experience for everyone, it is worth further investigating concepts surrounding teachers.

Teachers – by means of their behavior, thoughts or emotions – affect various student outcomes. For example, teachers are greatly responsible for the determination of the students' academic success, which portrays an essential outcome in the research of education. Among others, they impact students' school problems, inattention, emotional symptoms and their personal adjustment (Tennant et al., 2015). Teachers also play a key role in reducing and preventing bullying and carry out anti-bullying programs (Haataja, Ahtola, Poskiparta, & Salmivalli, 2015). They also find themselves in the advantageous position of being able to promptly observe a student having either behavioral, academic or emotional problems, thus allowing for preventive actions to be taken in a time-contingent manner (Orpinas, Raczynski, Peters, Colman, & Bandalos, 2015).

Especially essential for student outcomes are teachers' emotions. They are connected to student emotions, achievement and student learning as well as the student-teacher relationship (Becker, Goetz, Morger, & Ranellucci, 2014; Frenzel, Goetz, Stephens, & Jacob, 2009; Keller, Frenzel, Goetz, Pekrun, & Hensley, 2014). On a higher level, teachers' emotions are even linked to the school climate and the quality of education (Frenzel et al., 2009). The importance of teacher emotions for students stems from the fact that students "are aware and influenced by teachers' emotions" (Sutton & Wheatley, 2003, p. 340). When teachers feel angry, they yell, when teachers are happy, they smile. There can be positive and negative consequences for the students. They can become upset, if their teacher is angry with them, but the teacher's anger might also lead to less misbehavior in the classroom. Particularly essential is the resulting student's attribution of his or her failure or success. Expressing anger with a student's low effort or pity, if a failure was simply bad luck, might lead to adaptive attributions in the student (Sutton & Wheatley, 2003).

Besides being crucial for student outcomes, teachers' emotions also affect the teachers themselves in their personal and professional life, because they are an integral part of it (e.g. Frenzel et al., 2016). Teaching cannot only be an "emotionally rewarding profession" (Keller et al., 2014, p. 71), but also emotionally exhausting (Kuok & Lam, 2018). More precisely, emotions affect their cognitions and motivation (Sutton, 2007), meaning that depending on how they feel, teachers will think differently and approach challenges with different levels of effort. Furthermore, emotions are also important for the overall well-being of teachers, as job satisfaction and early retirement are dependent on them (Keller et al., 2014). Additionally, Wang and colleagues (2015) describe the high attrition rates of teachers in developed countries. They also mention that a considerable number of students studying to become a teacher end up choosing a different profession, while a similar amount quit within the first five years of teaching or at least regularly consider quitting. These findings suggest a fundamental lack of enjoyment in the teaching profession.

Because of these findings, antecedents of teachers' emotions should be investigated. In fact, Frenzel and colleagues (2009) discuss a demand for empirical attention on teachers' emotions. Becker (2014) goes as far as to attribute teachers' instructional behavior and their emotions similar importance.

One factor is the teachers' belief in his or her own ability. Teachers who are convinced that they are good teachers and make a positive impact on their students' lives might be more likely to go through the day with a smile on their face, as opposed to teachers who are convinced their lessons are substandard. This belief is called self-efficacy and describes the degree to which a person thinks his or her abilities are successful in a certain situation (Bandura, 1977). In addition to emotions, self-efficacy also influences student and teacher outcomes (e.g. Tschannen-Moran & Hoy, 2001).

Another possible antecedent of teachers' emotions might be the teachers' belief in the malleability of the abilities of his or her student. This concept is based on the implicit theories of intelligence (Dweck, 2000), where one's intelligence is regarded as either stable (entity theory) or malleable (incremental theory). Teachers who adopt an incremental theory of student's ability believe that their students' abilities can change or improve. Conversely, believing that no matter the influences, students will never be able to improve in class, describes an entity theory. Extensive research has shown relationships between theories of intelligence and affective outcomes in different contexts (e.g. King, 2017).

A third and crucial antecedent is the classroom goal structure. A classroom goal structure refers to the learning environment that the teacher establishes through the use of teaching strategies and instructional behavior (Meece, Anderman, & Anderman, 2006). The structure is described on the spectrum from performance oriented to learning oriented, which is considered favorable. The classroom goal structure does not only have a great and broadly researched impact on student motivation (e.g. Ames, 1992) and emotion (Baudoin & Galand, 2017), but is also connected to teachers' emotions (e.g. Frenzel et al., 2009).

In a next step, this study discusses the mediating role of classroom goal structures between self-efficacy and implicit theories with emotions. It is assumed that the behavioral factor might influence the relationship of the cognitive constructs with the affective outcome. By acting according to a belief, the outcome should be stronger than when considering the belief by itself. Teachers' attitude toward their own ability will influence their actions in the classroom. In the same manner, teachers, who think that their student's abilities are malleable might focus more on eliciting a beneficial motivational climate in the classroom. In turn, the teachers' perception of a mastery classroom goal structure evokes positive emotions, while the absence of said climate will foster negative emotions.

Thus, the relevance of this study can, firstly, be found in the use of the TARGET framework (J. Epstein, 1988; Lüftenegger, van de Schoot, Schober, Finsterwald, & Spiel, 2014) for operationalizing classroom goal structures, as most empirical research have investigated only some dimensions of the TARGET framework and thus, certain dimensions have been omitted in previous findings (e.g. Shim, Cho, & Cassady, 2013). Secondly, in reaction to Frenzel and colleagues' (2009) demand to further investigate specific teachers' emotions, it is the goal of this study to analyze its relationship with three likely antecedents. Particularly, implicit theories of others (as opposed to theories of the self) constitute a sparsely researched field. Thirdly, adding classroom goal structures as a mediational variable is a key element of the current study, which has only been done very few times (see Deemer, 2004; Zee & Koomen, 2016).

In light of the challenges within the teaching profession stated in the beginning of this chapter, the suggested concepts portray important factors in the teachers' and students' lives, as well as in the general school context.

2. Theoretical Background

2.1. Teachers' Emotions

Emotions portray a ubiquitous concept in the human life. Constant stimuli, situations and events elicit emotions, which greatly influence our lives (Lazarus & Smith, 1991). They are considered one of three “fundamental class[es] of mental operations” (Sutton & Wheatley, 2003, p. 332), together with cognitions and motivation (Keller et al., 2014).

Emotions are difficult to define (Lazarus & Smith, 1991; Scherer, Schorr, & Johnstone, 2001). Earlier theories have put them into either a cognitive or a physiological paradigm, but today an integrative view exists, acknowledging emotions with their cognitive, physiological and subjective elements (Rothermund & Eder, 2011). Meyer and colleagues (2001) define emotions as a current psychological state of a certain quality and intensity, which is temporally limited, conscious, object directed and has a subjective, physiological and behavioral aspect. Zimbardo and Gerrig (2004) coincide with these aspects and add the personal relevance. They define emotions as responses to personally relevant stimuli. These single descriptive elements can be brought into relation within the multicomponent perspective of emotions (Sutton & Wheatley, 2003), in which emotions are processes with certain components. In this framework, the five components are appraisal or evaluation (cognitive component), bodily symptoms (physiological component), action tendencies (motivational component), vocal or facial expression (motor expression component) and emotional experience (subjective feeling component) (Scherer et al., 2001; Sutton & Wheatley, 2003). The affective component, namely the feelings, is the principal element of emotions (Keller et al., 2014). For example, a teacher evaluates a certain situation in the classroom (the stimulus) as not satisfying, they start sweating, their voice gets louder, and their hands start shaking as they move toward the source of their anger. They feel angry. These components can be expressed differently in individuals. For example, when experiencing anger, some people will move away, others will approach the source of their anger (Sutton & Wheatley, 2003).

In recent research, one aspect has been found particularly essential, namely the appraisal of the stimulus (Scherer et al., 2001). Appraisal, the first component, is necessary for the presence of an emotion. It has been argued that an event alone will not lead to emotions, if it isn't evaluated (Frenzel et al., 2009). Frenzel and colleagues (2009) state that appraisal happens based on five dimensions, namely goal congruence, goal conduciveness, coping potential, accountability and goal significance. If a situation is congruent with one's goal or helpful (conductive) in the achievement of this goal as opposed to hindering, one will experience positive emotions.

Coping potential means one's judgement of whether a person is equipped for the situation, which is strongly related to the experience of anxiety. Accountability refers to whom a person holds responsible for the achievement, him- or herself or somebody else, which is connected to anger, especially if goal congruence and conduciveness are not given. Lastly, we evaluate the significance or the relevance of the situation, which will impact how strongly we feel about it. Applied to the school context, an example of appraisal would be the comparison between the intended classroom goals and the achieved goals while teaching (Keller et al., 2014).

Research on teachers' emotions is fairly recent (Sutton & Wheatley, 2003) and has only somewhat emerged in recent years (Frenzel et al., 2016; Keller et al., 2014). Especially research of specific emotions is scarce (Frenzel et al., 2009). Identified as the most relevant and prevalent emotions in the teaching context are enjoyment, anger and anxiety (Frenzel et al., 2016).

Specific emotions are generally sorted by their valence. Positive specific teacher emotions that come up in the teaching context are, among others, enjoyment, pride, love, caring, excitement and satisfaction (Sutton & Wheatley, 2003). Of these, enjoyment is the most dominant emotion (Keller et al., 2014). Factors causing specific positive emotions in the classroom have been summarized by Frenzel and colleagues (2009). Pleasant emotions, such as joy, are elicited, when teachers perceive cognitive gain in students, high motivational engagement and the students' compliance with rules. Additionally, Sutton and Wheatley (2003) listed antecedents to positive emotions, for example, satisfaction is experienced, when students learn and make progress. Pleasure derives from the growth of the students, when former students come back to talk and students' cooperation. Joy is caused by a good relationship with the students. Positive emotions also come from supportive colleagues or from parents, particularly when teachers "believe that parents are responsible, support teachers' efforts and respect teachers' judgement" (Sutton & Wheatley, 2003, p. 333). Teaching can also be exciting, especially to new teachers.

Common negative specific teacher emotions are anger, anxiety, frustration as well as helplessness, guilt, shame and sadness (Sutton & Wheatley, 2003). Reasons for negative emotions have also been summarized (Frenzel et al., 2009; Sutton & Wheatley, 2003). Sources of anger are students' misbehavior, laziness, inattention, lack of motivation and compliance to rules as well as when their academic failure is attributed to low student effort (Frenzel et al., 2009; Sutton & Wheatley, 2003). Sutton and Wheatley (2003) list further reasons for negative feelings, such as uncooperative colleagues as well as uncaring and irresponsible parents. Tiredness and stress can worsen anger and frustration. Teachers might feel ashamed, when

losing their temper. Young teachers often experience anxiety, because they are still learning how to teach and are not sure whether they are achieving their goals.

2.2. Classroom Goal Structure

One important predictor of teachers' emotions is the classroom goal structure (CGS). It describes the learning environment in relation to student motivation and learning patterns (e.g. Ames, 1992; Lüftenegger et al., 2014; Meece et al., 2006). It is created by the teacher's choice of instructional techniques and teaching strategies. A certain classroom goal structure predicts the adoption of the students' goal orientations (Lüftenegger et al., 2014; Meece et al., 2006). These are motivational theories that are "used to explain students' activity choice, engagement, persistence, help seeking, and performance in school" (Meece et al., 2006, p. 489). The CGS can either be a beneficial (mastery-goal structure) or a disadvantageous (performance-goal structure) motivational climate for the students. For example, students in a classroom, where a mastery-goal structure is established, tend to have a mastery goal orientation, meaning they study for the sake of knowledge and self-improvement, which is favorable to effective learning (e.g. Ames, 1992). If the CGS is not beneficial, students are likely to adopt a performance goal orientation, suggesting that they only study to be better than others and to appear smarter (Meece et al., 2006).

Epstein (1988) postulated the TARGET model to describe instructional strategies within six dimensions, namely *task*, *authority*, *recognition*, *group*, *evaluation* and *time*. TARGET as a second order factor with its six dimensions has been validated on the level of the students' perception and has been found to influence the adoption of students' goal orientation (Lüftenegger, Tran, Bardach, Schober, & Spiel, 2017).

The task dimension describes the choice of a teacher for a certain task, which will affect the students' judgement of their ability and their willingness to apply effort and strategies (Ames, 1992). Tasks should be varied and diverse as well as meaningful and of personal relevance to the students. They should offer a challenge, but also leave the student with a sense of control. These elements create intrinsic motivation. It has also been shown that with diverse and varied tasks social comparison declines (Marshall & Weinstein, 1984). Tasks should include specific and short-term goals in order for students to feel more capable and satisfied with school learning in general (Ames, 1992).

According to Ames (1992) authority, also being referred to as the autonomy dimension, means the degree to which students have options or choices regarding method and pace of learning. It

is essential that the students' decisions are based on interest and not avoidance. Greater perceived autonomy leads to higher intrinsic motivation. Students should feel a sense of responsibility, but also need support in their planning. The perception of control by the students positively affects their engagement with learning.

Recognition involves incentives and rewards for students, which are usually used to motivate them (Ames, 1992). But, this form of extrinsic motivation can have negative effects when given to an entirely heterogeneous class, varying in their initial intrinsic motivation. Furthermore, rewards should not be perceived by the students as bribes or controlling. But they can also have positive effects, when, for example, linked to effort.

The group dimension looks at team work between the students. Teachers should encourage peer interaction and working with others (Lüftenegger et al., 2014). The teacher is responsible for creating heterogeneous groups, where students collaborate and cooperate (Meece et al., 2006).

For the evaluation dimension, Ames (1992) emphasizes that it is not only how, how often and when students are evaluated, but also that their perception of their evaluation plays an essential role. One method that should be avoided is social comparison, for example, publicly stating which student performed best and which one the poorest. This has negative effects on their judgement of their abilities, choice of learning strategies and affect toward the self. Students' evaluations should include the evaluation of their effort, which positively impacts their problem-solving strategies and effective learning. Thus, evaluation should focus less on performance and competitiveness and should not be perceived as normative and "threatening to one's sense of control" (Ames, 1992, p. 265). Consequently, temporal feedback (comparing students' achievements with their own previous accomplishments) should be preferred over social feedback (Butler, 2000). With temporal feedback, students "can progress and feel competent when they improve" (Butler, 2000, p. 965).

The time dimension means for the teacher "to plan schedules and complete assignments at appropriate and optimal rates" (Meece et al., 2006, p. 493). It also includes the appropriate amount of workload for the students, the time the teacher takes for instructions and the possibility for students' wishes to learn about certain topics (Lüftenegger et al., 2017). It is closely related to the dimensions task and authority (Lüftenegger et al., 2017, 2014).

2.2.1. Classroom Goal Structures and Teachers' Emotions

The link between teachers' emotions and instructional practices has been established (Keller et al., 2014), although there are diverging theories as to the causal direction of the influence.

Frenzel and colleagues (2009) suggest a reciprocal relationship between teacher emotions and instructional behavior. Their work can be allocated within the appraisal paradigm and therefore it is argued that the appraisal of the students' behavior in relation to the teachers' goals for the classroom are considered predictors for teachers' emotions. For example, the students' completion of a certain task will be goal congruent, and thus, will elicit positive emotions in the teacher. "[A] teacher should experience enjoyment if student behaviors are in line with the specific behavioral goals set for a particular lesson or unit" (Frenzel et al., 2009, p. 133). Continuing the cycle, they suggest that teachers' emotions influence teachers' instructional behavior. Positive emotions should therefore be responsible for a more frequent use of flexible and activating teaching strategies, whereas negative emotions are accountable for less flexible and creative strategies. In the empirical part of their study they found positive relationships between the aggregated student perception of teacher behavior (which includes elaboration, comprehensibility, autonomy support, teacher enthusiasm and support after failure) and teachers' enjoyment as well as negative correlations with anger and anxiety (Frenzel et al., 2009).

Sutton and Wheatly (2003) postulate emotions to be antecedents of teachers' cognitions and motivation. Attention, memory, categorizing, thinking and problem-solving are included in cognitions. They suggest "that teachers who experience more positive emotions may generate more teaching ideas and strategies" (Sutton & Wheatley, 2003, p. 338). Conversely, an anxious teacher might not find the best solution to solve a problem in the classroom. Negative emotions in teachers, such as frustration or sadness, diminish their intrinsic motivation, while positive emotions are required for intrinsic motivation. Emotions also influence the attribution of outcomes which, in turn, affect the teachers' choice of strategies. For example, angry people tend to attribute failure externally, which, for a teacher, might lead to punitive strategies, when students do not solve a task (Sutton & Wheatley, 2003).

The longitudinal study of Wang and colleagues (2017), using Midgley et al.'s (2000) questionnaire to assess mastery- and performance-oriented classroom practices perceived by the teachers, showed that classroom goal structures predict teaching-related emotions. Their results showed that a mastery-goal structure predicted enjoyment ($\beta = .20$, $p < .05$) and a performance-goal structure predicted anger ($\beta = .25$, $p < .05$) and anxiety ($\beta = .17$, $p < .05$). Wang et al. (2017) explain this by proposing that teachers use certain instructional practices, because these methods will bring them joy.

2.3. Self-Efficacy

Another predictor of teacher's emotions constitutes self-efficacy. The first extensive overview of self-efficacy comes from Albert Bandura (1977), which has since been widely used by the scientific community (e.g. Daniels, Radil, & Goegan, 2017; Tschannen-Moran, Hoy, & Hoy, 1998; Wang et al., 2015; Zimmerman, 2000). He describes self-efficacy as the "conviction that one can successfully execute the behavior required to produce the outcomes" (Bandura, 1977, p. 193). For a given situation a person has expectations, whether he or she will succeed or fail. For example, a teacher with high self-efficacy is convinced that he or she will teach a class successfully and will positively impact his or her students' learning. A teacher with low self-efficacy is not sure, whether he or she will do a good job teaching the class. These thoughts are embedded in social structures and cannot be seen isolated. For example, people might use social comparison to make judgements about their own abilities. Therefore, self-efficacy belongs to the social-cognitive framework in psychology (Bandura, 1977).

Bandura (1977) distinguishes three dimensions in which self-efficacy can vary. They can differ in magnitude, generality and strength. Magnitude relates to the difficulty of the task for which they find themselves capable. The greater the magnitude of the self-efficacy, the more difficult a task can be with the person still being convinced of their ability. Generality means the extent of how much is included in the task (teaching one class on a certain day vs. teaching all classes for the year). The third dimension is strength, meaning its certainty or perseverance. A strong self-efficacy will not diminish when experiencing failure.

According to Bandura (Bandura, 1977; see also Zimmerman, 2000) there are four sources of self-efficacy beliefs: performance accomplishments, vicarious experience, verbal persuasion and emotional arousal. Performance accomplishments are the strongest source, because they are based on personal experience. Self-efficacy deriving from performance accomplishments is highly contributing to its strength. Vicarious experience, i.e. watching someone else accomplish a task, also has effects on one's personal judgment of ability concerning a task. For example, a task can be evaluated as being easier and in turn change one's appraisal of one's ability to accomplish the task after having seen someone do well on it. It is especially influential, if the modelled behavior shows clear outcomes. Thus, alterations of self-efficacy because of vicarious experience are elicited through social comparison of the self with others. Verbal persuasion itself is a weaker factor in enhancing self-efficacy. Merely telling a person that they will do well on a task is not enough, because the person simply might not believe it. Verbal persuasions "depend on the credibility of the persuader" (Zimmerman, 2000, p. 88). But if people receive

support additionally to social persuasion, they might put more effort into the task. Thus, especially the interactive effects of persuasion carry greater influence on one's self-efficacy. Emotional arousal is the fourth source of self-efficacy mentioned by Bandura (1977). Because high arousal is connected to weaker performances, people feeling anxious might not succeed in a given task. We use the information about our emotional arousal from previous similar tasks, to make judgements about our ability to take on future tasks. Through this cognitive component, namely that we know to expect a weaker performance, emotional arousals will influence our self-efficacy. The appraisal of the valence and strength of our emotional arousal will lead to higher or lower self-efficacy.

Self-efficacy influences "how people feel, think, motivate themselves and behave" (Bandura, 1993, p. 118). It affects the cognitive processes of conception of ability, framing of feedback, perceived controllability and causal structures. The motivational processes that are influenced are cognized goals, self-reactive influence and proactive control of motivation. Affective processes include thought control efficacy, coping efficacy and achievement anxiety. The impact in selection processes can be seen in peoples' choices of activities. The greater their self-efficacy the greater their options are, for example, in career decisions.

The cognitive process is impacted, because the stronger we believe we can achieve something the more we commit to doing so (Bandura, 1993). Before we do something, we visualize a likely scenario. For example, doubt in oneself will lead to a scenario where we don't succeed, thus we will not put as much thought into how and through which means we can be successful, something that would be useful to think about in order to accomplish a task. People with higher self-efficacy predict events and develop ways to control these. "[A] person with the same knowledge and skills may perform poorly, adequately or extraordinarily depending on fluctuations in self-efficacy thinking." (Bandura, 1993, p. 119). Collins (1982) found that in a sample of students solving math problems, students who had a higher self-efficacy performed better than the ones with low self-efficacy at each level of actual ability.

Also, in the educational context, self-efficacy plays a role for many outcome variables. Particularly the self-efficacy of teachers, or teacher efficacy, has recently received more attention in research. Teacher efficacy is "a judgment of [the teachers'] capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated" (Tschannen-Moran & Hoy, 2001, p. 783). This includes instructional, management and collaboration skills (A. Epstein & Willhite, 2015; Wang et al., 2015). Predictors of high teacher efficacy are a positive school atmosphere, the leadership of

the principal (e.g. including teachers in the school's decision making) and the sense of community in a school (Tschannen-Moran et al., 1998).

It is undisputed that the teacher efficacy has great impacts on many relevant variables on various levels in the school context. In their meta-analysis Tschannen-Moran and colleagues (1998) have summarized the effects of teacher efficacy on other concepts. On the student level, teacher efficacy is positively related to student achievement, student motivation, students sense of efficacy (see also Zee & Koomen, 2016) and students' academic adjustment (Zee & Koomen, 2016). For teachers themselves, their self-efficacy shows positive relationships with their persistence, enthusiasm, job satisfaction and commitment to the teaching profession (see also Chesnut & Burley, 2015). Teachers with a higher efficacy are reportedly more likely to seek help when disciplinary problems with students arise. Furthermore, it is negatively linked to emotional stress and emotional exhaustion (Skaalvik & Skaalvik, 2016) as well as burnout factors and positively linked to teacher's well-being (Zee & Koomen, 2016). Teacher efficacy also influences practices related to classroom quality (Zee & Koomen, 2016).

Tschannen and colleagues (1998) argue that teacher efficacy works in a cycle. The four aforementioned sources of efficacy lead to the cognitive processing of these influences, which in turn leads to self-efficacy. The performance based on the efficacy beliefs then influences the four sources.

2.3.1. Self-Efficacy and Teachers' Emotions

Numerous times, self-efficacy has been linked to affective outcomes, such as satisfaction with life, emotions as well as depression and symptoms of stress (e.g. Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Karademas, 2006; Tschannen-Moran & Hoy, 2001). Additionally, it has been found to be decisive in many areas such as illnesses, recovery and coping with difficult situations (Karademas, 2006). Karademas (2006) also reports that high self-efficacy increases self-esteem and well-being, while low self-efficacy is linked to anxiety. People who believe themselves to be efficacious often have lower negative affect, because they set appropriate expectations for themselves and tend to attribute failure or success in more adaptive ways, for example, on controllable factors (Wang et al., 2015). Research concerning the connection between self-efficacy and emotions has been scarce in the area of teaching (for exceptions see Caprara, Barbaranelli, Borgogni, & Petitta, 2003; Hoy, Hoy, & Davis, 2009; Tschannen-Moran & Hoy, 2001; Tschannen-Moran et al., 1998; Wang et al., 2015). Yet none of the cited studies has explicitly looked at specific emotions and merely talk about more general concepts within the range of affective or emotional constructs. To my knowledge, the

only exception is the study on the validation of the Teacher Emotions Scale of Frenzel and colleagues (2016), who have found correlations to enjoyment ($r = -.13$), anger ($r = -.17$) and anxiety ($r = -.29$) in a study with 69 German teachers, though only the negative relationship to anxiety was significant.

Midgley and colleagues (1995) summarize the connection between high self-efficacy and positive affect in children and adults. High self-efficacy also positively predicted satisfaction with life and optimism while it negatively predicted depression (Karademas, 2006). Bandura and colleagues (1996) found lower self-efficacy leading to feelings of depression. In several studies the negative relationship between self-efficacy and anxiety was established (e.g. Soysa & Wilcomb, 2015), for example, in the clinical context with Multiple Sclerosis patients (Tan-Kristanto & Kiropoulos, 2015) and regarding reading and listening anxiety (Mills, Pajares, & Herron, 2006). Measuring the self-efficacy of workers in insurance companies, Karademas (2006) found low self-efficacy to be related to symptoms of anxiety.

Measuring teachers' self-efficacy Tschannen-Moran and colleagues (1998) found that higher self-efficacy leads to reduced stress and emotional symptoms of stress. Teacher self-efficacy is also correlated with affective commitment, for example, enjoying to talk about school outside of work ($r = .40$, $p < .01$; Caprara et al., 2003). Self-efficacy in teachers is also linked to teachers' feeling more enthusiastic about teaching (Tschannen-Moran & Hoy, 2001). More recently, Wang and colleagues (2015), discussed teacher efficacy as a greater predictor to positive affect and job satisfaction than their objective teaching ability. Furthermore, they found a negative relationship between high self-efficacy and adjustment (measured by emotional exhaustion, depersonalization and personal accomplishment) and a positive connection to psychological and physical health. Moreover, it has been found to be positively related to teachers' psychological well-being, including personal accomplishment, job satisfaction, commitment (Zee & Koomen, 2016) and general satisfaction with life (Daniels et al., 2017). A negative relationship was found with burnout factors, for example, exhaustion and depersonalization (Daniels et al., 2017; Zee & Koomen, 2016).

2.3.2. Self-Efficacy and Classroom Goal Structures

Teachers' efficacy beliefs affect their teaching behavior (Allinder, 1994; Guskey, 1988; Tschannen-Moran & Hoy, 2001; Wang et al., 2015). Tschannen-Moran and Hoy (2001) summarize previous findings about the influence of teacher efficacy on their instructional behavior. Teachers with high self-efficacy tend to plan and organize their classes more. They also set themselves higher goals and invest more in their teaching activities. In order to give the

students what they need, they are more willing to try new strategies than teachers with lower levels of efficacy. Dealing with problems in the classroom in a more persisting and resilient way and managing students' mistakes in a more beneficial way, relating to the evaluation dimension of classroom goal structures, are also related to high self-efficacy. Furthermore, students' autonomy is enhanced by self-efficacious teachers, while low efficacy is linked to an authoritarian, more controlling teaching manner (Wang et al., 2015). Focusing more on the collaboration with students is also associated with high self-efficacy (Wang et al., 2015).

Midgley and colleagues (1995) found a correlation of $r = .32$ ($p < .01$) between self-efficacy in middle school teachers and their instructional practices fostering a task-oriented environment, a motivationally enhancing classroom structure, rather than performance-oriented. When calculating a regression model, they used instructional practices as the antecedent of self-efficacy, the opposite direction as suggested in this study. In their cross-section analysis their suggested path yielded a significant effect from self-efficacy to task-oriented instructional practices of $\beta = .23$ ($p < .01$).

Wang et al. (2015) explain the direction of the relationships within a cyclical model and postulate that "higher self-efficacy should lead to better instruction due to self-efficacious teachers being more willing to invest effort in their teaching thereby creating mastery experiences that further bolster their self-efficacy" (Wang et al., 2015, p. 121).

Daniels and colleagues (2017) also found a positive connection between teacher efficacy and mastery approaches in their classroom structure ($r = .29$, $p < .01$).

2.4. Implicit Theories of Student Ability

The research of Carol Dweck presents an extensive and detailed overview of implicit theories (e.g. Dweck, 2000; Dweck, Chiu, & Hong, 1995). She describes implicit theories as beliefs held by people about attributes (e.g. intelligence) of themselves or of others (Dweck et al., 1995). One can distinguish between the incremental and the entity theory. Some people think of intelligence as a fixed and stable trait-like attribute. They believe that no matter how much a person learns or studies, his or her intelligence will not change (entity theory). It is called entity theory, because the attribute "is portrayed as an entity that dwells within us and that we can't change" (Dweck, 2000, p. 2). Contrarily, some might say that intelligence develops with time and indeed is malleable (incremental theory). It is called incremental, because the attribute "is portrayed as something that can be increased through one's efforts" (Dweck, 2000, p. 3).

Depending on one's implicit theory are one's cognitions and behavior (Dweck, 2000; Dweck et al., 1995; Midgley et al., 1995), for example, the explanation for failure and the resulting actions. An entity theorist is more likely to blame him- or herself and his or her intelligence, which might lead to giving up. An incremental theorist attributes failure to other factors, such as effort and applied strategies, which, in turn, might lead to proactive coping skills, such as help-seeking or applying more effort. People holding an entity view also judge themselves after only one or few tries and, thus, lose confidence and the chance to improve at this task, because of having already decided that they lack intelligence. They "see performance as a direct reflection of intelligence" (Dweck, 2000, p. 75).

Dweck's research considers not only intelligence as an attribute about which people have implicit theories, but also personality, morality, "kind of person", and "theories about the world" (Dweck, 2000). There have also been investigations of implicit theories of ability (Butler, 2000) as well as of theories of emotions (Schroder, Dawood, Yalch, Donnellan, & Moser, 2015).

Implicit theories can also be held about other people (implicit theories of others), which implicates our judgement of their actions and the way we understand their behavior (Dweck, 2000). Entity theorists need a smaller sample of actions to judge someone's attribute, similar to when theorizing about one's own intelligence. They also tend to not change their minds about their initial judgment, unlike incremental theorists. Supporting this notion is Chiu and colleagues' (1997) research about students, who were asked to make judgments about fellow students. Students, who adopted an entity theory, were more likely to directly attribute the other students' failure to their intelligence, whereas incremental theorists would take mediational variables into account, such as studying, concentration or effort. Concerning implicit theories of personality, entity theorists are quicker to judge a person on a more general, deeper level, based on only a few perceptions of their behavior. This is true for negative and positive judgement. When comparing two people, where one of them did better on a task or was nicer in one situation, people with an entity view said the same person would again outperform or be nicer than the other. People believing in an incremental view more often said that the other person would do better and be nicer. Incremental theorists tend to even out the success, between two people, because it is not dependent on the person, but on circumstances. "[T]he relative performance of the two [...] would even out across different situations" (Dweck, 2000, p. 75). Consistent with these results is Butler's (2000) empirical study about inferences to ability. With a sample of students and teachers, which were both asked about their implicit theories of

abilities of the students (theories of others), Butler (2000) investigated their attributions to ability in regard to the deterioration or improvement of the accomplishment of tasks, meaning whether a student became worse or better at solving a task. Entity theorists voiced that they inferred ability to the student in the declining performance condition, while incremental theorists assumed people in the ascending condition were of higher ability. This means that students and teachers who believe that ability is fixed, find a first good performance more informative in order to judge the ability of the person and will stick with this first impression, while incremental theorists take the students' improvement over time into account, when judging their ability.

Dweck (2000) goes on to specify that when simply judging someone's behavior as good or bad, entity and incremental theorists show no differences in the extent or valence of their judgment. Only when asked to make assumptions about the goodness or badness of a person (not the behavior itself) showing these behaviors, the answers varied. This means that entity theorists do not generally value behavior stronger, but only in connection to the personality or ability of someone. However, entity theorists are not aware that they make faster and more extreme decisions. When asked, they state that they find it, in fact, easy to judge a person by a single action, which they think is reliable information (Dweck, 2000).

Regarding implicit theories in the school context, Midgley and colleagues (Nicholls, 1990; cited after Midgley et al., 1995) mention the importance of differentiating between intelligence and ability. More precisely, it is essential to clarify whether you want to investigate how well they are able to do in school or their overall intelligence.

Behavioral implications from implicit theories about others can be observed especially when negative behavior is judged. People believing in an entity theory focus on punishment in their following actions. Incremental theorists, conversely, tend to look at the mediators (effort or strategies), rather than considering the reason for the failure to be a fixed trait in the person. In turn, they focus less on punishing, but more on educating or reforming (Dweck et al., 1995).

2.4.1. Implicit Theories of Student Ability and Teachers' Emotions

Research of the relationship between implicit theories and emotions is very scarce. There have been studies investigating similar constructs or in other contexts, which will be described, but to my knowledge, there exists no research concerning the theories of others with one's own emotions in the current literature.

King and colleagues (2012) investigated the relationship between students' implicit theories of intelligence and students' academic emotions. Their reasoning involves the control-value-theory (Pekrun, 2006) of emotions, stating that the eliciting of an emotion is linked to the degree to which a certain task is controllable and how much value the task has for a person. Positive emotions are elicited, if the task appears to be controllable, negative emotions, if not. King and colleagues (2012) state that this is directly applicable to the concept of implicit theories, since people with an incremental view tend to view success as something controllable, whereas entity theorists think it is uncontrollable and dependent on external factors. Consequently, incremental theorists should experience more positive emotions than entity theorists (King et al., 2012). Indeed, they showed that in their sample of students an entity theory of intelligence predicted anger, anxiety, shame, hopelessness and boredom. No predictive relationship was found with positive emotions. In a subsequent study, King (2016) showed a negative association between an entity theory of intelligence and life satisfaction as well as a positive link to negative affect. In another study King and Gaerlan (2014) found predictive relationships between self-control and negative as well as positive emotions.

The relationship between an entity view and negative affect has been shown in different contexts. For example, a study of adults and students connected their entity theory of willpower to lower subjective well-being (Bernecker, Herrmann, Brandstätter, & Job, 2017). Furthermore, because maladaptive beliefs about the self, have also been shown to be linked to negative outcomes in clinical variables, Schroder and colleagues have postulated that they are "important factors in understanding depression and anxiety" (2015, p. 120). The empirical results in their study with college students show negative relationships between an incremental theory of intelligence and depression and anxiety. Conceptions of ability concerning the usage of computers as fixed or acquirable have shown to be influential on computer anxiety (Martocchio, 1994). In the acquirable skill condition computer anxiety of the attendees of an introductory microcomputer training course decreased, whereas in the entity condition their computer anxiety did not change.

2.4.2. Implicit Theories of Student Ability and Classroom Goal Structure

As previously established, implicit theories of intelligence have been found to influence behavior (Dweck, 2000; Midgley et al., 1995). But research on theories of ability linked to the motivational climate in the classroom elicited by the teacher's behavior is scarce (except Leroy, Bressoux, Sarrazin, & Trouilloud, 2007), although some have investigated implicit theories of intelligence in this regard (Dweck et al., 1995; Shim et al., 2013).

Dweck and colleagues found people holding an incremental view to concentrate “on educating or reforming (vs. punishing)”, while entity theorists focus on punishing a person with negative traits (1995, p. 268). In a school context, this would be consistent with incrementalist teachers to focus on educating and entity teachers on punishing, consistent with respectively a mastery and performance classroom goal structure.

In their study concerning supported autonomy Leroy and colleagues (2007) found that teachers considering academic ability as something stable support autonomy less. Conversely, they only found an indirect effect in incrementalist teachers to support autonomy, mediated by self-efficacy, but no direct effect. Referring to Trouilloud and colleagues (2006), Leroy et al. (2007) state that teachers holding entity beliefs might also be more likely to create a competitive classroom environment by openly favoring “more talented” students, which leads to the assumption that incremental teachers will foster an autonomy promoting climate.

Shim and colleagues (2013) theorize, based on prior research (e.g. Dweck, 2000; Dweck et al., 1995; Trouilloud et al., 2006), that teachers implicit theories of their students’ intelligence will affect the motivational environment in the classroom. They state that teachers with an incremental view expect their students to be able to expand their intellectual capacity and thus establish a motivational climate. Their findings do not support this hypothesis, though. An effect was only found in interaction with teachers’ achievement goal orientation, where implicit theories played a minor part.

2.5. Hypotheses

The following hypotheses derive from the results and theoretical notions of the above-mentioned studies, which are summarized at this point. It is also indicated that implicit theories are measured by the entity theory, which means higher values in implicit theory demonstrate an entity view, while lower values account for the incremental theory. Hypotheses 1.1.-1.5. describe direct paths, while Hypotheses 2.1 and 2.2 concern indirect paths of mediation.

It has been shown that high self-efficacy causes positive psychological outcomes (Bandura et al., 1996; Caprara et al., 2003; Karademas, 2006; Midgley et al., 1995; Tschannen-Moran & Hoy, 2001; Tschannen-Moran et al., 1998; Wang et al., 2015; Zee & Koomen, 2016). Moreover, teacher-efficacy is related to positive teacher-related outcomes, such as job satisfaction (Caprara et al., 2003; Wang et al., 2015). Negative emotions such as anxiety should be affected, because as stated by Frenzel et al. (2009) the coping potential of a situation (judgment of the degree to which one is equipped for the handling of the situation), which is very similar to self-

efficacy itself, is related to anxiety. Based on these findings, a hypothesis of this relationship can be applied to the teaching context and specifically to the three emotions, identified as essential and most prevalent in teachers.

- Hypothesis 1.1: Self-efficacy predicts enjoyment positively as well as anger and anxiety negatively.

Analogous to Pekrun's (2006) Control-Value Theory of Emotions, one could argue that not only control, but also the belief in the students' abilities might predict teacher emotions. Some studies have already shown the relationship of theories of intelligence, ability and willpower with anxiety and found entity theory to be a predictor of anxiety. Given the assumed adaptation of the control-value theory and the results already shown from previous research (e.g. King, 2017; King et al., 2012; Schroder et al., 2015), it is postulated that in teachers an entity view of their students' abilities leads to less enjoyment and higher anxiety as well as anger.

- Hypothesis 1.2: Entity theories of abilities predict enjoyment negatively as well as anger and anxiety positively.

Despite some studies theorizing the opposite or a bidirectional path concerning the relationship between self-efficacy and classroom goal structure, the majority of studies suggest instructional behavior as the outcome variable (Midgley et al., 1995; Tschannen-Moran et al., 1998; Wang et al., 2015), which is why this direction is applied in the current study. Many studies have shown relationships with certain dimensions of the TARGET framework, such as evaluation, when dealing with mistakes (Wang et al., 2015), or authority, when exercising control (Woolfolk & Hoy, 1990). Because TARGET has already been established as one second order factor, integrating all dimensions of the teachers instructional behavior in regard to a mastery structure (Lüftenegger et al., 2014), it is assumed that self-efficacy also predicts TARGET as a whole, including dimensions that have not yet been investigated.

- Hypotheses 1.3: Self-efficacy predicts classroom goal structure positively.

Research of implicit theories shows that they influence behavior (Dweck, 2000; Midgley et al., 1995). In the teaching context mostly theories of intelligence have been investigated. In one study (Shim et al., 2013) there has not been found a direct connection between an incremental theory and the establishment of a motivational classroom climate. However, research about theories of abilities showed a relationship between an entity view and less support of autonomy of teachers (Leroy et al., 2007) and that they might enhance the competitiveness in the classroom, which constitutes a characteristic of a performance goal structure. Despite the lack

of empirical evidence, most researchers argue that implicit theories affect instructional behavior (e.g. Shim et al., 2013). Thus, it is hypothesized that teachers who believe their students abilities can be changed establish a beneficial classroom structure.

- Hypothesis 1.4: Entity theories of abilities predict classroom goal structure negatively.

A clear understanding exists that there is a relationship between instructional practices and teacher emotions (Frenzel et al., 2009; Wang et al., 2017). Even though there have been theories that emotions influence classroom goal structure (Sutton & Wheatley, 2003), the hypothesis of this study goes along with the results from Wang and colleagues (2017) that showed emotions to be the outcome variable in a longitudinal study. They found positive relationships between a mastery and performance structure with enjoyment respectively anger and anxiety. Therefore, in the current study, it is expected that the teachers' perception of his or her own structuring of the learning environment is responsible for their emotions during the teaching. To specify, a beneficial classroom environment will elicit more joy and additionally low levels of anger and anxiety in teachers

- Hypothesis 1.5: Classroom goal structures predict enjoyment positively and anger and anxiety negatively.

Emotions develop when a situation is personally relevant and appraised as either goal congruent or incongruent (Frenzel et al., 2009; Scherer et al., 2001). Considering that self-efficacy is an expectation that can be lived up to, it could serve as a goal that can be reached. In order for the fulfillment of this expectation to be salient, the perception of one's own teaching behavior can be taken into account. Therefore, I hypothesize that a teacher with high self-efficacy not only feels joy, due to his or her strong belief in him- or herself, but feels even happier, when he or she perceives that their teaching actually lives up to his or her expectation. Thus, the situation (the teaching) is appraised as goal congruent (with the self-efficacy) and leads to enjoyment. Similarly, if one's perceived teaching does not align with one's self-efficacy, one might feel angry or anxious. Their behavior is appraised as goal incongruent. Partial mediation is expected, because of the expected great specific influence of self-efficacy, where it seems unlikely that its effect would be completely kept constant, merely because classroom goal structures are introduced in the equation.

- Hypothesis 2.1: Self-efficacy predicts enjoyment positively and anger as well as anxiety negatively, partially mediated by classroom goal structure

Similar to self-efficacy, implicit theories of students' ability can be interpreted as expectations or goals. Again, the subsequent behavior can be appraised as congruent or incongruent with this expectation, which would lead to positive or negative emotions, respectively. Teachers may be more likely to structure the classroom according to a mastery structure, if they think their students' abilities are malleable (Leroy et al., 2007; Shim et al., 2013). Also, if they adopt this incremental view of ability, they tend to experience more enjoyment (King et al., 2012). Consequently, a teacher with an incremental theory of ability, who also adjusts the classroom structure beneficially, is likely to feel even happier. It is therefore assumed that if teachers act in line with what they believe their students can achieve, they will be happier, because they are enabling their students to reach their full potential. Conversely, if this is not the case, they will be more likely to experience negative emotions. Partial mediation is expected, because of the expected great specific influence of implicit theories of students' abilities, where it seems unlikely that its effect would be completely kept constant, merely because classroom goal structures are introduced in the equation.

- Hypothesis 2.2: Entity theories of ability predict enjoyment negatively and anger as well as anxiety positively, partially mediated by classroom goal structures

3. Method

3.1. Design and Sample

This study was conducted during the summer semester of 2016 within a project on classroom goal structures of the research team of Bildungs-Psychology and Evaluation of the University of Vienna. The scales relevant for this study (self-efficacy, implicit theories of abilities, teachers' emotions) were included for this master's thesis, after reviewing the literature as to which factors might play a role in predicting teacher's emotions and relate to classroom goal structures.

Teachers were contacted via email, asking them to participate in the study by filling out the online questionnaire, for which a link was provided in the email. Taking part was voluntary for all participants. A small incentive to participate was the drawing of five teachers who would get a 20 Euro gift voucher for Amazon. 3703 teachers from all parts of Austria from 75 different schools received said email. All teachers teach in the secondary level, from grade 5 to 12. All major types of schools for those grades were included (New Secondary School [34; Neue Mittelschule], Grammar School [29; Gymnasien], Grammar school with emphasis on Sciences [10; Realgymnasium], others [2]). A total of 923 teachers clicked the link. After excluding 166

teachers, for having closed the link before even answering one question, the final sample included 757 teachers, of which 374 (69.5%) were female. The participants were asked to think of one specific subject for which they would answer the questions (see appendix). The three most chosen subjects were Mathematics (15.6%), English (14.5%) and German (13.2%). Their age range was 22-64, with a mean age of 45.24 (SD = 11.56 years). The mean teaching experience was 18,76 years (SD = 12.541). Two thirds of the teachers teach at a Grammar School (71.2%). 24,3% teach at a new secondary school. 61% teach in an urban region. Almost all (91.1%) visit regular seminars and professional development courses. The questionnaires were sent out on the 22nd and 23rd of June, 2017. The link was online until September 30th, 2017.

3.2. Instruments

The questionnaires were distributed in the German language. A six-point Likert scale (1 = stimmt genau [strongly agree], 2 = stimmt [agree], 3 = stimmt eher [rather agree], 4 = stimmt eher nicht [rather disagree], 5 = stimmt nicht [disagree], 6 = stimmt gar nicht [strongly disagree]) was used for all scales.

3.2.1. Teachers' Emotions

The scale to assess teachers' emotions was adapted from Frenzel and colleagues' (2016) Teachers' Emotions Scale. Their intention was to assess distinct emotions, rather than the valence and level of arousal of emotions. Enjoyment, anger and anxiety represent emotions that are relevant, clearly defined and occur frequently. Research has shown that the specificity of assessing emotions should be rather precise (Frenzel et al., 2016), therefore the items explicitly mention the teaching situation and ask the teacher to think about one class. Out of their initial 37 item-pool, four items per emotion were chosen, based on advantageous factor loadings. Teachers could answer on a four-point Likert scale. Internal consistency was good in two samples (Cronbach's $\alpha = .70 - .81$) for all three emotions. For the entirety of the questionnaire the teachers were asked to think about one of their subjects and to answer the questions in regard to this subject. Therefore, the items were slightly changed from "in dieser Klasse" [these students] to "in diesem Fach" [in this subject]. The items were, as suggested (Frenzel et al., 2016), presented in random order. Sample Items for the three emotions are „Im Allgemeinen macht mir Unterrichten in diesem Fach Freude“ [Generally I enjoy teaching this subject] (enjoyment), “Während des Unterrichtens in diesem Fach habe ich oft Grund, mich zu ärgern“ [While teaching this subject I often have reasons to get angry] (anger), “Ich mache mir oft

Sorgen, dass das Unterrichten in diesem Fach nicht so richtig klappt“ [I often worry that teaching this subject does not really work out] (anxiety).

3.2.2. Self-Efficacy

The scale to assess Self-Efficacy was taken from the TALIS study (OECD, 2009). Items were adapted from Schwarzer and colleagues (1999), “a related measurement that is widely used in educational research” (OECD, 2010, p. 39). Four items were used and adapted (sample item: “I feel that I am making a significant educational difference in the lives of my students” [Ich glaube, dass ich im Leben meiner Schüler/innen pädagogisch wesentlich etwas bewege]). For the Austrian sample the scale had a good internal reliability (Cronbachs’ $\alpha = .75$) (OECD, 2010). Answers were given on a four-point Likert scale, which, was changed to a six-point scale to match the other scales of the current study.

3.2.3. Implicit Theories of Student Ability

This scale was adapted from Dweck’s (2000) Measure of Implicit Theories (sample item: “In this subject, students can’t really do much to change their ability” [In diesem Fach können Schüler/innen kaum etwas tun, um ihre Fähigkeiten zu verändern.]). The original items were formulated as self-theories, meaning the students would make judgments about themselves. It was changed into an “other”-form, so that the teacher would make judgments about their students. Furthermore, it was reformulated into a scale measuring ability as opposed to intelligence. The statements also refer to the school context, which Dweck refers to as “domain-specific”, as opposed to “domain-general”, which would ask the teacher to judge the child’s overall abilities. The three items are formulated as entity statements, which is advantageous, because incremental statements tend to be biased towards social desirability. In most cases it is recommended to only use entity-items (Dweck, 2000). Therefore, the original 6 item scale, including three incremental items, was shortened to three entity items (Dweck, 2000). The reliability of the original (3-item) scale tested across studies was very good (Cronbach’s α from .94 to .98; Dweck et al., 1995).

3.2.4. Classroom Goal Structure

The TARGET scale was adapted from Lüftenegger and colleagues’ (2017) Goal Structure Questionnaire. The original scale measured the perception of classroom goal structures from the students’ perspective, which was changed to measure the teachers’ perception. Items were chosen based on their contribution to an efficient and balanced instrument, to represent all dimensions of TARGET and on their psychometric properties. The reliability for each dimension was sufficient (Cronbach’s $\alpha = .85 - .96$). The scale for the current study included

the six dimensions of TARGET, where each dimension had a different number of items. The *task* dimension had seven items (sample item: “In diesem Fach gestalte ich die Aufgaben abwechslungsreich“ [In this subject I design varied tasks]), *authority* had ten (sample item: „In diesem Fach treffe ich wichtige Entscheidungen über das Vorgehen beim Lernen gemeinsam mit den Schüler/innen“ [In this subject I make decisions concerning the process of studying together with the students]), *recognition* also had ten (sample item: „In diesem Fach gebe ich meinen Schüler/innen Rückmeldungen, die sie dazu nutzen können, um sich zu verbessern. [In this subject I provide feedback to my students, which they can use to improve]), *group* had five (sample item: „In diesem Fach sind Gruppenarbeiten ein wichtiger Bestandteil des Unterrichts“ [In this subject, teamwork is an essential part of teaching]), *evaluation* had 13 (sample item: „In diesem Fach fließt in meine Beurteilung auch ein, wenn sich Schüler/innen anstrengen“ [In this subject, effort is taken into consideration in the grading process]) and *time* had five (sample item: „In diesem Fach nehme ich mir genug Zeit für Erklärungen“ [In this subject I spend enough time giving explanations]). For the current teacher sample, reliability was also good for all subscales, except time (Cronbach’s $\alpha = .70 - .81$, $\alpha_{\text{time}} = .59$).

3.3. Statistical Analyses

For the regression and mediation analyses MPlus (Muthén & Muthén, 2017) and for all descriptive and correlation analyses SPSS (IBM Corp., 2017) was used. 81 cases had missings on all variables, which were excluded from the analyses conducted with MPlus. For each variable 19.8% to 31.0% were missing (including the 81 cases [10.7%] that were excluded afterwards for the MPlus analyses). For teachers who teach subjects without a conventional classroom setting (10.0% of the total sample) in order to observe Classroom Goal Structures (Physical Education [Bewegung und Sport], Art [Bildnerische Erziehung], technical and textile handicrafts [technisches und textiles Werken]), there are no data for their perception of CGS, but they are still included, to keep information on self-efficacy, implicit theories and emotions. Full information maximum likelihood was used to deal with missing variables.

For preliminary analyses confirmatory factor analyses (CFA) and to test the hypotheses regression analyses (Hypotheses 1.1-1.5) as well as mediation analyses (Hypotheses 2.1 and 2.2) were conducted. All three are certain forms of structural equation modeling (SEM), which is a causal inference method (Kline, 2016). Kline (2016) goes on to explain that a hypothesis and questions of causal relationship between variables constitute the basis for a SEM. The goal of SEM is to test, whether a theoretical model is consistent with the gathered empirical data (Urban & Mayerl, 2013). Using SEM, one can analyze a causal relationship between a single

or multiple independent and a single or multiple dependent variables. An example for a question of causal relationship is whether there is a direct or indirect effect from variable X to Y. The SEM will give a numerical estimate of the relationship, which is free of measurement errors. Measurement errors can occur in social sciences, if, for instance, the test person is influenced by their current emotional state or personal knowledge. Systematic errors occur, for example, due to the survey method and its rating scales (Urban & Mayerl, 2013). Models with at least one latent variable related to another variable consist of a structural model and a measurement model. The measurement model describes the relationship between the manifest variables and their latent factor, while the structural model refers to the relationship between the variables (Urban & Mayerl, 2013).

The CFA is concerned with the relationship between indicators and factors (Brown, 2015) and is therefore a measurement model. Indicators, or observed variables, are, for example, scores from a questionnaire and factors are latent variables that the scale intends to measure. In a confirmatory factor analysis, an a priori decision about how many factors are included in the model and represented in the data has already been made. The relationship between the factor and the item is numerically expressed in the factor loading, meaning how strongly one item loads on the factor.

A mediation analysis is a path model, where one variable mediates the effect from the independent (X) on the dependent variable (Y). This is called the mediator variable (M) and, thus, is a dependent and independent variable at the same time (Geiser, 2011). The direct effect from X to Y becomes an indirect effect (amount of the mediation), once M is introduced. For a complete mediation, the original direct path equals zero, when M is being controlled (Baron & Kenny, 1986). Moderation and mediation are similar concepts, therefore distinguishing between them is very important. A moderation occurs if there is a multiplicative connection between the predictor and the variable (M), mediation, if it is additive. Consequently, a moderation is interpreted as “when certain effects will hold, [while] mediators speak to how or why such effects occur” (Baron & Kenny, 1986, p. 1176).

To establish whether the proposed model fits the empirical data, certain indices are used. These indices describe the model fit. A good model fit states that the model is consistent to a certain degree with the data. The Comparative-Fit-Index (CFI) belongs to the “Incremental Fit Indices” and compares the fit of a baseline-model (an independent model, in which all covariances are set to zero) with the fit of the suggested model based on their covariances. The CFI thus states the degree to which the suggested model fits the data better than the baseline model. A good

model fit is assumed with a CFI of .95 or higher (Geiser, 2011; Urban & Mayerl, 2013). The Tucker-Lewis-Index (TLI) is also an “Incremental Fit Index” and also compares the fit of a baseline model with the fit of the suggested model. It has the same cut-off values as the CFI (Geiser, 2011). Sufficient values for the CFI and TLI are above .90 (Marsh, Hau, & Wen, 2004). The Root Mean Square Error of Approximation-Index (RMSEA) shows the discrepancy between the fit of the model estimation and a perfect model estimation. Values below .05 show a very good fit and values up to .08 a sufficient fit (Urban & Mayerl, 2013). The Standardized Root Mean Square Residual-Index (SRMR) is one value for all information on residuals. Values below .05 show a good fit, values below .08 a sufficient model fit (Hu & Bentler, 1999). The Chi-Squared-Test shows whether the covariances in the specified model are significantly different from the empirical data. This means that the Chi-Squared test should not be significant, however it is prone to be affected by sample size. Big sample sizes usually lead to a significant test (Urban & Mayerl, 2013). Because the current sample is a large one ($N = 676$), the model fit will be evaluated based on the first four indices.

4. Results

4.1. Construct Validity and Reliability of the Scales

For preliminary analyses, all scales were validated using confirmatory factor analyses (see Table 1). All scales show at least a sufficient model fit ($CFI = .950 - 1$, $TLI = .916 - 1$, $RMSEA = .000 - .052$, $SRMR = .000 - .031$), except anger, which shows two values with poor fit ($RMSEA = .173$ and $TLI = .793$). Nevertheless, the CFI (.913) and the SRMR (.045) show a sufficient and good model fit respectively and the reliability of the scale is satisfactory with Cronbach's $\alpha = .81$. Furthermore, because it is a well-established and widely used scale (Frenzel et al., 2016; Lohbeck, Hagenauer, & Frenzel, 2018), it is still being used in this study. Means and standard deviations can be seen in Table 2.

The TARGET scale was initially intended to be used as a second order factor consistent of six dimensions per five to 13 items, as suggested in its analogous form for a student target group by Lüftenegger and colleagues (2014). Unfortunately, with the current sample of teachers the scale showed poor model fit. Instead, one item of each subscale was selected to build a new scale of classroom goal structure, which made for a good model fit ($CFI = .950$, $TLI = .916$, $RMSEA = .044$, $SRMR = .031$). Despite the loss of information, this solution was chosen to maintain the TARGET concept and the representation of its six sub dimensions. The decision to keep these certain items was based on empirical reasons and in regard to their content. Every

original subscale consists of different aspects to one of which each item belongs to (Bardach, 2015). In most cases, the most representative aspect was chosen to best represent the subscale. For thematically similar items, the one with the better fit to the new scale of this study was selected.

Task. The item “In this subject I design varied tasks“ [In diesem Fach gestalte ich die Aufgaben abwechslungsreich] was chosen from the task scale from the aspect of *task design* (rather than *task processing*), because it comprises the definition most commonly given for the task dimension (e.g. Lüftenegger et al., 2017).

Authority. „In this subject I make decisions concerning the process of studying together with the students“ [In diesem Fach treffe ich wichtige Entscheidungen über das Vorgehen beim Lernen gemeinsam mit den Schüler/innen] was the item selected from the authority dimension. It belongs to the aspect concerning *factual authority*, regarding learning and teaching, as opposed to choosing one from the aspect of *social authority*. Both are considered important aspects, however, the chosen item showed a higher factor loading on the authority factor (.582).

Recognition. From the recognition scale the item “In this subject I give my students feedback, which they can use to improve” [In diesem Fach gebe ich meinen Schüler/innen Rückmeldungen, die sie dazu nutzen können, um sich zu verbessern] was chosen. It belongs to the aspect of *incentive* and was chosen over items from the aspects regarding *feedback* and *praise*, because of its factor loading (.561) to the recognition dimension.

Group. The item „In this subject, teamwork is an essential part of teaching.“ [In diesem Fach sind Gruppenarbeiten ein wichtiger Bestandteil des Unterrichts], belonging to the *teamwork with peers aspect* (as opposed to *teamwork in a heterogeneous group*) was selected from the group scale, because of its good thematic representatives for this dimension.

Evaluation. “In this subject, effort is taken into consideration in the grading process” [In diesem Fach fließt in meine Beurteilung auch ein, wenn sich Schüler/innen anstrengen] was the item chosen from the evaluation subscale. This item is especially representative, due to its focus on methods that assess the students’ progress rather than using social comparison, a key element in establishing a motivationally beneficial climate. It belongs to the aspect of *progress-related evaluation* and was chosen over items from the aspects of *evaluation* and *dealing with errors*.

Time. Finally, concerning the time scale the item “In this subject I spend enough time giving explanations” [In diesem Fach nehme ich mir genug Zeit für Erklärungen] was selected, as it belongs to the aspect regarding *planning enough time for everything that constitutes teaching*

(as opposed to items from the *time for questions* and *time for own thoughts*). It represents the pace of instruction, which should be adapted to the students' needs.

All scales show reasonable reliability (Cronbach's $\alpha = .77 - .82$) except classroom goal structures, which is compensated with a good model fit (see Table 1).

Table 1. Modelfit Indices for all scales and reliability

	Items	FL	RMSEA	90% CI	SRMR	CFI	TLI	χ^2	df	p	α
SE	4	.64-.74	.051	.000-.109	.013	.993	.978	4.5	2	.082	.78
ITA	3	.63-.94	.000	.000-.000	.000	1.00	1.00	0.00	0	.000	.81
ENJ	4	.58-.82	.052	.000-.109	.016	.990	.970	5.18	2	.075	.77
ANG	4	.66-.79	.173	.127-.224	.045	.913	.739	37.18	2	.000	.81
ANX	4	.71-.77	.022	.000-.088	.011	.998	.995	2.56	2	.278	.82
CGS	6	.31-.59	.044	.011-.073	.031	.950	.916	18.02	9	.035	.57

Notes: SE = Self-Efficacy, ITA = Implicit Theories of Student Ability, ENJ = Enjoyment, ANG = Anger, ANX = Anxiety, CGS = Classroom Goal Structure; FL = Factor Loadings

Table 2. Pearson correlation estimates, means and standard deviation of all scales

	Enjoyment	Anger	Anxiety	CGS	ITA	SE
ANG	-.448 (.082)**					
ANX	-.340 (.101)**	.800 (.042)**				
CGS	.570 (.058)**	-.352 (.080)**	-.283 (.103)*			
ITA	-.166 (.063)*	.231 (.079)*	.270 (.093)*	-.228 (.081)*		
SE	.645 (.039)**	-.422 (.088)**	-.327 (.116)*	.647 (.055)**	-.114 (.070)	
Mean	1.53	4.85	5.28	1.88	4.86	2.22
SD	.551	.954	.825	.488	.954	.668
Range	0-3.75	0-6.00	0-6.00	0-3.67	0-6.00	0-4.50

Notes: Pearson correlation estimates (standard error), ** $p \leq .001$, * $p < .05$; ANG = Anger, ANX = Anxiety, CGS = Classroom Goal Structure, ITA = Implicit Theories of Student Ability, SD = standard deviation

4.2. Regression Analyses from Self-Efficacy, Implicit Theories to CGS and Emotions

The results of the latent regression analyses may lead to the confirmation or dismissal of the first five Hypotheses, concerning direct paths between teacher's emotions and self-efficacy (H1.1), implicit theories (H1.2) as well as CGS (H1.5) and between CGS and self-efficacy (H1.3) as well as implicit theories (H1.4). The hypothesized paths are displayed in Figure 1 and their standard parameter estimates can be viewed in Table 3.

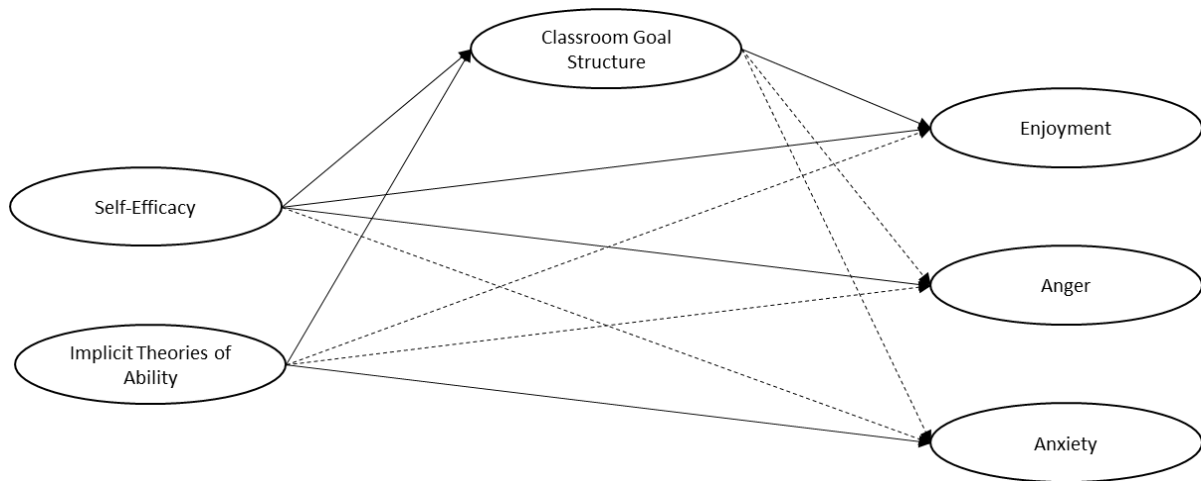


Figure 1. Suggested regressional paths. Significant paths are portrayed with ongoing arrows.

Table 3. Standard parameter estimates of regression analyses

Predictors	Mediator				Outcomes			
	CGS	Enjoyment	Anger	Anxiety	CGS	Enjoyment	Anger	Anxiety
Self-Efficacy	.629 (.059)**	.479 (.085)**	-.344 (.133)*	-.261 (.150)				
Implicit Theories	-.156 (.075)*	-.056 (.045)	.171 (.094)	.226 (.113)*				
CGS		.247 (.099)*	-.090 (.131)	-.062 (.146)				

Notes: Standard parameter estimates (standard error), ** $p < .001$, * $p < .05$, CGS = Classroom Goal Structure

As shown in Table 3, Hypotheses 1.1 – 1.5 (direct paths) have been at least partially confirmed. Self-efficacy significantly predicts enjoyment positively ($b = .479$, $SE = .085$, $p < .001$) and anger negatively ($b = -.344$, $SE = .133$, $p = .009$). The relationship with anxiety is also negative, but not significant (Hypothesis 1.1). Implicit theories significantly predict anxiety positively ($b = .226$, $SE = .113$, $p = .045$). The relationships to enjoyment and anger show the suggested direction but are not significant (Hypothesis 1.2). Both, self-efficacy ($b = .629$, $SE = .059$, $p < .001$) and implicit theories ($b = -.156$, $SE = .075$, $p = .037$) predict classroom goal structure significantly and in the suggested directions (Hypotheses 1.3 and 1.4). Classroom goal structure, in turn, predicted only enjoyment significantly ($b = .247$, $SE = .099$, $p = .012$), though, all directions are as suggested (Hypothesis 1.5).

4.3. Mediation Analyses

A mediational analysis was conducted to investigate the relationships between self-efficacy, implicit theories, classroom goal structure and emotions. To test the mediational effect of the classroom goal structure, Barron and Kenny's (1986) procedure was followed. According to

this method, four steps must be specified. The first step states that the predictor must correlate with the outcome. Thus, self-efficacy and implicit theories have to correlate with all three emotions. The second step is that the predictor correlates with the mediator. Self-efficacy and implicit theories must correlate with classroom goal structure. As can be seen in Table 4, all necessary correlations are significant.

The third step states that the mediator must affect the outcome, while the predictor is being controlled for. Therefore, self-efficacy and implicit theory of abilities are being controlled for and the relationship between classroom goal structures and emotions is being looked at. This relationship is significant only for enjoyment ($r(510) = .180, p < .000$), not for anger and anxiety (see Table 4). Step four, stating that the direct path between the predictor and the outcome should be zero, is only required for a test on complete mediation.

To test the significance of the mediation model Geiser (2011) suggests the use of the bias-corrected Bootstrap-Confidence Intervals, because conventional methods of testing the significance might be biased. The estimate is significant, if the confidence intervals do not include zero. Within a 95%-confidence interval, the suggested paths are only significant, if enjoyment is the dependent variable (see Table 5). Thus, Hypotheses 2.1 and 2.2 are partly confirmed. While there was no mediational effect on anger and anxiety, enjoyment is predicted by self-efficacy and implicit theories of ability, partially mediated by the perceived classroom goal structure. The model fit of the mediation structural model is good ($CFI = .928, TLI = .917, RMSEA = .046, SRMR = .048$).

Table 4. Pearson correlation estimates with self-efficacy and implicit theories of ability being controlled

		Enjoyment	Anger	Anxiety
Classroom	r	.180	-.048	-.054
Goal	df	510	510	510
Structure	p	.000	.220	.280

Note: r = correlation, df = degrees of freedom, p = significance

Table 5. Meditational analyses

Independent Variables	Mediating Variable	Dependent Variable	Original Sample		Bootstrap	
			Std. total indirect effect	SE	Mean indirect effect	95% CI with bias correction (upper, lower)
Self-efficacy Implicit Theories	CGS	Enjoyment	.155	.065	.093	.021, .176
		Anger	-.057	.082	-.087	-.324, .160
		Anxiety	-.039	.092	-.042	-.226, .160
		Enjoyment	-.039	.025	-.021	-.051, .002
		Anger	.014	.026	.020	-.025, .125
		Anxiety	.010	.028	.010	-.026, .091

Note: CGS = Classroom Goal Structure, SE = Standard Error

5. Discussion

The main goal of this study was to gain a deeper understanding of the relationship of three antecedents of the teachers' emotions, enjoyment, anger and anxiety. Most of the research within the teaching context has not existed before in the current literature, while other relationships (e.g. between self-efficacy and emotions) were intended to be replicated (Frenzel et al., 2016). This study finds its relevance in light of a lack of research concerning teachers' specific emotions (Frenzel et al., 2009). Emotions are strongly related to well-being, which is connected to a better teaching quality (Klusmann, Kunter, Trautwein, Lüdtke, & Baumert, 2008). Therefore, emotions play an essential role in the educational process. And due to the fact that many teachers suffer from attrition or want to quit their profession (Wang et al., 2015), antecedents should be investigated. Additionally, teachers' implicit theories regarding students' abilities constitute a concept that has received very little attention in the literature. Self-efficacy and classroom goal structures portray two concepts that have been investigated more frequently, yet classroom goal structures have not been researched including all six dimensions of the TARGET framework from the teacher perspective. Furthermore, the hypothesized mediation with classroom goal structures as a mediating variable provides a relatively new idea of how the relationship between teacher-related constructs works (for exceptions see Deemer, 2004; Zee & Koomen, 2016). Connections between cognitions and emotions have been established to some degree (Frenzel et al., 2016; Sutton, 2007), but considering a behavioral aspect as a

mediational variable is a key element of this study. This study thus follows the notion that acting in line with one's conviction should elicit greater positive feelings than the thought by itself.

In this study the regression analyses showed that paths from self-efficacy to enjoyment and anger were significant. This means that a teacher believing in his or her competences experiences more enjoyment, whereas teachers thinking of their abilities as insufficient find themselves feeling more anger while teaching. The results with enjoyment, coincide with other research (Caprara et al., 2003; Midgley et al., 1995; Tschannen-Moran & Hoy, 2001), suggesting that high self-efficacy elicits positive emotions. This may be, because people who believe they can successfully achieve something set themselves more appropriate goals (Wang et al., 2015) and already have a more positive attitude toward the task from the beginning than somebody who thinks they are not going to be successful. Rather new is the negative relationship with anger, as anger hasn't received much attention in this context so far. The connection shows that teachers with high self-efficacy are less angry throughout their day in school. Interestingly, Frenzel and colleagues (2016) found a significant relationship only between self-efficacy and anxiety, not enjoyment and anger. It is worth noting that the lack of a significant result between those two in this study is surprising, because the connection between anxiety and self-efficacy has been broadly established in different contexts (Karademas, 2006; Mills, Pajares, & Herron, 2006; Soysa & Wilcomb, 2015; Tan-Kristanto & Kiropoulos, 2015). There is an apparent need for further replication studies with teachers concerning the relationship between self-efficacy and anxiety as well as anger.

The regression analyses with implicit theories of students' abilities showed only a significant path to anxiety. This coincides with previous studies to some degree, as the majority of significant relations of implicit theories is found only with negative affective outcomes (e.g. Bernecker et al., 2017; Martocchio, 1994; Schroder et al., 2015). The result of this study suggests that teachers, believing that their students are not capable of improving, tend to be more anxious while teaching. This might be due to the fact that believing in an entity theory is usually accompanied by feelings of helplessness (Schroder et al., 2015), which is strongly related to anxiety (Fincham, Hokoda, & Sanders Jr, 1989). However implicit theories do not predict enjoyment and anger.

In line with previous research, classroom goal structures are predicted by both self-efficacy (Daniels et al., 2017; Midgley et al., 1995; Tschannen-Moran & Hoy, 2001; Wang et al., 2015; Zee & Koomen, 2016) and implicit theories (Dweck et al., 1995; Leroy et al., 2007; Shim et al., 2013). This proves that teachers believing in their teaching abilities apply them to create a

motivationally beneficial learning environment. The same notion holds for teachers believing in the changeability of their students' abilities. They try their best to achieve a positive change in their students' academic outcomes by establishing classroom structures. Thus, this study shows that teachers with high self-efficacy or an incremental theory of students' ability tend to structure their lessons according to the TARGET framework and therefore are responsible for better student outcomes.

Of the three teacher emotions, classroom goal structure predicted only enjoyment. This means that teachers perceiving their teaching to be aligned with a mastery goal structure experience more enjoyment. The positive connection between the two is in line with previous research (Frenzel et al., 2009; Wang et al., 2017), suggesting that certain instructional techniques bring more joy. The reason for this relationship might also lie therein as the teacher knows he or she is acting in the best interest of the students regarding their academic improvement. The teacher may even be aware of his or her success via the attention of the students or their achievements. In this study classroom goal structure does not significantly predict anger and anxiety. This might be due to these emotions being more strongly related to the students' misbehavior than to the academic part of the teachers' instruction and structuring of the classroom, as shown by Tsouloupas and colleagues (2010). In Wang and colleagues' study (2017), the same connection between a mastery classroom goal structure and enjoyment was found. Anxiety and anger only related to a performance goal structure significantly, which leads to the proposition that positive antecedents related to classroom structures (e.g. mastery structure) predict solely positive emotions, while negative factors such as students' inattention or misbehavior and performance structure relate to negative affective outcomes.

The mediational analyses showed significant partial indirect effects for self-efficacy and implicit theories on enjoyment. No significant relationships were found for anger and anxiety. Therefore, what teachers think about their own and their students' abilities is only partially mediated by what they do and how they structure their classroom, if the outcome is their enjoyment.

First, the result that self-efficacy's influence on enjoyment is partially mediated by classroom goal structure is consistent with Zee and Koomen's (2016) finding, in which teacher self-efficacy predicted psychological well-being mediated by classroom organization. Teachers tend to find themselves happier if not only they believe in their efficacy, but also when their instructional behavior is favorable for the students. As previously established, both self-efficacy and classroom goal structure account for a more positive affective teaching experience, but the

combination of the two leads to even more enjoyment in the teacher. As proposed, the appraisal of a successful teaching performance, of which the teacher considers him- or herself capable, positively influences his or her emotional state. Thus, living up to their efficacy expectation results in more enjoyment.

Second, implicit theories predict enjoyment partially mediated by classroom goal structure. Interestingly, although implicit theories do not significantly predict enjoyment in a direct path, they do so with classroom goal structure as a partial mediator. This finding suggests that the implicit theory only affects enjoyment when the classroom goal structure is also considered. This means that a teacher with low values in the entity theory (which accounts for being an incremental theorist) creates a more beneficial learning environment and is therefore happier in his or her profession. As theorized, this might be due to the appraisal of the teaching performance congruent to the teachers' expectation towards the students, namely enabling the students to reach their full potential by establishing a motivationally beneficial classroom structure.

Implicit theories show very low (correlation and regression) estimates, while self-efficacy values are overall high. As Shim and colleagues have already suggested in their study about achievement goals, implicit theories tend to show "weak and inconsistent relationships" (2013, p. 99), discussing the connections to goal orientations. This assumption can now be extended to classroom goal structures and teacher emotions, based on the findings on this study. The low estimates also lead to the conclusion that self-efficacy acts as a stronger predictor of classroom goal structures and emotions.

The descriptive analyses also yielded interesting results. The high mean value of implicit theories shows that most teachers think of their students' abilities as fixed. Coinciding with Wang and colleagues (2015), who discuss high attrition in teachers, are the mean values of the three emotions. Anger and anxiety show high values, while enjoyment is rather low. These values indicate ceiling (implicit theories, anger and especially anxiety) and floor effects (enjoyment). Furthermore, the results underline the importance of the research of teachers' emotions as well as continuing the research to define practical implications concerning possible countermeasures.

5.1. Limitations and Future Research

Even though this study follows a cross-sectional design, results of the regression and mediation analyses are interpreted as predictions rather than simple connections because of the underlying

theoretical assumptions. However, it is not intended to deny or overlook that the causality between the factors might be bidirectional or follow a cyclical relationship, as proposed by other authors (e.g. Wang et al., 2015). Nonetheless, greater influences were expected in the suggested paths, as they have already been established by previous research in some cases.

All scales except anger and TARGET were able to be validated for the current sample. Anger showed poor model fit in two of four relevant model fit indices. This is surprising, because it is a broadly used scale (Frenzel et al., 2016; Lohbeck et al., 2018). Unfortunately, the TARGET framework with all its indicators and as a second order factor did not hold for the current sample of teachers, as it did with a student sample (Lüftenegger et al., 2017). The compromise to still use one item of each dimension is regarded as sufficient (for this master's thesis) to still make assumptions about TARGET. Additionally, the reliability for the adjusted TARGET scale is very low, which might be due to the origins of the single items stemming from six different subscales.

Furthermore, the method and design of this study could be improved in certain regards. For example, all measurements are based on self-reported answers, which are prone to problems such as social desirability as have been shown to exist in different contexts (e.g. van de Mortel, 2008). Alternative additional measurement methods are recommended for further research, including, for example, student reports, objective observational measures as well as qualitative measures such as diary entries. Of course, longitudinal data and research design would be preferred, to be able to make definite assertions concerning causality. Another shortcoming is presented in the voluntary participation, due to which the sample is not randomized.

Concerning the analyses of this study, the poor model fit of the anger scale is recognized as a limitation, as well as the lacking reliability of the TARGET scale. The possibility of these weaknesses distorting the results is voiced at this time. The failure of this study to validate the instrument for classroom goal structures based on teachers' perceptions as a whole gives reason for further investigation. Should TARGET as a second order factor not hold in future studies, it is suggested that each dimension (including all items) is looked at as its own variable to find out about the importance of each dimension in regard to the affective outcomes. Alternatively, another theoretical model could be established that suits the teachers' perception of classroom goal structures.

Moreover, demographic variables were not included in the analyses, which might have provided further insights. For example, effects from sex, age or experience could have been analyzed.

Especially the influence of age could have yielded important information regarding anxiety, as stated by Sutton and Wheatly (2003).

A positive aspect of this study can be seen in the sample itself which shows good representativeness of the Austrian teacher population due to its size and variety concerning region, age, sex, experience, and school types. Consequently, assumptions for most secondary schools in Austria can be made. In order to generalize these findings globally, more studies in different countries need to be conducted, and different types of schools, societal differences and school reforms need to be taken into account.

A few questions can be raised for future research based on the findings of this study. Regarding the partially mediated relationship between implicit theories and emotions, with its underlying explication that implicit theories serve as a goal that should be attained, would students' academic achievement serve as a better or additional mediator, as it would be a clearer indicator, whether the assumed implicit theory is true or false? Are teachers aware that their structuring of the classroom (if abiding to a mastery structure) is fostering beneficial student outcomes? Should this awareness be taken into account in future studies? Is there an influence from the school level? How do anxiety and anger differ in their antecedents and impacts on other concepts?

5.2. Practical Implications

The findings emphasize the benefits of a high self-efficacy as well as an incremental theory of student ability. The implications from these manifestations of the two attitudes have shown to be advantageous concerning teaching instructions and teaching emotions. These relationships should be made salient during teacher education and training. Supporting pre-service teachers to realize and realistically judge their own capabilities has far-reaching consequences and should therefore receive attention. The same reasoning can be applied to developing and shaping their implicit theories of their future students. As for teachers who are already working and dealing with negative emotions or exhaustion, intervention programs should be established.

This study has also contributed to finding an instrument to measure classroom goal structures within the TARGET framework based on teacher perception. In future research, adjustments should be made in order to reliably and validly measure teachers' perceptions of the classroom environment. It is also contributing to the body of literature of educational psychology that deals with factors concerning teachers rather than students.

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Appendix

Abstract

This study addresses the gap in the current literature concerning specific teaching related emotions. Their understanding deserves comprehensive investigation, due to their importance for teachers' job satisfaction and attrition. Furthermore, these emotions serve as an important predictor of many student outcomes such as academic achievement. The study intends to identify three antecedents and their relationships. Austrian secondary school teachers completed an online questionnaire with self-report measures of teacher emotions (enjoyment, anger and anxiety), self-efficacy (belief in their own teaching ability), implicit theories of student ability (belief concerning the malleability of their students' abilities) and classroom goal structure (their perception concerning the mastery structure according to the TARGET framework). To analyze the data, structural equation modelling was applied. The results confirmed part of the hypotheses, inferred from the existing body of literature. Significant findings were self-efficacy predicting enjoyment positively and anger negatively, while implicit theories predicted anxiety positively. Furthermore, classroom goal structure predicted enjoyment positively. Lastly, classroom goal structure acted as a mediator for the relationship between self-efficacy and implicit theories with enjoyment. Limitations and future research as well as practical implications are discussed.

Zusammenfassung

Die vorliegende Studie befasst sich mit der Forschungslücke aktueller Literatur zu lehrbezogenen Emotionen. Das Verständnis dieser bedarf intensiver Auseinandersetzung, da sie essentiell für die Arbeitszufriedenheit sowie die Erschöpfung von Lehrkräften ist und einen wichtigen Prädiktor für SchülerInnen-Outcomes, wie zum Beispiel akademische Leistung, darstellt. Die Studie beabsichtigt, drei Prädiktoren und deren Beziehungen zu identifizieren. Österreichische Lehrkräfte der Sekundarstufe füllten einen Online-Fragebogen mit Selbstbeurteilungsskalen zu lehrbezogenen Emotionen (Freude, Ärger und Sorge), Selbstwirksamkeit (Überzeugung von der eigenen Lehrfähigkeit), impliziten Theorien über SchülerInnenfähigkeiten (Überzeugung zur Veränderbarkeit der Fähigkeiten ihrer SchülerInnen) und Klassenstrukturen (ihre Wahrnehmung zur Mastery Struktur nach dem TARGET-Modell) aus. Zur Datenanalyse wurde ein Strukturgleichungsmodell angewendet. Die Ergebnisse stimmen teilweise mit den aus der bisherigen Literatur abgeleiteten Hypothesen überein. Selbstwirksamkeit sagt Freude und Ärger vorher, während implizite Theorien Sorge vorhersagen. Außerdem gibt es eine signifikant positive Beziehung zwischen Klassenstruktur

und Freude. Schließlich dient die Klassenstruktur als Mediator für die Beziehung zwischen Selbstwirksamkeit und impliziten Theorien mit Freude. Limitation und zukünftige Forschung sowie praktische Implikationen werden diskutiert.

Codebook

Demographic Variables

Variable	Item name
An ein Unterrichtsfach denken [Thinking about one subject]	
The following questions concern one of your subjects. Please think of one that you currently teach, and indicate it:	Bewegung und Sport
[Die nachfolgenden Fragen werden sich konkret auf eines Ihrer Unterrichtsfächer beziehen. Bitte denken Sie an eines Ihrer Fächer, das sie aktuell unterrichten und auf das sie sich beziehen möchten. Kreuzen Sie dieses bitte an:]	Bildnerische Erziehung
	Technisches Werken
	Textiles Werken
	Biologie und Umweltkunde
	Chemie
	Darstellende Geometrie/ Geometrisch Zeichnen
	Deutsch
	Englisch
	Französisch
	Geographie und Wirtschaftskunde
	Geschichte und Sozialkunde
	Haushaltsökonomie
	Informatik
	Italienisch
	Latein
	Mathematik
	Musikerziehung
	Phsyik
	Politische Bildung
	Psychologie und Philosophie
	Religion
	Spanisch
	Andere Sprache
	Anderes Fach
	Altgriechisch
	Andere Sprache
	Anderes Fach
Schultyp [School Type]	

	Schultyp
	AHS
	HTL
	HAK
	NMS
	Hauptschule
	Polytechnische Schule
	Berufsbildende Pflichtschule
	BMHS
	Kolleg
	Sonderpädagogische Schule
	Andere
	Andere
Ausbildung [Education]	
Höchste abgeschlossene	Bachelor
Ausbildung (highest	Master
completed edcuation]	Magister
	Doktorat
	Anderes
	Anderes
Region [region]	
	Stadt
	Land
Alter [age]	
	Alter
Geschlecht [sex]	
	männlich
	weiblich
Unterrichtserfahrung [Teaching Experience]	
	Unterrichtserfahrung
Fortbildungen [Further Education]	
	Ja
	Nein

All scales

TARGET		
Scale	Item	Source
Task	... gestalte ich die Aufgaben abwechslungsreich.	Adapted from Lüftenegger et al. (2017)
	... rege ich die Schüler/innen dazu an selbst zu prüfen, ob sie den Lernstoff schon können.	
	... rege ich die Schüler/innen dazu an verschiedene Möglichkeiten zum Lernen ausprobieren.	
	... rege ich die Schüler/innen dazu an das Vorgehen beim Lernen selber zu planen.	
	... rege ich die Schüler/innen dazu an sich selbst Ziele beim Lernen zu setzten.	
	... rege ich die Schüler/innen dazu an ihr Lernen zu beobachten.	
	... gestalte ich Aufgaben, welche die Schüler/innen neugierig machen sollen mehr über das Thema zu lernen.	
Authority	... ist es mir wichtig, dass die Schüler/innen ihre eigene Meinung sagen.	Adapted from Lüftenegger et al. (2017)
	... lege ich Wert darauf, dass die Schüler/innen lernen selber Entscheidungen zu treffen.	
	... können die Schüler/innen selber wählen, wie sie Aufgaben bearbeiten wollen.	
	... nehme ich die Meinung der Schüler/innen ernst.	
	... lasse ich die Schüler/innen selber bestimmen, wie lange sie etwas üben wollen.	
	... bestimme ausschließlich ich, was während dem Unterricht zu tun ist.	
	... gebe ich den Schüler/innen die Möglichkeit darüber zu reden, wenn sie untereinander Probleme haben.	
	... interessiert mich die Meinung von allen Schüler/innen, wenn es einen Konflikt gibt.	
	... treffe ich wichtige Entscheidungen über das Vorgehen beim Lernen gemeinsam mit den Schüler/innen.	

	... lasse ich die Schüler/innen selber entscheiden, welche Themen sie genauer behandeln wollen und welche nicht.	
Recognition	<p>... lobe ich die Schüler/innen, wenn sie beim Lernen erreichen, was sie sich vorgenommen haben.</p> <p>... gebe ich den Schüler/innen Rückmeldungen über ihren Lernfortschritt.</p> <p>... mache ich deutlich, was den Schüler/innen das Lernen bringt.</p> <p>... meine ich es wirklich ernst, wenn ich jemanden lobe.</p> <p>.... gebe ich meinen Schüler/innen Rückmeldungen, die sie dazu nutzen können, um sich zu verbessern.</p> <p>... sind Noten die einzigen Rückmeldungen, die ich den Schüler/innen gebe.</p> <p>.... mache ich deutlich welchen Nutzen das Lernen für das Leben der Schüler/innen hat.</p> <p>... spreche ich offen Lob aus.</p> <p>... gebe ich den Schüler/innen Rückmeldungen, die sie dazu bringen sollen über ihr Lernen nachzudenken.</p> <p>... bekommen die Schüler/innen Rückmeldung über ihren Lernfortschritt.</p> <p>... gestalte ich den Unterricht so, dass den Schüler/innen die Beschäftigung mit dem Stoff Freude macht.</p>	<p>Adapted from Lüftenegger et al. (2017);</p> <p>except: “... meine ich es wirklich ernst, wenn ich jemanden lobe.“ – adapted after Tapola and Niemivirta (2008)</p>
Group	<p>... achte ich darauf, dass die Schüler/innen nicht immer mit den gleichen Mitschüler/innen zusammenarbeiten.</p> <p>... gebe ich den Schüler/innen die Möglichkeit mit mir darüber zu sprechen, wenn es bei Gruppenarbeiten zu Problemen kommt.</p> <p>... lasse ich die Schüler/innen Aufgaben gemeinsam mit Mitschüler/innen bearbeiten, wenn sie möchten.</p> <p>... sind Gruppenarbeiten ein wichtiger Bestandteil des Unterrichts.</p> <p>... ist es mir wichtig, dass die Schüler/innen lernen mit anderen zusammen zu arbeiten.</p>	<p>Adapted from Lüftenegger et al. (2017)</p>

Evaluation	... ist es nicht so schlimm, wenn Schüler/innen mal einen Fehler machen.	Adapted from Lüftenegger
	... sollen Schüler/innen Fehler als Chance sehen, die sie dazu nutzen können sich zu verbessern.	et al. (2017);
	... mache ich deutlich, dass man sich verbessern kann, wenn man sich anstrengt.	except: ... ist es mir
	... versuche ich Vergleiche zwischen Schüler/innen zu vermeiden.	wichtiger den Schüler/innen
	... mache ich deutlich, dass es wichtig ist sich anzustrengen, wenn man etwas erreichen will.	etwas beizubringen
	... mache ich deutlich, dass es darum geht sich laufend zu verbessern.	als sie zu bewerten.“ –
	... mache ich deutlich, dass es zum Lernen dazu gehört Fehler zu machen.	adapted after Tapola and
	... fließt in meine Beurteilung auch ein, wenn sich Schüler/innen anstrengen.	Niemivirta (2008)
	... mache ich deutlich, dass jeder und jedem Fehler passieren können.	
	... ist es mir wichtiger den Schüler/innen etwas beizubringen als sie zu bewerten.	
	... ist es mir wichtig, dass sich die Schüler/innen Mühe geben.	
	... mache ich deutlich, wenn jemand sich verbessert hat.	
	... mache ich deutlich, dass es wichtig ist sich anzustrengen, wenn man etwas erreichen will.	
<hr/>		
Time	... nehme ich mir genug Zeit für Erklärungen.	Adapted from
	... können die Schüler/innen eigene Fragen in den Unterricht einbringen.	Lüftenegger et al. (2017)
	... ermuntere ich die Schüler/innen Fragen zu stellen.	
	... berücksichtige ich die Interessen der Schüler/innen.	
	... können die Schüler/innen in ihrer eigenen Geschwindigkeit an Aufgaben arbeiten.	
<hr/>		
Emotions		
<hr/>		
Enjoyment	Im Allgemeinen macht mir Unterrichten in diesem Fach Freude.	Frenzel et al. (2016)

	Während des Unterrichts in diesem Fach habe ich oft Grund, mich zu freuen.	
	Im Allgemeinen macht mir Unterrichten in diesem Fach so viel Spaß, dass ich den Unterricht gerne vorbereite und durchführe.	
	Im Allgemeinen unterrichte ich dieses Fach mit Begeisterung.	
Anger	Beim Unterrichten in diesem Fach werde ich gelegentlich richtig sauer.	Frenzel et al. (2016)
	Während des Unterrichtens in diesem Fach habe ich oft Grund, mich zu ärgern.	
	Im Allgemeinen frustriert mich das Unterrichten in diesem Fach.	
	Während des Unterrichtens in diesem Fach bin ich oft genervt.	
Anxiety	Beim Unterrichten in diesem Fach bin ich in der Regel angespannt und nervös.	Frenzel et al. (2016)
	Die Vorbereitung des Unterrichts in diesem Fach bereitet mir Sorgen.	
	Ich mache mir oft Sorgen, dass das Unterrichten in diesem Fach nicht so richtig klappt.	
	Wenn ich an das Unterrichten in diesem Fach denke, bin ich beunruhigt.	
Implicit Theories		
	... können Schüler/innen kaum etwas tun, um ihre Fähigkeiten zu verändern.	Adapted from Dweck (2000)
	... besitzen Schüler/innen gewisse Fähigkeiten, die sie nicht wirklich verändern können.	
	... sind Fähigkeiten etwas, das Schüler/innen kaum verändern können.	
Self-Efficacy		
	Ich glaube, dass ich im Leben meiner Schüler/innen pädagogisch wesentlich etwas bewege.	Adapted from OECD (2009)

Wenn ich mich wirklich anstrenge, kann ich selbst mit den schwierigsten und unmotiviertesten Schüler/innen einen Fortschritt erzielen.

Ich bin bei den Schüler/innen in meiner Klasse erfolgreich.

Ich weiß normalerweise, wie ich Schüler/innen erreichen kann.
