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Abstract

Classroom management is an important topic in teacher education, as it has a strong impact on students' engagement. However, untangling the concepts influencing teachers' classroom management practices is a question that needs further investigation. Using data from a survey of 154 vocational teachers participating in teacher education, this study examined associations between classroom management practices, teaching experience, and teachers' beliefs (general pedagogical beliefs, beliefs about student motivation, and self-efficacy beliefs). Results highlighted associations between the different types of beliefs, and between teachers' beliefs and practices. Teaching experience was positively related to self-efficacy and beliefs in constructivism but did not impact practices.

Keywords

teacher education, classroom management practices, teaching experience, general pedagogical beliefs, beliefs about student motivation, self-efficacy beliefs

Introduction

Woolfolk Hoy and Weinstein (2006) describe “classroom management” as an umbrella term covering topics such as “actions taken to create a productive, orderly learning environment (. . .) to elicit changes in students' behavior (. . .) [and] to help students fulfill their responsibilities more effectively” (p. 181). Research on developmental stages (Huberman, 1989/1993) in teaching consistently indicates that classroom management is one of the most important, if not the most important, focuses of novice teachers. Accordingly, they report poorer classroom climates than experienced teachers (Jensen, Sandoval-Hernández, Knoll, & Gonzalez, 2012). Furthermore, many novice teachers believe that managing their classroom is a prerequisite to teaching content (Cochran-Smith & Villegas, 2016; Condon, Clyde, Kyle, & Hovda, 1993; Kilgore & Ross, 1993; McCormack, 2001; Pigge & Marso, 1997), a position Dewey (1904) defended nearly a century ago. Finally, Weinstein's (1989) study on preservice teachers' beliefs revealed that being able to motivate students, which is one of the aims of classroom management, is part of the preservice teachers' image of what a good teacher is. For experienced teachers, classroom management is also a key competence: The Teaching and Learning International Survey (TALIS; Organisation for Economic and

Co-Operation and Development [OECD], 2009, 2014) revealed that 20% of the teachers reported needing teacher professional development regarding student discipline and behavior problems, whereas nearly 15% reported needing professional development in classroom management (OECD, 2014). Concordantly, motivating students is among the difficulties teachers face during their career, as revealed by Huberman's (1989/1993) study on 160 in-service teachers. These studies all agree that classroom management is central for novice and experienced teachers.

Research shows that the way teachers manage their classroom has a strong influence on students' cognitive and behavioral engagement, thus going beyond the scope of simply keeping students quiet and maintaining silence in the classroom (Jang, Reeve, & Deci, 2010; Reeve, 2009; Weinert

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& Helmke, 1995). Kunter, Baumert, and Köller (2007) found that the degree to which students perceive the clarity of rules and teachers' monitoring of classroom activities explains the extent to which students develop an interest in the subject. Accordingly, a learning environment that states the limits in an informative way creates a context that helps promote students' intrinsic motivation, feeling of autonomy, and competence beliefs, all major educational goals.

Adopting a dynamic and comprehensive perspective, this study investigates sources of teaching practices and provides bases for improving teacher education programs. Except for a few studies (e.g., Lopes & Santos, 2013; Pelletier, Séguin-Lévesque, & Legault, 2002; Stipek, Givvin, Salmon, & MacGyvers, 2001), the analysis of the relationship between teachers' beliefs and classroom management practices has been neglected (Woolfolk Hoy & Weinstein, 2006). Most studies looked at the outcomes rather than the sources of classroom management practices. As a result, little is known about what drives teachers to adopt one practice or another. However, there is a growing body of research on teachers' beliefs, in which the relationship between beliefs and teaching practices is viewed as significant (Fives & Gregoire Gill, 2015). Researchers seem to agree on some key aspects characterizing beliefs. Notably, as beliefs are built on prior life experiences, the agreed-upon definition of beliefs includes a dimension of stability. This characteristic of beliefs often leads researchers to view beliefs as precursors of teaching practice (Chen, Brown, Hattie, & Millward, 2012; Fang, 1996; Kennedy, 2005; Pajares, 1992; Richardson & Placier, 2001; Tatto & Coupland, 2003), and to focus on direct belief impact. Researchers have indicated that teachers' self-efficacy beliefs (Woolfolk Hoy & Davis, 2006), beliefs about student motivation (Turner, Bogner Warzo, & Christensen, 2011), and general conceptions about teaching and learning—such as constructivism or direct transmission (Prawat, 1992)—have been identified as factors that affect how teachers concretely manage their classrooms. This expectation of direct relationship has been challenged by suggesting that beliefs and practices are related in a more dynamic way. This assumption has not been often investigated, as most studies consider only one or a limited number of beliefs when studying their relation to classroom management practices. Therefore, it is still not clear how these multiple beliefs are articulated with each other and with practices. This study follows the common expectation that beliefs might predict practices. However, this assumption is moderated by adopting a dynamic and comprehensive perspective on the impact of beliefs on practices. Indeed, it acknowledges that beliefs can serve different functions: Some may directly impact teaching practices, whereas some others may influence other types of beliefs. Furthermore, this study allows individual characteristics to play a role in this dynamic, assuming that years of teaching experience may affect teachers' beliefs—such as the more experienced in teaching, the higher the self-efficacy beliefs (Tschannen-Moran & Woolfolk Hoy, 2007)—and practices (OECD, 2009).

The present study aims to uncover, in a sample of Swiss vocational teachers, the associations between teachers' beliefs, self-reported classroom management practices, and their prior teaching experience. Investigating the impact of years of teaching experience and of beliefs on classroom management practices is particularly relevant in the context of this study. In Switzerland, vocational teacher education usually takes place after several years of teaching in vocational schools. Thus, vocational teachers already have teaching experience (though it is largely variable) and established instructional practices and beliefs when they enter teacher education. Beyond detailing the dynamic relationship between years of teaching experience, beliefs, and practices, this study will provide important information about the beliefs that might be fostered or discouraged in teacher education programs depending on what type of practice is to be promoted.

Various Perspectives on Classroom Management

As a broad topic, classroom management has been investigated using very diverse lenses (Evertson & Weinstein, 2006). Among these lines of research, some focused on issues of discipline and management of misbehavior with theoretical foundations in behaviorist psychology (Landrum & Kauffman, 2006), others on issues of management of cultural heterogeneity in the classroom (van Tartwijk, den Brok, Veldman, & Wubbels, 2009), and still others investigated what they named “teachers' interpersonal motivating style” (Deci & Ryan, 1987; Deci, Schwartz, Sheinman, & Ryan, 1981; Reeve, 2009; Reeve, Bolt, & Cai, 1999) rooted in the self-determination theory (SDT) sociocognitive framework (Deci & Ryan, 1985). This latter perspective was adopted in the present article to investigate classroom management practices or style.

Recent studies and theoretical advances describe classroom management using two oppositions or continuums: *autonomy support* versus *control*, and *structure* versus *chaos* (Jang et al., 2010; Reeve, 2009; Reeve, Deci, & Ryan, 2004; Sierens, Vansteenkiste, Goossens, Soenens, & Dochy, 2009). *Autonomy support* is defined as “the interpersonal sentiment and behavior teachers provide to identify, nurture, and develop students' inner motivational resources” (Reeve, 2009, p. 159), whereas *control* refers to “interpersonal sentiment and behavior teachers provide during instruction to pressure students to think, feel, or behave in a specific way” (Reeve, 2009, p. 160). *Structure* refers to “the amount of information in the context about how to effectively achieve desired outcomes” (Skinner & Belmont, 1993, p. 572). *Structure* is also defined as “the provision of clear instruction in the classroom and the communication of realistic goals and expectations for behavior and learning” (Soenens, Sierens, Vansteenkiste, Dochy, & Goossens, 2012, p. 109). The opposite of structure is *chaos*, in which teachers communicate confusing or contradictory messages, and does not

provide clear directions and expectations to students (Jang et al., 2010). Autonomy support and structure are supposed to positively affect students' cognitive engagement; in addition, their conjunction or interaction could affect self-regulation and cognitive strategy use in addition to the main effects of the two types of practices (Sierens et al., 2009).

Under the label "Psychologically Controlling Teaching" (PCT), Soenens et al. (2012) describe a teaching style that aims at exercising strong control over students' feelings, behavior, and engagement. This style has multiple sources such as pressure from parents, colleagues, or principals on the teacher; the teacher's perception of students' low motivation; and the teacher's low intrinsic motivation to teach. PCT has a negative effect on students' relative autonomy, which in turn leads to the use of metacognitive strategies (self-regulation) that influence academic performance.

Teachers' Beliefs and Classroom Management Practices

Teachers' beliefs and teaching practices should be related in a meaningful way, as is the case for other teaching tasks, such as student assessment, in which conceptions of assessment and assessment practices are significantly associated (Brown, 2009). The reasons teachers adopt classroom management practices such as the use of rewards and punishment have been analyzed by Landau (2009) and Landrum and Kauffman (2006). Teachers' main argument for using such practices is their efficiency: They offer a readily and easy-to-use applicable solution to react to misbehavior. Furthermore, this gives the teacher a feeling of keeping students under control. At the opposite end of the spectrum, practices such as complimenting and private verbal encouragement are believed to be not very useful as teachers say that such practice cannot work with the teachers' own students.

Beliefs about student motivation. According to Patrick and Pintrich's synthesis on teachers' beliefs and conceptual change (2001), teachers generally see student motivation as a stable trait that can be influenced mainly by factors external to the school such as parents. Teachers believe that their own influence is limited, except in trying to create interesting activities. These beliefs discourage teachers from trying motivational strategies (Turner, 2010). However, research shows that teachers are aware of the importance of student motivation and its implications for student engagement, and recognize that it can lead to classroom management issues (Mansfield & Volet, 2010). Thus, teachers' beliefs about student motivation constitute a possible source of instructional practices. These beliefs could take multiple forms (Nolen & Nicholls, 1994; Turner, 2010) and differ depending on students' characteristics such as their achievement levels. However, these beliefs fall into two broad categories: beliefs in using intrinsic forms of motivation (such as taking into account students' individual interests, asking for personal

projects, or finding challenging tasks to engage students in learning) and beliefs in using extrinsic forms such as rewards, punishments, threats, or grades. In terms of classroom management, the more teachers believe in the utility of fostering intrinsic motivation, the more they support students' autonomy (Reeve, 2009). In contrast, the more teachers believe in the relevance of extrinsic forms of motivation, the more they try to control students. In a study of mathematic teachers, Turner (2010) found that teachers considered extrinsic forms of motivation more effective than intrinsic ones. In addition, according to Reeve's (2009) review, teachers would adopt a controlling style if they believe in the *maximal-operant principle*, stating that "the likelihood of producing long-term interest in academic tasks is assumed to vary positively with the size of a reward" (Boggiano, Barrett, Weiher, McClelland, & Lusk, 1987, p. 866). Therefore, classroom management is also based on teachers' beliefs about student motivation such as what helps students engage in learning. They also had only weak beliefs in the benefit of autonomy-supportive strategies. To our knowledge, no theoretical or empirical basis assumes associations with structure or chaos.

Teacher self-efficacy. Several studies have shown that classroom management beliefs and practices are related to the level of teacher self-efficacy beliefs, that is, the "teacher's belief in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context" (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998, p. 233). The threefold conceptualization of teacher self-efficacy (Tschannen-Moran & Woolfolk Hoy, 2001) includes two dimensions that relate to classroom management practices: self-efficacy for classroom management (e.g., maintaining order, discipline, keeping students quiet) and self-efficacy for student engagement (e.g., motivating uninterested students, helping students understand the value of learning). Studies converge toward the conclusion that less self-efficacious teachers have a pessimistic view of students, tend to adopt controlling practices (such as punishment), and strive to maintain strong discipline (Martin & Sass, 2010; Woolfolk & Hoy, 1990). At the opposite, teachers who feel highly confident in their abilities tend to sustain their students' autonomy and to respond quickly to misbehavior without feeling threatened (Woolfolk Hoy & Weinstein, 2006). Note that other studies did not find any significant association between teacher self-efficacy beliefs (for classroom management and for student engagement) and the quality of student-teacher interactions (de Jong et al., 2014).

General conceptions about teaching and learning. The general beliefs teachers hold about teaching and learning could explain why they adopt certain teaching practices. For instance, constructivist beliefs about teaching, defined as viewing students as active participants in the process of acquiring knowledge and stressing the development of

thinking processes more than the acquisition of specific knowledge, were significantly related to student-oriented practices and enhanced activities (OECD, 2009). In contrast, direct transmission beliefs—defined as viewing the student as a passive recipient and the role of a teacher as communicating knowledge in a clear and simple way, explaining right solutions and making sure that the classroom is clam and students concentrated—were related to structuring practices (OECD, 2009). However, these general beliefs are abstract, and thus, they have low relevance for teaching practices. These general beliefs likely constitute the basis for more specific beliefs such as beliefs about student motivation and indirectly affect teaching practices. TALIS (OECD, 2009) showed that teachers internationally tend to favor constructivist over direct transmission beliefs.

Years of Teaching Experience

The classroom management practices teachers adopt have been shown to relate to their years of teaching experience. Comparing novice (i.e., student teachers having less than 40 hr of classroom teaching experience) and expert (i.e., teachers with at least 10 years of teaching experience and whose classroom management expertise was recognized by peers and/or school administrators) teachers' representations of classroom management issues, Wolff, van den Bogert, Jarodzka, and Boshuizen (2014) showed that expert teachers were significantly more effective at predicting classroom management events than novice teachers. This suggests that with years of experience, teachers develop a better understanding of classroom management, which enables them to anticipate issues and to adapt their classroom management practices accordingly. Along the same line, Morris-Rotschild and Brassard (2006) reported that years of teaching experience were positively associated with *compromising* and *integrating*—two positive conflict strategies within classrooms that are conceptually close to autonomy support—and negatively associated with *obliging*, which is conceptually close to control.

Regarding the relation between teaching self-efficacy and experience, research showed a positive correlation indicating that teachers tend to become more confident over their career (OECD, 2009). Huberman (1992) calculated what he called a "Coefficient of Mastery" including 18 facets of teaching confidence, such as "dealing effectively with discipline problems" and "motivating uninterested students." It appears that there is a considerable mastery progression between the first phase in a teaching career (5-10 years of experience) and the last phase (30-39 years of experience). Moreover, with increasing years of experience, the facets rated as "mastered to a large degree" tend to slip into the category of "fully mastered." Such conclusions have been corroborated by Tschannen-Moran and Woolfolk Hoy (2007) who found that more experienced teachers have a greater sense of efficacy for classroom management than the novice teachers and by

Klassen and Chiu (2010) who showed that self-efficacy in classroom management increased from the onset of the career (though a decline was found after 23 years of experience). Concerning general conceptions about teaching and learning, some studies have shown a tendency for novice teachers to hold simplistic views on teaching and learning (Borko & Putnam, 1996; Calderhead, 1996); in other words, novice teachers hold traditional theories of learning, comparable with direct transmission beliefs. As teachers move to constructivist conceptions (Black & Ammon, 1992), both types of beliefs often coexist (Patrick & Pintrich, 2001). To conclude, years of teaching experience seems to be an important variable to take into account, as it is linked to teaching practices, self-efficacy, and general conceptions about teaching and learning.

Aim, Research Questions, and Hypotheses

This study aimed to describe the association between teachers' beliefs (self-efficacy, general conceptions about teaching and learning, beliefs about student motivation), classroom management practices, and teaching experience. The following three research questions and related hypotheses (based on the literature reviewed above) drive the analyses and discussion of the results:

Research Question 1: What are teachers' general conceptions about teaching and learning, beliefs about student motivation, and self-reported practices in classroom management?

Given that the sample is constituted of teachers with up to several years of experience, we expect teachers to hold stronger constructivist beliefs, and, in the opposite, lower direct transmission beliefs. Furthermore, beliefs about student motivation might be higher for promoting extrinsic than for intrinsic motivation. Finally, teachers might report lower chaos than autonomy support, control, and structure.

Research Question 2: How are teachers' beliefs and reported practices of classroom management associated?

Classroom management practices should be directly explained by teachers' beliefs about student motivation (Boggiano et al., 1987; Landau, 2009; Reeve, 2009). In turn, these beliefs should be explained by general conceptions of teaching and learning, and self-efficacy beliefs (Chen et al., 2012; OECD, 2009; Pajares, 1992; Prawat, 1992). Specifically, we assume that teacher self-efficacy beliefs will be positively related to autonomy support and structure, and negatively related to control and chaos. Regarding general pedagogical beliefs (or general conceptions about teaching and learning), constructivist beliefs will be indirectly related to autonomy support, whereas direct transmission beliefs will be indirectly related to structure and control; these relationships will be

mediated by beliefs about student motivation. Finally, beliefs in promoting extrinsic motivation will be related to control and beliefs for promoting intrinsic motivation to autonomy support.

Research Question 3: How is teaching experience related to beliefs and practices?

Teaching experience relates to general pedagogical beliefs, self-efficacy belief, and, indirectly, to practices (Black & Ammon, 1992; Huberman, 1992; OECD, 2009; Tschannen-Moran & Woolfolk Hoy, 2007). We assume that the higher the teaching experience, the stronger the beliefs in constructivism and sense of efficacy; to the opposite, the higher the experience and the lower the beliefs in direct transmission beliefs.

Method

Participants

One hundred fifty-four vocational teachers undergoing in-service teacher education at the Swiss Federal Institute for Vocational Education and Training (Lausanne, Switzerland) participated in the study. There were 58 women and 94 men (two participants did not report their sex); all taught as their main activity. One hundred seven taught vocational subjects, 21 general knowledge (courses including French, law, civic education, and other topics), and 21 are higher education teachers (professional education and training). Their age ranged from 25 to 57 years ($M = 40.18$ years, $SD = 6.9$ years). Teaching experience before beginning teacher education ranged from 1 year to 29 years, with a median of 3 years ($M = 4.63$ years, $SD = 4.48$ years).¹

Instruments

General conceptions about teaching and learning. Twelve items were adapted from Chan and Elliott (2004) and from the French translation (Berger & D'Ascoli, 2012) of items from TALIS (Jensen et al., 2012). Six items assessed constructivist beliefs about teaching and learning (e.g., "Students learn best by finding solutions to problems on their own"), and six items assessed direct transmission beliefs (e.g., "Instruction should be built around problems with clear, correct answers, and around ideas that most students can grasp easily"). Participants rated each item on a 6-point Likert-type scale (1 = *completely disagree*; 6 = *completely agree*). A two-factor confirmatory factor analysis (CFA) demonstrated acceptable fit: $\chi^2(43) = 70.67$, $p = .0049$, comparative fit index (CFI) = .90, root mean square error approximation (RMSEA) = .07. A one-factor solution did not converge.

Self-efficacy beliefs. Eight items were taken from the French translation (Dumay & Galand, 2012) of the Ohio State

Teacher Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001). Four items assessed self-efficacy beliefs for classroom management, and four items assessed self-efficacy beliefs for student engagement. Participants rated each item on a 6-point Likert-type scale (1 = *completely disagree*; 6 = *completely agree*). After removing one item, which loaded poorly on the factor *self-efficacy beliefs for student engagement*, a two-factor CFA model showed acceptable fit: $\chi^2(13) = 19.84$, $p = .10$, CFI = .98, RMSEA = .06.

Beliefs about student motivation. Twelve items were translated and adapted from scales developed by Nolen and Nicholls (1994), Shalter Bruening (2010), and Stipek et al. (2001). Six items assessed beliefs in the value of promoting intrinsic motivation (e.g., "To motivate students, it is useful to make them work on a project about a topic of their choice"), and six items assessed beliefs in the value of promoting extrinsic motivation (e.g., "To motivate students, it is useful to remind them that they risk a bad grade if they do not study enough"). Participants rated each item on a 6-point Likert-type scale (1 = *completely disagree*; 6 = *completely agree*). A two-factor CFA model showed acceptable fit: $\chi^2(53) = 98.1$, $p = .0002$, CFI = .88, RMSEA = .07. A one-factor solution did provide a worse fit: $\chi^2(54) = 254.129$, $p < .0001$, CFI = .47, RMSEA = .16.

Classroom management practices. Five vignettes inspired by the Problem in School Questionnaire (Deci et al., 1981; Pelletier et al., 2002) were developed (see Figure 1 for an example). Each vignette describes a problematic situation in terms of classroom management and four ways to react to this situation (20 items total). The four reactions correspond to the theoretical dimensions of interpersonal motivating style: autonomy support, control, structure, and chaos (Reeve et al., 2004). In contrast to the Problem in School Questionnaire, the vignettes describe situations with adolescent students, not typical situations for primary education teachers.² The participant had to rate—in each vignette—each alternative reaction on a 7-point scale (1 = *does not apply at all*; 7 = *applies completely*). CFA specifying four factors showed that, after two items that were supposed to assess chaos but did not load significantly on the factor were removed, the model fit the data adequately: $\chi^2(128) = 164.44$, $p = .02$, CFI = .91, RMSEA = .04. In comparison, a two-factor model (Factor 1: autonomy support and control, Factor 2: structure and chaos) fitted the data inadequately: $\chi^2(133) = 306.65$, $p < .001$, CFI = .58, RMSEA = .09.³ To investigate convergent validity, correlations were observed between the vignettes and two other scales, namely, the Psychologically Controlling Teaching Scale—Teacher Self-Report (PCT Scale; Soenens et al., 2012) and the Behavior and Instructional Management Scale (BIMS; Martin & Sass, 2010). As expected, control correlated positively, $r(153) = .52$, $p < .001$, with the PCT Scale, whereas autonomy support correlated negatively, $r(153) = -.19$, $p = .02$. Furthermore, structure correlated positively with the two dimensions of the BIMS: behavior management, $r(153) = .33$, $p < .001$, and

Vignette 5: In your classroom, the students are very passive. They do not show any interest and seldom answer your questions during class. Your reaction would be to:

1 = Does not apply at all; 7 = Applies completely

Impose unexpected tests: During each class, a student will be randomly chosen and interrogated. Therefore, students will study.	1 2 3 4 5 6 7
Tell students that they won't achieve anything if they remain passive and that they have to react.	1 2 3 4 5 6 7
Tell them your expectations for class participation and remind them of the importance of being active in learning.	1 2 3 4 5 6 7
Remind students of the relevance of your class and ask them about the reasons for their passivity.	1 2 3 4 5 6 7

Figure 1. Example of a vignette.

Table 1. Correlations and Descriptive Statistics for Scores Regarding Classroom Management ($N = 154$).

Scale	1	2	3	4	5	6	7	8	9	10	11
1 Constructivist beliefs	1										
2 Direct transmission beliefs	-.33	1									
3 Promoting intrinsic motivation	.61	-.24	1								
4 Promoting extrinsic motivation	-.12	.47	.03	1							
5 Autonomy support	.37	-.17	.43	-.06	1						
6 Control	-.16	.26	-.04	.48	.02	1					
7 Structure	.36	-.05	.41	.10	.62	.18	1				
8 Chaos	-.12	.20	-.16	.30	-.33	.44	-.20	1			
9 Self-efficacy for classroom management	.06	.05	.12	.13	.22	.10	.24	.02	1		
10 Self-efficacy for student engagement	.15	-.07	.24	.06	.31	.07	.30	.03	.53	1	
11 Teaching experience	.08	.03	.09	.04	.05	-.00	.01	.00	.13	.13	1
No. of items	6	5	6	6	5	5	5	3	4	3	—
<i>M</i>	5.01	3.31	5.05	3.05	5.47	2.61	5.23	4.49	4.57	4.47	4.63
<i>SD</i>	0.57	0.73	0.52	0.87	0.90	1.09	0.92	1.07	0.74	0.72	4.48
Minimum	3.50	1.25	3.50	1.00	2.60	1.00	2.20	1.00	1.25	2.67	1.00
Maximum	6.00	5.40	6.00	5.33	7.00	7.00	7.00	5.67	6.00	6.00	29.00
α	.75	.60	.70	.76	.67	.67	.68	.50	.86	.68	—

Note. α = internal consistency estimated with Cronbach's alpha. Correlations $\geq |.16|$ are significant at the level of $p = .05$; correlations $\geq |.21|$ are significant at the level of $p = .01$; correlations $\geq |.27|$ are significant at the level of $p = .001$ (two-tailed).

instructional management, $r(153) = .24, p < .001$. Chaos correlated significantly neither with behavior management nor with instructional management.

Procedure

As part of a larger anonymous survey administered during a 45-min class period, participants were asked to provide information about their demographic characteristics and to complete the instrument. All participants were provided with written information about the nature and purpose of the research project. They were made aware that they could withdraw from the project at any time. Participation was neither mandatory nor remunerated. With less than five exceptions, all participants agreed to complete the survey. Participation was a function of attendance on the testing day and unlikely to reflect unintended sample selectivity.

Data Analysis

Two steps were followed to answer the research questions. First, mean differences were tested (using paired-samples *t* tests) to find the beliefs and practices favored by teachers (Research Question 1). Specifically, differences were tested among general pedagogical beliefs, among beliefs about student motivation, and among classroom self-reported practices. Then, based on the research questions and hypotheses stated above, a structural equation model (path analysis) was developed to investigate the relations between the multiple beliefs and the practices investigated (Research Question 2).

Results

The descriptive statistics and correlations are shown in Table 1. Internal consistency was acceptable for all scales ($\alpha \geq .6$)

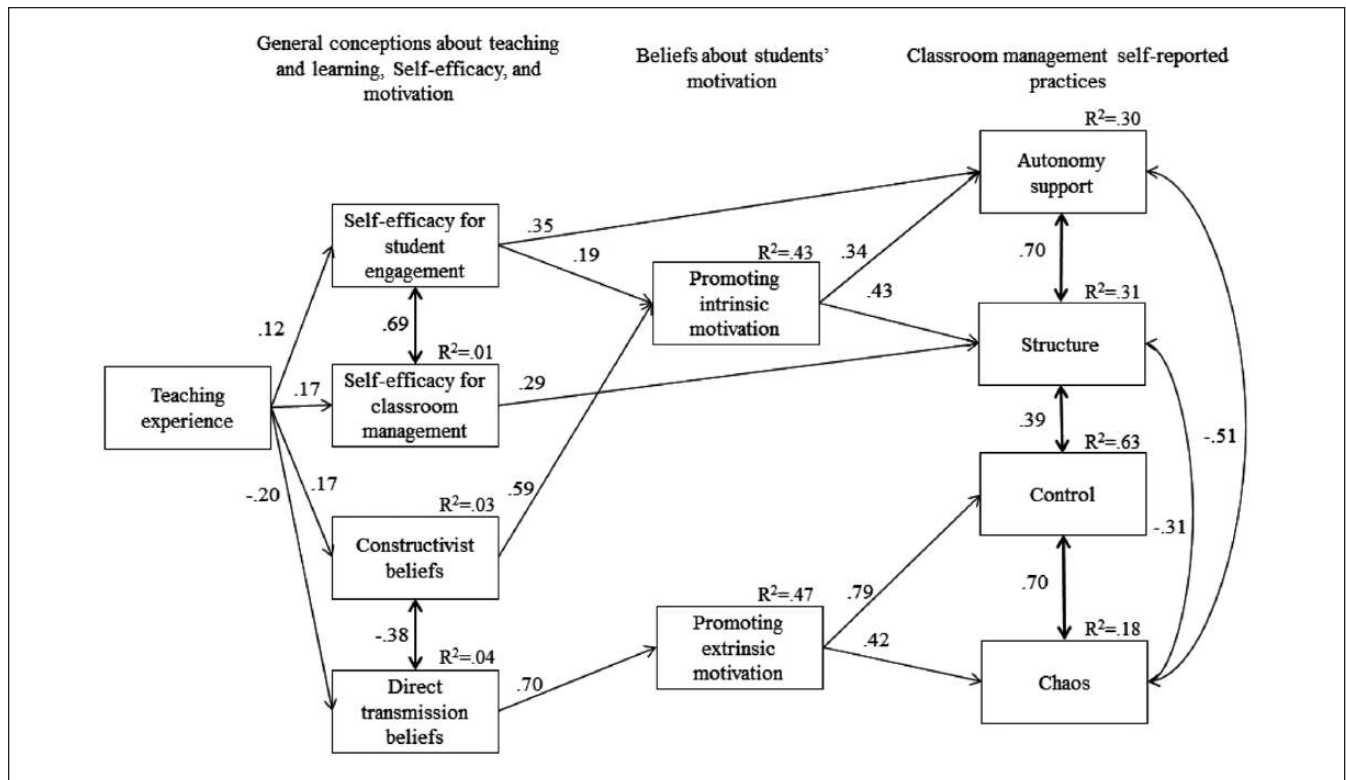


Figure 2. Final path model.
 Note. All paths are significant at the level $p < .01$ ($N = 154$).

except for chaos. Therefore, this lack of reliability was taken into account in additional analyses.

Mean Differences Within Beliefs and Within Practices

Comparing the two types of general conceptions about teaching and learning revealed that constructivist beliefs were rated much higher than direct transmission beliefs, $t(153) = 19.89$, $p < .001$, $d = 2.60$. Regarding beliefs about student motivation, promoting intrinsic motivation was preferred over promoting extrinsic motivation, $t(153) = 24.75$, $p < .001$, $d = 2.80$. In the vignettes, teachers reported they would use significantly more autonomy-supportive than structuring practices, $t(153) = 3.83$, $p < .001$, $d = 0.27$. Then, structuring was used significantly more than controlling, $t(153) = 24.91$, $p < .001$, $d = 2.60$, and finally, the latter was not significantly different from chaos, $t(153) = 1.08$, $p = .28$.

Relationships Between Experience, Beliefs, and Practices

The maximum likelihood robust estimator available in Mplus 5.0 was used to take into account deviations from multivariate normality. Measurement error in the scores was corrected using the formula “(1 – reliability) × variance” to specify

measurement errors in the path model (Bollen, 1989), to take into consideration the reliability of the scores, resulting in parameters that are more precise. After nonsignificant paths at the level of $p < .01$ were removed and relevant paths were added based on the examination of modification indices, the data had a good fit to the model: $\chi^2(25) = 29.22$, $p = .25$.

The final model is shown in Figure 2. From a statistical point of view, the two types of beliefs about student motivation are independent, as self-efficacy beliefs are independent of general conceptions about teaching and learning. In terms of explained variance in the endogenous variables, the model results indicate that teaching experience explains a small portion of the variance in self-efficacy beliefs and general conceptions about teaching and learning. Beliefs about students' motivation are largely explained ($R^2 = .43$ -.47) by the set of predictors. Finally, self-reported classroom management practices are explained to very different extents ($R^2 = .18$ for chaos to .63 for control). In sum, substantial portions of variance are explained, which support the validity of the model. The meaning of the model is discussed in the following section.

Discussion

This study aimed at uncovering the associations between teachers' beliefs (self-efficacy, general conceptions about teaching and learning, beliefs about student motivation), classroom

management practices, and teaching experience. Six issues will be discussed: favorite beliefs and practices, associations between beliefs, associations of beliefs and practices, the effect of teaching experience on beliefs and practices, the vignette instrument, and the limitations of the study.

Favorite Beliefs and Practices

Results indicate that teachers tend to agree more with constructivist beliefs than with direct transmission beliefs, which is consistent with previous survey research (OECD, 2009). Contrasting the findings of Turner's (2010) study, in which teachers considered extrinsic forms of motivation to be more effective than intrinsic forms, teachers in our study thought that promoting their students' intrinsic motivation is more relevant than promoting extrinsic motivation. Finally, we found that teachers reported to adopt practices encouraged by teacher education (autonomy support and structure) more than practices considered unfavorable (control and chaos). This means that teachers already know what practices are more prone to student engagement, an observation that was already made in another study with a similar population of teachers (Girardet & Berger, in press).

Associations Between Beliefs

As hypothesized, teachers' beliefs about student motivation are rooted in teachers' general conceptions about teaching and learning: The more teachers adhere to constructivist beliefs, the more they think that it is worth promoting their students' intrinsic motivation. At the opposite, direct transmission beliefs relate to stronger beliefs in the use of methods that promote students' extrinsic motivation. As teachers who participated in the present study rated constructivist beliefs significantly higher than direct transmission beliefs, this difference is reflected in the teachers' preference for methods that target intrinsic rather than extrinsic motivation. The effects of pedagogical beliefs on teaching practices are fully mediated by beliefs about student motivation. Thus, the latter play a relevant role in translating pedagogical beliefs into teaching practices. The assumed associations between constructivist beliefs and autonomy support, and direct transmission beliefs and control, were confirmed by the results. To the contrary, no significant association between direct transmission beliefs and structure (OECD, 2009) was found and indirect paths were uncovered: Constructivist beliefs indirectly explain structure via beliefs in promoting intrinsic motivation, and direct transmission beliefs indirectly explain chaos via beliefs in promoting extrinsic motivation. Accordingly, theoretically opposed practices, namely, structure and chaos, rely on theoretically opposed beliefs about teaching and learning, namely, constructivist and direct transmission beliefs. Not only supporting autonomy but also providing a strong structure seems necessary to facilitate the construction of meaning by the students, in other words to

enact constructivist beliefs. In contrast, lack of teacher reaction (i.e., chaos) relates to conceiving teaching and learning as being under the authority of the teacher (i.e., direct transmission); this might also explain the strong correlation between chaos and control.

Associations Between Beliefs and Practices

Self-efficacy beliefs are, as hypothesized, positively linked to autonomy support and structuring practices; however, no relationships with control and chaos were found. We conclude from this observation that the confidence teachers have in their ability to produce effective results (keeping students quiet or having them engaged in learning) strongly matters in classroom management. Therefore, this study adds to the large body of literature about the importance of teachers' self-efficacy (Martin & Sass, 2010; Tschannen-Moran & Woolfolk Hoy, 2001) in understanding instructional practices.

Each of the four forms of practices was explained by specific predictors. Autonomy support was directly explained by self-efficacy for student engagement and promotion of intrinsic motivation. Structure was also explained by the latter, in addition to self-efficacy for classroom management. Thus, the two components of teacher self-efficacy described by Tschannen-Moran and Woolfolk Hoy (2001) have different effects, and thus, both are important for an optimal classroom management practice. In contrast, control and chaos were explained by beliefs in the use of extrinsic forms of motivation, the latter dependent on direct transmission beliefs. This latter pathway has theoretical coherence: It characterizes teachers who tend to see teaching as an interaction between an adult who possesses the knowledge and students who learn it by listening to his or her words (Good & Brophy, 2008). According to this perspective, strong authority is necessary to maintain good learning conditions and students' behavior. Chaos makes sense in that students are responsible for behaving according to the expectations, and thus, the teacher is not supposed to trigger students' interest.

The Relevance of Teaching Experience

Consistent with previous studies (Huberman, 1992; Klassen & Chiu, 2010), results indicate that teaching experience is related to specific beliefs. In fact, self-efficacy for classroom management and student engagement was positively related to years of experience. This suggests that, on average, teachers increase their confidence in their abilities, which helps the teachers adopt autonomy-supportive and structuring practices. The second type of effect of teaching experience was observed on general conceptions about teaching and learning. The more experience teachers had, the more they believed in constructivism and the less they believed in direct transmission. This corroborates what was observed internationally in TALIS (OECD, 2009, 2014), and is very close to what other researchers found about novice teachers who hold direct

transmission beliefs (Borko & Putnam, 1996; Calderhead, 1996) versus more experienced teachers holding constructivist beliefs (Black & Ammon, 1992). These results suggest that teachers' general conceptions about teaching and learning might be shaped by their classroom experience even before they begin teacher education; in other words, teachers are learning from experience. Again, this result is important as these general conceptions are indirectly related to self-reported teaching practices. A direct effect of teaching experience was not observed on beliefs about student motivation or self-reported teaching practices. This suggests that beliefs about student motivation do not depend on experience and that teaching practices depend only indirectly on experience. Furthermore, this raises the question of how change in classroom management practices during the career is related to change in self-efficacy and in general conceptions about teaching and learning. Given that no causal relationship can be stated based on the present correlational study, these relationships are only suggested by the results and another study design would be needed to answer this question.

Limitations

Several limitations of this study must be emphasized. First, interpretation of the present study results is limited by the self-reported nature of the data, in particular classroom management teaching practices. Teachers may have reported the ideal behavior they would adopt in virtual situations, which may differ from the real behavior the teachers would have adopted in such situations. One advantage of self-report, however, is that this measure is nonintrusive, whereas observation of behavior during teaching is intrusive. Note that this study is the first to include a vignette measure of the four dimensions of interpersonal style according to the SDT theory (Deci & Ryan, 1987; Deci et al., 1981; Reeve et al., 1999; Reeve et al., 2004). However, there is room for improvement as the chaos dimension was measured with only three items, and relatively high correlations were observed between autonomy support and structure, and between control and chaos. Although structure and chaos, theoretically opposite dimensions of a continuum, were negatively correlated, autonomy support and control were not correlated as expected. According to the present study, the opposite of autonomy support is not control but chaos. More studies that include the four dimensions of interpersonal style and use various methods (observation, qualitative account, and questionnaire) are necessary to further investigate the theoretical framework with empirical evidence. Second, regarding the path analysis, different structural models could fit the data as adequately as the one we presented. However, this model is based on theoretical and empirical work, which sustains the model's validity. Furthermore, all significant relationships uncovered can be explained theoretically. Third, teaching experience was simply assessed by the years of experience, which does not provide information about the quality of this

experience. Finally, due to the cross-sectional design, we relied on theoretical arguments and relevant literature to infer causal relationships. Our next research will study the same variables within a longitudinal design, which will provide further information about the causality of the data.

Implications

According to Sierens et al. (2009), it is reasonable to suppose that a classroom management style oriented toward autonomy support and structure positively affects students' cognitive engagement. Moreover, this style of classroom management is likely to affect self-regulation. Therefore, teacher education has to foster this way to manage the classroom. The present findings indicate a way to reach this objective: influence teachers' general conceptions about teaching and learning and teachers' beliefs about student motivation. Both sets of beliefs are logically and psychologically connected together, and as demonstrated by our analyses and illustrated by the model shown in Figure 2, general conceptions about teaching and learning relate to classroom management style oriented toward autonomy support and structure with beliefs about student motivation acting as a mediator.

However, the efficacy of the teacher education program aiming to influence teachers' beliefs in favor of constructivism and intrinsic motivation has to be questioned. Indeed, it may be that a program of this kind will be effective mainly with experienced teachers. In fact, according to Borko and Putnam (1996) and Calderhead (1996), it seems that novice teachers tended to hold more simplistic views on teaching and learning than their more experienced peers; in other words, novice teachers believe more in direct transmission beliefs and less in constructivism than their more experienced peers. Our results confirm this observation. Therefore, the problem of changing teachers' beliefs appears to be a developmental issue. Indeed, we can interpret the important influence of years of teaching experience on teaching practices, self-efficacy, and general conceptions about teaching and learning as the sign of a developmental sequence (Huberman, 1989/1993): Beginning teachers would adhere to direct transmission beliefs and use classroom management practices oriented toward control, believing in the relevance of extrinsic motivation. The fact that novice teachers adhere to a coherent pattern of beliefs and practice (direct transmission, extrinsic motivation, and classroom management oriented toward control) can be considered as an argument in favor of this way to raise the problem. In other words, the issue would not be to persuade teachers of the value of the constructivist approach, but to foster the developmental move from one stage to another in the process of becoming a teacher. Conceivably, accelerating this move implies actions in favor of strengthening teachers' self-efficacy beliefs. Indeed, experienced teachers adhere not only to constructive beliefs but also are confident in their capacity to manage the

classroom and to foster student engagement. This position regarding the implication of our study concerning teacher education is coherent with our findings. The latter being correlational in nature, we can only make hypotheses. Quasi-experimental research, including a pre–post design, is needed to rigorously measure the effects of different ways to try to influence teachers’ beliefs and practice in regard of classroom management.

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Notes

1. In Switzerland, vocational teachers typically teach for several years before entering teacher education. In the present sample, teachers had varying years of experience with half of them having 3 or less than 3 years of experience.
2. In a major study on teachers’ interpersonal teaching style, Deci, Schwartz, Sheinman, and Ryan (1981) developed a vignette instrument (The Problem in School Questionnaire) to gauge whether teachers were more autonomy-supportive or, at the opposite, more controlling with their students. The recent addition of structure versus chaos to this dichotomy leads to a four-dimension framework: autonomy support, control, structure, and chaos. Although Jang, Reeve, and Deci (2010) used an observation grid to code teachers’ behavior reflecting these four dimensions, there is no self-report instrument for moderate to large samples.
3. To gauge the sensibility of this instrument to socially desirable responses, two scales based on Paulhus’s (1984) conceptualization of socially desirable responses were administered. A significant but small correlation between the autonomy support score and impression management was found: $r(153) = .22, p < .01$. No other significant correlation between *SD* and vignette scores was observed. This indicates that the vignette instrument is relatively independent of social desirability.

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