

Research paper

How controllable versus uncontrollable cognitions affect emotion processing during classroom disruptions A video study with preservice teachers

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ABSTRACT

We studied how preservice teachers explain and regulate their emotions when faced with classroom disruptions. Participants watched a video of a disrupted classroom and were either shown a subsequent video of the disruptive student explaining their behavior or not. Those preservice teachers who attributed the disruptions to controllable factors used functional emotion regulation to a greater extent (such as cognitive change, attentional deployment, and deep acting), while those who saw the disruptions as uncontrollable used venting more often. The study suggests that understanding the student's perspective and attributing disruptions to controllable factors can improve emotion regulation in teachers.

1. Introduction

One of the main reasons for teachers' negative emotions are students who disrupt the classroom (Taxer & Gross, 2018). In a meta-analysis, Montgomery and Rupp (2005) demonstrated that teachers who are less successful at coping with provoking classroom situations are more likely to suffer from burnout. Disruptions in the classroom are challenging and require the teacher to display a high degree of flexibility. They present an exceptional situation where theoretical knowledge cannot be put into practice without further ado, but the reaction must be adapted to the specific situation at hand.

In challenging situations cognitions and emotions usually emerge rather quickly and subconsciously (Izard, 2009). Accordingly, failure to respond effectively to classroom disruptions often results in teachers blaming their students for poor behavior control and perceiving their own behavior management as ineffective. When teachers are overwhelmed by such negative emotions and thoughts, it can be more difficult for them to stop a classroom disruption. For that reason, it is helpful if they learn to view classroom disruptions as controllable instead of uncontrollable.

In this study, we argue that perceptions of classroom disruptions as controllable relate to successful and more functional emotion regulation. Teachers who can effectively regulate their emotions not only

create strong working alliances with their students (Brackett et al., 2010; Lopes et al., 2005) but also protect themselves against emotional exhaustion, burnout syndrome and teacher dropout (Krause et al., 2008; Mearns & Cain, 2003; Montgomery & Rupp, 2005; Philipp, 2010; Weber et al., 2005). Therefore, our first goal was to investigate how preservice teachers' explanations of classroom disruptions and emotion regulation strategies relate when observing student misbehavior. We hypothesized that perceptions of classroom disruptions as controllable—in contrast to uncontrollable—result in more functional emotion regulation.

Moreover, we assumed that taking the student's perspective is another important cognitive strategy that might prevent dysfunctional emotional processing of classroom disruptions. Teachers who take the student's perspective might shift their attention away from their own and the student's failure and establish a more balanced understanding of how and why the classroom disruption occurred. This, in turn, might mitigate the negative effects of perceiving classroom situations as uncontrollable on adaptive emotion regulation.

This study has important implications for teacher education: (1) professional thinking comprises the ability to think constructively about one's actions (Schön, 1991), which requires that teachers perceive the situation as being under their control. In contrast, perceiving classroom interactions as uncontrollable distracts teachers' attention away from opportunities to act intentionally and to manage classroom disruptions

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proactively (Kumschick et al., 2017). Therefore, this study contributes to our understanding of what kind of reflection is important in teacher training to support preservice teachers' effective emotional and behavioral responses to classroom disruptions. (2) In teacher education, perspective-taking is seldom discussed as a powerful tool for preventing and responding to classroom disruptions. Particularly, taking students' perspective helps teachers see how well the classroom environment meets students' needs (Webb et al., 2012). This, in turn, contributes to improved instructional support and better student-teacher relationships which are essential to collaboration and student engagement (Murray & Pianta, 2007). The present study might encourage teacher trainers to consider perspective-taking as an important behavior management strategy.

2. Teachers' explanations of classroom disruptions

Teachers' affective and behavioral reactions to their students' misbehavior materially depend on how teachers explain their students' behavior (Reyna & Weiner, 2001). If teachers explain their students' misbehavior by aspects beyond their control, such as their perceived inability to manage the classroom effectively, they are likely to experience emotions such as anxiety or anger and to react with withdrawal or negative control to student misbehavior (Nemer et al., 2019). However, if teachers explain their students' misbehavior primarily by controllable aspects of the classroom environment (e.g., clarity of learning goals or quality of student activation), they might experience self-efficacy and adapt their teaching to better meet their students' emotional and academic needs. Teachers who explain students' misbehavior with reference to their teaching practice are more likely to feel effective and responsible for changing students' behavioral problems in the classroom (Andreou & Rapti, 2010). Moreover, teachers who are less likely to view the causes of children's misbehavior in uncontrollable child characteristics show higher emotional support during classroom observations (Carter et al., 2014). In sum, teachers' explanations of student misbehavior may notably contribute to adaptive teacher emotions regarding student misbehavior and teachers' willingness to change their teaching.

Previous research mainly focused on teachers' explanations of their students' academic failure and provided support for the fundamental attribution error, i.e., teachers tend to view the cause of academic failure within the child and not in relation to their teaching (e.g., Reyna & Weiner, 2001). Similarly, teachers explain students' behavioral problems mainly by uncontrollable influences (Hughes et al., 1993; Knoblauch & Chase, 2015; Kulinna, 2007). These influences mainly concern aspects outside school such as problems in the family environment or stable and uncontrollable characteristics of the child (e.g., motivational and social deficits) (Kulinna, 2007). In contrast, teachers are less likely to consider classroom climate, the quality of behavior management or instructional support as reasons for student misbehavior. This attribution pattern was found in preservice teachers (Knoblauch & Chase, 2015) as well as in-service teachers (e.g., Carter et al., 2014; Kulinna, 2007) and were replicated in various cultural contexts (for a review see Nemer et al., 2019).

However, none of these studies investigated the emotional consequences of teachers' explanations of classroom disruptions. To better understand how teachers' cognitions and emotions are intertwined during classroom disruptions, we investigated how teachers' perceptions of classroom disruptions as controllable vs. uncontrollable relate to their emotion regulation strategies. This importantly informs our knowledge about effective teacher education because it highlights the need to support preservice teachers' ability to think constructively about their own teaching practice. If future teachers are trained to focus their self-observation and self-evaluation on their teaching practice rather than their person, they may regulate their emotions more effectively and react to classroom disruptions in more efficient ways. This might not only result in improved teacher wellbeing, but also in better student outcomes (Andreou & Rapti, 2010; Carter et al., 2014).

3. Emotion regulation

Emotion regulation is defined as "a set of automatic and controlled processes involved in the initiation, maintenance, and modification of the occurrence, intensity, and duration of feeling states" (Webb et al., 2012, p. 775). It influences the intensity of the arousal, the quality, and the duration of an emotion (Holodynski et al., 2013). One precondition for having the need to regulate one's own emotion is emotional dissonance (Kumschick et al., 2018; Philipp, 2010; Sieland, 2008). Emotional dissonance is the experience of a difference between the affective component (inner feeling) and the expressive component of an emotion. For example, teachers try to maintain a friendly face and body expression and have a nice voice when speaking to their class, even though they are annoyed by some students who do not participate (e.g., oppose to instructions, do not follow the class, come in late, speak among themselves etc.). In this paper, following the perspective of other researchers (Krause et al., 2008; Rubin et al., 2005; Zapf, 2002), we associate emotional dissonance with an inner tension that causes the desire to reduce and regulate that tension via emotion regulation.

The most prominent model of emotion regulation was developed by Gross and John (2003) who differentiated between antecedent-focused strategies (situation selection, situation modification,¹ attentional deployment, cognitive change) and a response-focused strategy (response modulation). Antecedent-focused strategies are applied early in the regulation process, before the appraisal of a stimulus has given rise to a full-blown emotional response. In contrast, the response-focused strategy is applied after the emotion has already developed intensively. There is a consensus in research that strategies applied early in the process are healthier than strategies that are applied late (Gross & John, 2003; Kumschick et al., 2018; Webb et al., 2012). For instance, attentional deployment (strategy 3) and cognitive change (strategy 4) can be helpful and functional emotion regulation strategies when trying to react appropriately during a classroom disruption.

An example of attentional deployment is when teachers ignore minor disturbances or deliberately focus their attention on motivated students. In addition, teachers may use cognitive change by resorting to self-talk ("these are only kids") or reappraisal (a subtype of cognitive change) via perspective-taking. This latter strategy refers to teachers' attempts to consider the personal circumstances of the disruptive student and not take the behavior personally. Cognitive change is a helpful regulating strategy because it is linked to a successful reduction of negative emotions (while positive emotions increase), higher psychological wellbeing, and better interpersonal functioning (Gross & John, 2003).

As far as the last strategy (response modulation, strategy 5) is concerned, the components that characterize an emotion (meaning the affective, cognitive, neurophysiological, expressive, and motivational components; see Scherer, 1990) are highly pronounced. The level of arousal, which is most closely associated with the neurophysiological component, is significantly increased. According to Gross and John (2003), at this level, individuals can only modulate the expressive component by inhibiting their inner negative feeling and showing a different positive or neutral one (Kumschick et al., 2018). This emotion regulation process is known as "suppression". Research indicates that the suppression of strong emotions has negative effects, such as increasing the experience of negative feelings in the short term and impairing memory (Gross, 2002). Additionally, the use of suppression is

¹ *Situation selection* and *situation modification* are not the subject of this study, because these two proactive strategies reduce the risk of classroom disruptions to arise. For example, to prevent a classroom disruption *situation selection* (strategy 1) can be used when planning a lesson (e.g., the teacher plans a different and possibly easier task for a student with special needs) or the teacher uses *situation modification* (strategy 2) by deciding not to assign two "difficult" students to the same learning group. However, these two strategies are not suited for dealing with classroom disruptions in situ.

linked to unhealthy long-term effects such as emotional exhaustion or burnout (Carson, 2007).

However, there is another theoretical approach that expands the model of Gross and John (2003) by framing “suppression” as a strategy that can be applied in various ways. In this theoretical framework, the focus is not on whether a negative emotion is suppressed or not, but rather on *how* it is suppressed, for instance, by exerting deep acting or surface acting (see Hochschild, 1983). Additionally, this perspective emphasizes the importance of response modulation in professional contexts, which involves not displaying negative emotions. With surface acting the emotion and its expression are incongruent, leading to significant emotional dissonance. For example, outwardly being friendly while inwardly feeling angry. This strategy is typically used to conceal antipathy, anger, or fear. Deep acting is also a form of emotion masking. However, when individuals use this strategy, they are more successful in reducing emotional dissonance by genuinely feeling more of the expressed emotion. In this way, internal tension is decreased, and teachers have more capacity to think clearly about the situation. Deep acting can be viewed as successful suppression of negative emotions. At the same time, acting out negative emotions, such as anger, in the form of *venting*, is the most challenging regulatory strategy for all individuals involved in interactive settings (Hochschild, 1983) and it is not helpful for building healthy and strong student-teacher relationships (Sutton et al., 2009; Sutton & Wheatley, 2003).

There are pedagogical reasons for investigating suppression as a positive form of emotion regulation, such as deep acting. Sutton and Harper (2009) emphasize that the use of response-focused strategies aimed at regaining the ability to act can be functional in the short term to maintain professional classroom management and respond appropriately. However, showing a negative emotion, such as anger, in the classroom is dysfunctional and represents an undesirable emotion regulation strategy. Venting negative emotions may provide momentary emotional relief, but research indicates that there is no long-term benefit and that the negative emotion persists and can increase over time (Taylor et al., 2020). Furthermore, venting not only affects teachers’ well-being (Enwereuzor et al., 2017), but as mentioned above also has a negative impact on building positive teacher-student relationships (Sutton et al., 2009; Sutton & Wheatley, 2003). Teachers who cannot adequately regulate negative emotions tend to exhibit a punitive approach to classroom disruptions, reacting immediately to disruptive behavior and imposing inappropriately harsh punishment. This type of interaction is aimed at winning or losing (Mahvar et al., 2018).

4. Perspective-taking

Previous studies have shown that perspective-taking is an important method for inducing functional emotion regulation in the form of cognitive change (Kumschick et al., 2018, 2021; Webb et al., 2012). Webb et al. (2012) found that individuals who were directly instructed to take the perspective of the person they were in conflict with were more likely to use cognitive change as an emotion regulation strategy than those who were not instructed in the same way. This means that Webb et al. (2012) operationalized cognitive change as a technique of reappraising via perspective-taking. They differentiated between several techniques of cognitive change, such as reappraising the emotional response, reappraising the emotional stimulus, and reappraising via perspective-taking. In a meta-analysis, they found that people who used the strategy of reappraising via perspective-taking were most successful in regulating negative emotions, with an effect size of Cohen’s $d = .46$ for this specific form of cognitive change.

However, researchers have different notions of perspective-taking. Some researchers do not consider perspective-taking as a technique of cognitive change or reappraisal, but rather view it as a strong means of buffering negative feelings in therapeutic contexts (Dunn et al., 2009). In an experimental study, Kumschick et al. (2018) found that it is possible to induce cognitive change by providing people with the

opportunity to easily take the perspective of their interaction partner. In this study, the experimental group was shown the student’s perspective on a severe classroom disruption, whereas the control group did not receive this information. All participants were explicitly instructed to take the teacher’s perspective while watching the videotaped negative emotional stimulus, either the videotaped classroom disruption or the classroom disruption with the student’s perspective on it. After viewing the video, participants were asked to indicate their feelings with regard to the situation. The study found that the experimental group used cognitive change more often than the control group. Due to these findings it can be assumed that perspective-taking is a strong means of supporting cognitive change, not only in a therapeutic context.

In addition, perspective-taking may even buffer negative thoughts or explanations (such as teachers’ explanations of classroom disruptions) within the interaction. This means that, empirically, perspective-taking influences the regulation strategy cognitive change and reappraisal in particular. However, if we take the teacher’s explanation into account (controllable or uncontrollable attributions), we can assume that other emotion regulation strategies are also influenced in the context of the interaction of cognitive explanations and perspective-taking. This is a very interesting research question that will be examined in this study.

5. Research question and hypotheses

In the present study, we refer to Gross and John’s model (2003) with the inclusion of Hochschild’s theoretical explanations (1983). Thus, we examined *Attentional Deployment*, *Cognitive Change*, and emotional suppression in the form of *Deep Acting* as successful regulatory strategies. In addition, we used *Venting* (which is quite often shown by teachers in school classes) as a negative form of emotion regulation that costs the individual many resources. We investigated the differential relationship between two types of explanations of classroom disruptions (i.e., controllable vs. uncontrollable) and four emotion regulation strategies (see above). Based on previous research in teacher education, we predicted a positive relationship between perceptions of classroom disruptions as controllable and functional emotion regulation (i.e., cognitive change, attentional deployment, deep acting). At the same time, we expected a positive association between uncontrollable explanations and dysfunctional emotion regulation (i.e., venting). Moreover, we were interested to replicate earlier results concerning the role of perspective-taking. We assumed that access to the student’s perspective on the disruptive behavior does not only significantly increase the general use of cognitive change (Kumschick et al., 2018), but also buffers the negative effect of uncontrollable explanations on dysfunctional emotion regulation (e.g., in the form of a decrease in venting or an increase in deep acting).

Overall, the study examines the cognitive conditions that induce various emotion regulation strategies—i.e., cognitive change (CC), attentional deployment (AD), deep acting (DA) and venting—during a classroom disruption. Whereas CC, AD and DA are functional strategies, venting is dysfunctional.

Based on previously reported findings, we developed the following hypotheses (see Fig. 1).

- H1.** Perceptions of classroom disruptions as controllable positively predict the use of functional emotion regulation strategies (CC, AD and DA) and negatively predict venting.
- H2.** Perceptions of classroom disruptions as uncontrollable positively predict the use of venting and negatively predict functional emotion regulation strategies.
- H3.** The regulation strategy *cognitive change* is used more often in the experimental condition where individuals know the student’s perspective than in the control condition (see Kumschick et al., 2018, 2021): effect of group condition.
- H4.** Access to the student’s perspective on the disruptive behavior

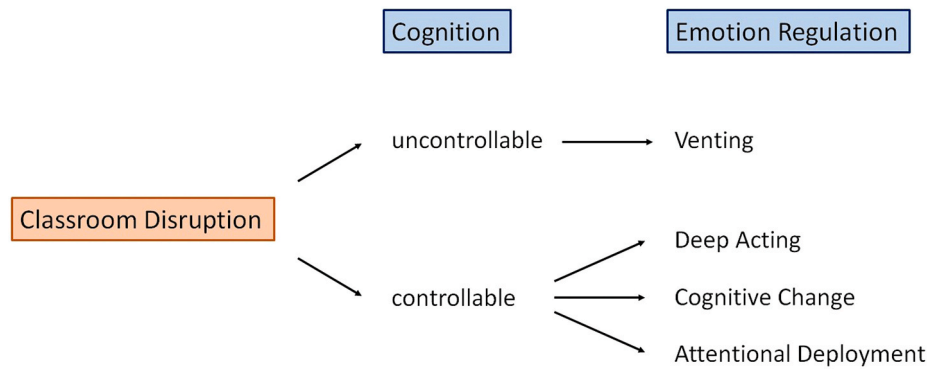


Fig. 1. Model of the assumptions formulated in hypotheses H1 and H2.

buffers the negative effect of uncontrollable cognitions, i.e., participants in the experimental group show less venting and more functional emotional emotion regulation irrespective of their explanations of classroom disruptions: protective function of perspective-taking.

6. Methods

6.1. Sample

A total of $N = 167$ preservice teachers participated in our study. The participants were enrolled in a Master's degree program for secondary school teachers (ranging from third to sixth semester) and studied at one of three different universities of teacher education in Switzerland (Lucerne: $n = 77$, Bern: $n = 49$; Zurich: $n = 31$). The mean age was 24.38 years ($SD = 5.28$, range 19–55 years), and 105 of the participants were female (63%). The participants were randomly assigned to the control group (CG; $n = 81$, 48.5%) or the experimental group (EG; $n = 86$, 51.5%). The groups did not differ regarding sex (female CG: $n = 50$; female EG: $n = 55$; $\chi^2 [1] = 0.89$, $p = .766$), age (CG: $M = 24.05$, $SD = 4.19$; EG: $M = 24.70$, $SD = 6.14$; $t [165] = -0.81$, $p = .420$), and teaching experience (proportion of students teaching in a school, CG: $n = 14$; EG: $n = 13$, $\chi^2 [1] = 0.15$, $p = .704$).

6.2. Design and procedure

In the experiment, all participants (CG and EG) were presented a videotaped classroom situation with a severe disruption. Prior to this, they were asked to put themselves in the position of the teacher. While the CG only saw the classroom disruption, the EG got access to supplementary information in a further video, in which the disruptive student commented and reflected his behavior, passed general comments about school, and stated how he felt during the portrayed teaching situation (perspective of the disruptive student). As stimulus material for creating the need for emotion regulation, we used a staged video produced by Piwovar et al. (2017) in which a severe classroom disruption was portrayed. Prior to the experiment, preservice teachers evaluated this teaching sequence and ensured its high acceptance in terms of credibility and usefulness for teacher education (Piwovar et al., 2017). The video we showed had a length of 2:52 min and featured a female teacher teaching a math lesson at the secondary school level to 17 students using a direct instruction approach. The instructions were disrupted by a male adolescent named Daniel, who arrived late to class and provoked the teacher by sleeping during the lesson, not following the lesson, and opposing all instructions. While interacting with Daniel, the teacher made typical 'errors' (Bauer & Mulder, 2008) in handling the disruptive situation such as not following through with previously announced sanctions, giving unclear instructions, ignoring mobbing and excessive sanctioning. She appeared increasingly helpless. As supplementary information, the experimental group saw an additional video (1:18 min) in which the disruptive student explained his perspective on the situation,

his feelings, and why he did not react to the teacher's interventions. After watching the video of the classroom disruption (and that of the disruptive student), the participants completed a digital questionnaire including scales for (1) the stimulus evaluation check, (2) controllable versus uncontrollable cognitions and (3) emotion regulation strategies. The experiment was conducted during a lecture at one of the three participating universities. The computer-assisted test procedure lasted approximately 45 min.

6.3. Measurement instruments

Stimulus evaluation check: To verify whether the staged video provoked the expected emotional reactions in terms of emotional dissonance in both, CG and EG, the participants were asked what emotions they would *experience* and *express* in a similar situation ("Which emotions have you perceived?"; "Which emotions would you show?"). They were presented three negative (anger, disappointment, helplessness) and two positive (safety, neutrality) emotions and then indicated on five-point scales, ranging from 1 (*not at all*) to 5 (*very much*), how strongly they would experience and express those emotions if they were the teacher in the video (Kumschick et al., 2018). The scales showed sufficient to good reliabilities (Cronbach's alpha: experienced negative emotion = 0.74; experienced positive emotion = .56; expressed negative emotion = 0.65; expressed positive emotion = .69). In addition, we assessed the (situation-related) difficulty of action (see Philipp, 2010). For this purpose, preservice teachers rated how difficult they would find it to.

(1) Stay friendly, (2) maintain a positive attitude, and (3) focus on the goals of the lesson in the disrupted classroom situation. Again, the items ranged from 1 (*not at all*) to 5 (*very much*) on a five-point scale, with the scale showing a good Cronbach's alpha ($\alpha = 0.79$).

Explanations of classroom disruption: To assess how the participants of the study explained the disruptive classroom misbehavior, they were presented 10 items and asked to rate how likely they would have a certain thought in a situation like that (response scale ranging from 1 = *not at all* to 5 = *certain*). Five items referred to controllable aspects of the situation (e.g., "What methods could I apply to this class to activate all students?"; Cronbach's alpha $\alpha = .82$) while five items represented uncontrollable aspects of the situation (e.g., "I am incapable of teaching this class"; Cronbach's alpha $\alpha = .89$). The standardized factor loadings were between 0.51 and 0.83, and according to the criteria of Hu and Bentler (1999), the fit of the confirmatory factor analysis with two correlated factors was good ($\chi^2 (34) = 46.73$, $p = .072$; CFI = 0.978; TLI = 0.971; RMSEA = 0.047; SRMR = 0.047). We refer to the two scales with the labels "controllable explanations" and "uncontrollable explanations".

Emotion regulation strategies: To examine the (classroom disruption-related) emotion regulation style, we developed a new four-dimensional questionnaire, which included 20 items. The participants were asked to rate on a five-point scale how they would react if they

were the teacher in the video (from 1 = *does not apply at all* to 5 = *applies completely*). The questionnaire included four subscales: (1) Six items referred to the emotion regulation strategy *cognitive change* with a focus on reinterpreting the negative emotional stimulus (e.g., “I think there are reasons why the student is unmotivated”; Cronbach’s alpha $\alpha = .76$); (2) *attentional deployment* was included in five items that describe strategies to shift attention away from the student misbehavior (e.g., “I try to distance myself inwardly from what is happening in order to gain an overview”; Cronbach’s alpha $\alpha = .76$); (3) *deep acting* was covered by four items that addressed the teacher’s attempt to minimize the emotional dissonance by empathically suppressing negative feelings (e.g., “I suppress my feelings because what this student needs is sympathy; Cronbach’s alpha $\alpha = .76$); (4) *venting* was assessed by five items that described the teacher’s tendency to act out a negative feeling (e.g., “I show my negative feelings clearly”; Cronbach’s alpha $\alpha = .79$). The standardized factor loadings were between 0.40 and 0.79, and the fit of the confirmatory factor analysis with four correlated factors was good ($\chi^2(164) = 194.08, p = .054$; CFI = 0.966; TLI = 0.961; RMSEA = 0.033; SRMR = 0.053).

6.4. Analyses

We are going to present preliminary analyses of the stimulus evaluation check (SEC) first. They were carried out to guarantee the internal validity of our study (Scherer, 2001), namely, that the presented video indeed triggered emotional dissonance. This means that (1) more negative than positive emotions were experienced while (2) more positive than negative emotions were expressed. Furthermore, we ensured that both, CG and EG, regardless of whether they had access to the student’s perspective, evaluated the video in a similar way (concerning the experienced and expressed emotions as well as the difficulty of action). To test our hypothesis regarding the effects of the classroom disruption on experienced and expressed emotions in participants of the CG and EG group, two separate 2 (between-effect: CG vs. EG) \times 2 (within-effect: negative vs. positive emotion) mixed measures ANOVAs were performed on the two dependent variables (i.e., experienced and expressed emotions). In addition, a *t*-test was performed to examine whether CG and EG differed in the reported difficulty of action.

Moreover, to test the hypotheses of our study, a manifest path-analytic approach was applied: The four emotion regulation strategies (dependent variables: cognitive change, attentional deployment, deep acting and venting) were predicted for both explanation types (controllable and uncontrollable, hypotheses 1 and 2), by the experimental condition (CG vs. EG; hypothesis 3) and by the moderating effect of the experimental condition (EG uses less venting—even if participants have an uncontrollable perspective on the situation). The interaction terms were built as product terms (i.e., “controllable explanation \times group” and “uncontrollable explanation \times group”). Significant interactions were followed up using simple slopes tests analyzing the association between the emotion regulation strategy and the explanation type for each group. As no restrictions were imposed, the model was saturated, resulting in a perfect fit. The analyses were conducted with SPSS 26 (IBM Corp. Released 2019) and Mplus 8.6, applying the robust maximum-likelihood estimator MLR (Muthén & Muthén, 1998-2017).

6.5. Preliminary findings regarding the stimulus evaluation check

As mentioned above, before running the main analyses, we conducted preliminary analyses in terms of a *stimulus evaluation check* (SEC) as a core strategy to guarantee internal validity. Indeed, the results of the ANOVA showed that generally more negative ($M = 3.73$) than positive ($M = 1.89$) emotions were experienced when observing the severely disrupted classroom situation ($F(1, 165) = 330.57, p < .001$). However, there was no significant difference between CG ($M = 2.84$) and EG ($M = 2.78; F(1, 165) = 0.67, p = .416$) and no significant interaction effect ($F(1, 165) = 2.60, p = .109$). The results of the mixed ANOVA concerning

the expressed emotions also showed a significant difference. In average, more positive ($M = 3.97$) than negative ($M = 2.38$) emotions were expressed ($F(1, 165) = 216.04, p < .001$). No main group effect (CG: $M = 3.19$; EG: $M = 3.15; F(1, 165) = 0.47, p = .495$) or interaction effect was found ($F(1, 165) = 2.94, p = .088$). Finally, participants of the CG ($M = 2.85, SD = 0.94$) and the EG ($M = 2.71, SD = 0.80$) did not differ in the reported difficulty of action ($t(165) = 1.01, p = .315$). Thus, the experimental stimulus led to emotional dissonance in individuals that participated in the experiment, and induced emotion regulation processes in both, EG and CG.

7. Results

Table 1 shows the results of the descriptive statistics and the correlations of variables. All variables correlate as expected. The results of the path analysis are displayed in Table 2. We found that participants who reported a stronger preference for controllable explanations used cognitive change ($\beta = 0.46$), attentional deployment ($\beta = 0.33$), and deep acting ($\beta = 0.44$) significantly more often (hypothesis 1). Moreover, individuals who favored uncontrollable explanations used venting significantly more often ($\beta = 0.35$; hypothesis 2). In addition, a significant negative effect of uncontrollable explanations on deep acting was found ($\beta = -0.19$). Furthermore, there was a negative effect of controllable explanations on venting that approaches significance ($\beta = -0.15$). The results regarding the effect of the group condition showed that participants of the EG reported a generally higher level of cognitive change than the participants of the CG ($\beta = .38$, see also Table 2, hypothesis 3). Furthermore, there was a trend concerning the moderating effect of the experimental condition ($p = .061$; hypothesis 4). As shown in Fig. 2, while the participants of the CG anticipated more venting when they reported a stronger preference for uncontrollable explanations (simple slope: $B = 0.27, SE = 0.10, p < .01$), this dysfunctional effect was not evident in the EG, as there was no association between this explanation type and venting ($B = 0.05, SE = 0.07, p = .506$). In addition, Fig. 3 reveals that individuals in the EG exhibited cognitive change more frequently compared to participants in the CG, even when experiencing uncontrollable thoughts ($B = 0.10, SE = 0.05, p < .01$). In contrast, for participants in the CG, uncontrollable thoughts were not associated with cognitive change ($B = -0.05, SE = 0.07, p = .529$). Fig. 4 demonstrates a trend with respect to participants in the CG reporting being less engaged in the regulatory strategy of deep acting than individuals in the EG when facing uncontrollable explanations for classroom disruptions (CG: $B = -0.14, SE = 0.07, p = .068$; EG: $B = 0.05, SE = 0.05, p = .262$). Furthermore, no interaction effect was found for the variable attentional deployment (EG: $B = -0.02, SE = 0.07, p = .730$; CG: $B = -0.12, SE = 0.12, p = .328$); see Fig. 5.

8. Discussion

The current study investigates the relationship between teachers’ cognitive processing and the resulting use of functional versus dysfunctional emotion regulation during classroom disturbances. Overall, the results demonstrate that preservice teachers who think about a student’s disruptive behavior in a controllable and activity-based way (thinking about possible actions), more often employ functional emotion regulation strategies such as cognitive change, attentional deployment, and deep acting. In contrast, they are less likely to act out their emotions in terms of venting (H1 confirmed). There is a reverse effect with individuals who think in an uncontrollable way when interacting with a disruptive student: they show more venting (H2 confirmed). At the same time, they are less likely to use the functional regulation strategy deep acting. In sum, these results indicate that preservice teachers experience more control over difficult teaching situations if they apply a controllable way of thinking.

As discussed in the theoretical section, there is a high pedagogical value in having more control. Controllable thoughts are intertwined

Table 1
Descriptive statistics and correlations of the study variables (N = 167).

	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Group (0 = CG; 1 = EG)	–	–	–										
2. Uncontrollable Cognition	3.23	1.02	-.13										
3. Controllable Cognition	3.82	0.82	.06	-.24**									
4. Cognitive Change	3.78	0.64	.22**	-.07	.48***								
5. Attentional Deployment	3.00	0.75	.02	-.14	.27***	.35***							
6. Deep Acting	3.90	0.72	.09	-.15	.47***	.67***	.34***						
7. Venting	2.54	0.78	-.08	.21**	-.19*	-.17*	-.45***	-.29***					
8. Experienced Negative Emotion	3.72	0.87	-.13	.38***	-.14	-.02	-.08	.01	.16*				
9. Experienced Positive Emotion	1.89	0.75	.07	-.19*	.07	.04	.12	-.02	-.00	-.31**			
10. Expressed Negative Emotion	2.38	0.76	-.15	.26***	-.19*	-.11	-.12	-.15	.29**	.17*	.03		
11. Expressed Positive Emotion	3.97	0.87	.08	-.03	.23**	.12	.13	.18*	-.15	.13	.03	-.46**	
12. Difficulty of Action	2.78	0.89	-.08	.40***	.03	-.08	-.16*	-.16*	.25**	.13	.04	.28**	.01

Notes. CG = control group, EG = experimental group. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2
Results of the path analysis predicting the emotion regulation strategies by controllable versus uncontrollable cognitions, intervention (CG versus EG) and the respective interaction terms.

Emotion Regulation Strategies	Cognitive Change				Attentional Deployment				Deep Acting				Venting			
	B	SE	β	p	B	SE	β	p	B	SE	β	p	B	SE	β	p
	Intercept	3.66***	.08	-.18	<0.001	3.02***	.08	.03	<0.001	3.88***	.07	-.03	<0.001	2.55***	.08	.02
uncontrollable	-.05	.08	-.07	0.529	-.12	.12	-.16	0.324	-.14 ^a	.07	-.19	0.066	.27**	.10	.35	0.006
controllable	.37***	.09	.46	<0.001	.30**	.11	.33	0.006	.39***	.11	.44	<0.001	-.15 ^a	.11	-.15	0.167
Group (G)1	.25***	.09	.38	0.004	-.02	.11	-.03	0.868	.07	.10	.10	0.478	-.07	.12	-.08	0.586
G x uncontrollable	.15 ^a	.09	.24	0.093	.09	.14	.12	0.504	.19*	.09	.26	0.031	-.22 ^a	.12	-.29	0.061
G x controllable	.02	.16	.02	0.906	-.15	-.17	-.16	0.393	.01	.17	.01	0.960	.03	.18	-.04	0.849

Notes. N = 167; CG = control group; EG = experimental group. $R^2_{Cognitive\ Change} = 0.28$, $R^2_{Attentional\ Deployment} = .09$, $R^2_{Deep\ Acting} = .24$, $R^2_{Venting} = 0.09$. ¹Group: CG = 0, EG = 1. ^a $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

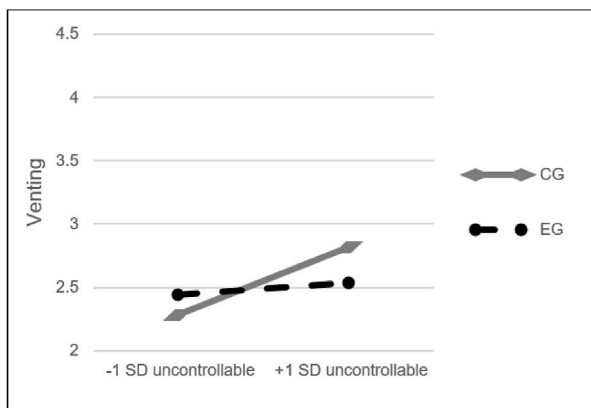


Fig. 2. Interaction between “uncontrollable Cognition X Group” on Venting. CG = control group, EG = experimental group.

with several pedagogical benefits in classroom practice: they enable teachers to be better role models, produce healthier emotion regulation, lead to an increased cognitive capacity for perspective-taking and provide more cognitive resources to identify options for action (to be successful at stopping disturbing behavior). All of these aspects together form an important basis for good student-teacher relationships and create a beneficial working alliance that furthers the student’s cooperation while interacting with the teacher (Brookfield, 2017; Murray & Pianta, 2007; Schön, 1991; Webb et al., 2012). In addition, teachers having this cognitive approach might feel better prepared to change disruptive behavior and address classroom problems in a more effective, problem-solving way (Kumschick et al., 2017). Moreover, the

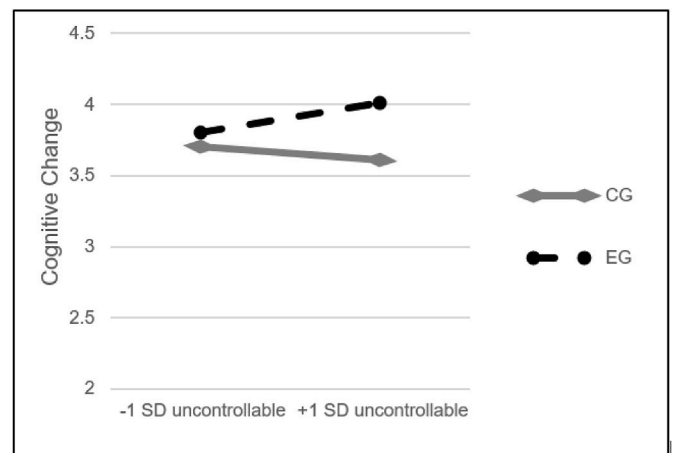


Fig. 3. Interaction between “uncontrollable Cognition X Group” on Cognitive Change. CG = control group, EG = experimental group.

controllable thinking approach can inspire teachers to innovative classroom settings. For instance, they can use students’ class disruptions as opportunities to foster students’ social development by implementing classroom discussions focused on understanding the reasons behind disruptive behavior and gaining insights into students’ perspectives. In this way, they nurture students’ sense of autonomy and responsibility (Battistich et al., 1997; Watson et al., 2013). However, teachers might facilitate discussions about behavioral issues in the classroom not only to encourage students’ critical thinking about their behavior but also to

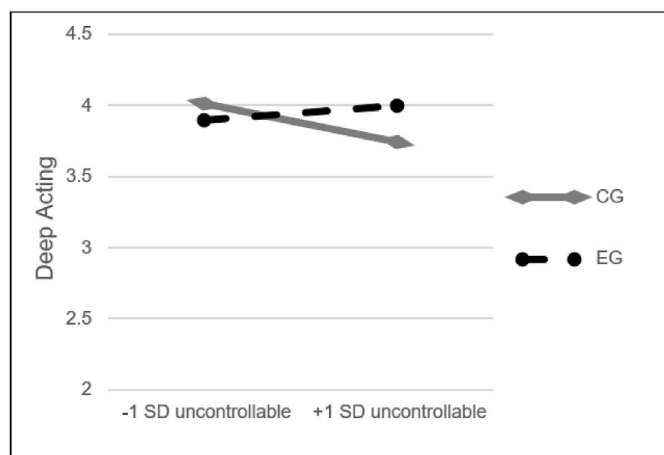


Fig. 4. Interaction between “uncontrollable Cognition X Group” on Deep Acting.

CG = control group, EG = experimental group.

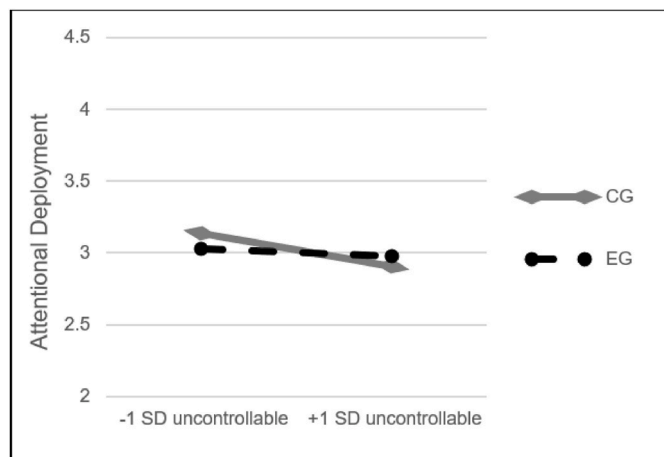


Fig. 5. Interaction between “uncontrollable Cognition X Group” on Attentional Deployment.

CG = control group, EG = experimental group.

gain insights into students’ motives for class disruptions. Therefore, professional development should include training in leading discussions with students about class disruptions to support teachers in better understanding the students’ perspectives on these issues (Gasser & Althof, 2017).

Replicating a finding from previous research was another goal of the present study. We found that access to information about the student’s perspective positively contributed to the use of the regulation strategy *cognitive change* (Kumschick et al., 2018, 2021). The participants of the experimental group used this regulation strategy significantly more often than those of the control group (H3 confirmed). By conducting a meta-analysis, Webb et al. (2012) have demonstrated a strong relationship between cognitive change and perspective-taking. In their study, they instructed the participants to actively take the perspective of the person they interacted with in order to see the situation more objectively. Within this experimental condition they confirmed that perspective-taking is a strong and helpful strategy to induce cognitive change. By contrast, in the current study we induced the use of cognitive change as a strategy without giving direct instruction—we simply showed the experimental group the student’s perspective (without offering any comments) and thereby gave them the opportunity to take the student’s perspective. Even under these rather implicit circumstances participants used cognitive change significantly more often than without

having knowledge of the student’s perspective. However, although perspective-taking seems to be particularly relevant to cognitive change, it does not generally influence other kinds of functional emotion regulation (here: attentional deployment and deep acting).

Furthermore, the results revealed that having access to the disruptive student’s perspective (experimental group) tends to result in a decline in the use of venting (see Fig. 2)—even if one uses uncontrollable thinking). Moreover, participants of the experimental group were more likely to use functional emotion regulation strategies (i.e., cognitive change and deep acting, see Figs. 3 and 4)—even if they reported an uncontrollable cognition (H4, trend). All in all, our study revealed that the presentation of the student’s perspective seems to have a powerful effect on emotion regulation—even if individuals view a disruptive behavior in their classroom as uncontrollable and may doubt their own competence. It is easily conceivable that teachers are more likely to sympathize with students who disrupt the classroom if they know their perspective. This could lead to a strategy of empathically suppressing negative feelings, i.e., one’s own negative feelings are perceived, but their expression is inhibited in order not to burden other people (König, 2011). Previous research has shown that there is a connection between the perception of controllability or uncontrollability in a situation and the subsequent reaction of the teacher (Graham & Hoehn, 1995; Reyna & Weiner, 2001; Weiner et al., 1988). Based on these studies, we assume that perspective-taking as well as the individual way of thinking are not only highly correlated with emotion regulation but possibly also associated with a more constructive or a more punitive handling of class disruptions.

The current study was able to demonstrate that it is absolutely necessary that preservice teachers learn to think in a controllable and activity-based way. It seems that there is a need for students to gain more knowledge about cognition and emotion processes as early as during their education in order to deal successfully with challenging professional interactions. Furthermore, they should be given the opportunity to explore, apply, examine and practice this knowledge in in-situ training units. It is important that preservice (and experienced) teachers gain insight into how to cognitively interpret emotional challenges in their profession and how to regulate their emotions when finding themselves in a challenging teaching situation. This not only requires the developing of performance-based in-situ learning settings (with opportunities to act while experiencing negative emotions) but also further research in teacher education and professional development in order to address this very important topic.

9. Limitations of the study

The present study has its limitations. First, the preservice teachers were from three different teacher training institutions, each of which has its own training curriculum. The topic of emotion regulation may be discussed at some of the schools and might influence the results. Second, there is a reliance on self-reports, which could introduce bias. Being asked to state what one would feel and how one would express one’s feelings in a fictional situation is cognitively demanding and probably influenced by theoretical knowledge about emotion regulation. Therefore, behavioral measurements of emotion regulation (biological marker, behavioral observation) would be more appropriate indicators of emotion expression than self-report measurements and should be included in further studies. Our experimental design with the use of staged videos and self-assessments does not allow conclusions about the ecological validity of the findings. A one-time assessment of one’s own emotion regulation does not allow any conclusions to be drawn about how the regulation process in all its phases (identification, selection, implementation and monitoring; McRae & Gross, 2020) is carried out in real situations. A further limitation is that the alpha values for the experienced positive emotion and the expressed negative emotions are low. Similarly low reliability was observed by the authors in a previous study when using the same scale in the framework of the stimulus

evaluation check (compare Kumschick et al., 2018). This may be due to the fact that in both studies, only 2 items for positive emotions and 3 items for negative emotions were presented (Cortina, 1993). Therefore, in a replication of the presented experiment, it might be better to use a valid and reliable instrument for measuring emotions, such as the Positive and Negative Affect Schedule (Watson et al., 1988). In sum, further studies are needed to investigate in greater detail the complexity of teachers' cognitions and emotion regulation during severe classroom disruptions. Moreover, as previously mentioned, the results should be validated in authentic and real classroom settings.

10. Conclusion

It is a universal finding that early career teachers report that they feel unprepared to handle classroom disruptions successfully (Al-Zu'bi, 2013; Christ, 2004; Lewis et al., 2005; Merrett & Wheldall, 1993; O'Neill & Stephenson, 2014; Stokking et al., 2003; Stoughton, 2007). Novices view the management of classroom disruptions as the most difficult challenge to overcome within the teaching profession (Admiraal et al., 2000; Everson & Weinstein, 2013; Rieg et al., 2007). The present study can be seen as a helpful and important piece filling the research gap regarding protective factors against dysfunctional cognitive and emotional processing of disruptive classroom behavior. As outlined above, the results emphasize the importance of teacher trainings that implement knowledge about cognitive and emotional processes during classroom disruptions and give the opportunity to try out that newly acquired knowledge. Our work suggests that the ability to deal with classroom disruptions successfully depends on external strategies for action on one hand, but is also connected with introspective cognitive and emotional processes on the other. Being able to regulate one's emotions helps to stay calm and react sensibly and appropriately, which in turn ensures that a teacher can continue to be a leader in complex teaching situations. That is why it is desirable to develop evidence-based interventions to train teachers purposefully with regard to their cognitive, affective and behavioral dealing with classroom disruptions. If teachers fail because of their inability to deal with classroom disruptions successfully, this does not only have negative consequences for them as teachers (Chan, 2006; Montgomery & Rupp, 2005; Sutton & Wheatley, 2003), but also for the students (Sutherland et al., 2008) and the relationship between the teacher and his or her students (Hamre & Pianta, 2005; Turner et al., 2003).

Declaration of competing interest

The authors declare that they have no financial, personal, or professional interests that could influence or be perceived to influence the work reported in this paper.

Data availability

Data will be made available on request.

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