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ABSTRACT

This study tested a model in which perceived self-efficacy in classroom management explained the influence of student disruptive behavior on teacher burnout. Dutch secondary teachers completed the Maslach Burnout Inventory, Self-Efficacy Scale for Classroom Management and Discipline, and Order and Organization subscale of the Classroom Environment Scale. Before analysis, completed questionnaires were divided into two groups. Utilizing a structural equation modeling procedure with maximum likelihood estimation and a two-step modeling approach, researchers first tested the measurement model using half of the sample. Pseudo chi-square was significant, indicating the specification of the measurement model needed improvement. They related depersonalization and emotional exhaustion to one construct (the core of burnout). The measurement model was adequate since pseudo chi-square was not significant. Tests performed on the structural model indicated that it could be improved by adding a direct effect of personal accomplishment upon perceived self-efficacy. After this modification, Normed Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) exceeded .90, a recommended criterion. The modified model was tested using the rest of the sample. CFI and TLI exceeded .90. After modification of the measurement model and structural model, researchers concluded that the hypothetical model was empirically sound. (Contains 75 references.) (SM)

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Abstract

The present study proposed and tested a model in which perceived self-efficacy in classroom management explains the path of influence of student disruptive behavior on teacher burnout. The model is nonrecursive, indicating that perceived student disruptive behavior and burnout feed on each other. A sample of 558 secondary school teachers completed the Maslach Burnout Inventory (Maslach & Jackson, 1981), the Self-Efficacy Scale for Classroom Management and Discipline (Emmer & Hickman, 1991), and the Order and Organization subscale of the Classroom Environment Scale (Moos & Trickett, 1974). Before analysis, the completed questionnaires were randomly split into two halves. Utilizing a Structural Equation Modeling procedure with maximum likelihood estimation and a two-step modeling approach (Anderson & Gerbing, 1988), we first tested the measurement model using half of our sample ($N = 279$). Pseudo chi-square was significant, which means that the specification of the measurement model needed to be improved. We related depersonalization and emotional exhaustion to one construct, named the 'core of burnout'. The measurement model was adequate since pseudo chi-square was not significant. Tests performed on the structural model indicated that the model could be improved by adding a direct effect of personal accomplishment upon perceived self-efficacy. After this modification, Normed Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) exceeded .90, the criterion recommended by Bentler and Bonett (1980). The modified model was tested using the other half of the sample ($N = 279$). CFI and TLI exceeded .90. After modification of the measurement model and the structural model, we concluded that the hypothetical model is empirically sound.

Introduction

Teaching is quite a demanding activity. Every year a great many teachers feel themselves unable to continue their work. They feel drained and exhausted. Studies in this field show that a considerable number of teachers experience exhaustion symptoms during their careers. After surveying American literature on this subject, Farber (1991) posits that between 5% and 20% of all teachers in the USA will become exhausted at a certain point. Dutch percentages indicate a similar figure. Numerical data on employees in the Netherlands demonstrate that in 1994 more than 44% of the total number of civil servants who were entirely unfit for work came from the education sector (ABP, 1995). More than half of the cases could be attributed to psychological complaints (Van Horn & Schaufeli, 1996).

In the past few years many articles have linked these psychological complaints to burnout (Schaufeli & Bergers, 1992). Within an educational framework, burnout is considered a process in which a teacher becomes emotionally exhausted in response to a demanding work environment. Emotional exhaustion refers to feelings of being emotionally overextended and depleted of one's emotional resources (Maslach, 1993). As a consequence, the sufferer develops negative attitudes towards both recipients (conceptualized as depersonalization) and his or her work performance (conceptualized as reduced personal accomplishment). Teachers suffering from burnout usually experience an increased number of problems, including decreased mental and physical well-being and deteriorating relationships with students and colleagues (Schaufeli, 1990b). In the long run these problems may become a cause of their -temporarily- leaving employment. Unfortunately, it is not unusual for these problems to lead occasionally to premature retirement.

By definition, burnout only occurs among 'professionals' in so-called social occupations such as nursing, social work and teaching (Van Horn & Schaufeli, 1996). These occupations distinguish themselves from others by their demanding and emotionally stressful relationships. This distinguishing characteristic is therefore an obvious starting-point when attempting to acquire a closer understanding of the burnout process. This is exactly what Freudenberger and Maslach - pioneers in burnout research - did (Maslach & Schaufeli, 1993). A few investigators who have pursued this line of reasoning demonstrated that the degree of burnout is usually higher when the professional's social relationships with those receiving his or her help are particularly frustrating or difficult in nature (Van Dierendonck, Schaufeli & Sixma, 1994). By including the demanding and stressful nature of these relationships in the definition of burnout, these researchers have shown that social psychological processes are essential to comprehending the burnout process.

In view of the importance of social psychological processes in understanding and explaining burnout, when investigating teacher burnout it seems reasonable to focus attention on the relational component of their function, i.e. teacher-student relationships. Interaction research during classroom instruction reveals that student behavior has a positive effect on teacher burnout (Burke, Greenglass & Schwarzer, 1996; Friedman, 1995; Lamude, Scudder & Furno-Lamude, 1992; Byrne, 1991; Hock, 1988).

The present study is focused on an important aspect of teacher-student relationships, namely student disruptive behavior and the impact of this behavior on teacher burnout. Student behavior is defined as disruptive when the student in question is not engaged in a task structured for him or her by the teacher and when this behavior is noticed by and/or interferes with the efforts of other learners (Niemann, Ball & Caldwell, 1989). Previous research shows that secondary school teachers perceive student disruptive behavior as one of the most

important stressors (Byrne, 1991; Blase, 1982), and that burnout can occur when stress becomes chronic (Westman & Eden, 1997; Lee & Ashforth, 1993). Byrne found (1994) that teachers who were confronted with student disruptive behavior were more emotionally exhausted. Teachers' attitudes towards their students were also more negative.

Bandura's theory of perceived self-efficacy was chosen as a theoretical perspective. Perceived self-efficacy refers to "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). Perceived self-efficacy is the belief in one's capacity to bring about a certain kind of behavior. It does not deal with knowledge and skills as such, but with the belief in one's knowledge and skills in a certain domain of activities. According to Bandura (1977; 1997) and Smylie (1990), judgments of general relationships between behavior and outcomes (outcome expectancy) on the one hand and ideas about the extent to which results can be controlled personally (locus of control) on the other, are beyond the scope of the theory of perceived self-efficacy.

Self-efficacy beliefs are the result of learning processes. Bandura (1977; 1997) mentions four different sources of information at the basis of these learning processes: (1) enactive mastery experiences that serve as direct indicators of capabilities, (2) vicarious experiences that alter efficacy beliefs by observing other people performing similar tasks, (3) verbal persuasion in which others can guide individuals to believe in their own capabilities, and (4) physiological and affective states that indicate one's vulnerability to dysfunction.

As a mediating construct between our skills and our actions, efficacy beliefs are effective in different ways (Bandura, 1997; Pajares, 1996; Smylie, 1990). First, they affect the actions, tasks and social situations we choose. As a consequence, someone who has a low opinion of her or his efficacy to perform a particular activity, will prefer to avoid that activity. Second, self-efficacy beliefs affect the extent to we persevere in accomplishing a task when there is a

setback. The more competent we are, the more likely we will persevere in completing the task even if accompanied by many setbacks. Third, assessment of our competency affects the way in which we think about others and about our environment. In contrast to persons who have a high estimate of their competency, individuals who have a low estimate of their competency will be inclined to perceive potential problems as huge.

In Bandura's view (1977; 1997) self-efficacy beliefs vary along different dimensions. First, they are associated with a domain of activities. A person can consider himself very competent in a certain domain, but less competent in another. As a matter of course, a domain can include many or few activities. Second, self-efficacy beliefs are associated with a certain performance level. We can consider ourselves quite competent to perform a task on an average level, while considering ourselves less competent to perform exceptionally well. A performance level can be challenging to a high or low degree. Third, self-efficacy beliefs can vary in strength. The higher we rate our competence at achieving a particular outcome, the more likely it is that we will achieve this outcome.

The present study is focused on self-efficacy beliefs in the domain of classroom management and discipline. This domain has been chosen because of its close connection with student disruptive behavior. Furthermore, a model that assumes causal relationships between (1) student disruptive behavior, (2) teachers' beliefs about their ability to manage this disruptive behavior, and (3) burnout, has never been proposed and tested to date. A test of such a model is of great importance, as previous research into classroom interactions shows that student disruptive behavior has a positive effect upon teacher burnout (Burke, Greenglass & Schwarzer, 1996; Friedman, 1995; Hock, 1988). Research evidence also indicates that teachers' judgments about their competence to manage disruptive behavior is a mediated construct within this effect (Friedman & Farber, 1992).

Figure 1 shows the hypothetical model. Below we substantiate the relationships within the model.

Insert Figure 1 About Here

Enactive mastery experiences are the most powerful source of perceived self-efficacy. When we observe that our activities yield success, it is likely that our self-efficacy to produce successful activities will increase. In contrast, when failures are the result of our activities, our self-efficacy beliefs will most likely decrease. When a teacher repeatedly perceives that his or her activities and strategies do not reduce student disruptive behavior, his or her perceived self-efficacy in classroom management and discipline will most likely decrease. A teacher who constantly observes that students keep misbehaving in spite of his ongoing attempts to control student behavior will likely begin to doubt his ability to maintain classroom order. Friedman and Farber (1992) posit that students disruptive behavior can engender low self-regard among teachers. Student behavior is therefore an important source of information for teachers for understanding their self-efficacy in classroom management and discipline (Smylie, 1990).

People who have self-doubts about their capabilities in a particular domain of activities can easily fall victim to stress and burnout. They are quick to consider the tasks in which their perceived self-efficacy beliefs are low as threats, which they prefer to avoid (Bandura, 1997). When they cannot avoid these tasks, their level of stress increases. Burnout can occur when stress becomes chronic (Westman & Eden, 1997; Lee & Ashforth, 1993). Teachers who distrust their efficacy in classroom management and discipline cannot easily quit their jobs.

Because they must continue to handle disruptive students, their level of stress and burnout is most likely to increase.

Several studies demonstrate that doubts of self-efficacy can in themselves trigger the burnout process. Chwalisz, Altmaier and Russell (1992) found that teachers who score low in self-efficacy reported a higher degree of burnout than their counterparts who score high in self-efficacy. Greenglass and Burke (1988) conclude that doubts about self-efficacy contributed significantly to the development of burnout among male teachers. The more specific relationship between teachers' perceived self-efficacy in classroom management and burnout has been investigated as well. Friedman and Farber (1992) found that teachers who considered themselves less competent in classroom management and discipline reported a higher level of burnout than their counterparts who have more confidence in their competence in this regard.

Burnout can be defined as a long-term stress reaction (Maslach & Schaufeli, 1993). In the most widely-used definition, burnout is described as "a psychological syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who work with other people in some capacity. Emotional exhaustion refers to feelings of being emotionally overextended and depleted of one's emotional resources. Depersonalization refers to a negative, callous, or excessively detached response to other people, who are usually the recipients of one's services or care" (Maslach, 1993, pp. 20, 21). Reduced personal accomplishment refers to "a person's negative self-evaluation in relation to his or her job performance" (Schaufeli, Maslach & Marek, 1993, p. 17). Most researchers consider emotional exhaustion as the key dimension of the syndrome (Schaufeli, Enzmann & Girault, 1993). In regard to burnout among teachers, Byrne (1994) states that emotional

exhaustion is most responsive to various stressors in the teacher's work environment, including student disruptive behavior.

Schaufeli and Van Dierendonck (1993) investigated the construct validity of the Maslach Burnout Inventory, the most widely-used research instrument to measure burnout. They showed that burnout can be represented as a two-dimensional construct consisting of emotional exhaustion and negative attitudes. The first dimension is a non-specific exhaustion component linked to physical complaints and psychological tension (emotional exhaustion). The second more specific dimension consists of negative attitudes towards both patients, clients or students (depersonalization), and towards oneself in relation to one's own work environment (reduced personal competence, Schaufeli & Van Dierendonck, 1993; Van Dierendonck, Schaufeli & Sixma, 1994).

Down through the years different models have been suggested for describing the burnout process. In the process model proposed by Leiter and Maslach (1988), emotional exhaustion arises first as a consequence of a social-psychologically demanding work environment. In turn, emotional exhaustion induces negative attitudes both towards patients, clients or students (depersonalization), and towards one's accomplishments in the job (reduced personal accomplishment, Van Dierendonck, Schaufeli & Sixma, 1994). In tests of this model, Lee and Ashforth (1993) and Byrne (1994) have shown that emotional exhaustion indeed appears first, followed by depersonalization and reduced personal accomplishment.

Teachers who show a relatively high level of stress and burnout and yet continue to teach, can have a negative influence on their students (Hock, 1988). Lamude and Scudder (1992) show that teacher stress and burnout affect student behavior. The authors conclude that the degree of student-observed teacher stress goes a long way towards explaining why they resist teacher efforts to maintain classroom order. This can be explained by the fact that teachers

who show a relatively high level of stress and burnout usually have a lower tolerance level for classroom disruption. Moreover, these teachers are less sympathetic to students, and exhibit more distant and rejecting behavior toward them (Byrne, 1991; Byrne, 1994; Lamude, Scudder & Furno-Lamude, 1992; Capel, 1987; Cunningham, 1983). Such behavior makes student disruptive behavior more likely (Burroughs, Kearney & Plax, 1989; Kearney, Plax, Hays & Ivey, 1991).

The present study investigated three questions: (1) what is the effect of student disruptive behavior on burnout among secondary school teachers, (2) what is the role of perceived self-efficacy in classroom management and discipline in this effect, and (3) do these effects show a negative feedback-loop? The answers to these questions should determine the empirical fit of the hypothetical model.

Method

Participants

1156 teachers working in 15 secondary schools in the province of Limburg in the Netherlands were asked to participate in the present study. 611 questionnaires were returned, a response rate of 53%. 441 of the participants were men (72%) and 170 were woman (28%). The average age was 46 years with a range of 22 to 63 years ($SD = 8.78$). The average teaching experience in years was 21 ($SD = 9.41$). A comparison with all teachers working in secondary schools in the province of Limburg in 1997 (CFI, 1998) showed that the sample of the present study was representative in terms of sex ($c^2_{(1)} = 3.38, p = .07$).

Measures

Burnout. Burnout was measured using the Dutch version of the Maslach Burnout Inventory for teachers (MBI-NL-Ed; Schaufeli & Van Horn, 1995; Schaufeli, Daamen & Van Mierlo, 1994; Maslach & Jackson, 1981). The questionnaire includes 20 items divided into three

subscales: Emotional Exhaustion (EE; 8 items), Depersonalization (D; 5 items), and Personal Accomplishment (PA; 7 items). The items are measured with a 7-point Likert scale, ranging from 'never' to 'every day'. Scores on the scales are added separately. High scores on the scales EE and D, and low scores on the PB scale are indicative of burnout. In a study among secondary school teachers ($N = 916$), Schaufeli and Van Horn (1995) found Cronbach's Alpha's of .87, .71 and .78.

Student Disruptive Behavior. Student disruptive behavior was measured using an adaptation of the Dutch 'Order and Organization' subscale of the Classroom Environment Scale (CES) designed by Moos and Trickett (1974; Vander Sijde, 1986). The original questionnaire includes 90 items, in with 10 items in every subscale. The 'Order and Organization' subscale measures the extent to which student behavior is orderly and calm, and the general organization of activities in the classroom. In our scale we used the 6 items which measure the extent to which student classroom behavior is orderly and calm. We adapted the original items of the scale to some extent. Among other things, in other studies the CES was used to measure how teachers experience their classroom environment (Moos, 1979; Fisher & Fraser, 1983; Raviv, Raviv & Reisel, 1990; Byrne, 1994). With respect to the 'Order and Organization' subscale, Fisher and Fraser (1983) found a reliability coefficient of .77 among 56 teachers. The CES has originally had a right/wrong response format. Following Byrne (1994), we used a Likert scale as well. The 6-point scale has a strongly agree/strongly disagree response format.

Perceived Self-Efficacy in Classroom Management. Perceived self-efficacy in classroom management was measured using the Self-efficacy Scale for Classroom Management and Discipline designed by Emmer and Hickman (1991). The questionnaire includes 14 items measured with a 6-point Likert scale and has a strongly agree/strongly disagree response

format. For this scale Emmer and Hickman (1991) found a reliability of .79 ($N = 161$). The scale was devised as a supplement to the Teacher Efficacy Scale originally designed by Gibson and Dembo (1984), which measures teachers self-efficacy in instruction activities. Using factor-analytical research, Emmer and Hickman (1991) found that perceived self-efficacy in classroom management differs from perceived self-efficacy in instructional activities. Rich, Lev and Fischer (1996) also conclude that teachers' perceived self-efficacy differs from domain to domain. We translated the Emmer and Hickman's questionnaire into Dutch. To check the comprehensibility of the translated items in a different educational system, we discussed these with eight secondary school teachers. We adapted the translation of some items based on their suggestions.

Procedure

We telephoned the principals of 15 schools to ask them to cooperate in our study and to hand out to every teacher in their school a questionnaire and a letter which explains the nature and general aim of the study. Follow-up mailings were conducted to increase the return rate.

Analysis

We tested the fit of our model with a Structural Equation Modeling (SEM) analysis procedure with maximum likelihood estimation using the AMOS 3.6 computer program. The SEM procedure makes it possible to test nonrecursive models (Tacq, 1997). Our model is nonrecursive because of its feedback-loop. SEM also corrects for measurement errors by working with latent variables (Jaccard & Wan, 1996). An assumption of maximum likelihood estimation is a multivariate normal distribution of the manifest variables in the population (Breckler, 1990). The number of participants must therefore exceed 200. Monte Carlo studies have shown that only then can parameter estimations be acquired with standard errors small

enough to be of practical value (Anderson & Gerbing, 1988; Boomsma, 1983). Our sample satisfies these condition, even after splitting (see below).

In order to determine the fit of the model, we estimated fit indices that are usually applied in SEM procedures: the Adjusted-Goodness-of-Fit Index (AGFI) and the Root-Mean-Square Residual (RMR). We also estimated two so-called incremental fit indices. Estimates of incremental indices are based on the difference between the theoretical model and an alternative model. The so-called null model is generally used as an alternative model. The null model represents the most restricted model, specifying that the variables are mutually independent (Bentler & Bonett, 1980). The incremental indices we used are the Tucker-Lewis Index (TLI) and the Normed Comparative Fit Index (CFI; McDonald & Marsh, 1990; Bentler, 1990). The advantage of these indices over the first mentioned is that the latter are hardly sensitive to the sample size (McDonald & March, 1990; Bentler, 1990). When the value of these incremental indices exceeds .90, which is the criterion recommended by Bentler and Bonett (1980), the assumption is that the model cannot be improved significantly. A value below .90 usually means that the model can still be improved (March, Balla & McDonald, 1988).

Before the fit of the structural model could be tested, we first determined whether the measurement model was adequately specificated (the two-step modeling approach of Anderson and Gerbing, 1988). When the measurement model is inadequate, no structural model will give an acceptable fit. To determine the adequacy of the measurement model, it is necessary to formulate two models, i.e. the so-called saturated submodel and the so-called null submodel. In the saturated submodel, all parameters relating the four variables to one another are estimated, while in the null submodel all these parameters are fixed at zero. We then performed a pseudo chi-square test in which we took the value of chi-square of the saturated

submodel along with the degree of freedom of the null submodel (Bentler & Bonett, 1980). When the pseudo chi-square was significant, we modified the measurement model. Nonsignificance indicated that we could start to test the structure model knowing that the measurement model was adequate.

An investigator who modifies a model based on the data is using explorative model development. This method does not mean that the resulting model has been validated merely because it fits the data (MacCallum, 1995). However, modifications of the model may be based on characteristics of the sample which are attributed to chance (MacCallum, Roznowski & Necowitz, 1992). It is therefore necessary to cross-validate the modified model. A frequently recommended method is the split-half procedure, which means that the sample is randomly split. The model can be modified for one half of the sample while the other half is used to test the modified model (Cudeck & Browne, 1983; Breckler, 1990; Tacq, 1997). We used this method in our study.

Our model consists of four latent variables. To identify, the latent variables (constructs) in the measurement model we had to estimate them by at least two manifest variables (indicators; Van Dierendonck, Schaufeli & Sixma, 1994). Three constructs in our model were determined by one indicator, i.e., student disruptive behavior, perceived self-efficacy in classroom management, and emotional exhaustion. Various procedures have been recommended to tackle this problem. For the variables student disruptive behavior and emotional exhaustion, we followed the procedure recommended by Kenny (1979), who states that the value of reliability (i.e., Cronbach's alpha) can be used to estimate the strength of the relationship between latent and manifest variables (Van Dierendonck, Schaufeli & Sixma, 1994). For the variable perceived self-efficacy, we followed procedure recommended by Jaccard and Wan (1996), who state that two indicators can be created by randomly splitting

the items on the scale in half. The item scores are then added separately for each half. This procedure was used by Rock, Werts, Linn and Jöreskog (1977; Arbuckle, 1997), and can be used with the perceived self-efficacy variable because the scale that measures this construct has a sufficient number of items.

Results

In our analysis, we used the completed questionnaires ($N = 558$). Table 1 shows the descriptive statistics, the reliability estimates, and the intercorrelations.

Insert Table 1 About Here

The reliability of all the indicators is .70 or higher. This is also the case for the two scales of perceived self-efficacy formed by randomly splitting the whole scale (.77 and .79). Based on the criterion of sufficient reliability suggested by Nunnally (1978), we can state that these are adequate for all the indicators.

It was possible that our hypothetical model would have to be modified based on the data. To enable us to test the modified model, we split the sample randomly into two halves. The first half was used to test and if necessary to modify the model ($N = 279$).

Before the structural model was tested, the adequacy of the measurement model was evaluated. Two additional models were formulated for this purpose: the saturated submodel and the null submodel. Pseudo chi-square, in which the value of the chi-square of the saturated submodel ($c^2 = 32.21$) was used with the degrees of freedom of the null submodel ($df = 11$), was significant ($p < .01$). As a consequence, the measurement model had to be modified (Anderson & Gerbing, 1988).

To identify the source of misspecification, we analyzed the pattern of normalized residuals in the saturated submodel. The residual covariance of emotional exhaustion and depersonalization was higher than 2 (i.c. 3.19), indicating misspecification (Anderson & Gerbing, 1988). Based on this information and on literature in which both indicators together are considered to be the 'core of burnout' (Green, Walkey & Taylor, 1991; Walkey & Green, 1992; cf. Friedman, 1993), we took depersonalization and emotional exhaustion together as indicators of the same construct. Following Green et al. (1991), we named this construct the 'core of burnout'. Personal accomplishment is the only indicator of the construct 'negative attitudes'. We named this construct 'personal accomplishment' and used the Cronbach's Alpha reliability in order to estimate the relationship with the indicator (Kenny, 1979).

To determine the adequacy of the measurement model after modification, we formulated the saturated submodel and the null submodel based on this modified model. Pseudo chi-square was not significant ($c^2_{(11)} = 13.02, p = .29$), which means that the measurement model was adequate. The next step was to test the structural model.

Insert Table 2 About Here

The value of the TLI of our hypothetical model was .89. This was below .90, the criterion recommended by Bentler and Bonett (1980; Table 2). This meant that the structural model could be improved significantly (March, Balla & McDonald, 1988). Since the difference between the saturated submodel and our model was significant ($Dc^2_{(2)} = 30.81, p < .01$) we could improve our model by adding a relationship between the constructs (Anderson & Gerbing, 1988). We did not improve the model by adding a direct effect of student disruptive behavior on the core of burnout. In this case the value of the TLI would remain at .89. It is

obvious to assume that personal accomplishment has a direct effect on perceived self-efficacy in classroom management. According to the theory of perceived self-efficacy, enactive mastery performances are the most influential source of efficacy information (Bandura, 1997). The personal accomplishment construct includes the evaluation of these performances (Schaufeli, Maslach & Marek, 1993). We assumed therefore that the way in which teachers evaluate their performances (including their efforts to maintain order in the classroom) has a direct effect on their perceived self-efficacy in classroom management. When we allowed for this direct effect of personal accomplishment on perceived self-efficacy in our model, the value of TLI and CFI exceeded the recommended criterion of .90 (.98, respective .99). This meant that the modified model fit the data well. Since the difference between our modified model and the saturated submodel was not significant ($Dc^2_{(1)} = .26, p = .61$), we chose the most parsimonious model, i.e. the modified model (Anderson & Gerbing, 1988).

In order to determine whether the validity of our modified model extended further than the sample used to modify our hypothetical model, we tested the modified model against a new sample (cross-validation; Cudeck & Browne, 1983). First, the saturated submodel and the null submodel were formulated based on the other half of our split sample ($N = 279$). Pseudo chi-square was not significant ($c^2_{(11)} = 8.68, p = .65$), which meant that the measurement model was adequate. Second, we tested the structural model utilizing TLI and CFI. The value of these indices exceeded the recommended criterion of .90, which meant that the modified model fit the new sample (Table 3).

Insert Table 3 About Here

Figure 2 shows the so-called standardized solution of the modified model, estimated on the basis of the first half of our sample ($N = 279$). The path-coefficients must be interpreted as standardized regression coefficients. Perceived self-efficacy in classroom management appears to be a mediating construct in the effect of student disruptive behavior on the core of burnout. The core of burnout has a strong effect on personal accomplishment, the other dimension of burnout. Besides an indirect effect - through student disruptive behavior - personal accomplishment also has a direct effect on perceived self-efficacy in classroom management. The direct effect (.29) is stronger than the indirect effect (.15).

Insert Figure 2 About Here

Discussion

In this study we tested the hypotheses that (1) student disruptive behavior has a positive effect on burnout among secondary school teachers, that (2) within this effect teachers' perceived self-efficacy in classroom management and discipline plays a mediating role, and that (3) these effects show a negative feedback-loop: when teachers constantly observe student disruptive behavior, their level of perceived self-efficacy in classroom management decreases. This results in a higher level of burnout. In turn, a higher level of burnout results in increased student disruptive behavior, by which the process 'repeats itself'.

The results of the study are partly a confirmation of the hypotheses. Teacher-perceived self-efficacy in classroom management actually is a mediating construct in the positive effect of student disruptive behavior on burnout. However, the way in which the process 'repeats itself' (the feedback-loop) is more complex than we initially assumed. The construct personal accomplishment which belongs to the burnout concept has not only an indirect effect -

through student disruptive behavior - on teacher-perceived self-efficacy. Personal accomplishment also and mainly has a direct positive effect on teacher-perceived self-efficacy. The latter effect is easy to explain using the theory of perceived self-efficacy. This theory states that enactive mastery performances are the most influential source of information on which one bases a judgment about one's own competence (Bandura, 1997). The personal accomplishment construct encompasses the evaluation of these performances (Schaufeli, Maslach & Marek, 1993). Obviously teachers are more likely to base judgments about their self-efficacy on evaluations of their performances (including self-assessments of their own attempts to manage student disruptive behavior) than on the effects of these performances (including student behavior).

The relationships between the indicators of burnout found in this study do not confirm the measurement model initially formulated. Based on Schaufeli and Van Dierendonck (1993), we stated that burnout can be conceptualized as a two-dimensional construct including emotional exhaustion and negative attitudes. Emotional exhaustion was defined as a non-specific burnout dimension associated with somatic complaints and psychological strain, while negative attitudes were seen as a more specific dimension of burnout including depersonalization and reduced personal accomplishment. Although the results of our study indeed suggested that burnout can be conceptualized as a two-dimensional construct, they do not confirm the content of these dimensions. Depersonalization was not found to be a underlying factor of the dimension negative attitudes, but together with emotional exhaustion determines the content of the other dimension of burnout. This result is in agreement with Green, Walkey and Taylor (1991). In a factor-analytical study, they found that a general dimension underlies the subscales 'emotional exhaustion' and 'depersonalization'. Following them, we named this dimension the 'core of burnout' (Walkey & Green, 1992; cf. Friedman,

1993). In our study as well as in Green et al. (1991), personal accomplishment was distinguished from this construct.

These results, in which depersonalization and emotional exhaustion together form one construct, lead us to question what these factors have in common in a conceptual sense. Holland, William and Simon (1994) state that both factors represent a feeling of alienation. No uniform conclusions have been reached this subject. Further research into the conceptual relationships between these factors is required.

Our study has a few limitations. First, the cross-sectional research design makes it impossible to make statements about the direction of causal connections. We strongly recommend testing the model longitudinally. Second, the study is based on self-assessment measures. It is well known that this research strategy is sensitive to social desirability. It is therefore important to develop measures which are not or less sensitive to social desirability and which will allow the same research questions to be answered (Schaufeli, Enzmann & Girault, 1993).

We conclude that our hypothetical model, after modification of the measurement model and the structural model, is valid and empirically sound. The next step would be to test the modified model longitudinally. The indication that the revealed significant relationships between student disruptive behavior, perceived self-efficacy in classroom management, and burnout among secondary school teachers reflects a self-reinforcing cycle, shows that the development and evaluation of specific interventions might be important for teachers. It would be desirable to continue the research which is necessary to reach this result.

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Table 1

Descriptive statistics, reliability estimates (between parentheses), and correlations between the variables (N = 558)

	M	*SD*	1	2	3	4	5
1. Student Disruptive Behavior	13.11	5.24	(.82)				
2. Perceived Self-Efficacy	50.03	8.20	-.62	(.88)			
3. Emotional Exhaustion	16.38	9.06	.30	-.40	(.90)		
4. Depersonalization	5.71	3.94	.26	-.44	.60	(.70)	
5. Personal Accomplishment	27.22	6.29	-.35	.57	-.46	-.47	(.85)

Table 2

Goodness-of-Fit indexes of the models (one half of the sample, $N = 279$)

	c^2	df	p	AGFI	RMR	TLI	CFI
Null model	745.12	15	.000	.23	11.66		
Null submodel	389.29	11	.000	.45	10.47	.41	.49
Saturated submodel	13.02	5	.023	.93	.56	.97	.99
Hypothetical model	43.83	7	.000	.85	1.43	.89	.95
Modificated model	13.28	6	.039	.94	.47	.98	.99

Table 3

Goodness-of-Fit indexes of the models (the other half of the sample, N = 279)

						c^2	df	p
AGFI	RMR	TLI	CFI					
Null model		740.40	15	.000	.25	12.76		
Null submodel		336.70	11	.000	.50	11.18	.49	.55
Saturated submodel		8.68	5	.122	.96	.43	.99	.99
Modificated model		8.81	6	.185	.96	.49	.99	.99

Figure Captions

Figure 1. Hypothetical model

Figuur 2. Modificated model, standardized solution

Figure 1. Hypothetical model

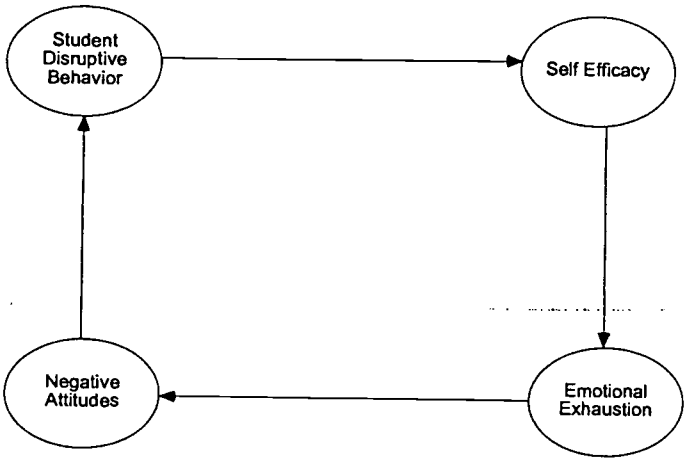
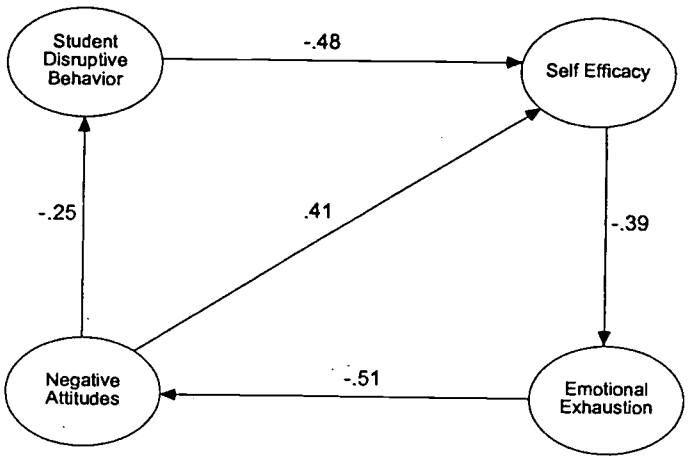


Figure 2. Modificated model, standardized solution



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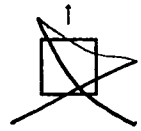
Level 1 ↑ 	Level 2A ↑ ☐	Level 2B ↑ ☐
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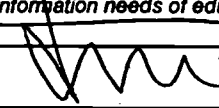
Signature: 	Printed Name/Position/Title: Welko Tomic Ph.D.
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