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ABSTRACT

This paper presents and examines the first school change program focusing on violence and caring based on self-determination theory (Deci & Ryan, 2012). The program aimed at promoting teachers' capacity to cope with violence and enhance caring without becoming more controlling. Comparisons of the effects of a 22-month-long program in three intervention schools and three control schools indicated that the program (a) reduced violent student behavior and controlling teacher behavior and (b) enhanced caring student behavior and active teacher response to violence. The results suggest that exposure to self-determination theory (SDT) concepts may promote a firm, yet non-controlling, teacher response to violence. More generally, the results highlight the potential for incorporating SDT ideas in violence reduction programs.

TEACHERS AND PARENTS operating in stressful or violent contexts often confound limit setting and clear structure with controlling, autonomy-suppressive behavior (e.g., Baumrind, 1991; Grolnick, 2003; Reeve, 2009). Thus, in order to assert their authority, they may, for example, try to dictate every move in the classroom, prohibit dialogue regarding teacher instructions, and use threats of various kinds. In short, in stressful and violent contexts many teachers may feel that it is necessary to amplify the deterrence potential of limit-setting behavior by a generally controlling, power-assertive, mode of teaching. Yet, there is wide agreement that while limit setting and structure are beneficial (e.g., Jang, Reeve, & Deci, 2010; Sierens, Vansteenkiste, Goossens, Soenens & Dochy, 2009), autonomy suppression is harmful (e.g., Assor, Kaplan, & Roth, 2002). Therefore, it is important to develop programs and methods that enable teachers to actively cope with violence without becoming autonomy-suppressive. The purpose of the present paper is to describe the development and testing of one such program.

Many school programs dealing with violent child behaviors emphasize firm teacher response to violence and the cultivation of a positive school climate (e.g., Frey, Hirschstein, Edstrom, & Snell, 2009; Hazler & Carney, 2006; Jimerson & Furlong, 2006; Olweus, 2001). However, to our knowledge, there is no published research on programs combining firm teacher response to violence with an explicit emphasis on minimizing controlling teacher behavior and perhaps even promoting autonomy-supportive teacher behavior. The present paper describes and examines such a program: the Personal and Social Growth (PSG) program. The program is based on SDT (Ryan & Deci, 2000). The theory is briefly presented in the next section, with a focus on two aspects that are particularly relevant to violence-reduction and caring-enhancement programs.

SDT as a basis for a program aimed at reducing violence and enhancing caring

SDT is a macro theory of development, personality functioning, and social behavior (Ryan & Deci, 2000). A central tenet of SDT is that human beings thrive if they feel that their major goals and activities are autonomous rather than controlled by external or internal forces. This experience of perceived autonomy can apply to goals and behaviors that are self-initiated (intrinsic motivation) or are internalized because one fully and freely identifies with them. SDT's notion of internalization distinguishes between two types of internalization: autonomous and introjected. In autonomous internalization, people adopt the goal or the behavior because they understand its inherent value and identify with it. In introjected internalization, the main reason people internalize the goal/behavior is that they feel that their social acceptance, status, or sense of self-worth depends on the adoption and enactment of goals or behaviors promoted by significant others; introjected internalization is experienced as controlling and nonautonomous. Autonomous internalization emerges in contexts that support people's needs for autonomy, relatedness, and competence and do not pressure people to adopt specific behaviors by making them feel that lack of internalization will lead to need-frustration.

Consistent with these general principles, SDT assumes that teachers and students alike tend to internalize socially sanctioned values, ideas, and behavioral expectations if they feel that these ideas and behaviors (and the way they are introduced) do not undermine their basic needs for autonomy, relatedness, and competence and perhaps even support these needs (e.g., Reeve & Assor, 2011). Relative to other motivation theories, SDT puts more emphasis on supporting students' and teachers' need to feel autonomous (Deci, Vallerand, Pelletier, & Ryan, 1991).

In this paper, we propose that there are two SDT features that are especially important in promoting active teacher coping with violence that is not accompanied by autonomy suppression. Below we briefly describe these two features.

(1) *SDT's distinction between structure/limit-setting and autonomy-suppression/control.* SDT strongly emphasizes that clear limits and structure are very different from autonomy suppression and control (Grolnick & Pomerantz, 2009; Koestner, Ryan, Bernieri, & Holt, 1984; Sher-Censor, Assor, & Oppenheim, 2015; Soenens, Vansteenkiste, & Niemiec 2009). The notion of structure and limit setting refers to the specification of clear expectations, the provision of means for meeting the expectations, and when necessary it also includes actions aimed at preventing harmful consequences of problematic child behavior (e.g., Grolnick & Pomerantz, 2009; Vansteenkiste et al., 2012).

The notion of autonomy suppression refers to socializing agents' intrusive behaviors, attempts to force students to do things they do not want to do (via the use of threats of humiliation, conditional regard, or physical punishment), and the suppression of any criticism or dialogue with students (e.g., Assor et al., 2002). Autonomy-suppressive behavior undermines adaptive functioning in various domains and often leads to poor internalization of the socializing agents' expectations and/or defiant behavior (e.g., Soenens & Vansteenkiste, 2010).

We assume that teachers' understanding of the distinction between limit setting/structure and autonomy suppression/control (and the very different consequences of these practices) is likely to help them to set limits and actively cope with violent student behavior without becoming autonomy-suppressive and controlling. But understanding is not enough. Teachers often understand that certain new educational ideas are worthy but still fail to internalize and express them in their behavior (e.g., Reeve et al., 2013). We believe that the next SDT feature to be discussed can help us cope with the internalization and enactment problem.

(2) *SDT's internalization notion: Supporting teachers' basic needs as a key to teachers' motivation to internalize an autonomy-supportive limit-setting approach.* SDT suggests that teachers are more likely to adopt non-controlling limit-setting style if they feel that the reduced reliance on controlling behaviors does *not* threaten their basic needs and even allows increased satisfaction of these needs. For example, teachers need to feel that non-controlling limit setting does not undermine their ability to cope with violence and perhaps even increases this ability (need for competence). Similarly, teachers need to feel that they are not pressured to adopt a non-controlling limit-setting style (need for autonomy).

Based on the foregoing analysis, it appears that an SDT-based program aimed at reduced violence and increased caring should be guided by two principles: (a) learning the distinction between

controlling and non-controlling limit setting and structure and (b) an implementation process that helps teachers to internalize the new distinctions and practices because they feel that these new elements do not threaten their needs and perhaps even support them. In the following section we describe the structure of a program guided by these principles.

An SDT-based Personal and Social Growth (PSG) Program

The PSG program is designed to be carried out with entire elementary school staffs. The program has four components, which are described below.

Internalization-promoting learning of SDT's basic concepts. In the first phase of the program, teachers learn (a) the distinction between limit setting/structure and autonomy suppression/control and (b) autonomy-supportive ways of coping with violence and promoting caring in the classroom (Table 1 shows an example of an autonomy-supportive teacher response to violence). The concepts are introduced within the larger theoretical framework of SDT (Ryan & Deci, 2000). Major sources used in the PSG program were the chapters by Assor (2001, 2004) written specifically for teachers and parents.

SDT concepts are presented in the following sequence in three or four meetings: (a) the motivation and internalization continuum (autonomous, controlled, a-motivation, and defiance), (b) affective and behavioral outcomes of different levels of internalization and motivation, (c) satisfaction and frustration of basic psychological needs: effects on internalization and motivation, and (d) teacher behaviors and classroom features affecting students' needs, motivation, and consequent behavior, including violent and caring behaviors.

To help teachers realize the practical utility of the new ideas, we encourage them to use the needs and motivation concepts in their attempts to understand various classroom events and in the planning of their response to these events. In addition, we try to link the need and motivation concepts to teachers' ongoing experiences in the "here and now" of the group in which the learning occurs. For example, at the end of each meeting, participants are invited to share with the group their experiences of the extent to which their needs for autonomy, competence, and relatedness were supported or thwarted during the meeting.

Evaluation and feedback as a basis for setting change goals. This component includes assessment of students' perceptions of the extent to which their teachers support their need for autonomy, the extent to which teachers actively respond to violence in the classroom (rather than ignore it), and the presence of caring and violence in the classroom. Teachers participated in the selection of the assessment items. In addition, teachers received confidential and nonjudgmental feedback concerning their behavior as perceived by students.

Concrete implementation resources, plans, and training. To promote an implementation process that supports teachers' need for competence, it is important to provide teachers with concrete implementation resources, plans, and training that help them feel that they have the knowledge and means to attain the goals of the change program. These resources included autonomy-supportive ways of promoting the two classroom features that the PSG program focuses on: (a) minimizing classroom violence and (b) enhancing caring among students. Each feature was described in concrete terms and teachers were provided with activities, written materials, and training supporting their ability to implement this feature.

Autonomy-based violence reduction. Teachers are provided with activities and procedures aimed at reducing violence in autonomy-supportive ways and receive guidance on how to implement these activities. Below are some examples:

(a) Teachers are encouraged to conduct class discussions aimed at establishing three rules pertaining to zero tolerance for violence. In these discussions all children are invited to participate, and teachers try to highlight the rationale for the rules established so as to promote autonomous internalization. When a child acts aggressively, the child is immediately and firmly required to discontinue the disruptive behavior. Then, immediately after class, the teacher conducts a conversation with the child that is

Table 1. Example of teacher response to violent student behavior: A student hitting another student when students work in groups on an assignment under teacher's guidance.

Description of the function of the activity in SDT terms	What the teacher actually does and says
During the lesson*:	
Non-controlling limit setting (clear expectations) accompanied by an autonomy-supportive rationale (e.g., Sher-Censor et al., 2015)	The teacher goes to the student and states firmly that she/he should stop hitting immediately because he/she hurts another person and such behavior is not accepted in our school.* This message is not backed by threats, bribes, shaming, or a hostile intonation.
Maintaining students' sense of relatedness to the teacher and the classroom (Niemiec & Ryan, 2009)	The firm message is conveyed quietly so not everyone notes the confrontation, and students' sense of relatedness to teacher and classroom is not seriously undermined.
Creating an opportunity for a conversation supporting autonomous internalization of teachers' expectation regarding violent behavior (e.g., Assor, 2011)	The limit-setting message is accompanied by the setting of time immediately after class to understand better what happened and find ways to avoid such incidents in the future.
Conversation with student after the lesson (see Assor [2011] and Grolnick & Promerantz, [2009]) on the SDT concepts appearing below:	
Perspective taking attempt	"I saw that you were hitting X … what happened … I am not sure I understand why you did that."
Empathic perspective taking: Showing understanding for the motive/reason or feeling motivating the violent action (without accepting the behavior)	"I can see that you did this because you were angry (or wanted to protect yourself, etc.)." This of course depends on what the child said in response to what the teacher said above.
Providing rationale promoting autonomous internalization of the value of avoiding violent response in the future (by arousing empathy to the student being hurt or highlighting the intrinsic value of consideration for others [i.e., identified motivation])	"How do you think your classmate felt after being hurt?" "Do you think this way of dealing with problems is good? Is this the kind of person you want to be? The kind of friends you want to have?"
Encouraging participation and competence in order to develop regularity capacities and autonomous motivation enabling the inhibition of violent response tendencies	"Let us think together what you can do or say when you feel that you want to hit another child." "What can you and I do so you do not need to hit in order to solve problems you have with other kids?"
Building an autonomy-supportive structure and schedule that enhances child competence and autonomous motivation to avoid violent behaviors	"I suggest that we meet again tomorrow and next week to see what you think on what we talked about and how we can find better ways of dealing with things that cause you to hit other kids."

*Note. If the student continues to act violently or offensively the teacher removes him/her from the class without acting offensively. The teacher still indicates that she/he will have a conversation with student later and then follows with all the other acts indicated in the table above.
SDT = Self-determination theory.

aimed to promote autonomous internalization of the limits set on the child. As part of this conversation, the teacher tries to understand the child's perspective, explain the rationale for the expected behavior, and plan together with the child ways of preventing the misbehavior from recurring.

(b) Teachers receive training on how to respond assertively, yet nonvindictively, to highly aggressive child behaviors. For example, teachers are encouraged to look the aggressor directly in the eye, not withdraw, and repeat the rules without getting into a long discussion.

(c) Teachers are taught how to conduct class activities promoting students' autonomous motivation to intervene when one of their peers is exposed to violence, for example, Olweus' (2001) "bullying circle." To enhance autonomous motivation to intervene, activities are structured in ways that clarify the importance of violence-reducing interventions and arouse empathy for the victim. Both rationale and empathy are considered autonomy-enhancing motivators for caring (e.g., Assor, 2011). Moreover, we try to minimize teacher attempts to promote peer intervention based on shame or expectations of

rewards or punishments, which, according to SDT, are not considered autonomy-suppressing motivators promoting introjected internalization or extrinsically motivated compliance (Ryan & Deci, 2000).

Promoting autonomously motivated caring. Teachers are provided with materials and suggestions for activities showing how to promote empathy and autonomously motivated caring among students. For example, routine meetings in which students share personal information that enhance familiarity and empathy. The activities are designed in ways that increase the likelihood that the content shared increases empathic concern rather than anxiety, envy, or rivalry.

Reflecting on and supporting staff's needs and autonomous motivation in groups. As teachers try to apply ideas and activities, they are encouraged to examine how the program and the application process, including the group process, support or threaten their needs and their motivation to apply the program. The examination of the group's and the program's impact on staff's needs is a key aspect of the program, done mostly in the small groups. Doubts and critiques voiced by teachers are considered valuable information regarding features of the program or the group process that may require improvement. Based on those discussions, changes in the program are often instituted. In addition, the groups also provide competence-enhancing learning and consultation regarding the application of specific program components.

Hypotheses

The main hypothesis tested was the following: Exposure to the intervention would result in increased positive difference in favor of the intervention schools' students compared to the control schools' students on all five outcome measures. Specifically, for students' perceptions of their classmates' behaviors, we expected that (a) intervention students would report less violence than would control students at T2 (post-intervention), but not at T1 (pre-intervention), and (b) intervention students would report more caring among classmates than would control students at T2, but not at T1. Similarly, for students' perceptions of their teachers' behavior, we expected that (a) intervention students would report less controlling teacher behavior than would control students at T2, but not at T1, and (b) intervention students would report more active teacher response to violence and more teacher autonomy support than would control students at T2, but not at T1.

In addition, we also examined a hypothesis that may provide information on the possible role of the internalization of SDT principles in promoting desired student and teacher outcomes: Students of teachers showing relatively high levels of internalization of SDT principles presented as part of the program would report more positive outcomes on measures of classmates' and teachers' behavior than would students of teachers showing low levels of internalization.

Method

Design, participants, and procedure

The study uses a quasi-experimental design and questionnaire data collected at two points in time. The program focused mainly on teacher development and guidance and was conducted in three Jewish Israeli elementary schools (grades 1–6) located in a mid-sized city (more than 100,000 inhabitants). There were three control schools with similar demographic attributes and violence levels. Thus, on a survey of violence (Benbenishty, Zeira, & Astor, 2000) completed by students in the city schools, the three intervention schools and the three control schools were placed in the top third of the violence distribution of the city schools. According to the Nurturance Index of the Israeli ministry of education (1996), all these schools serve students coming mostly from moderately low socioeconomic background. Schools' scores on the Nurturance Index are determined mainly by the formal education level of students' parents. Table 2 compares the intervention and control schools' students on grade size, gender composition, students' age, and teachers' years in teaching.

As shown in Table 2, teachers in the control schools had more years of teaching than did intervention schools' teachers. However, intervention schools' teachers also had considerable teaching experience (mean = 10.40 years). Teachers in both the intervention and the control schools were graduates

Table 2. Attributes of the intervention and control schools' students.

Variable		Intervention ($n = 1367$)	Control ($n = 657$)
Percentage of students by grade	3rd	26.5%	25.3%
	4th	24.0%	24.5%
	5th	25.2%	26.4%
	6th	24.3%	23.8%
Students' gender	Male	46.2%	41.9%
	Female	53.8%	58.1%
Students' age	M (SD)	10.29 (1.27)	10.40 (1.24)
Teachers' number of years teaching	M (SD)	15.01 (7.64)	10.40 (6.48)
Teachers' age	M (SD)	39.11 (7.50)	37.10 (9.61)

Note. Significant differences were found between the intervention and control groups in terms of size of grade, x^2 (3) $= 1.37$, ns, students' gender, $x^2(1) = 3.21$, ns, students' age, $t = 1.79$, ns, and teachers' age, $t = 1.26$, ns. Significant differences were detected for teachers' number of years teaching, $t = 9.54$, $p < .001$.

of 4-year teaching colleges. Importantly, the effect of number of years teaching was controlled for in analyses examining program and internalization effects.

The three intervention schools were selected because the head of the city's education department wanted to try a new violence-reduction program and thought that the schools selected need such a program. It should be noted, however, that at the beginning, the schools' principals and staff were not particularly interested in the intervention offered to them, and in fact there was considerable staff ambivalence toward the program in the first year (the implications of this selection process are examined in the discussion section). Before the beginning of the intervention program, both intervention and control schools operated programs based on the directives of the Israel Ministry of Education (2000). These programs emphasize the enforcement of clear limits to violence, together with the cultivation of a positive school climate highlighting the importance of respect, caring, and safety for both students and teachers (Aldor, 2000; Olweus, 2001). However, none of these programs emphasized the importance of teachers' and students' need for autonomy.

In each school, we administered questionnaires assessing the variables assumed to be affected by the intervention via students' reports. The questionnaires were administered to grades 3 to 6 (ages 8–12). Students in grades 1 and 2 did not complete questionnaires because pilot testing indicated that they were not able to comprehend these questionnaires adequately. Students completed the questionnaires at the beginning of the first academic year (T1) and then again in the third year, during the final trimester of the school year (T2). As a result, while students who were in grades 3 and 4 at T1 completed the questionnaires at both measurement points, students who were in grades 5 and 6 at T1 only completed the questionnaire at T1. Similarly, students who were in grades 3 and 4 at T2 only completed the questionnaire at T2. Because of the regulations of the municipality, we were not able to identify individual students. Consequently it was not possible to assess longitudinal effects at the individual-student level.

In the three intervention schools, for each grade level, two classes were randomly sampled by a research assistant not familiar with the school. These classes then completed the questionnaires. The number of students who completed questionnaires in the intervention schools was 645 at T1 and 647 at T2. In each of the three control schools, for each grade level, the questionnaires were completed by one class, based on scheduling and convenience considerations. The number of control group students who completed questionnaires was 311 at T1 and 340 at T2. The rate of students participating in the assessment and completing all the scales (relative to the total number of students in the relevant classes) was very similar in the intervention and control groups and in T1 and T2. These rates ranged between 80% and 82%. In grade 3, we took more time to explain and administer the questionnaires and had two rather than one questionnaire administrator.

Validation sample

A third and different sample of 369 students in grades 3 to 6, from two schools in the same city that did not participate in the intervention assessment, was used to examine the construct validity of the student report measures assessing the intervention program. Data obtained in these schools were collected

prior to the beginning of the intervention project. The questionnaire administered to this sample included scales that allowed construct validation of the intervention study measures as well as other scales aimed at examining another theoretical question, namely, how various types of autonomy affect motivation and emotions in relation to studying.

To assess potential effects of the internalization of SDT principles by teachers, the main teachers of the 24 intervention classes were asked to complete, in the middle of the third year of the program, an open-response questionnaire designed to assess this variable. The internalization questionnaire was completed by 23 main teachers (the questionnaire of one teacher is missing). The person administering the open-response questionnaire was a university student not familiar with the intervention program and not familiar with the school staff or the intervention staff.

The principals of the three schools completed, in the middle of the third year, a brief scale assessing teachers' investment and motivation in relation to teaching and educational activities with students. This measure allowed us to control for possible effects of teachers' general professional investment while examining the effects of teachers' internalization of SDT principles.

Program organization and implementation sequence

Each school had a facilitator who was not one of the staff and was part of the university project team. The facilitators' team met on a monthly basis and was led and supervised by the first and the last two authors. In each of the intervention schools, the first year started with several meetings with the principal, followed by the establishment of a leading team of teachers and the principal. This team met twice monthly to learn the SDT concepts. Following the administration of the baseline questionnaire and the confidential feedback given to almost all the teachers, the leading team discussed the results and the concrete implementation resources and plan for the next year.

In the second year and in the first half of the third year, the program was expanded to include the complete school teaching staff. In each school, two or three teachers' learning and application groups were established and met twice monthly, for 2 hours, after school hours.

These meetings were part of the school in-service schedule. As all teachers in the public school system were expected to take part in ministry-approved in-service programs, and our intervention was approved by the ministry, the time spent in the meetings helped teachers to fulfill their job duties. Yet, the school could have opted for other kinds of in-service programs and teachers were aware of this.

Of the 24 teachers who participated in the program during the whole school application phase (years 2 and 3), 20 participated in the in-service for the entire period. Four teachers participated only in the first year of this phase and were substituted by other teachers who joined the school or returned from a leave of absence. It is important to note that the teachers who did not participate in both years of the application phase did not drop out of the intervention program or the study. Rather, they simply did not teach during the second year of the application phase due to child birth, change of residence location, or leaves taken.

The groups were led by the members of the leading team, which were sometimes accompanied by the university facilitator. The teachers' groups first learned the SDT concepts emphasized in the PSG program (see the description of the PSG program in the introduction). Then, they discussed and attempted to apply the activities included in the third component of the PSG program (see introduction).

The leading team continued to meet once or twice monthly with the university facilitator until the end of the project. In these meetings, the team members discussed issues pertaining to the learning and application groups, as well as pointed to various problems of application and ways of deepening the learning and application process.

Measures

Students' responses to items assessing the following four scales were made on a 4-point Likert-type scale, ranging from 1 (*not true at all*) to 4 (*very true*). Students' scores on each of these variables were computed by averaging the values reported for each of the scale's items.

Perception of the teacher as autonomy-supportive

This variable was examined by items developed by Assor et al. (2002, see also Roth, Assor, Kanat-Maymon, & Kaplan, 2007). The scale consists of seven items. Cronbach's α was .66 (T1) and .70 (T2). Illustrative items were "The teacher asks us which subjects we would like to study" and "The teacher explains why it is important to study certain subjects in school." Research by Roth et al. (2007) supported the construct validity of this scale by showing that, as can be expected, autonomy-supportive teaching assessed by this scale mediates the effect of teacher-reported autonomous motivation for teaching on students' self-reported autonomous motivation for learning. Roth et al. (2007) report Cronbach's α of .68, which is similar to the coefficients obtained in the present study.

Perception of the teacher as controlling

This variable was examined by a scale based on Assor et al. (2002) and Assor, Kaplan, Kanat-Maymon, and Roth (2005). The scale consists of four items. Cronbach's α was .57 (T1) and .61 (T2). Illustrative items were "The teacher tells me what to do all the time" and "The teacher is willing to listen only to opinions that fit her views." Research by Assor et al. (2005) supported the construct validity of this scale by showing that, as can be expected theoretically, this scale was associated positively with students' extrinsic motivation for learning, negative emotions while learning, and a-motivation and negatively with intensive engagement in studying. Assor et al. (2005) report Cronbach's α of .60, which is similar to the coefficients obtained in the present study.

Perception of the teacher as actively responding to violence

This variable was examined by two items adapted from widely used questionnaires focusing on bullying and responses to bullying (e.g., Benbenishty et al., 2000; Fekkes, Pijpers, & Verloove-Vanhorick, 2005; Olweus, 1991). Cronbach's α was .65 (T1) and .74 (T2). The items are "When a student tells the teacher that another student is threatening him or beating him, the teacher tries to solve the problem" and "When a student tells the teacher that another student threatens to hit him, the teacher does nothing" (reverse). Correlations in the validation sample indicated, as expected, that perception of the teachers as actively responding to violence correlated negatively with students' reports of being a victim of physical violence (assessed via Benbenishty, Astor, Zeira, & Vinokur's [2002] questionnaire) and with students' reports of being frequently bullied by the same group of classmates (assessed via Olweus' [1996] questionnaire). The two validation measures had satisfactory internal consistencies (> .70).

Perception of classmates as caring

This variable was examined by a scale developed by Assor (1999). The scale consists of 5 items, with Cronbach's α of .63 (T1) and .67 (T2). The illustrative item was "In my class there are many children who help each other." Results from the validation sample indicated that a student's perception of classmates as caring correlated positively with the number of students choosing to sit next to that student in a sociometric measure administered to the whole class (number of positive nominations, see Coie, Dodge, & Coppotelli [1982], and with feeling of belongingness to class, assessed by a scale based on Goodenow [1993]) and perception of the main teacher as encouraging caring among classmates (based on Solomon, Battistich, Kim, & Watson's [1996] assessment of teachers as promoting prosocial and cooperative behavior). The latter two validation measures had adequate internal consistencies (> .72).

Student reports of physical violence

This variable was assessed by 7 items used by Benbenishty et al. (2000, 2002) to assess being a victim of physical harm and physical threat. Cronbach's α was .66 (T1) and .72 (T2). Illustrative items are "A student used a stone or some object to hurt you" and "a student threatened that she/he would beat you." For each item, participants' indicated how often the relevant behaviors occurred in the last month. Response options were never (1), once or twice (2), or three times or more (3). Students' scores were computed by averaging the responses given to all the items. Correlations in the validation sample showed that, as expected, being a victim of physical violence correlated positively with students' self-reports of being exposed to repeated bullying (as indicated by Olweus' (1996) measure). In addition,

students' reports of being a victim of physical violence correlated positively with the number of children preferring not to sit next to the child in a sociometric measure and negatively with the number of students choosing to sit next to the child (as indicated by a sociometric measure based on Coie et al. [1982] that was administered to the whole class).

Table 3 presents the correlations between the five (student-rated) teacher and class behaviors assessed at Time 1 and Time 2. Also included are the measures of teachers' internalization of SDT principles and teacher investment according to the principal. Inspection of Table 3 shows a similar correlation pattern in both times and suggests that the different scales are distinct from each other.

Teachers' internalization of SDT principles

The assessment of teachers' internalization of SDT principles, concepts, and tenets was based on the notion of deep internalization according to SDT (e.g., Assor, 2011; Ryan & Deci, 2000). SDT considers internalization as relatively deep if it is based on (a) an understanding of the content to be internalized and (b) the valuing and acceptance of this content. For example, teachers are viewed as showing a high level of internalization of the concept of autonomy support if they (a) understand why this is important according to SDT, what practices it includes, and how they can applied in the classroom (i.e., the understanding component) and (b) they think that autonomy support is important in education and for them personally (i.e., the valuing component).

Teachers' understanding and valuing of SDT's concepts were assessed by an open-response questionnaire. The questionnaire starts with a question asking teachers to describe school processes they found meaningful in the last 2 years. Then, teachers are asked whether the program includes features they find especially important for the school or their classroom or for them personally. For each domain, if the answer was positive (i.e., the program was meaningful), teachers were asked to provide concrete and detailed examples. The last section asks the teacher to describe three processes that occurred in the last year: (a) a classroom event that caused her to feel satisfied, (b) a classroom event that caused her to feel disappointed, and (c) a professional issue or a question that she frequently thought about during the last year.

Level of internalization of SDT principles was assessed via the following scoring system: First, responses were scored for understanding and valuing using a 3-point scale (low, medium, high). Then the understanding and valuing score were summed to provide an overall internalization score. A high level of understanding of SDT concepts was indicated by an appropriate use of these concepts in teachers' descriptions of their attempts to cope with specific events or in their planning of classroom activities. For example, following a case of misbehavior by a student, a teacher indicated that while in the past she would only punish hard to deter students from repeating their misbehavior, she now first tries to understand the origins of the problem behavior in students' frustrated needs. A high level of valuing was indicated by statements showing strong positive evaluation of the value of the SDT principles promoted by the program, including statements referring the contribution of the program to one's

Table 3. Correlations among the study measures.

	M	SD	1	2	3	4	5
1. Student perception of classmates caring	2.82	.60		−.33**	.23**	−.25**	.17**
2. Student-reported physical violence	1.33	.37	−.42**		−.24**	.25**	−.05
3. Student perception of teacher as actively responding to violence	3.49	.76	.17**	−.12**		−.40**	.39**
4. Student perception of teacher as controlling	1.98	.70	−.15**	.13**	−.49**		−.28**
5. Student perception of teacher as autonomy-supportive	2.74	.63	.06	.05	.44**	−.40**	
6. Teacher internalization of SDT principles	3.27	.82	−.03	.05	.28	−.36*	.51**

Note. The correlations above the diagonal are based on the first (T1) measurement in both intervention and control groups, except for the last variable: internalization, measured only at Time 2. Correlations below the diagonal are based on the second (T2) measurement in both groups. Correlations for the teachers' internalization measure are based on 23 teacher open-response questionnaires administered at Time 2 to the intervention group teachers; for this measure, we computed the correlation between the teacher score and the mean of the class on the other measures administered. Since not all the teachers in T2 were the same teachers as in T1, we did not compute the correlations of teacher internalization at T2 with the various measures administered in T1.
*$p < .05$. **$p < .01$.
SDT = Self-determination theory.

professional identity or practice. Medium-level understanding was assigned when teachers reported using practices and understandings that are consistent with SDT principles, but without appropriately tying them to specific examples. Medium-level valuing was assigned to teachers showing some appreciation for the program, but with substantial reservations. Low level of understanding was indicated by lack of any example or general statement suggesting understanding or appropriate application of SDT principles. Low-level valuing was assigned when teachers stated that the program was not valuable or did not contribute to them and to the school at all.

Of interest, almost all teachers showing medium or low levels of valuing showed low levels of understanding. Interjudge reliability for level of internalization was adequate (kappa = .71). As can be expected, teacher internalization of SDT principles was positively and significantly associated with students' perception of teachers as autonomy-supportive and negatively and significantly associated with students' perception of teachers as controlling.

Teacher investment and engagement

Teachers' level of investment and engagement in teaching and school activities was assessed by principals in the third year, so it would be possible to control for this variable in the assessment of the effects of internalization of SDT principles on desired outcomes. This was done in an attempt to rule out the option that the effects of internalization level could be ascribed to another important teacher attribute. Investment and engagement levels were rated by the principal in relation to seven teacher behaviors. The items were adapted from validated teacher rating scales assessing students' engagement (e.g., Furrer & Skinner, 2003; Reeve, Jang, Carrell, Jeon, & Barch, 2004). Item examples are "invests considerable time in school activities" and "invests very little in teaching" (reverse). Each behavior was rated on a 5-point scale (*never* to *most of the time*). Cronbach's α was .75.

Results

Analytical approach

The longitudinal effects of the intervention program were examined via generalized estimating equations (GEE; Liang & Zeger, 1986), using SPSS version 21 (Nooraee, Molenberghs, & Van den Heuvel, 2014). GEE provides efficient and unbiased parameter estimates, standard errors, and asymptotic test statistic for a wide variety of statistical models (e.g., analysis of variance, linear regression) in part because they permit specification of a working covariance matrix that accounts for the form of within-subject correlation of responses on dependent variables of many different distributions (Liang & Zeger, 1986). Like hierarchical liner models (HLM; Raudenbush, Bryk, Cheong, & Congdon, 2001), GEE models account for variation due to within-person and between-person factors. Unlike HLM, GEE is not restricted to specific assumptions concerning the nature of the variance–covariance structure. Thus, a major advantage of the GEE model is its robustness to the misspecification of the covariance structure. Another advantage of GEE is that this method does not assume normality of the dependent variable. This is important to the current research as some of the dependent variables (e.g., physical violence) are count variables that fall into what Harrison (2002) referred to as "limited range variables" or have distributions that are positively skewed. Limited range variables rarely distribute normally, which can bias results. Moreover, in the present study all the measures are positively skewed (especially the scale of student-reported active teacher response to violence). GEE uses the Wald chi-square statistics to estimate model fit. As the GEE does not provide an estimate of effect size, we have derived the effect size using ordinary least square approach (partial-$\eta2$); this, however, underestimates intervention effect (e.g., Serfaty et al., 2009).

Examining the program effects by comparing the intervention and control groups across time

The independent factors examined were (a) time of measurement (pre-intervention vs. post-intervention) and (b) degree of exposure to the program (exposed [intervention schools] vs. not exposed [control schools]). We expected that the positive effects of the program would be reflected in an interaction between the factor of

time of measurement and degree of exposure to the program (intervention vs. control groups), so that the discrepancy between the intervention and the control group will increase after 2 years of intervention.

Results of GEE analyses reveal significant group effects for perception of classmates as caring ($x^2 = 10.09$, $df = 1$, $p < .01$, $p\eta^2 = .005$), physical violence ($x^2 = 6.96$, $df = 1$, $p < .01$, $p\eta^2 = .004$), and perception of teacher as autonomy-supportive ($x^2 = 8.96$, $df = 1$, $p < .01$, $p\eta^2 = .005$), and a significant time effect for perception of teacher as actively responding to violence ($x^2 = 4.81$, $df = 1$, $p < .05$, $p\eta^2 = .003$). These main effects were than qualified by significant group × time interactions.

GEE analyses further show that, as expected, the group × time interaction effects were significant for perception of classmates as caring ($x^2 = 25.22$, $df = 1$, $p < .001$, $p\eta^2 = .013$), physical violence ($x^2 = 5.96$, $df = 1$, $p < .05$, $p\eta^2 = .003$), perception of the teacher as actively responding to violence ($x^2 = 8.06$, $df = 1$, $p < .01$, $p\eta^2 = .004$), and perception of the teacher as controlling ($x^2 = 11.37$, $df = 1$, $p < .01$, $p\eta^2 = .006$) but not for perception of teacher as autonomy-supportive ($x^2 = 0.46$, $df = 1$, NS, $p\eta^2 = .000$). The four significant interaction effects reported above emerged also after controlling for the effects of students' gender, students' age, teachers' years teaching, and teachers' age.

Table 4 presents post hoc comparisons for students' perceptions of class and teacher behaviors as a function of measurement time and degree of exposure to program. As can be seen from Table 4 and from the figures, the pattern of all the significant interactions was as expected. That is, following exposure to the program and compared to students in the control group, students in the intervention group reported more classroom caring and more active teacher response to violence, as well as less classroom violence and less controlling teacher behavior. As can be seen in the right column of Table 4, the difference between the intervention and control groups in the post-intervention (T2) measurement was significant for all four measures. Of importance, as can be seen from Time 1 comparisons in Table 4, none of the differences between the measures was significant before the intervention started. As shown in Table 4, in the post-intervention measurement, students in the intervention group also perceived their teacher to be significantly more autonomy-supportive relative to students in the control group. However, it appears that the interaction effect was not significant because the intervention students also reported higher (although nonsignificant) teacher autonomy support at Time 1, and consequently improvement due to the program was not large enough to attain statistical significance.

The effects of exposure to the intervention program (relative to nonexposure) are depicted in Figure 1 (effects on autonomy support are not presented because the interaction was not significant).

Comparisons across time conducted separately within the intervention group and within the control group are presented in Table 5. As shown in Table 5, within the intervention schools, there was a significant increase in students' caring for each other and in teachers' active response to violence, as well as a significant decrease in controlling teacher behavior.

Table 4. Students' perceptions of class and teacher behaviors as a function of measurement time and exposure to program: GEE post hoc comparisons.

Measure examined	T1			T2		
	Intervention M (SE)	Control M (SE)	x^2 (df = 1)	Intervention M (SE)	Control M (SE)	x^2 (df = 1)
Student perception of classmates as caring	2.84 (.02)	2.89 (.03)	1.64	2.98 (.02)	2.74 (.03)	34.97***
Student-reported violence	1.35 (.01)	1.35 (.02)	0.02	1.31 (.01)	1.40 (.02)	13.38***
Student perception of teacher as actively responding to violence	3.43 (.03)	3.47 (.04)	0.51	3.61 (.03)	3.44 (.04)	12.34***
Student perceptions of teacher as autonomy-supportive	2.68 (.02)	2.61 (.03)	2.53	2.68 (.02)	2.57 (.03)	7.17**
Student perception of teacher as controlling	1.94 (.03)	1.87 (.04)	2.12	1.81 (.03)	1.97 (.04)	11.53**

Note. Top figures are means and figures in parenthesis are standard errors (*SE*). T1 intervention group sample (listwise deletion of missing cases) = 611; T1 control sample = 290; T2 intervention sample = 642; T2 control sample = 337.
**$p < .01$. ***$p < .001$.
GEE = generalized estimating equations.

These differences suggest that, on three of the four measures showing positive program effects relative to the control group, the effects occurred, at least partly, due to program-related improvement within the intervention group. In contrast, changes across time in the control group were very minimal or not in the desirable direction, suggesting that the passage of time itself was not associated with improvement in the teacher and classroom variables assessed.

Exploring the effects of internalization of SDT tenets and concepts

To explore potential internalization effects, we used the GEE procedure, comparing scores on the five study measures among three teachers' groups: (a) a high-internalization post-intervention group including classes from the three intervention schools whose teachers' internalization scores were above the median ($n = 13$ classes and 253 students), (b) a low-internalization post-intervention group including classes from the three intervention schools whose teachers' internalization scores were below the median ($n = 10$ classes and 215 students), and (c) a baseline pre-intervention (T1) group including classes from the intervention schools whose teachers were not exposed to the program ($n = 23$ classes and 410 students). The classes in the three groups were matched on the variables of grade level and school affiliation.

In this analysis, in addition to the factors of class and school affiliation, we also controlled for teacher investment according to principal report by entering it as an additional predictor. Thus, we examined whether, despite the relatively limited exposure to SDT concepts, the high-internalization group would obtain more desirable scores on the five outcome measures relative to both the low-internalization group and the baseline (no exposure) group. Results of the relevant comparisons, as well as mean group scores are presented in Table 6.
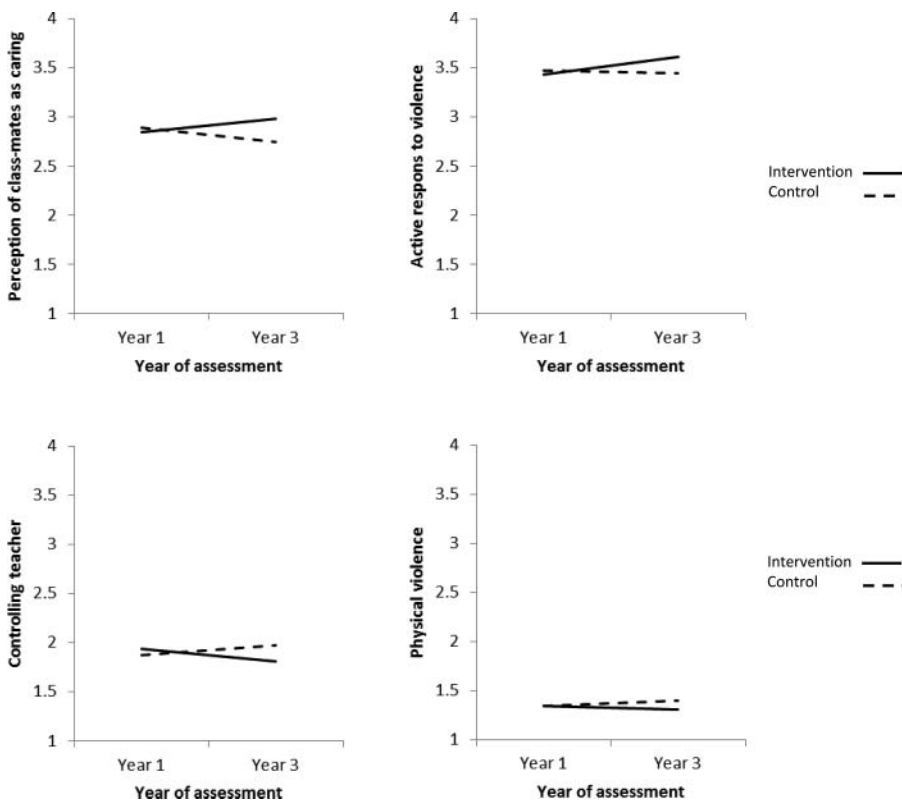

Figure 1. Students' perceptions of classroom and teacher as a function of exposure to the program and time of measurement.

Table 5. The difference between Time 1 and Time 2 measurement within the intervention and the control groups: GEE post hoc comparisons.

The five outcome measures assessed	Intervention x^2 ($df = 1$)	Control x^2 ($df = 1$)
Student perception of class-mates as caring	16.51[***]	10.86[**]
Student reported physical violence	3.80	2.49
Student perception of teacher as actively responding to violence	20.61[***]	0.14
Student perceptions of teacher as autonomy-supportive	0.01	0.72
Student perception of teacher as controlling	11.04[**]	3.09

Note. [**]$p < .01$. [***]$p < .001$.
GEE = generalized estimating equations.

Table 6 shows that positive internalization effects emerged consistently for the variables of teachers' active response to violence, teachers' autonomy support, and teachers' controlling behavior. Figure 2 presents the means of the three groups on teachers' active response to violence.

Discussion

The program described and examined in this paper (i.e., the PSG program) is the first school change program in the violence and caring domain that is explicitly based on the learning and application of SDT (Ryan & Deci, 2000) principles by teachers, including a special emphasis on the concepts of autonomy and minimization of controlling behavior. Most extant programs dealing with violent or antisocial child behaviors do not include the notion of autonomy and control-minimization as a major program feature (e.g., Jimerson & Furlong, 2006). Therefore, a violence-reduction program assigning a central role to autonomy and the negative effects of controlling behavior (in addition to an active response to violence) might be of special interest.

Summary of results

Analyses examining the effects of the program in the intervention schools compared to control schools (Table 3 and Figure 1) suggest that the program (a) enhanced caring student behavior and active teacher response to violence and (b) reduced physical violence among students and controlling teacher behavior. Thus, the program showed the expected (significant) effects on four of the five outcome

Table 6. Students' perceptions of class and teacher behaviors as a function of teachers' level of internalization of SDT principles.

Outcome measure assessed	Pre-intervention baseline group M (SE)	Post-intervention low-internalization group M (SE)	Post-intervention high-internalization group M (SE)	x^2 ($df = 2$)
Student perception of classmates as caring	2.82(.05)	3.05(.06)	2.95(.06)	32.78[***][abc]
Student-reported physical violence	1.33 (.03)	1.28 (.04)	1.29(.03)	8.46[*][a]
Student perception of teacher as actively responding to violence	3.49 (.09)	3. 52(.09)	3.73(.09)	19.11[***][bc]
Student perception of teacher as autonomy-supportive	2.74 (.07)	2.56 (.08)	2.87(.08)	26.23[***][abc]
Student perception of teacher as controlling	1.91(.08)	1.88(.08)	1.70 (.08)	16.45[***][bc]

Note. Top figures are means and figures in parenthesis are standard errors (*SE*).
[a]Significant differences between pre-intervention baseline group and post-intervention low-internalization group.
[b]Significant differences between pre-intervention baseline group and post-intervention high-internalization group.
[c]Significant differences between post-intervention low-internalization group and post-intervention high-internalization group.
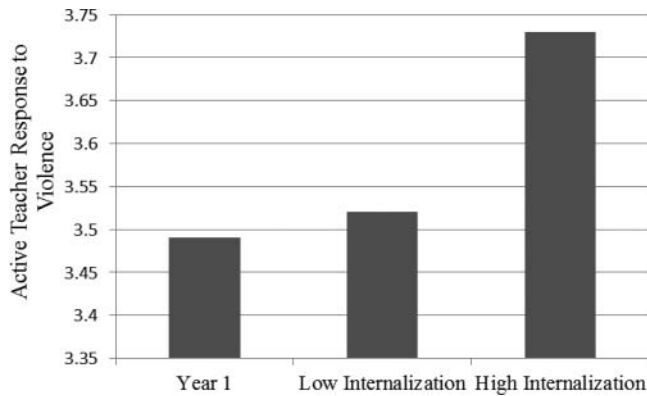SDT = Self-determination theory.

Figure 2. Active teacher response to violence as a function of teachers' level of internalization of self-determination theory concepts.

measures examined. The program effect (relative to the control group) on autonomy-supportive teacher behavior was positive but not significant.

Analyses exploring the potential role of internalization of SDT principles showed that teachers characterized by high-level internalization of SDT principles were (a) significantly more inclined to respond actively to students' violence than teachers showing low internalization levels or teachers not exposed to the program, (b) significantly less inclined to behave in a controlling manner than teachers showing low internalization levels or teachers not exposed to the program, and (c) significantly more inclined to be autonomy-supportive than teachers showing low internalization levels or teachers not exposed to the program.

Implications

The finding that exposure to SDT principles (assigning a central role of autonomy and control-minimization) is associated with (a) increased active teachers' response to students' violence and (b) decreased controlling behavior, appears particularly important. There is a common perception (indeed a misperception) that loosening adults' control of children's behavior means giving children freedom to behave as they want, including allowing or ignoring noncaring and violent behavior. As was already noted, SDT's concept of minimizing controlling, autonomy-suppressive behavior does not imply freedom to thwart others' needs. Rather, it refers to the importance of considering children's need for autonomy in order to reduce defiance and poor internalization as well as enhance children's motivation to deeply internalize the importance of nonviolent and caring behavior (e.g., Assor, 2011; Soenens et al., 2009).

Consistent with this view, the findings concerning the program's effects across time (relative to the control group) suggest that teachers' exposure to the notions of autonomy and the negative effects of controlling behavior does not enhance their tendency to ignore or allow violent student behavior, nor does it undermine their capacity to actively react to student violence. Moreover, the finding that internalization of SDT principles was associated with a more active teacher response to violence and less controlling behavior suggests that understanding of and identification with the principle of minimizing autonomy-suppressive behavior may strengthen teachers' capacity to actively respond to antisocial behaviors.

To the extent that future studies would replicate the above findings, further research may explore the processes underlying the positive effects of teachers' deep internalization of the notion of autonomy and minimizing controlling behavior on their coping with violent behavior. Perhaps increased understanding of the negative psychological effects of coercive and controlling behavior leads to greater sensitivity to the suffering that children inflict on each other when they behave in a violent way. As a result, teachers may feel that it is truly important to promptly and seriously address violent and noncaring behavior among students.

In the present study, active teacher response to violence was negatively related to controlling teacher behavior and positively related to autonomy-supportive teacher behavior. Conceptually similar

findings were obtained in past research showing that teachers and parents can support students' autonomy while simultaneously setting limits and structure, as well as refusing to ignore breaches of adults' expectations (e.g., Farkas & Grolnick, 2010; Grolnic & Pomerantz, 2009; Jang et al., 2010; Sierens et al., 2009; Soenens et al., 2009; Vansteenkiste et al., 2012). However, this is the first research addressing these aspects of teacher behavior in relation to violence among students.

How can we explain the finding that the program did not produce a significant increase in autonomy-supportive teacher behavior? One possible explanation is that it might be more demanding and even threatening for teachers to become more autonomy-supportive than to reduce controlling behavior. Teachers who learn to structure and set limits in ways that are non-controlling may find this practice fairly rewarding and nonthreatening. In contrast, autonomy-supportive behaviors such as providing choice, taking students' perspectives, and engaging in frequent dialogue with students may be experienced as threatening and/or simply too exhausting and demanding. Thus, it appears that future programs may need to devote special attention to the teaching of autonomy-supportive practices.

While the PSG program did produce desirable and significant changes on four of the five indicators examined, its effects were small. Therefore, it appears that the achievements of the program were limited and there is a need for improvements and replications. How can we explain these limited effects? One possible explanation pertains to the length of the program and its intensity. In the first academic year we worked only with the leading team of each school (4 or 5 teachers including the teacher and educational counselor). Consequently, the whole staff was exposed to the program only during the 8 months of the second school year and the first 6 months of the third year (until the post-test started). This means that the complete staffs were exposed to the program for only 14 months. There is considerable research showing that in order for a comprehensive school change program to have sizeable effects, the program should be fully and consistently implemented for more than 2 years (e.g., Borman, Hewes, Overman, & Brown, 2003; Hazler & Carney, 2006; Solomon, Battistisch, Watson, Schaps, & Lewis, 2000; Frey et al., 2009). Future research may examine whether implementation of the PSG program for more than 2 years would produce more sizable effects.

Another factor that may account for the small effects of the program is the increased focus of the ministry of education and the district superintendent on schools' achievement tests results. As noted by considerable research (e.g., Ryan & Brown, 2005; Ryan & Weinstein, 2009), "pressures from above" often create considerable stress among principals and teachers. And, as noted by Frey and Nolen (2010), teachers who are subjected to "pressure from above" tend to invest little effort in their educational roles, sometimes also using considerable power assertion. Thus, it is possible that the pressures coming from the ministry of education interfered with teachers' capacity to learn and apply the SDT principles they were exposed to.

Results obtained for the control schools' students appear to provide indirect evidence for the possible negative effects of the general educational atmosphere during that period in the school district. Thus, the pattern manifested by the control group in Figures 1 through 4 shows a consistent deterioration from year 1 to year 3 on all four teacher-behavior and student-behavior indicators depicted in these figures. Of importance, the intervention schools do not show a similar trend; in fact, they actually show an improvement from the pre-intervention to post-intervention on all four measures. However, it is important to note that, as noted in Table 5, for both the control and the intervention students, the changes on reported violence from T1 to T2 were not statistically significant.

It is possible, then, that the intervention program actually served as a stress-buffering factor, reducing the negative effects of the increased ministry-based achievement pressures and allowing teachers to focus on educational features that do not directly relate to measured achievements. Future research may examine whether under a less stressful general educational background, the program can have larger effects.

The present research also explored the role of teachers' internalization of SDT principles in promoting the expected changes in student-reported teachers' and classmates' behaviors. Results are consistent with the hypothesis that internalization of SDT principles may account for desirable changes only in the case of the three student-reported teachers' behaviors examined, but not in the case of two student-

reported classmates' behaviors examined. How can we explain the finding that internalization of SDT principles apparently did not promote more desirable classmates' behaviors (as indicated by students' reports)? Assuming that students' reports of classmates' and teachers' behavior reflect actual behavior, one possible explanation may again involve the relatively short time span of the program. Perhaps it takes time for the positive changes in teacher behaviors to affect students' behaviors. Another possible explanation is that students' behaviors are affected by a number other important sources in addition to teachers' behaviors.

The present research of course does not conclusively demonstrate that it is important to expose teachers to an approach highlighting the importance of minimizing controlling behavior or supporting autonomy. Thus, the positive findings may also be attributed to other aspects of the program or the SDT theory, including the emphasis on being sensitive to the child's needs for caring and relatedness. These aspects are also emphasized by other theories; for example, attachment theory (e.g., Pianta & Nimetz, 1991). The importance of control minimization or autonomy as key aspects of the program should be further examined in careful future research. In addition, it is possible that the affiliation of the program with a respected university enhanced the effectiveness of the program. Therefore, it is important to examine the effectiveness of the program in research conducted with nonuniversity agents. The PSG program was not designed only for highly stressful or violent contexts. But it is probably more needed in such contexts and therefore may also be more effective. Future research may examine the effects of this program in relatively less violent contexts. In addition, future research may also assess teachers' experience of each component of the program, so that each component might be improved.

Limitations

The present study has several limitations. First, we relied only on students' reports in the assessment of the major outcome variables. This is an important limitation because, for example, concepts such as "caring" and "violence" may be interpreted quite differently by boys and girls. Therefore, it is important that future research would also use observation methods and reports by teachers.

Second, the lack of random assignment to experimental versus control conditions may bias the results. Thus, it is possible that the schools selected for the intervention might have had some attributes that made it easier to work with them. However, as these schools had significant violence problems, and such problems often make teachers more controlling, it would seem that the task of promoting non-controlling responses to violence would be especially difficult in these schools. Third, one may claim that the PSG program is mainly, perhaps only, relevant to schools with serious violence problems. As school violence is a fairly widespread problem (e.g., Jimerson & Furlong, 2006), it appears that the program is likely to be relevant to many schools. Yet, future research should examine the relevance of this program also to schools with low levels of violence.

Fourth, the present study used a between-subject design to assess program effects across time because it was not possible to assess self-reported outcomes at grades 1 and 2. Future research using observational measures and teacher reports may follow students from the first grade to sixth grade and thus allow the use of more informative and rigorous within-subject longitudinal designs. Such research may also attempt to follow students into middle schools, thus providing information on possible long-term effects that persist after students have left the intervention schools. Fifth, although we did assess the extent to which teachers understood the relevant SDT concepts, it would be useful to also include indicators of the quality of program implementation.

Sixth, the results might be more applicable to contexts similar to the present sample in terms of cultural values. Previous research has shown that nonreligious Jews in Israel are more inclined than other Middle Eastern and Asian cultural groups to value autonomy more than hierarchy (e.g., Schwartz, 2006). Consequently, it is possible that interventions emphasizing autonomy-supportive methods (such as PSG) are particularly effective in autonomy-valuing cultural contexts. The potential cultural specificity of the PSG program can be viewed as both a strength and a limitation. On one hand, the program is likely to be particularly effective in similar cultural contexts. However, it may be less effective in cultural

contexts that are more hierarchical. Therefore, it is important that future research would examine the effects of the PSG program in cultural contexts that value hierarchy more than autonomy.

Seventh, despite evidence for the construct validity of the internalization measure, it is still possible that our assessment overemphasized the role of teachers' capacity to verbalize their understanding of SDT principles, ignoring tacit, action-oriented aspects of internalization (e.g., Argyris & Schön, 1978; Eraut, 2000). Future research may attempt to assess the understanding component of internalization in ways that are less conceptual and more action-related. Another reason for developing a tacit knowledge internalization measure is that it may be applicable also at the pre-intervention assessment, since it examines whether teachers use practices and considerations consistent with SDT principles without actually using formal SDT terms. The administration of a tacit internalization measure to teachers not exposed to the PSG program (in pre-intervention and control schools) would allow the inclusion of this measure in the full design, which would then enable a more direct assessment of the possible role of internalization in promoting desired changes.

Finally, it is possible that the positive results may be partially ascribed to principals' initial interest in the project. Research on school change suggests that such interest is a necessary but not a sufficient condition for creating positive changes (e.g., Stegö, Gielen, Glatter, & Hord, 1987). Yet, it is important to try to replicate the project with a design controlling for the effect of such initial interest.

Conclusion

Overall, the findings of the present study suggest that an SDT-based program—emphasizing the importance of students' and teachers' need for autonomy—can help teachers cope with violence while at the same time becoming less controlling. Moreover, such programs may also increase caring in classrooms. More generally, the results highlight the potential for incorporating SDT ideas in violence-reduction and caring-enhancement programs.

Acknowledgment

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