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Complementary roles of care and behavioral control in classroom management: The self-determination theory perspective

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ABSTRACT

This study examined how classroom management practices—care and behavioral control—were differentially associated with students' engagement, misbehavior, and satisfaction with school, using a large representative sample of 3196 Grade 9 students from 117 classes in Singapore. Results of hierarchical linear modeling showed differential relations. After controlling for students' gender and socioeconomic status, both care and behavioral control were positively related to student engagement. Moreover, behavioral control was a significant negative predictor of classroom misbehavior and care was a significant positive predictor of satisfaction with school. Our findings underscore the importance of blending care and behavioral control to achieve multiple goals of classroom management.

1. Introduction

Accumulating research has revealed that classroom management is a critical component of effective teaching (e.g., Brophy, 2006; Carter, Cushing, Sabers, Stein, & Berliner, 1988; Doyle, 1990; Emmer & Stough, 2001; Good & Grouws, 1977; Jones, 1996; Soar & Soar, 1979; Torff & Sessions, 2005; Wang, Haertel, & Walberg, 1993), but too many teachers were distressed with the ineffectiveness of classroom management. For example, teacher stress and negative emotion are often related to student misbehavior (e.g., Blase, 1986; Emmer, 1994; Feitler & Tokar, 1992). In search of the causes of and the cures for the persistent problem of engaging student learning and reducing misbehavior, researchers have adopted a broadened view of classroom management which encompasses not only using control to reduce misbehavior, but also establishing good teacher–student relationships, creating supportive classroom environments, and responding to students' needs for love, respect, and sense of belonging to school (e.g., Allen, 1986; Battistich, Solomon, Watson, & Schaps, 1997; Emmer & Gerwels, 2006; Emmer & Stough, 2001; Jones, 1996; Pianta, 2006; Ritter & Hancock, 2007; Watson & Battistich, 2006).

This broadened view takes into consideration the student-centered and humanistic approach to classroom management, emphasizing care, guidance, and self-discipline (Freiberg, 1999). It is also consistent with the prevailing student-centered approach to instruction. However, the humanistic approach to classroom management has not kept pace with instructional reforms. As Morse (1994) commented: "It is sad to note that proposals for school reform or special education inclusion seldom give attention to conditions which would facilitate the school as a setting for continuity of caring for children." (p. 132). In practice, conceptions of classroom management typically remain rooted in behaviorism and the most common approach to classroom management is controlling student misbehavior (McCaslin & Good, 1992).

Understanding how care and behavioral control are related to student outcomes has become an increasingly important topic in classroom management and schooling (Jones & Jones, 2004). Especially when recommendations for school reforms are being suggested, research on this issue assumes a particularly important role. However, empirical research that examined the roles of both care and behavioral control is relatively scarce in the classroom management literature. Accordingly, the present study views care and behavioral control as complementary components of classroom management and seeks to provide empirical support for this view. We focus not only on how care and behavioral control are differentially related to behavioral outcomes (misbehavior and engagement), but also to affective outcomes (satisfaction with school).

2. Theoretical framework

In this article, we used self-determination theory as a theoretical framework for understanding the roles of behavioral control and care in student outcomes. Self-determination theory emphasizes the significance of three basic psychological needs in people's self-motivation and healthy psychological growth—the needs for competence, relatedness, and autonomy. According to self-

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determination theory, social-contextual conditions that provide people with the opportunity to satisfy their basic needs lead to enhanced motivation, optimal functioning, and psychological well-being, whereas environmental factors that thwart these basic needs result in opposite outcomes (Deci & Ryan, 2000; Ryan & Deci, 2000).

The application of motivation theories to management practices is not new. As early as 1950s, Liken (1953) argued that motivation is the core of management in organizational settings. However, motivation theories have seldom been linked to management practices in classroom settings despite recent advances in research and theorization. In the current study, we provide a self-determination perspective on classroom management. There are a number of benefits for doing so. First, self-determination theory helps to resolve the empirical and conceptual confusion of the control construct in the classroom management literature by deepening our understanding of the differences between behavioral control and external control. In addition, it provides a reasonable explanation of why behavioral control does not undermine an individual's sense of autonomy (Deci, 2008). Second, self-determination theory provides a psychological explanation of the beneficial effects of teacher care from the needs satisfaction perspective. Third, self-determination theory provides a theoretical lens for researchers and teachers to view classroom management from an adaptive motivational and positive psychology perspective by emphasizing the importance of moving beyond the traditional function of classroom management (i.e., reduction of misbehavior) to include other key indicators of effectiveness such as engagement and psychological well-being.

3. Teacher control

3.1. Conceptualization of control

The effectiveness of the control approach to classroom management has been hotly debated. Some empirical findings show that teacher control could reduce misbehavior and increase desirable behavior (e.g., Nicholls & Houghton, 1995), whereas other findings show that controlling contexts undermined intrinsic motivation and produced passivity (Deci, Koestner, & Ryan, 1999; Lewis, Romi, Katz, & Qui, 2008; McCaslin & Good, 1992; Ryan & La Guardia, 1999). To answer the question of whether control is desirable or not, it is important to make a clear distinction between external control and behavioral control. External control refers to the use of salient rewards and deadlines to coerce or pressure individuals to think, behave, or feel in certain ways. The opposite of external control is autonomy support, which refers to conditions that facilitate the experience of volition, choice, and freedom (Vansteenkiste, Lens, & Deci, 2006). Therefore, external control is expected to undermine students' sense of autonomy and intrinsic motivation.

In this article, teacher control was defined and operationalized as teachers' attempts to stop, reduce, and correct misbehavior, and to maintain desirable behavior. This operationalization of teacher control refers to behavior control but not external control because it aims at regulation of student behavior by rules and expectations to create an orderly environment. Behavior control is related to conformity to social rules and expectations. In the educational psychology and self-determination literature, a contextual variable closely related to the concept of behavioral control is structure, which refers to information concerning expectations, guidelines, contingencies, or limits that are present and operative within some social context (Connell & Wellborn, 1991; Deci, 2008; Skinner & Belmont, 1993; Reeve, 2002). The term "structure" is more often used in instructional contexts, whereas the term "behavioral control" is frequently used in classroom management contexts. Because both behavioral control and structure are concerned about providing consistent rules, and expectations, Deci (2008) argued that behavioral control is closer to the concept of structure than to the concept of external control given the way they are defined in self-determination theory.

Why would behavioral control and structure not undermine students' sense of autonomy? Self-determination theory provides an explanation for this issue. Social interactions are governed by rules and regulations. Structure and behavioral control provide rules, expectations, guidelines, and contingencies within some social context. One central issue in self-determination theory is internalization and integration of social rules and values with the sense of self such that social values can be endorsed by the self, and thus is experienced as self-determined (Ryan & Deci, 2000). According to self-determination theory, acting in accordance with social norms is the process of subjective endorsement and ownership of these norms. When social norms and expectations are endorsed by the individual, conforming to these norms is likely to be experienced as self-determined (Vansteenkiste, Zhou, Lens, & Soenens, 2005). Therefore, behavioral control and structure could facilitate the endorsement of social rules and would not diminish the sense of autonomy.

3.2. Empirical evidence and hypotheses

There is evidence that behavioral control was associated with decreased externalized problem behaviors of their children (Barber, Olsen, & Shagle, 1994). In addition, Skinner and Belmont (1993) found that structure provided by the teacher was positively related to students' behavioral engagement. Consistent with self-determination theory, Taylor and Ntoumanis (2007) obtained evidence that the relation between structure and positive student outcomes was mediated by students' perceptions of autonomy and competence. Furthermore, Skinner, Furrer, Marchand, and Kindermann (2008) found that teachers' care, provision of structure, and autonomy support were positively related to engaged behavior and emotion, and were negatively related to disaffected behavior and emotion. Jang and Jeon (2008) found that both autonomy support and structure make important contribution to supporting students' classroom engagement. In light of our definition and the findings reviewed above, we therefore hypothesized that teacher control would be negatively related to student misbehavior and positively related to student engagement in the classroom.

4. Teacher care

4.1. Conceptualization of care

Teachers' care, warmth, support, and involvement are highlighted in the classroom management (e.g., Jones & Jones, 2004), developmental (e.g., Steinberg, Darling, & Fletcher, 1995) and educational psychology literature (e.g., Furrer & Skinner, 2003; Wentzel, 1997). The meanings and measures of these concepts often overlap with one another. For example, Diamond et al. (2005) defined teacher care as the child's perceived care, warmth, understanding, and affection. Chang (2003) used the term teacher warmth to refer to the qualities of a teacher who cares about, listens to, likes, respects, and understands their students. Midgley, Feldlaufer, and Eccles (1989) defined teacher support as students' perceptions of their teachers' care, friendliness, and fairness. Self-determination theorists used the term involvement to refer to teachers' interest in, emotional support for, and affection toward their students (Connell & Wellborn, 1991; Skinner & Belmont, 1993). From the self-determination perspective, teacher involvement leads to positive student outcomes because it satisfies students' basic needs for relatedness (Deci & Ryan, 2000; Ryan & Deci, 2000). In the present study, we use the umbrella term teacher

care to refer to teachers' sensitivity to students' needs for relatedness by showing concern, friendliness, openness, acceptance, and respect toward their students (Rogers & Webb, 1991).

4.2. Empirical evidence and hypotheses

The relations between teacher care and positive student outcomes have received considerable empirical support. For example, teacher care was found to be positively related to students' engagement (e.g., Hughes, Zhang, & Hill, 2006; Roeser, Eccles, & Sameroff, 2000; Skinner & Belmont, 1993; Wentzel, 1997). In addition, good teacher–student relationships and supportive classroom environments were found to foster students' sense of identity, belonging, attachment, and satisfaction (e.g., Beck, 1992; Furrer & Skinner, 2003; Perez, 2000; Roeser, Midgley, & Urdan, 1996; Rogers & Webb, 1991). Based on the studies reviewed above, we hypothesized that care would be positively related to students' engagement and satisfaction with school life.

5. Complementary roles of care and behavioral control in classroom management

In the classroom management literature, there is increasing consensus among researchers that care and behavioral control are not mutually conflicting practices and hence it is advisable to blend care and behavioral control in classroom management (Bowers & Flinders, 1990; Jones, 1996; McLaughlin, 1991). The idea of blending care and behavioral control is based on the assumption that care and behavioral control have their specific pathways in relation to different student outcomes that are key concerns in classroom management. However, empirical support for this assumption is relatively scarce as very few studies have examined behavioral control and care simultaneously. To address this gap in the literature, we examined whether and how behavioral control and care accomplished their complementary roles by testing their differential relations to multiple outcomes, including students' misbehavior, engagement, satisfaction with school life. If either control or care *alone* is related to *all* of the three outcomes in the expected direction, argument for the blending of behavioral control and care in classroom management would be weakened, whereas if behavioral control and care are differentially related to these outcomes, evidence for their complementary roles is demonstrated.

6. Level of measurement and inference

Different researchers measured the two constructs at different levels. For example, some researchers measured individual student's perceived care at the student level, such as "my teacher really cares about me" (e.g., Wentzel, 1997). Some researchers measured teacher care at a global teacher (or class) level based on student perceptions such as "the teacher cares how we feel" and "the teacher is friendly to us" (e.g., Midgley et al., 1989).[1] Some researchers used teacher self-reports and measured teacher care at a global teacher level, such as "I like my students" and "I care about my students" (e.g., Chang, 2003). Considering that the purpose of the present study is to examine the relationship between teachers' management practices and students' outcomes and to provide useful inferential information for teachers, it is important that the level of conceptualization is consistent with the level of inference. Conceptualization and measurements at teacher level would allow us to make inferences consistent with our research objectives (Chan, 1998; Glick, 1985). In the study, we first moved down to the student level to collect perceptual data as Midgley et al. (1989) did and subsequently aggregated student ratings to the class level to establish the construct of teacher care at the class level. We employed this relatively complex procedure due to the following reasons. First, students' perceptions of their teachers' behavior are reliable and accurate based on some previous studies (Babad, 1990; Marshall & Weinstein, 1986), especially when perceptual data are aggregated to the class level (Marsh, 1983). Second, teacher care needs to be perceived by students to exert its effects on student outcomes. As Nodding (2005) argued: "No matter how hard teachers try to care, if the caring is not received by students, the claim 'they don't care' has some validity" (p. 15).

7. Students' gender, SES and classroom management practices

Whether a particular classroom management practice is consistently effective across students of different characteristics is an important issue in practice. However, research on this issue is relatively little. Some groups of students may be affected more than others by the different management practices. Veroff's (1983) research showed that adolescent girls had a greater need than boys for affiliation and social connectedness. This implies that girls may be more sensitive to teacher care than boys, and thus teacher care may have stronger effects on girls than on boys. Therefore, in the present study, we examined the interaction between gender and management practices.

Sanford and Evertson (1981) conducted three case studies and found that teachers in low socioeconomic schools faced special problems in establishing productive classroom climate. Safran's (1990) conducted a survey on teachers' manageability beliefs and also found that students' socioeconomic status and academic achievement were related to teachers' manageability beliefs. These findings suggest that the same management practice may not work well for some groups of students such as low SES students. In the present study, we partition students' SES into within-class SES and between-class SES (class-mean SES) because we are concerned about not only the interaction between classroom management and student individual SES differences within class, but also the interaction between classroom management and SES as a group characteristic.

To further our understanding of the generalizability of the relations of care and behavioral control to student outcomes, we also examined the interaction between care and behavioral control in the prediction student outcomes. That is, we tested whether the relations between behavioral control (care) and outcomes were consistent across different levels of care (control). Lack of interaction would indicate that care and behavioral operate *additively* in the prediction model, whereas significant interaction would indicate that care and behavioral control serve as a moderator for each other in the prediction model.

In summary, this study adds to existing research in the following ways. First, we apply self-determination theory to further our understanding of classroom management. Bringing a self-determination perspective to the field of classroom management help us expand the goals (or outcomes) of classroom management beyond reducing misbehavior, clarify the meanings of control, and provide insights into the empirical inconsistencies and conceptual confusion in the literature regarding the control construct. Second, we conceptualize care and behavioral control at the class level, rather than the individual psychological perception level, to ensure that the level of conceptualization and the level of inference are

[1] The perception at individual level and global (class) level would be differentiated on the basis of research purposes. In organizational research literature, an individual perception is treated as a psychological environment variable which serves to explain psychological processes, whereas the aggregation of individual perceptions to a global (organizational) level is treated as an organizational environment variable. The former variable does not permit inference at the organizational level, whereas the latter does (Chan, 1998; Glick, 1985).

consistent. Third, we explore the complementary roles of care and control by examining their differential relations to multiple student outcomes, including engagement, misbehavior, and satisfaction with school life. Fourth, we examine the generalizability of differential relations by testing the interactions among classroom management practices, gender, and SES in the prediction of student outcomes.

8. Research questions

The research questions of this study are as follows. (a) How much of the total variance in student outcomes (engagement, misbehavior, and satisfaction with school) is accounted for by between-class differences and within-class differences? (b) Do care and behavioral control have differential relations to different student outcomes? (c) What are the patterns of interaction between student characteristics (gender and within-class SES, classroom composition (class-mean SES) and classroom management practices (care and behavioral control) in predicting student outcomes? (d) Do care and behavioral control show interactive patterns in their prediction of student outcomes?

9. Method

9.1. Participants

The participants in this study were 3196 Grade 9 students from 117 classrooms in 39 secondary schools in Singapore. The ethnic distribution of the sample was as follows: 75% of the participants were Chinese, 18% were Malay, 5% were Indian, and 2% were of other ethnic groups. The gender distribution of the sample was even (51% female and 49% male). The mean age of the students was 15.5 years. English is the medium of instruction in Singapore and all students formally start learning English in Grade 1.

9.2. Procedure and design

An online survey was conducted in the computer rooms of the participating schools. The survey included two forms. Half of the students within each class were randomly selected (through a computer algorithm) to complete survey form 1 in which students reported their misbehavior, engagement and satisfaction with school. The other half of the students in the *same* class completed survey form 2 in which students reported the classroom management methods used by their English teachers. The average numbers of students completing forms 1 and 2 per class were 14.2 and 13.1, respectively. All students provided their background and demographic information.

In this design, students within each class were randomly split into two groups. In effect, students in Group 1 provided student-level data on misbehavior, engagement, and satisfaction, whereas students in Group 2 served as independent raters of teachers' management practices and provided class-level data (in the form of aggregated scores) for hierarchical linear modeling (HLM). Although different groups of students provided student-level and class-level data, these multilevel data could be linked through common class ID's. The purpose of this design was to mitigate the potential problem of inflating cross-level relations (Lau & Nie, 2008).

9.3. Measures

All items on the survey were rated on 5-point Likert scales (1 = never to 5 = always; or 1 = strongly disagree to 5 = strongly agree). The items for self-report scales are presented in the Appendix A.

9.3.1. Classroom management practices

Two broad categories of classroom management practices were assessed—behavioral control and care. The behavioral control scale included items on the frequency of teacher behavior on correcting and controlling misbehaviors (adapted from Schaffer, Nesselrodt, & Stringfield, 1998). The teacher care scale included items on the frequency of a teacher showing warmth, concern, and acceptance to students (adapted from Midgley et al., 1989; Schaffer et al., 1998).

A confirmatory factor analysis was conducted to examine the factorial structure of the two constructs. A two-factor structure provided a good fit for the data, χ^2 (18, $N = 1537$) = 66.68, TLI = .99, CFI = .99, RMSEA = .04[2]. This result suggests that Grade 9 students can differentiate the two types of classroom management practices in English classrooms. Interfactor correlation between care and behavioral control was .37.

Two types of reliability index were used to assess the reliability of the scores for classroom management practices. In terms of internal consistency reliability, Cronbach's alpha was .84 for control and .89 for care. In terms of within-group interrater reliability (James, Demare, & Wolf, 1984), we found that the average of the within-group interrater reliability across the 117 classrooms was .86 ($SD = .07$) for control and .82 ($SD = .10$) for care. The latter result is important because it suggests that within-class student ratings are quite consistent, which justifies the procedure of aggregation to derive class-level measures of classroom management practices.

9.3.2. Engagement

Our measure of engagement was based on students' report of their attention, effort, and participation in classroom activities (Steinberg, Lamborn, Dornbusch, & Darling, 1992; Wellborn & Connell, 1987). A confirmatory factor analysis was conducted to examine the factorial structure of engagement. A one-factor structure provided a good fit for the data, χ^2 (4, $N = 1659$) = 32.92, TLI = .97, CFI = .99, RMSEA = .07. The Cronbach's alpha was .86.

9.3.3. Misbehavior

Our measure of misbehavior was based on students' report of misbehavior that commonly occurred in the classroom, e.g., inattention, disruptive talk, making noise, walking around the classroom, refusing to follow teachers' requests or rules. The scale included six items. A confirmatory factor analysis was conducted to examine the one-factor structure of classroom misbehaviors. A one-factor structure provided a good fit for the data, χ^2 (7, $N = 1659$) = 34.33, TLI = .98, CFI = .99, RMSEA = .05. The Cronbach's alpha was .85.

9.3.4. Satisfaction with school

Life satisfaction is defined as an evaluative response and assessment of a person's quality of life according to her or his unique standards (Huebner, 1994). Satisfaction with school is the evaluation of life satisfaction with respect to a specific domain—school life. Students' reported satisfaction with school was assessed by items derived and revised from the scales created by Huebner (1994) and van Damme, de Fraine, van Landeghem, Opdenakker, and Onghena (2002). The scale included four items. A confirmatory factor analysis was conducted to examine the factorial structure of satisfaction with school. A one-factor structure provided a good fit for the data, χ^2 (2, $N = 1659$) = 39.60, TLI = .95, CFI = .99, RMSEA = .10. The Cronbach's alpha was .86.

[2] An alternative one-factor structure of management was also tested by confirmatory factor analysis. One-factor model does not fit the data well, χ^2 (19, $N = 1537$) = 1843.49, TLI = .47, CFI = .72, RMSEA = .25.

9.3.5. Gender and socioeconomic status

Gender was coded 0 = male and 1 = female. Our measure of socioeconomic status (SES) included five indicators: father's educational level, mother's educational level, family resources, family learning resources, and type of residence. Parents' education was measured on a 7-point scale (1 = "Primary or below" to 7 = "Master or PhD"). Family resources and family learning resources were measured by dichotomous items, such as "Do you have a maid at home?" (family resources) and "Do you have dictionary at home?" (family learning resources). Yes was coded as 1 and No as 0. The sum of the item scores of each scale was used as the indicator of family resources and family learning resources. Type of residence was measured on a 5-point scale (1 = "One or two bedroom government-subsidized flat" to 5 = "Condominium or private property"). Because the units of measurement of the five indicators were not the same, all the scores of the indicators were standardized before further analyses. A confirmatory factor analysis was conducted to examine the factorial structure of the construct. A one-factor structure provided a good fit for the data, χ^2 (4, N = 1659) = 8.05, TLI = .99, CFI = 1.00, RMSEA = .03. The Cronbach's alpha was .77.

10. Analyses and results

Descriptive statistics and zero-order correlations among the variables used in this study is presented in Table 1. The relatively high mean scores of control (M = 4.08) and care (M = 3.72) suggest that both types of classroom management practice were commonly practiced by teachers in Grade 9 English classroom.

10.1. Analytic approach to modeling student outcomes

All predictors and outcome variables (except gender) were standardized before running HLM. The one-way ANOVA with random effects model (Model 0) was used to estimate the proportion of within- and between-class variances in the outcome variables (Raudenbush & Bryk, 2002).

Model 0

$$Y_{ij} = \beta_{0j} + r_{ij}$$
$$\beta_{0j} = \gamma_{00} + u_{0j}$$

Results of random effects ANOVA are presented under Model 0 in Tables 2–4. The intraclass correlation coefficient (ICC) measures the proportion of total variance in a variable explained by between-class differences. For self-reported outcome variables, ICC was 8% for classroom engagement, 5% for classroom misbehavior, and 10% for satisfaction with school. For predictors, ICC was 18% for control, 21% for care, and 29% for SES. Chi-square tests were also performed to examine the significance of between-class variances. We found that between-class variances were significant for all the predictors and outcome variables.

The next set of HLM analyses was performed to evaluate the predictive relations between classroom management practices and student outcomes, controlling for students' gender and SES. For this purpose, gender and SES were entered into the model as control variables. SES was group-mean centered at level 1 and grand-mean centered at level 2, such that SES was partitioned into the within-class component (SES_w) and between-class component (SES_b) (Raudenbush & Bryk, 2002). Model 1 was used to examine whether SES_w and gender predicted student outcomes at level 1. Model 2 was used to examine the contribution of SES_b to predicting average student outcomes (the intercept), controlling for SES_w and gender. Model 3 was used to examine whether classroom

Table 1
Descriptive statistics and zero-order correlations among variables.

	M	*SD*	1	2	3	4	5
Student level (n = 1659)							
1. Student engagement	3.84	.71	–				
2. Classroom misbehavior	2.24	.83	−.34**	–			
3. Satisfaction with school	3.41	.89	.21**	−.17**	–		
4. Gender	.52	.50	−.01	−.10**	−.08**	–	
5. Individual SES	.00	.74	.04	−.01	.05*	.04	–
Class level (n = 117)							
1. Control	4.08	.38	–				
2. Care	3.72	.48	.37**	–			
3. Mean SES of the class	−.03	.45	−.26**	.05	–		

Note. The relatively small SD for class-level variables is due to aggregation of student-level data to the class level.
* $p < .05$.
** $p < .01$.

Table 2
Results from HLM analyses predicting engagement.

Variable	Model 0		Model 1		Model 2		Model 3	
Fixed effect	γ	*SE*	γ	*SE*	γ	*SE*	γ	*SE*
Random effect	Variance		Variance		Variance		Variance	
Intercept								
γ_{00}	.001	.036	−.001	.044	−.001	.044	.000	.039
SES_b (γ_{01})					.017	.035	.047	.033
Control (γ_{02})							.127**	.034
Care (γ_{03})							.090*	.038
Slope								
Gender (γ_{10})			.004	.050	.003	.050	−.002	.050
SES_w (γ_{20})			.063*	.029	.063*	.029	.063	.029
Random effect	Variance		Variance		Variance		Variance	
u_{0j}	.081		.082		.083		.054	
r_{ij}	.917		.915		.915		.914	
			Proportion reduction in variance					
	ICC		M1 vs. M0 (L1)		M2 vs. M1 (L2)		M3 vs. M2 (L2)	
	8%		2%		0%		33%	

Note. Gender was coded 1 = female and 0 = male. ICC = intraclass correlation coefficient. M0–M3 = Model 0 to Model 3, respectively. L1 and L2 indicate that the calculation of proportion reduction in variance is based on level 1 and level 2 variance, respectively.
* $p < .05$.
** $p < .01$.

Table 3
Results from HLM analyses predicting misbehavior.

Variable	Model 0		Model 1		Model 2		Model 3	
Fixed effect	γ	*SE*	γ	*SE*	γ	*SE*	γ	*SE*
Random effect	Variance		Variance		Variance		Variance	
Intercept								
γ_{00}	.002	.032	.113	.045	.112*	.044	.112*	.043
SES_b (γ_{01})					−.060	.031	−.082*	.033
Control (γ_{02})							−.081*	.035
Care (γ_{03})							−.043	.031
Slope								
Gender (γ_{10})			−.214**	.053	−.207**	.053	−.205**	.053
SES_w (γ_{20})			.034	.030	.034	.030	.035	.030
Random effect	Variance		Variance		Variance		Variance	
u_{0j}	.050		.050		.047		.038	
r_{ij}	.951		.941		.941		.943	
			Proportion reduction in variance					
	ICC		M1 vs.M0 (L1)		M2 vs. M1 (L2)		M3 vs. M2 (L2)	
	.05		2%		6%		19%	

Note. Gender was coded 1 = female and 0 = male. ICC = intraclass correlation coefficient. M0–M3 = Model 0 to Model 3, respectively. L1 and L2 indicate that the calculation of proportion reduction in variance is based on level 1 and level 2 variance, respectively.
* $p < .05$.
** $p < .01$.

Table 4
Results from HLM analyses predicting satisfaction with school.

Variable	Model 0		Model 1		Model 2		Model 3	
Fixed effect	γ	*SE*	γ	*SE*	γ	*SE*	γ	*SE*
Intercept								
γ_{00}	−.011	.037	.084	.047	.086	.045	.088*	.044
SES_b (γ_{01})					.112**	.037	.091*	.035
Control (γ_{02})							−.059	.034
Care (γ_{03})							.109*	.038
Slope								
Gender (γ_{10})			−.183**	.055	−.192**	.054	−.195**	.054
SES_w (γ_{20})			−.018	.031	−.018	.031	−.018	.031

Random effect	Variance	Variance	Variance	Variance
	ICC	M1 vs.M0 (L1)	M2 vs. M1 (L2)	M3 vs. M2 (L2)
u_{0j}	.098	.099	.087	.078
r_{ij}	.903	.896	.896	.897
		Proportion reduction in variance		
	ICC	M1 vs.M0 (L1)	M2 vs. M1 (L2)	M3 vs. M2 (L2)
	10%	1%	12%	11%

Note. Gender was coded 1 = female and 0 = male. ICC = intraclass correlation coefficient. M0–M3 = Model 0 to Model 3, respectively. L1 and L2 indicate that the calculation of proportion reduction in variance is based on level 1 and level 2 variance, respectively.

* $p < .05$.

** $p < .01$.

management practices predicted student misbehavior, engagement and satisfaction with school, controlling for the effects of gender, SES_w, and SES_b.

Model 1

$$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{gender}) + \beta_{2j}(SES_w) + r_{ij}$$
$$\beta_{0j} = \gamma_{00} + u_{0j}$$
$$\beta_{1j} = \gamma_{10}$$
$$\beta_{2j} = \gamma_{20}$$

Model 2

$$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{gender}) + \beta_{2j}(SES_w) + r_{ij}$$
$$\beta_{0j} = \gamma_{00} + \gamma_{01}(SES_b) + u_{0j}$$
$$\beta_{1j} = \gamma_{10}$$
$$\beta_{2j} = \gamma_{20}$$

Model 3

$$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{gender}) + \beta_{2j}(SES_w) + r_{ij}$$
$$\beta_{0j} = \gamma_{00} + \gamma_{01}(SES_b) + \gamma_{02}(\text{control}) + \gamma_{03}(\text{care}) + u_{0j}$$
$$\beta_{1j} = \gamma_{10}$$
$$\beta_{2j} = \gamma_{20}$$

Y_{ij} is the dependent variable; control and care are aggregated from individual students' ratings to the class level). r_{ij} is the level 1 residual term; u_{0j} is the level 2 residual term for the intercept.

In all the HLM analyses, we tested whether the slope parameters for gender and SES_w were random or not. For all the outcome variables, the random effects for the slopes were not significant at $\alpha = .05$. Thus, both β_{1j} and β_{2j} were treated as fixed parameters in Models 1–3.

Furthermore, we estimated the proportion of variance reduction[3] as a result of adding predictors in successive models. Besides conceptual considerations in relation to our research objectives, the sequence of model building was based on Raudenbush and Bryk's (2002) recommendation on the proper use of proportion reduction in variance statistics—"the variance explained in a level-2 parameter, such as β_{0j}, is conditional on a fixed level-1 specification" (p. 150). Thus, each preceding model is a nested model of the more complex model that follows. Parameter estimates and variance reduction results from the series of HLM analyses are presented in Tables 2–4. Of most relevance to our research objectives are the comparisons between Model 3 and Model 2.

10.2. Care and behavioral control predicting engagement

As shown in Model 3 of Table 2, at level 1, gender differences were not significant for engagement. Within-class SES was not a significant predictor of engagement. At level 2, between-class SES was not a significant predictor of engagement. Both behavioral control and care were significantly related to engagement. Behavioral control was a significant positive predictor of engagement ($\gamma = .127$, $p < .01$); care was also a positive significant predictor ($\gamma = .090$, $p < .05$). Comparison between Model 3 and Model 2 yielded 33% reduction in between-class variance in classroom engagement.

10.3. Care and behavioral control predicting misbehavior

As shown in Model 3 of Table 3, at level 1, gender differences in misbehavior were significant. Males tended to have more misbehavior problems than females ($\gamma = -.205$, $p < .01$). Within-class SES was not a significant predictor to misbehavior. At level 2, between-class SES was negatively related to misbehavior ($\gamma = -.082$, $p < .05$). In low SES classes, there were more behavior problems. Moreover, behavioral control was negatively related to misbehavior ($\gamma = -.081$, $p < .05$), whereas care was not a significant predictor of misbehavior. Comparison between Model 3 and Model 2 yielded 19% reduction in between-class variance in misbehavior.

10.4. Care and behavioral control predicting satisfaction with school

As shown in Model 3 of Table 4, at level 1, gender differences were significant for satisfaction with school ($\gamma = -.195$, $p < .01$).

[3] Variance reduction, also called "the proportion reduction in variance" or "variance explained" in HLM, is analogs to R^2 or R^2 change in linear regression analysis. It is a measure of how much variance is explained by adding the predictors in the model (R^2) or how much more variance is explained by adding additional predictors in successive models (R^2 change) (Raudenbush & Bryk, 2002).

Table 5
Results from the interaction model.

Variable	Engagement		Misbehavior		Satisfaction With School	
Fixed effect	γ	*SE*	γ	*SE*	γ	*SE*
Intercept						
γ_{00}	−0.013	0.043	0.102*	0.046	0.041	0.045
SES_b (γ_{01})	0.051*	0.033	−0.077*	0.033	0.072*	0.030
Control (γ_{02})	0.136**	0.035	−0.076*	0.038	0.000	0.032
Care (γ_{03})	0.085*	0.038	−0.047	0.031	0.072*	0.036
SES_b × control (γ_{04})	−0.015	0.038	−0.005	0.042	−0.184**	0.031
SES_b × care (γ_{05})	−0.018	0.041	−0.027	0.029	0.071*	0.035
Control × care (γ_{06})	0.021	0.028	0.022	0.028	−0.037	0.030
Slope						
Gender (γ_{10})	0.003	0.050	−0.201**	0.053	−0.181**	0.053
SES_w (γ_{20})	0.063*	0.029	0.034	0.030	−0.018	0.031
Random effect	Variance		Variance		Variance	
u_{0j}	0.056		0.037		.050	
r_{ij}	0.915		0.943		.896	

Note. Gender was coded 1 = female and 0 = male.
* $p < .05$.
** $p < .01$.

Boys felt more satisfied with their school life than girls. Within-class SES was not a significant predictor of satisfaction with school. At level 2, between-class SES was a significant positive predictor of satisfaction with school ($\gamma = .091$, $p < .05$). Care was positively related to satisfaction with school ($\gamma = .109$, $p < .05$), whereas behavioral control was a not significant predictor. Comparison between Model 3 and Model 2 yielded 11% reduction in between-class variance in satisfaction with school.

10.5. Interaction between gender, ses and management practices

In the final set of analyses, we explored whether classroom management effectiveness would differ by gender, individual (within-class) SES, aggregated (class-level) characteristics of students. We also explored how the two management practices (behavioral control and care) interacted with each other in predicting student outcomes. The fixed slopes of gender and individual SES suggested that the slopes were parallel and no interaction between potential predictors (control and care) and gender and individual SES.[4] Then we tested the interaction between class-level SES (SES_b) and classroom management practices as well as the interaction between control and care by entering three product terms, SES_b × control, SES_b × care, and control × care into the HLM model for each of the outcome variables, as shown in Model 4.

Model 4 (Interaction Model)

$$Y_{ij} = \beta_{0j} + \beta_{1j}(\text{gender}) + \beta_{2j}(SES_w) + r_{ij}$$
$$\beta_{0j} = \gamma_{00} + \gamma_{01}(SES_b) + \gamma_{02}(\text{control}) + \gamma_{03}(\text{care}) + \gamma_{04}(SES_b \times \text{control}) + \gamma_{05}(SES_b \times \text{care}) + \gamma_{06}(\text{control} \times \text{care}) + u_{0j}$$
$$\beta_{1j} = \gamma_{10}$$
$$\beta_{2j} = \gamma_{20}$$

The results are presented in Table 5. We found significant interaction only when satisfaction with school was used as the outcome variable. Specifically, the SES_b × control interaction was negatively significant ($\gamma_{04} = -.184, p < .01$), whereas the SES_b × care interaction was positively significant ($\gamma_{05} = .071, p < .05$). Furthermore, the addition of the interaction terms to the HLM model (Model 4 vs. Model 3) resulted in a 36% reduction in between-class variance in satisfaction with school.

11. Discussion

We found that both behavioral control and care were commonly used by teachers in Grade 9 English classrooms in Singapore, as indicated by the high means of the two variables. The dual emphasis of behavioral control and care in classroom management takes into consideration the needs and demands of both teachers and students. For teachers, they hope that the classroom is in order so that teaching can be conducted smoothly. For students, they need care, respect and love from their teachers. This is consistent with the notion of balancing demandingness and responsiveness in parenting research (Baumrid, 1991; Darling & Steinberg, 1993; Maccoby & Martin, 1983). The importance of blending behavioral control and care in classroom management is also supported by our findings of differential relations of behavioral control and care to multiple student outcomes, which we elaborate in the following sections.

11.1. Classroom management and engagement

Researchers have examined a wide range of approaches to enhancing student engagement, such as restructuring schools, reforming instructional practices, and creating mastery goal structures in the classroom (see Fredricks, Blumenfeld, & Paris, 2004, for a review). Among them, classroom management plays an important role in maintaining and enhancing student engagement in classrooms (Doyle, 1986). As shown by our findings, in classrooms characterized by higher levels behavioral control and care, students were more engaged in learning.

The positive relation between control and engagement is consistent with our conceptualization of control as behavioral control rather than as external control. More recently, some studies showed the importance of structure in promoting positive student outcomes (e.g., Cleveland & Reese, 2005; Jang & Jeon, 2008; Reeve, 2008; Skinner et al., 2008). Our findings are in line with these studies. From the self-determination perspective, behavioral control and structure contribute to an orderly and well-structured environment conducive to teaching and learning, whereas external control imposes pressure on students and undermines their intrinsic motivation (Skinner & Belmont, 1993; Vansteenkiste et al., 2006). This finding suggests that in future research it is important to make a clear distinction between different kinds of control in conceptualization, measurement, and interpretation (Deci, 2008).

The positive relation between care and student engagement is in line with a body of literature which demonstrates the important role of teacher care in fostering student engagement at different grade levels and using different measures such as student nominations and teacher-reports (e.g., Hughes et al., 2006; Midgley et al., 1989). Consistent with self-determination theory, a caring environment would foster students' motivation by meeting their needs for relatedness (Ryan & Deci, 2000).

11.2. Classroom management and misbehavior

Student misbehavior interferes with teaching and stifles learning. It also produces considerable stress for teachers. Thus, many teachers are afraid of losing control and believe that control is effective (Charles, 2005; Lake, 2004). The finding of a negative rela-

[4] A supplementary analysis was done by entering control and care in the fixed slopes of gender and individual SES for all outcomes. None of the interaction was significant.

tion between control and misbehavior supports the view that control is effective in managing student misbehavior. It is also consistent with the findings of some previous intervention studies which showed that control effectively decreased student disruptions (Allen, 1983; Ward, 1983). In contrast, care was not significantly related to student misbehavior. Taken together, these results suggest that control is necessary for managing student misbehavior and care itself may not be enough to manage misbehavior well.

A notable developmental feature in adolescents is the emerging need for autonomy (Deci & Ryan, 2000; Erikson, 1968). A concern about emphasizing teacher control is that adolescents may overreact to teacher control and their misbehavior may be related to attempts to empower themselves in a controlling environment (e.g., Brandt, 1988; Glasser, 1988). However, we argue that certain type of control is necessary to reduce misbehavior. Especially when behavioral control is used to maintain order and structure in the classroom, it can be adaptive and beneficial.

11.3. Classroom management and satisfaction with school

Many prior studies used behavioral outcomes as criteria of effectiveness of classroom management and tried to understand how teachers bring about engagement and limit misbehavior (see Emmer & Stough, 2001, for a review). The choice of these criteria is reasonable; however, in light of the broadened view of classroom management, another important goal of classroom management is to make students enjoy learning and school life. In line with this perspective, satisfaction with school was chosen as a criterion of effectiveness. We found that if teachers showed more care to their students, their students were more satisfied with their school life, whereas teacher control was not found to be related to students' satisfaction with school. These results are not unexpected. From the self-determination perspective, teacher care emphasizes responding to students' needs for relatedness, which is expected to enhance their experience of a satisfied school life (Furrer & Skinner, 2003; Taylor & Ntoumanis, 2007).

11.4. Interactions between gender, ses and classroom management practices

We found interactive relations between classroom management and class-level SES in predicting students' satisfaction with school. Specifically, when the class-level SES was higher, the relation between control and satisfaction tended to be more negative, whereas the relation between care and satisfaction tended to be more positive.

The interaction finding may be interpreted in terms of the degree of match between classroom contexts and families. Numerous parenting studies have shown that parents in high SES families exhibit less controlling behavior in disciplining their children and are warmer toward them than parents in low SES families (Conger et al., 1992; Kohn, 1977; Luster, Rhoades, & Haas, 1989; Sampson & Laub, 1992). Thus, a classroom context characterized by a high level of control and low level of care would be a mismatch for students from high SES families.

The finding that low SES classrooms were associated with high levels of misbehavior (see Table 5) suggests another plausible explanation. In low SES classrooms, strong behavioral control may be necessary to create an orderly environment conducive to learning, whereas in high SES classrooms with low levels of misbehavior, such control may be perceived by students as superfluous and overly restrictive, which may produce negative affective reactions among them. In studies of risky environments, such as low-income families in dangerous neighborhoods, parents' behavioral monitoring and control are instrumental in protecting their children from engaging in risky and delinquent behavior (Bradley & Corwyn, 2002; Garmezy, 1993). Theses findings suggest that behavioral control may serve as a protective factor in chaotic or risky environments.

Nonsignificant results for interaction tests in the prediction of misbehavior and engagement suggest that relations between classroom management and these outcomes are consistent (or generalizable) across males and females, across students with different SES ranking within each class, and across classes with different mean SES. In other words, students' gender and SES and class-level SES do not moderate the predictive relations of classroom management practices to student misbehavior and engagement.

The lack of interaction between behavioral control and care in the prediction of the three outcome variables indicates that behavioral control and care have additive relations to student outcomes and that they do not moderate each other in the predictive model. In other words, the relations between control (care) and outcome variables are consistent across different levels of care (control).

11.5. Conclusions

Teacher care is advocated by researchers and practitioners to meet students' needs for love and respect, to engage student learning, and to fit the agenda of student-centered instructional reforms (Brophy, 1999, 2006; Evertson & Harris, 1999; McCaslin & Good, 1992). The present study supports this approach on the basis of its facilitating role in engaging student learning and enhancing students' satisfaction with school life. Moreover, teacher control is still effective in reducing misbehavior and engaging student learning. Taken together, the finding of the complementary roles of behavioral control and care in classroom management suggests that teachers may blend behavioral control and care in the classroom to achieve multiple outcomes.

11.6. Limitations

Several limitations of this study are important to note. First, the correlational nature of the study does not allow us to infer causal relations between classroom management practices and student outcomes. However, we believe that our data, in combination the results from previous experimental and intervention studies, suggest the facilitating role of classroom management in engaging student learning, reducing misbehavior and improving satisfaction with school. The replication of this research with intervention studies would help to clarify the causal nature of the relations. Second, we relied on students' self-reported measures as a primary source of data. The use of multiple methods, including teacher reports and observational measures, would serve to strengthen our interpretations of these results. Third, the generalization of our findings, which were based on Grade 9 students in the Singapore context, must be made with caution. The effects of classroom management practices can be moderated by factors such as students' age (or grade level) and culture. Future studies can enhance the generalizability of the findings by replicating the research with students of different grade levels and in different cultural contexts.

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Appendix A. Items for self-report scales

A.1. Teacher behavioral control

In my English class the teacher corrects misbehavior immediately.
In my English class the teacher tells the class to keep quiet when the class is noisy.
In my English class the teacher takes note of misbehaviors.
In my English class the teacher takes action to make sure that pupils behave well.

A.2. Teacher care

In my English class the teacher shows concern for pupils.
In my English class the teacher creates a warm and friendly classroom environment.
In my English class the teacher accepts different opinions from pupils.
In my English class the teacher is open to pupils' suggestions.

A.3. Engagement

In my English class I pay attention well.
In my English class I keep my attention on the work during the entire lesson.
In my English class I listen carefully when the teacher explains something.
In my English class I try my best to complete class work.
In my English class I try my best to answer the teacher's questions.

A.4. Classroom misbehaviors

In my English class I walk out of the classroom.
In my English class I walk around the classroom.
In my English class I make noise while waiting for the next teacher to come to class.
In my English class I look out of the window.
In my English class I talk loudly.
In my English class I refuse to follow my teacher's requests or rules.

A.5. Satisfaction with school

I am glad to be in this school.
I think it is nice to study in this school.
If I could, I would rather go to another school. (reversed item)
If I had to move to another place, I would still want to stay in this school.

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