

An investigation into academic burnout among Taiwanese adolescents from the self-determination theory perspective

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Abstract The present study attempted to explore the relations among Taiwanese eighth graders' perceptions of teachers' autonomy support versus psychological control, satisfaction of need for autonomy, work engagement, and academic burnout. Four hundred and seven eighth-grade Taiwanese students completed a self-reported survey assessing the variables described above. Results of this study indicated that students' perceived autonomy support versus psychological control in the classroom environment, satisfaction of need for autonomy, and work engagement all had significant influences on their experienced academic burnout. In addition, autonomy need satisfaction, vigor, and dedication mediated the relations between perceived autonomy support provided by teachers and student burnout. This study also documented profiles of students with different types of academic burnout. Well-functioning students were the most engaged group characterized by the highest levels of vigor, dedication, and absorption. In contrast, distressed students obtained the lowest scores across all the dimensions of work engagement. Implications for educational practices are discussed.

Keywords Academic burnout · Work engagement · Autonomy support · Psychological control · Autonomy need satisfaction

1 Introduction

Academic stress is common among Asian students due to the familial and cultural demands for academic excellence. Academic achievement is viewed in Asian societies as the primary way for upward mobility and expanded opportunities for career

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development. Education is hence highly valued in countries such as China, Taiwan, Singapore, Hong Kong, Japan, and Korea. In these East Asian countries, the pursuit of academic success is intensified (Ang and Huan 2006; Tan and Yates 2011). For example, according to a survey reported in the newspaper *The China Post* (Soong 2011), increasing academic burdens and parents' expectations were identified as the principal sources of stress that Taiwanese adolescents experienced. Results of the survey show that 61.9% of the 2,133 surveyed adolescents attended cram schools intended to supplement their regular education. Further, 35.9% of the students often felt "exhausted and drained" after a day of school; 21.9% of them regarded schooling as "a heavy burden;" and 19.4% of them thought the stress was "beyond their physical and mental load." Judging from these statistics, a great number of Taiwanese adolescents appear to suffer from academic burnout.

Academic burnout refers to a psychological syndrome that occurs due to chronic academic stress and course loads, manifested as an emotional exhaustion because of study demands, a cynical and detached attitude toward schoolwork, and a reduced efficacy as a student (Gan and Shang 2007; Zhang et al. 2007). Schaufeli et al. (2002) developed the student version of the Maslach Burnout Inventory (MBI-SS) to assess a student's academic burnout syndrome on the above three dimensions. Given that adolescents spend a large part of lives in the school environment, they often evaluate themselves on the basis of academic performance (Ang and Huan 2006). Such pressures to excel, as mentioned earlier, are likely to give rise to student burnout. Nevertheless, the vast majority of research on academic burnout has been conducted in the context of college students (Jacobs and Dodd 2003). Little is known about burnout among adolescent students. To address the paucity of literature in this area, the present study attempted to examine factors related to junior high school students' academic burnout in the Taiwanese classroom context.

1.1 Subtypes of academic burnout

Previously, burnout tended to be considered a homogeneous phenomenon with unitary and global terms (Schaufeli and Van Dierendonck 1995). Several recent studies (Demerouti et al. 2005; Lee et al. 2010; Loo 2004), however, have begun to explore the subtypes of burnout that reflect its multidimensional conceptualization. For example, using a clustering methodology, Lee et al. (2010) classified different patterns of academic burnout among South Korean middle and high school students. In their study, South Korean adolescent students were clustered into four identifiable groups (i.e., distressed group, laissez-faire group, persevering group, and well-functioning group) based on students' responses to the MBI-SS (Schaufeli et al. 2002).

The distressed group reported emotional exhaustion, cynicism, and the lack of efficacy at the highest level. Students in this group appeared to feel a lack of competence on academic matters. Also, they had the most negative self-esteem and the lowest grade point average (GPA). The laissez-faire group, the second cluster type, was characterized by low scores on emotional exhaustion and cynicism, along with high scores on the lack of academic efficacy. Students in this group seemed not to be very emotionally exhausted or cynical about schoolwork. Yet, they felt incompetent in terms

of academic performance. The third academic burnout type, the persevering group, was characterized by high scores on emotional exhaustion and cynicism, in combination with low scores on the lack of efficacy. Students with this profile appeared to be exhausted and cynical but had a high degree of competence toward schoolwork. The fourth cluster type had the lowest scores on emotional exhaustion, cynicism, and the lack of efficacy. This cluster was labeled as the well-functioning group because students in this group self-identified as not experiencing academic burnout. These students had the highest GPA and positive self-esteem.

There exist similarities between South Korean and Taiwanese educational systems. The pressures from the competitive entrance examination cause South Korean students to rank academic stress as the most stressful aspect of their lives (Hwang 2006; Lee et al. 2010). For cross-validation of the identified burnout patterns among South Korean students, the present study attempted to examine the differences among Taiwanese adolescents according to the classification criteria delineated above. Lee et al. (2010) pointed out the need to classify academic burnout patterns such that students at risk for academic burnout can be identified. They maintained that classifying subtypes of academic burnout may help practitioners to develop personalized intervention strategies to prevent and alleviate student burnout. By categorizing Taiwanese adolescents into different types of burnout based on Lee et al.'s classification system and examining the differences among these subtypes, it was hoped that the profiles of each type of academic burnout can be further documented. Presumably, the advanced understanding in this respect may lead to a more specific treatment plan for each type of students.

Also, this research was intended to explore the opposite of burnout, namely, engagement (Maslach et al. 2001). Schaufeli et al. (2002) defined engagement as persistent, positive, fulfilling, and work-related state of mind that is characterized by vigor, dedication, and absorption. Vigor refers to high levels of energy and resilience. Dedication refers to a strong involvement in one's work. Finally, absorption refers to a pleasant state of total immersion in one's work. Student burnout can be considered to be an erosion of work engagement. Schaufeli et al. (2002) hence assumed that all burnout and engagement scales are at least moderately negatively related. In particular, because vigor and dedication are directly opposite to exhaustion and cynicism, relatively strong associations are expected between vigor and exhaustion as well as between dedication and cynicism. Nevertheless, findings concerning the investigations into the above hypotheses were inconsistent (Schaufeli and Bakker 2004; Demerouti et al. 2001). To capture the precise relations between sub-constructs of academic engagement and burnout, the present study attempted to explore the predicting effects of all engagement dimensions on the three components of burnout while controlling for the effects of autonomy support, psychological control, and autonomy need satisfaction.

The practical significance of examining the relation of academic engagement to burnout is that engagement represents a desired goal for burnout intervention (Maslach and Leiter 2008). The burnout versus engagement contrast is consistent with the conservation of resources (COR) theory (Uludag and Yartan 2010). The COR theory suggests that the loss of resources heightens the levels of stress that one experiences. Further, individuals actively engage in their environment to create and maintain personal characteristics (e.g., engagement, motivation, and self-esteem) in order to avoid such loss of resources (Hobfoll 1989). Put differently, engagement may decrease the

levels of stress, the chief cause of burnout. It was hoped that the investigation of the role of engagement in predicting academic burnout would enhance our understanding of the potential of each dimension of engagement to address academic burnout. In addition to the relation of work engagement to burnout, the individual's need for autonomy and whether perceived environment can satisfy this need may play a pivotal role in student burnout.

1.2 Autonomy need satisfaction and autonomy support

Self-determination theory (SDT; [Deci and Ryan 2000](#); [Ryan and Deci 2000](#)) is a widely studied theory of human motivation that provides a framework for understanding human tendencies toward active engagement and development. According to SDT, the satisfaction of three basic psychological needs (i.e., the needs for competence, relatedness, and autonomy) is essential for growth and well-being of people's personalities and cognitive structures ([Deci and Ryan 2000](#)). Competence refers to the need to feel efficacious while interacting with the social environment, such as completing a learning task. Relatedness refers to the need to feel connected to significant others, like teachers. Autonomy refers to the need to experience one's behavior as freely chosen and volitional ([Sierens et al. 2009](#)). Due to the centrality of autonomy in SDT ([Assor et al. 2002](#)), the present research focused on the effects of autonomy need satisfaction on Taiwanese adolescents' academic burnout.

It has been shown that autonomy need satisfaction leads to a variety of positive outcomes including intrinsic motivation ([Hollembek and Amorose, 2005](#)), low proneness to negative affect ([Deci et al. 2001](#)), and student engagement ([Furrer and Skinner 2003](#)). SDT proposes that autonomy-supportive contexts are conducive to autonomy need satisfaction. In the classroom setting, autonomy support occurs as the teacher takes the student's perspective, allows opportunities for self-initiation and choice, provides a meaningful rationale for the requirement, and acknowledges the student's feelings while minimizing the use of pressures and demands ([Deci et al. 1994](#)). In contrast, psychological control refers to control attempts that intrude into the psychological and emotional development of the person through use of manipulative techniques like guilt-induction and love withdrawal ([Soenens et al. 2005](#)).

At its core, SDT presumes that a sense of autonomy constitutes an important psychological resource for dealing with stressful demands. Such a resource helps the individual appraise objective stressors as challenges rather than threats. In other words, effective ways of coping appear to be organized around autonomy need satisfaction ([Skinner and Edge 2002](#)). According to this view, it may be inferred that the provision of autonomy support in the classroom context satisfies students' need for autonomy. In turn, students are able to effectively cope with school stress and thus, less likely to experience academic burnout. Conversely, psychological control is supposed to stifle the need for autonomy ([Soenens et al. 2005](#)). As a consequence, academic burnout may arise.

Whereas the empirical findings supporting SDT have identified optimal effects of autonomy support versus deleterious effects of psychological control on individuals' motivational processes, Markus and Kitayama ([1991, 2003](#)) challenged the

applicability of these findings to non-Western cultures. Their self-systems theory suggests that the exact content and structure of the self may differ considerably by culture. People in Western cultures possess a model of the self as fundamentally independent. Conceptualizing the self as an autonomous, independent person leads members of Western cultures to desire a sense of autonomy and strive to express their unique attributes. For these individuals, the provision of autonomy support may be pivotal to the formation of their self-identity (Iyengar and Lepper 1999).

In contrast, individuals in many non-Western cultures, East Asian cultures in particular, possess a more interdependent model of the self. This view of the self regards the individual not as separate from the social context but as more connected with others. Members of more interdependent cultures strive to fit in with relevant others, to fulfill obligations, and to maintain harmony among people (Hsu 1985; Miller 1988; Triandis 1995). For individuals holding the independent view of the self, autonomy and its expression are often their primary concerns. By contrast, for those who possess a more interdependent model of the self, autonomy may be secondary to, and constrained by, the principal task of interdependence (Markus and Kitayama 1991). Accordingly, members of more interdependent cultures might sometimes prefer to submit to choices expressed by significant others for the sake of the superordinate cultural goal of belongingness (Iyengar and Lepper 1999). Such is the case in Taiwan.

Studies of the Taiwanese societies showed that instead of exercising personal choice, Taiwanese people tend to act primarily in accordance with anticipated expectations of others and social norms (Yang 1997). Within this cultural context, the child's motive to achieve may not necessarily reflect his or her internal wishes. Their motivation to achieve may have social or collective origins. Given the challenges that these cultural analyses pose to SDT, it would be informative to examine whether the beneficial effects of autonomy support would apply to the Taiwanese students in the sense of alleviating academic burnout.

1.3 The present study

In summary, there were two aims of this study. First, the current research was intended to investigate the extent to which Taiwanese adolescents' perceptions of teachers' autonomy support versus psychological control, autonomy need satisfaction, and work engagement function as significant predictors of the three dimensions of academic burnout derived from the student version of the Maslach Burnout Inventory. Second, on the basis of the categories of academic burnout classified by Lee et al. (2010), the present study attempted to determine the differences in the perceived environment, the satisfaction of need for autonomy, and work engagement among different subtypes of burnout. Lee et al. (2010) originally came up with the burnout subcategories by conducting cluster analysis on the basis of students' scores on the MBI-SS (Schaufeli et al. 2002). Normally, cluster analysis is used in the exploratory phase of research without any preconceived notion of what categories may arise (Burns and Burns 2009). Since the present study was intended to assess how distinct these identified subtypes of burnout are on the variables of interest described above, MANOVA was selected as the analytical tool in the hope that group differences can be determined. Specifically, the

current research was devised to test the following hypotheses: (a) Adolescents' perceptions of teachers' autonomy support versus psychological control, autonomy need satisfaction, and work engagement would significantly predict the three dimensions of academic burnout (i.e., exhaustion, cynicism, and lack of efficacy); (b) There would exist significant differences in perceived teachers' autonomy support versus psychological control, autonomy need satisfaction, and work engagement among different subtypes of academic burnout (i.e., distressed group, laissez-faire group, persevering group, and well-functioning group).

2 Method

2.1 Participants

The participants included 407 eighth-grade Taiwanese students from fourteen classes in three junior high schools. Participating schools were located in the northern part of Taiwan. All of school principals granted initial consent for data to be collected in their schools. The 219 boys (54%) and 188 girls ranged in age from 12 years, 10 months to 15 years, 1 month ($M = 13$ years, 11 months, $SD = 3.7$ months). The school districts were primarily middle class in terms of socioeconomic status. All of the participants were Taiwanese. Guidelines for the proper treatment of human subjects were followed. Students' participation was voluntary. All participants had parental consent to take part in the study. Confidential treatment of the data was guaranteed.

2.2 Procedure

The data were collected at the beginning of the eighth grade (September). Students were invited to fill out a survey (described in detail below) during regular class time. There were two research assistants in each class for the data collection. They assured students of the confidentiality of their self-reports and encouraged them to respond to all items as accurately as possible.

2.3 Measures

Participants were instructed to respond to all items on five-point Likert scales ranging from 1 (strongly disagree) to 5 (strongly agree). A Chinese version of this self-report survey was employed. All measures utilized in the present study were translated into Chinese and then back-translated into English. To ensure adequate translation, guidelines of the International Test Commission (Hambleton 1994) were followed. Specifically, the translation process took full account of linguistic and cultural differences among Taiwanese adolescents. Participants' familiarity with item format, item content, and test procedures was ensured by checking with two Taiwanese junior high school students during translation. Also, appropriate statistical techniques were selected to establish the equivalence between the different language versions of the measure. Information on the reliability and validity of the adapted versions is detailed below.

2.3.1 Perceived autonomy support

Students' perceptions of autonomy support provided by their teachers were assessed by the short version of the Learning Climate Questionnaire (LCQ; Williams and Deci 1996). Six items measure the degree to which students perceive instructors as supporting student autonomy (e.g., "My instructor provides me with choices and options"; $\alpha = .86$). Higher scores represent a higher level of perceived autonomy support in the classroom context. To examine the validity of the scale, a confirmatory factor analysis was completed. In the model tested, all items were hypothesized to load onto one latent factor. Results showed that this model provided an adequate fit to the data, $\chi^2(9, N = 407) = 33.75, p < .01, \chi^2/N = .08, RMSEA = .06, GFI = .97, NFI = .99, NNFI = .99, CFI = .99, IFI = .99, RFI = .98$.

2.3.2 Perceived psychological control

The Parental Psychological Control Scale developed by Shek (2006) was adapted to assess perceived teachers' psychological control. Specifically, the subject of the sentence in each item was changed from "my parents" to "my teacher." Ten items assess teachers' psychological control in a global manner (e.g., "During our conversation, my teacher always dominates the conversation and wants me to follow his or her view"; $\alpha = .88$). Higher scores represent a higher level of perceived psychological control in the classroom context. In the CFA model, all items were hypothesized to load onto one latent factor. The CFA yielded a good fit to the data, $\chi^2(23, N = 407) = 62.39, p < .05, \chi^2/N = .15, RMSEA = .04, GFI = .97, NFI = .99, NNFI = .99, CFI = .99, IFI = .99, RFI = .98$.

2.3.3 Autonomy need satisfaction

Adolescents' autonomy need satisfaction was assessed by the scale adapted from the Basic Need Satisfaction at Work Scale (Baard et al. 2004). This scale was used to measure the extent to which students experience satisfaction of their autonomy need on academic work (e.g., "I feel like I can pretty much be myself at work"; 4 items; $\alpha = .81$). A confirmatory factor analysis was performed to test the validity of the scale. In the model tested, all items were hypothesized to load onto one latent factor. Results showed that this model yielded an excellent fit to the data, $\chi^2(2, N = 407) = 1.14, p > .05, \chi^2/N = .00, RMSEA = .00, GFI = 1.00, NFI = 1.00, NNFI = 1.00, CFI = 1.00, IFI = 1.00, RFI = 1.00$.

2.3.4 Academic burnout

Students' academic burnout was assessed by the scale adapted from the Maslach Burnout Inventory-Student Survey (MBI-SS; Schaufeli et al. 2002). The MBI-SS consists of 15 items that constitute three scales: Exhaustion (e.g., "I feel emotionally drained by my studies"; 5 items; $\alpha = .82$), Cynicism (e.g., "I doubt the significance of my studies"; 4 items; $\alpha = .85$) and Lack of Efficacy (e.g., "I can effectively solve the problems that arise in my studies"; 6 items; $\alpha = .77$). The

items measuring efficacy were reverse scored. A confirmatory factor analysis was performed to test the validity of this scale. In the model tested, items from each subscale were hypothesized to load only onto their respective latent variables. Results indicated that this model represented a good fit for the proposed structure of the scale, $\chi^2(85, N = 407) = 205.15, p < .01, \chi^2/N = .50, RMSEA = .05, GFI = .94, NFI = .97, NNFI = .98, CFI = .98, IFI = .98, RFI = .96$.

2.3.5 Work engagement

Students' engagement in schoolwork was assessed by the questionnaire adapted from the Utrecht Work Engagement Scale-Student (UWES-S; [Schaufeli et al. 2002](#)). This scale was constructed to measure the three underlying dimensions of work engagement: Vigor (e.g., "When studying I feel strong and vigorous", 4 items, $\alpha = .79$), Dedication (e.g., "I am enthusiastic about my studies", 5 items, $\alpha = .88$), and Absorption (e.g., "I can get carried away by my studies", 4 items, $\alpha = .81$). To test the validity of the scale, items from each subscale were hypothesized to load only onto their respective latent variables in the CFA model. Results showed that this model provided a good fit to the data, $\chi^2(61, N = 407) = 128.92, p < .01, \chi^2/N = .32, RMSEA = .05, GFI = .96, NFI = .98, NNFI = .99, CFI = .99, IFI = .99, RFI = .98$.

3 Results

3.1 Hierarchical regressions predicting academic burnout

Descriptive information and correlations for study variables are shown in Table 1. Overall, results of the correlational analyses revealed the expected patterns. In terms of the correlations between variables of self-determination and academic burnout, autonomy support was negatively correlated with all the three indicators of burnout (i.e., exhaustion, cynicism, and lack of efficacy), whereas psychological control was positively correlated with exhaustion and cynicism. In addition, autonomy need satisfaction was negatively correlated with all the dimensions of burnout. Among the correlations reported above, the highest level of correlation existed between autonomy need satisfaction and lack of efficacy ($r = -.64$). Regarding the correlations between work engagement and academic burnout, all the three indicators of work engagement (i.e., vigor, dedication, and absorption) were negatively correlated with all the dimensions of academic burnout. The highest level of correlation was between lack of efficacy and dedication ($r = -.74$).

Three-step hierarchical regression analyses were conducted in which indicators of academic burnout were regressed on perceived autonomy support versus psychological control, autonomy need satisfaction, and the three components of work engagement. Prior to running regression analyses, intraclass correlation coefficients (ICC) were calculated to check for potential non-independence problems that might arise from nested data. The ICC values ranged from .66 to .90. Since [Fleiss \(1986\)](#) describes values from

Table 1 Descriptive statistics and correlations for study variables (N=407)

Variable	1	2	3	4	5	6	7	8	9
1. Autonomy support	—								
2. Psychological control	-.17**	—							
3. Autonomy need satisfaction	.43**	-.14**	—						
4. Exhaustion	-.33**	.28**	-.39**	—					
5. Cynicism	-.38**	.23**	-.44**	.80**	—				
6. Lack of efficacy	-.56**	.05	-.64**	.41**	.53**	—			
7. Vigor	.48**	-.06	.50**	-.55**	-.57**	-.63**	—		
8. Dedication	.54**	-.02	.57**	-.54**	-.63**	-.74**	.79**	—	
9. Absorption	.48**	-.03	.51**	-.45**	-.53**	-.60**	.76**	.74**	—
<i>M</i>	3.36	2.79	3.58	2.92	2.72	2.49	2.88	3.04	2.96
<i>SD</i>	.84	.85	.94	.85	.96	.70	.82	.85	.91

** $p < .01$

Table 2 Summary of hierarchical regression analyses predicting academic burnout (N = 407)

Variable	Exhaustion			Cynicism			Lack of efficacy		
	β	<i>t</i>	ΔR^2	β	<i>t</i>	ΔR^2	β	<i>t</i>	ΔR^2
Step 1			.16			.17			.31
Autonomy support	-.29***	-6.31		-.35***	-7.58		-.57***	-13.61	
Psychological control	.23***	4.99		.17***	3.79		-.05	-1.17	
Step 2			.07			.09			.20
Autonomy support	-.17***	-3.54		-.21***	-4.42		-.36***	-9.34	
Psychological control	.21***	4.71		.15***	3.44		-.09	-2.40	
Autonomy need satisfaction	-.28***	-5.82		-.33***	-6.84		-.49***	-12.78	
Step 3			.17			.20			.13
Autonomy support	.04	.72		.02	.53		-.18***	-4.82	
Psychological control	.26***	6.44		.21***	5.55		-.04	-1.16	
Autonomy need satisfaction	-.05	-1.05		-.06	-1.31		-.29***	-7.61	
Vigor	-.31***	-4.43		-.13	-2.03		-.07	-1.29	
Dedication	-.30***	-4.19		-.42***	-6.20		-.43***	-7.66	
Absorption	.03	.36		-.09	-1.54		.01	.05	

*** $p < .001$

.40 to .75 as “fair to good,” these ICC values were considered acceptable. Hierarchical regression analyses were thus performed. Autonomy support versus psychological control were given the highest priority of entry because this set of predictors were presumed to be causally prior to autonomy need satisfaction and work engagement (Baard et al. 2004; Ryan and Deci 2000; Tabachnick and Fidell 2007). In the preliminary analysis, gender was entered first in regression models. It turned out that gender failed to predict any outcome variable of interest. Therefore, gender was not included as a predicting variable in the current study. The alpha level used to determine the significance of all of these analyses was set at .01. This more conservative alpha level was selected to reduce the possibility of making a Type I error arising from completing a series of analyses with related outcomes (Wolters 2004).

Results of hierarchical regressions predicting students’ academic burnout are displayed in Table 2. With respect to the significant predictors of exhaustion, in Step 1, perceived autonomy support negatively predicted exhaustion, whereas psychological control was positively related to exhaustion. In Step 2, autonomy need satisfaction was added to the model. Students were less likely to experience exhaustion when their needs for autonomy were met. In the final step of the model, the three indicators reflecting work engagement (i.e., vigor, dedication, and absorption) were included in the model. Both vigor and dedication negatively predicted exhaustion. Regarding the significant predictors of cynicism, in Step 1, autonomy support negatively pre-

dicted cynicism, whereas psychological control predicted cynicism positively. In Step 2, autonomy need satisfaction emerged as a significant negative predictor of cynicism. Results from Step 3 of the analysis showed that dedication was negatively related to cynicism. In terms of the significant predictors of the lack of efficacy, in Step 1, autonomy support negatively predicted the lack of efficacy. Adding autonomy need satisfaction in Step 2 indicated that when students' needs for autonomy were fulfilled, they were less likely to feel the lack of efficacy. In Step 3, dedication was found to be negatively associated with the lack of efficacy. Across the regression analyses, all variance inflation factor (VIF) values ranged from 1.25 to 1.80. Since all VIF values were less than 5, multicollinearity problems did not take place (Groebner et al. 2005).

Table 2 shows significantly reduced effects of autonomy support on all the indicators of academic burnout after adding autonomy need satisfaction and work engagement to the regression models. To determine whether autonomy need satisfaction and work engagement mediated the relations between autonomy support and academic burnout, mediational analyses were performed. According to Barron and Kenny (1986), mediation requires the following conditions to be met. First, the predictor variable (autonomy support) predicts the dependent variable (the indicator of academic burnout). Second, the predictor variable predicts the hypothesized mediator variables (autonomy need satisfaction and work engagement). Third, the mediator variables predict the dependent variable, and the relationship between the predictor and dependent variable is lessened when mediator variables are controlled. Given that the first and third conditions had already been fulfilled, regression analyses examining the predicting effects of autonomy support on autonomy need satisfaction and work engagement (i.e., the likely mediator variables) were conducted.

Results of the above analyses revealed that autonomy support significantly predicted autonomy need satisfaction, $F(1, 406) = 92.09, p < .001; \beta = .43, p < .001$; vigor, $F(1, 406) = 121.07, p < .001; \beta = .48, p < .001$; and dedication, $F(1, 406) = 168.76, p < .001; \beta = .54, p < .001$. These variables clearly played a mediating role in the relations between autonomy support and academic burnout. A Sobel test was also conducted to test the significance of mediation effects (MacKinnon et al. 2002). Autonomy need satisfaction significantly mediated the effects of autonomy support on the lack of efficacy ($z = -8.23, p < .001$). Vigor significantly mediated the relation between autonomy support and exhaustion ($z = -9.07, p < .001$). Dedication also significantly mediated the influences of autonomy support on exhaustion ($z = -9.63, p < .001$), cynicism ($z = -10.81, p < .001$), and the lack of efficacy ($z = -11.39, p < .001$).

To further corroborate the mediational model delineated above, structural equation modeling was conducted in order to control for measurement error. Maximum likelihood was used as the estimation method (Hoyle and Panter 1995). The tested model was composed of seven latent variables. Eight paths based on the results of the regression analyses were specified. The model had an acceptable fit to the data, $\chi^2(519, N = 407) = 1356, p < .05, RMSEA = .06, CFI = .97, NNFI = .97$. The results from the structural equation analysis were consistent with the original regression analyses. Figure 1 demonstrates the mediational model tested with structural equation modeling.

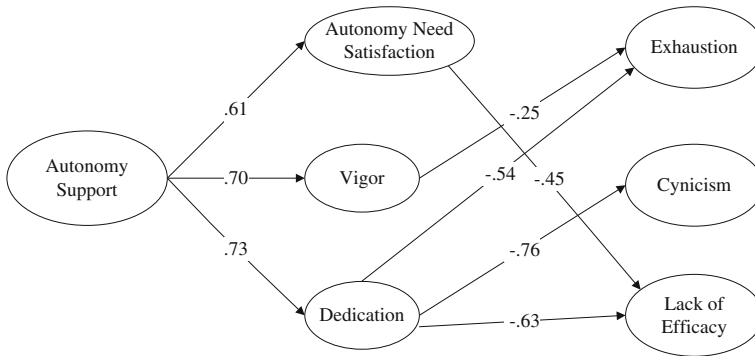


Fig. 1 The mediational roles of autonomy need satisfaction and engagement in the relations between autonomy support and academic burnout. Note. The measurements are not presented for the sake of clarity. All the path coefficients are significant, $p < .001$

3.2 Differences among students with different types of academic burnout

To determine the differences in the primary variables of interest among students with different types of academic burnout, participating adolescents were formed into four groups based upon the classifying criteria suggested in Lee et al.'s study (2010). Students who scored above the means on exhaustion, cynicism, and the lack of efficacy were identified as distressed students. Those who scored below the means on exhaustion along with cynicism and above the mean on the lack of efficacy were grouped as *laissez-faire* students. Participants scoring above the means on exhaustion together with cynicism and below the mean on the lack of efficacy were identified as persevering students. Finally, students who scored below the means on exhaustion, cynicism, and the lack of efficacy were clustered as well-functioning students. In total, 333 out of 407 students met the above criteria, including 115 distressed students, 38 *laissez-faire* students, 54 persevering students, and 126 well-functioning students. The means and standard deviations of the dependent variables according to these students' group membership are displayed in Table 3.

The assumption for the MANOVA had again been examined before the analysis was performed. Because cell sizes for the independent variables were unequal, Box's M test was conducted first to check for the homogeneity of covariance matrices. The result of this test was not significant ($F = 1.06$, $p > .05$), indicating the confirmation of this assumption (Tabachnick and Fidell 2007). MANOVA yielded significant effects for group membership, Wilks' $\Lambda = .44$, $F(6, 324) = 17.07$, $p < .001$, $\eta^2 = .24$. Results of the univariate analyses organized by the academic burnout categories are detailed below.

Distressed students. The distressed students reported the lowest levels of autonomy support ($M = 2.91$) and autonomy need satisfaction ($M = 3.03$), along with the highest levels of psychological control ($M = 3.03$) across the four groups. Regarding the indicators of work engagement, the distressed group had the lowest scores on vigor ($M = 2.30$), dedication ($M = 2.38$), and absorption ($M = 2.36$). Given that

Table 3 Differences among students with different types of academic burnout

Variable	Distressed (n = 115)		Laissez-faire (n = 38)		Persevering (n = 54)		Well- functioning (n = 126)		F (Univariate Analyses)	η^2
	M	SD	M	SD	M	SD	M	SD		
Autonomy support	2.91 _a	.71	2.91 _a	.63	3.53 _b	.87	3.94 _c	.74	44.87***	.29
Psychological control	3.03 _a	.84	2.60 _b	.84	2.99 _a	.88	2.50 _b	.80	10.16***	.08
Autonomy need satisfaction	3.03 _a	.89	3.28 _b	.83	3.56 _b	.84	4.16 _c	.75	39.05***	.26
Vigor	2.30 _a	.69	2.79 _b	.67	2.81 _b	.71	3.51 _c	.67	64.89***	.37
Dedication	2.38 _a	.68	2.83 _b	.74	3.07 _b	.70	3.75 _c	.64	84.65***	.44
Absorption	2.36 _a	.77	2.74 _b	.78	3.06 _b	.89	3.59 _c	.68	54.96***	.33

Different subscripts denote statistically significant differences ($p < .05$) in means according to Tukey's criteria *** $p < .001$

their scores on work engagement were all below the median, this group of students appeared not fully engaged in schoolwork.

Laissez-faire students. The laissez-faire group reported lower levels of autonomy support ($M = 2.91$) than did the persevering and well-functioning groups. Students in this group also obtained lower scores on psychological control ($M = 2.60$). Their scores on autonomy need satisfaction ($M = 3.28$) were somewhat higher than the distressed students' scores in this respect. As for work engagement, this group scored in between the distressed and well-functioning groups on vigor ($M = 2.79$), dedication ($M = 2.83$), and absorption ($M = 2.74$).

Persevering students. The persevering students scored in between the distressed and well-functioning groups on autonomy support ($M = 3.53$) and autonomy need satisfaction ($M = 3.56$). This group reported higher levels of psychological control ($M = 2.99$). With respect to work engagement, the persevering students scored in between the distressed and well-functioning students on vigor ($M = 2.81$), dedication ($M = 3.07$), and absorption ($M = 3.06$).

Well-functioning students. Students in the well-functioning group reported the highest levels of autonomy support ($M = 3.94$) and autonomy need satisfaction ($M = 4.16$) across the four groups. Further, they obtained the lowest scores on psychological control ($M = 2.50$). In contrast to the distressed students reporting the lowest levels of work engagement, this group of students had the highest scores on vigor ($M = 3.51$), dedication ($M = 3.75$), and absorption ($M = 3.59$).

4 Discussion

Findings of the current study further the understanding of factors related to adolescents' academic burnout. As hypothesized, Taiwanese junior high school students' perceived

autonomy support versus psychological control in the classroom environment, satisfaction of need for autonomy, and work engagement all have significant influences on their experienced academic burnout. Moreover, the present findings enrich the literature by examining the differences among the subtypes of academic burnout formulated by Lee et al. (2010). Results of MANOVA suggest that instead of functioning as a homogeneous phenomenon with unitary and universal terms (Schaufeli and Van Dierendonck 1995), academic burnout can further be divided into a few subtypes according to different levels of exhaustion, cynicism, and lack of efficacy. Each subtype is found to display a distinct profile as to students' perceived classroom environment, autonomy need satisfaction and work engagement. Below, several important findings are discussed in more detail.

4.1 Predictors of academic burnout

Results from the hierarchical regression analyses reveal that students' perceived classroom environment has significant influences on their experienced burnout. Markus and Kitayama (2003) have maintained that experiences of autonomy may not be vitalizing to individuals in collectivistic cultures because such experiences are incongruent with the emphases on conformity, social cohesion, and harmonious group functioning in collectivistic cultural contexts. Moreover, they and other cross-cultural researchers argued that non-Western students might even flourish when they are required to live up to pressuring internal or external expectations (Iyengar and Lepper 1999; Markus and Kitayama 2003). Findings of the hierarchical regression analyses, nonetheless, conflict with their argument. The provision of autonomy support from teachers is related to lower levels of adolescents' emotional exhaustion, cynicism, and in particular, feelings of incompetence at academic work. Teachers' autonomy support alone accounts for nearly one third of variance (31 %) in the lack of efficacy. When the teacher engages in such practices as valuing students' viewpoint, encouraging experimentation as well as self-initiation, and acknowledging students' feelings, students are less likely to feel a lack of academic efficacy. As opposed to the negative associations between autonomy support and the three components of academic burnout, teachers' control attempts characterized by guilt-induction or love withdrawal are found to be positively related to students' feeling of being depleted of emotional resources and their cynical response to schoolwork. These findings apparently lend support to the universality of SDT. SDT, in effect, provides an explanation of the universality by distinguishing the concept of autonomy from that of independence. Instead of nonreliance on others, implied in the concept of independence, autonomy reflects experiences of volition and choice. SDT contends that experiences of volition should bring forth optimal consequences across cultures (Ryan and Deci 2003).

In addition to the direct impacts of perceived environment on student burnout, results of mediational analyses suggest that autonomy need satisfaction, vigor, and dedication mediate the relations between autonomy support and academic burnout. Figure 1 shows that dedication mediates the effects of autonomy support on all the dimensions of academic burnout. Students perceiving autonomy support in the classroom are inspired to be enthusiastically involved in schoolwork and willing to invest effort in the face of

difficulties (Deci et al. 1994). Such strong dedication appears to be the central factor that may help ameliorate academic burnout. Unlike the significant mediational effects of dedication on all the aspects of burnout, vigor only mediates the relation between autonomy support and exhaustion. Yet, the significant association between vigor and exhaustion found in the current study exactly substantiates Schaufeli et al.'s (2002) proposition that vigor and exhaustion are antipodes of each other. Students can be invigorated by teachers' provision of autonomy support and therefore less likely to feel emotionally exhausted. When it comes to alleviating students' exhaustion, the most effective antidote appears to be elevating their levels of energy and mental resilience through autonomy support. Among the sub-constructs of engagement, absorption is the only dimension that fails to predict any indicator of academic burnout. This finding is in line with findings of the previous study that absorption is a unique component of engagement that is not clearly antithetical to any aspect of burnout (Schaufeli and Bakker 2004).

It is noteworthy that autonomy need satisfaction only mediates the relation of autonomy support to the lack of efficacy when the mediational effects of vigor and dedication are taken into consideration. Such finding suggests the strong associations between autonomy-related experiences and the individual's feelings of efficacy. As one acts with an internal perceived locus of causality, the autonomously motivated behaviors facilitate a stronger sense of self-efficacy (Knee and Zuckerman 1998). Accordingly, students who experience greater extent of autonomy are found to report significantly lower levels of the lack of efficacy.

4.2 Profiles of students with different types of academic burnout

A primary strength of this study is that it identifies distinct patterns of academic burnout based on the differences in perceived environment, autonomy need satisfaction, and work engagement among the four subtypes. In addition to cross-validating the classification system of burnout formulated by Lee et al. (2010), findings in this regard extend Lee et al.'s study by incorporating the research on academic burnout typologies in the self-determination theory framework. Results of the current study suggest that students report different experiences with self-determination according to their group membership.

Students in the distressed group display the most maladaptive characteristics. They obtain the lowest scores across all the dimensions of work engagement. Their need for autonomy is not adequately satisfied. In terms of perceived classroom environment, they report significantly higher levels of teachers' psychological control and lower levels of autonomy support. Clearly, those who enjoy the lowest levels of autonomy and freedom in the classroom context appear to be vulnerable to the worst type of academic burnout.

Unsurprisingly, the well-functioning students are the most engaged group characterized by the highest levels of vigor, dedication, and absorption. Moreover, they score the highest on autonomy need satisfaction. Their active engagement in schoolwork may result from the nurturing environment that meets the need to experience their behaviors as volitional. Students of this group perceive the highest levels of autonomy

support and the lowest levels of psychological control in the classroom. Presumably, they are encouraged by teachers to pursue intrinsic interest and seek out challenges. Higher levels of work engagement are therefore promoted.

There are no significant differences across all the indicators of work engagement between persevering and laissez-faire students. The very factor that distinguishes between these two groups concerns their different perceptions of the classroom environment. Persevering students perceive significantly higher levels of teachers' psychological control than do laissez-faire students. The higher levels of psychological control may give rise to persevering students' emotional exhaustion and cynicism regarding academic work. On the other hand, laissez-faire group report significantly lower levels of autonomy support in the classroom than do persevering group. As discussed previously, teachers' autonomy support is closely associated with students' academic efficacy. The deficiency of autonomy support may hence result in laissez-faire students' lack of efficacy. These findings clearly have important implications for educational practices.

4.3 Implications for educational practices

In terms of the discussions of implications of this study, it should be noted first that the present data are correlational. To the extent that the correlational findings of the study reflect causal relationships, the current findings suggest that to prevent and ameliorate adolescents' academic burnout, teachers should provide them with autonomy support and simultaneously avoid using controlling practices. Teachers with an autonomy-supportive style motivate and engage students by vitalizing their inner motivational resources through meeting their need for autonomy (Reeve 2006). Specifically, teachers can coordinate the instructional activities with students' preferences, interests, sense of enjoyment, and choice-making. This sort of practice is aimed to bring about students' enhanced efficacy. Second, when students are requested to engage in an uninteresting activity, autonomy-supportive teachers help students generate self-determined motivation by explaining why the undertaking is useful and necessary. Third, if students complain about and resist the requests and instructional agendas that are at odds with their own preferences, autonomy-supportive teachers acknowledge and accept such feelings by communicating an understanding of students' perspective. In doing so, students' emotional exhaustion and cynicism are expected to be considerably minimized.

With respect to reducing the use of controlling techniques, teachers are advised not to prioritize their own perspectives to such an extent that the student's perspective and goals are neglected, dismissed, or overrun. Teachers can empower students by listening carefully and creating opportunities for students to talk (Reeve and Tseng 2011; Reeve 2006). In addition, the use of manipulative techniques like guilt-induction and love withdrawal to pressure students into compliance with the teacher's agenda should be cautiously avoided. Instead, teachers are encouraged to welcome students' thoughts, feelings, and behaviors into the flow of learning activities. These noncontrolling practices are thought to be better able to activate students' inner resources such as intrinsic motivation or intrinsic goals. As findings of the current study suggest, students

benefit from self-determined motivation in terms of the typologies of academic burnout.

4.4 Limitations and future research

Although results of the present study provide insights into educational practices, there are several limitations that need to be noted. First, as mentioned previously, the results of this study are correlational. Any conclusions about causality cannot be drawn from the findings. Second, the present study only examines effects of students' perceptions of teachers' autonomy support and psychological control on academic burnout. Future research should simultaneously assess teachers' own ratings of their provision of autonomy support versus psychological control in the classroom context to see whether students' perceptions are in line with the self-ratings of the teachers themselves. Third, the present findings confirm the relations between teachers' autonomy support versus psychological control and students' academic burnout. Socialization research has demonstrated the negative effects of psychologically controlling parenting on adolescents' development (Soenes and Vansteenkiste, 2010). Future research should also consider parental influences in this regard and explore the differential effects of family and classroom contexts on children's academic burnout. Finally, it has been found that social support from peers is a strong buffer against stressful events (Cohen and Wills 1985). More research investigating the effects of peer support together with relatedness need satisfaction as a result of such support on adolescents' academic burnout is encouraged. Such research has the potential for effective interventions fostering adaptive academic engagement as well as optimal motivation.

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