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# Autonomy Support Versus Psychological Control, Perfectionism, and Taiwanese Adolescents' Achievement Goals

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**ABSTRACT. The author attempted to explore potential antecedents of achievement goals and relations of teacher and parental autonomy support versus psychological control to Taiwanese adolescents' perfectionistic tendencies. A total of 512 eighth-grade students completed self-reported questionnaires assessing variables of interest. Results indicated that perceived autonomy support versus psychological control together with perfectionistic tendencies play a role in predicting Taiwanese adolescents' achievement goal orientations. In addition, the present findings replicated effects of autonomy-supportive versus controlling social environment consistently found in Western cultures. The author also documented profiles of adolescents with different perfectionistic tendencies. Adaptive perfectionists reported higher levels of teachers' autonomy support and lower levels of parental psychological control than did maladaptive perfectionists. Also, adaptive perfectionists were more likely to adopt approach-oriented goals.**

**Keywords: achievement goals, autonomy support, perfectionism, psychological control**

Over the past several decades, achievement goal theory has emerged as the dominant framework for studying achievement motivation. *Achievement goal* refers to a cognitive representation of a competence-based possibility that a person seeks to attain (Elliot, 1999). Achievement goal theorists differentiate achievement goals on two dimensions: according to how competence is defined and according to how competence is valenced. Conventionally, competence may be defined according to whether one has fully mastered the task at hand or performs better than others (i.e., the mastery-performance distinction). In terms of how competence is valenced, an achievement goal may focus the individual on attaining a positive, desirable possibility (an approach goal) or avoiding a negative, undesirable possibility (an avoidance goal).

Combining the definition and valence dimensions result in a 2×2 crossing of the performance-mastery and approach-avoidance distinctions that may account for the broad spectrum of competence-based strivings (Elliot & McGregor, 2001). Mastery-approach goals motivate individuals to increase their competence or achieve task mastery. Mastery-avoidance goals represent striving to avoid losing an individual's skills and abilities or a lack of task mastery. Performance-approach goals focus students on demonstrating their ability relative to others or proving their self-worth. Finally, performance-avoidance goals lead students to avoid appearing incompetent or less able than others. These goals are posited to function as channels for their underlying motivation. Hence, each goal type has been linked to a distinct predictive profile. For instance, mastery goals have been associated with a range of positive processes and outcomes, including absorption in study material, persistence while studying, deep processing of information, and long-term retention of information (Elliot & Church, 1997; Elliot & McGregor, 2001). The relations of mastery goals to positive engagement may arise from intrinsic motivation that underlies this type of goal (Elliot & Harackiewicz, 1996). By contrast, performance-avoidance goals produce worry and distraction that result in procrastination, low absorption during task engagement, and poor retention of information (Elliot & Church, 1997; Elliot & McGregor, 2001).

### *The Hierarchical Model of Achievement Motivation*

Although the relations of achievement goals to school-related outcomes have been extensively explored, there has been a lack of attention to factors predicting achievement goals. To address this issue, the hierarchical model of achievement motivation was developed to incorporate

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both important antecedents of goal adoption and goals together into an integrative framework (Elliot, 2006; Elliot & Thrash, 2001). In the hierarchical model, achievement goals represent the final component of the self-regulatory process through which individuals pursue their more abstract desires, concerns, needs, and motives (i.e., reasons). These abstract reasons are activated by intrapsychic (e.g., individuals' perfectionistic tendencies) or environmental processes (e.g., autonomy support and psychological control in the family or classroom contexts). In turn, individuals adopt more concrete goals to accomplish the desire, concern, need, or motive that has been activated (Elliot & Thrash, 2001). In the present study, the hierarchical model of achievement motivation was employed to help elucidate the potential antecedents of achievement goals. Given that perfectionism has been generally conceptualized as a dispositional tendency to set excessively high standards for performance and to define an individual's worth by accomplishments of those standards (Flett & Hewitt, 2002; Frost, Marten, Lahart, & Rosenblate, 1990), this intrapsychic trait might have implications for the adoption of achievement goals.

### *Adaptive Versus Maladaptive Perfectionism*

Recently, theorists and researchers have begun to distinguish between adaptive and maladaptive perfectionism based on cumulative evidence (Bieling, Israeli, Smith, & Antony, 2003; Enns, Cox, & Clara, 2002; Frost, Heimberg, Holt, Mattia, & Neubauer, 1993). Adaptive perfectionism involves setting high personal standards and striving for success while retaining the ability for an individual to be satisfied with his or her performance. In contrast, maladaptive perfectionism is characterized by excessive rigidity in expectations, compulsion to set high goals, an individual's inability to take pleasure in his or her performance, and concern over errors (Enns et al., 2002). Whereas maladaptive perfectionism was found to be positively related to psychological dysfunction, adaptive perfectionism tended to be positively correlated with healthy adjustment (Stoeber & Otto, 2006).

Built on the conceptualization of perfectionism as a multidimensional construct with both adaptive and maladaptive aspects, Frost et al. (1990) developed a validated and widely used measure of perfectionism, termed the Multidimensional Perfectionism Scale (MPS). These researchers identified five dimensions contributing to total perfectionism. The first dimension has been described as the central feature of perfectionism, namely, the setting of personal standards of performance. Another major dimension is concern over making mistakes. This dimension assesses individuals' tendencies to equate mistakes with failure and to believe that failure will lead to the loss of respect of others. The third component is an individual's tendency to doubt the quality of his or her performance. It measures the extent of an individual's confidence in his or her ability to accomplish tasks. The fourth and fifth dimensions assess the theorized root of perfectionism, high parental expectations and parental criticism. In addition to these five dimensions, a tendency to be organized has often been associated with perfectionism (Frost et al., 1993). Factor analyses performed in previous studies (Bieling, Israeli, & Antony, 2004; Frost et al., 1993) consistently yielded two higher order latent factors sustaining the differentiation between adaptive versus maladaptive perfectionism. Adaptive perfectionism includes scales measuring personal standards and organization, whereas scales measuring concern over mistakes, doubts about actions, and parental criticism cluster together to form a factor reflecting the maladaptive aspect of perfectionism.

Slade and Owens's (1998) dual-process model of perfectionism suggests that adaptive perfectionism is associated with motivation to approach success, while maladaptive perfectionism is likely to bring about motivation to avoid failure. Hope of success and fear of failure that constitute the important features of perfectionism, clearly, may prompt individuals to endorse contrastingly different goals in achievement contexts. Whereas there are plenty of studies on perfectionism in college students, little is known about perfectionism in junior high school students (Stoeber & Rambow, 2007). Of the handful of studies investigating how perfectionism relates to adolescents' academic engagement (Accordino, Accordino, & Slaney, 2000; Einstein, Lovibond, & Gaston, 2000; Nounopoulos, Asbhy, & Gilman, 2006; Vandiver & Worrell, 2002), no one has yet addressed the relations of adaptive versus maladaptive perfectionism to achievement goals among junior high students. In the present study I therefore attempted to explore the impacts of Taiwanese young adolescents' perfectionistic tendencies on their adoption of achievement goals in the hope that the findings would shed more light in this regard.

In addition to perfectionism, because daily life experiences within social contexts produce recurrent approach and avoidance tendencies with regard to achievement (Elliot, 2006), students' perceptions of autonomy support versus psychological control in family and classroom contexts may, to a certain degree, shape their achievement striving. In the following section, effects of these environmental processes are further elaborated.

### *Autonomy Support Versus Psychological Control*

Self-determination theory (SDT; Deci & Ryan, 2000; Ryan & Deci, 2000) proponents contended that autonomy-supportive environments promote the development of self-governing functioning as well as beneficial outcomes. In autonomy-supportive contexts, an individual in a position of authority takes the other's perspective, allows opportunities for self-initiation and choice, provides a meaningful rationale for the requirement, and acknowledges the other's feelings while minimizing the use of pressures and demands (Deci, Eghrari, Patrick, & Leone, 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, Vansteenkiste, Luyten, Duriez, & Goossens, 2005).

Previous findings revealed that when interpersonal contexts of children's learning were autonomy supportive rather than psychologically controlled, children reported higher levels of intrinsic motivation, perceived cognitive competence (Deci, Schwartz, Sheinman, & Ryan, 1981), and self-esteem (Ryan & Grolnick, 1986). When interpersonal contexts were psychologically controlling, individuals' self-esteem hinged on performance. This type of ego involvement led people to focus on proving and defending themselves rather than pursuing growth and challenge (Deci & Ryan, 1987). Put another way, social contexts characterized by autonomy support versus psychological control are expected to lead students to espouse different types of achievement goals.

In addition to serving as antecedents of achievement goals, autonomy support versus psychological control may also be linked to perfectionistic features. For instance, Hamachek (1978) presumed that maladaptive perfectionism arises from nonapproval and conditional approval of parents. Soenens et al. (2005) in effect found that adolescents experiencing psychological control doubted their behavior, engaged in negative self-evaluation, and had strong concerns about their potential mistakes.

### *Effects of Cultural Context*

Whereas considerable empirical findings supporting SDT have identified beneficial effects of autonomy support versus deleterious effects of psychological control on individuals' achievement-relevant processes, Markus and Kitayama (1991, 2003) challenged the applicability of these findings to non-Western cultures. These researchers maintained that individuals in many non-Western cultures, particularly East Asian cultures, possess a more interdependent model of the self. 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 & Lepper, 1999). Such is the case in Taiwan.

Studies of the Taiwanese society 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). Additionally, compared to American parents, Taiwanese parents are more likely to expect their children to excel academically (Benjamin, 2006). Thus, 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 that Taiwanese students strive to live up to expectations of their authority figures, such as parents and teachers, it would be informative to examine whether findings regarding the harmful effects of psychological control on Western students' motivation also apply to Taiwanese students.

According to SDT (Deci & Ryan, 2000), autonomy-supportive versus psychologically controlling environments may orient students not only to different types of achievement goals, but also to different personality dispositions. Individuals' perceptions of autonomy support in social contexts are likely to inspire them to endorse mastery-oriented goals and adaptive perfectionism. In contrast, psychologically controlling environments are presumed to lead to avoidance-focused goals and maladaptive perfectionism. Moreover, Slade and Owens's (1998) dual-process model of perfectionism suggests that different perfectionistic orientations are supposed to elicit different goals in achievement settings. Adaptive perfectionism is expected to be related to approach-focused goals, whereas maladaptive perfectionism may be linked with avoidance-focused goals.

In summary, in the present study I attempted to examine the applicability of the hierarchical model of achievement motivation to the Taiwanese context. Based on this model, it was expected that perceived autonomy support versus psychological control in family and classroom contexts, as well as individuals' perfectionistic tendencies, would function as antecedents of goal adoption. Additionally, according to SDT, students' perceptions of autonomy support versus psychological control in social contexts were expected to be related to their perfectionistic strivings. Specifically, the present research was intended to test the following hypotheses: (a) adolescents' perceptions of parental and teacher autonomy support and psychological control, along with perfectionistic tendencies would significantly predict their achievement goal orientations; (b) adolescents' perceptions of parental and teacher autonomy support and psychological control would significantly predict their perfectionistic tendencies; and (c) adolescents' perceptions of parental and teacher autonomy support and psychological control, as well as achievement goal orientations, would significantly differ according to their perfectionistic tendencies.

## Method

### *Participants*

The participants included 512 eighth-grade Taiwanese students from 21 classes in four 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 262 girls (51%) and 250 boys ranged in age from 12 years, 9 months to 16 years, 6 months ($M = 13$ years, 6 months, $SD = 8.2$ 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.

*Procedure*

The data were collected at the beginning of Grade 8 (September). Students were required to fill out six questionnaires (described in detail subsequently) 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.

*Measures*

Participants were instructed to respond to all items on 5-point Likert-type scales ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). All questionnaires were translated from English to Chinese, the participants' native language, using the guidelines of the International Test Commission (Hambleton, 1994).

*Perfectionism*. Students' perfectionistic tendencies were assessed by the scale adapted from the MPS (Frost et al., 1990). This scale measures perfectionism across six dimensions. For the present investigation, four of the original six subscales were used including Personal Standards (e.g., "I set higher goals than most people"; six items; Cronbach's $\alpha$ = .81), Organization (e.g., "I try to be an organized person"; five items; Cronbach's $\alpha$ = .86), Concern over Mistakes (e.g., "People will probably think less of me if I make a mistake"; nine items; Cronbach's $\alpha$ = .84), and Doubts About Actions (e.g., "I usually have doubts about the simple everyday things I do"; four items; Cronbach's $\alpha$ = .65). Although the subscale measuring Doubts About Actions had a lower alpha value, Fornell and Larcker (1981) suggested that an alpha value of .6 is generally acceptable.

Next, according to Frost et al.'s (1993) study on adaptive versus maladaptive perfectionism, subscales assessing Personal Standards and Organization were combined to create the Adaptive Perfectionism measure ($r$ = .63, $p$ < .001; Cronbach's $\alpha$ = .87). Also, scores for Concern over Mistakes and Doubts About Actions were averaged to form a Maladaptive Perfectionism composite ($r$ = .52, $p$ < .001; Cronbach's $\alpha$ = .81). To examine the validity of these two composite scales, confirmatory factor analyses (CFAs) were completed using LISREL 8.52 (Jöreskog & Sörbom, 2002). Maximum likelihood was used as the estimation method (Hoyle & Panter, 1995). In the models tested, items from each composite scale (i.e., Adaptive vs. Maladaptive Perfectionism) were hypothesized to load only onto their respective latent variables.

Results suggested that in terms of adaptive perfectionism, the model represented an adequate fit to the data, $\chi^2(37, N = 512) = 119.04$, $p < .01$, $\chi^2/N = .23$, root mean square error of approximation (RMSEA) = .06, goodness of fit index (GFI) = .96, normed fit index (NFI) = .98, nonnormed fit index (NNFI) = .98, comparative fit index (CFI) = .99, incremental fit index (IFI) = .99, relative fit index (RFI) = .97. The model of maladaptive perfectionism also provided an acceptable fit to the data, $\chi^2(56, N = 512) = 166.38$, $p < .05$, $\chi^2/N = .32$, RMSEA = .06, GFI = .95, NFI = .96, NNFI = .97, CFI = .98, IFI = .98, RFI = .95.

*Achievement goals*. Students' achievement goal orientations were measured by the revised version of the Achievement Goals Questionnaire (Elliot & Murayama, 2008). This questionnaire assesses the four types of achievement goals. Four scores representing Mastery-Approach (e.g., "My goal is to learn as much as possible"; three items; Cronbach's $\alpha$ = .78), Mastery-Avoidance (e.g., "My goal is to avoid learning less than it is possible to learn"; three items; Cronbach's $\alpha$ = .67), Performance-Approach (e.g., "My goal is to perform better than the other students"; three items; Cronbach's $\alpha$ = .80), and Performance-Avoidance Goals (e.g., "My goal is to avoid performing poorly compared to others"; three items; Cronbach's $\alpha$ = .77) for each student were created accordingly. 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 suggested that this model represented a reasonable fit for the proposed structure of the scale, $\chi^2(48, N = 512) = 154.79$, $p < .05$, $\chi^2/N = .30$, RMSEA = .06, GFI = .95, NFI = .98, NNFI = .98, CFI = .98, IFI = .98, RFI = .97.

*Perceived autonomy support from teachers*. Students' perceptions of autonomy support provided by their teachers were assessed by the short version of the Learning Climate Questionnaire (Williams & Deci, 1996). Six items measure the degree to which students perceive instructors as supporting student autonomy (e.g., "My instructor listens to how I would like to do things"; Cronbach's $\alpha$ = .78). Higher scores represent a higher level of perceived autonomy support in the classroom context. In the CFA model, all items were hypothesized to load onto one latent factor. Results showed that this model provided a good fit to the data, $\chi^2(6, N = 512) = 14.29$, $p > .05$, $\chi^2/N = .03$, RMSEA = .04, GFI = .99, NFI = .99, NNFI = .99, CFI = .99, IFI = .99, RFI = .97.

*Perceived autonomy support from parents*. Students' perceptions of autonomy support provided by their parents were assessed by the child version of the Perceptions of Parents Scales (Grolnick, Ryan, & Deci, 1991). Six items assess children's perceptions of the degree to which their parents are autonomy supportive (e.g., "My parents always explain to me about the way I should behave"; Cronbach's $\alpha$ = .65). Higher scores represent a higher level of perceived autonomy support in the family context. A CFA was also run to examine the validity of this scale. In the model tested, all items were hypothesized to load onto one latent factor. Results showed that this model provided an excellent fit to the data, $\chi^2(5, N = 512) = 3.94$, $p > .05$, $\chi^2/N = .01$, RMSEA = .01, GFI = 1.00, NFI = .99, NNFI = 1.00, CFI = 1.00, IFI = 1.00, RFI = .98.

*Parental and teachers' psychological control*. Students' perceptions of parental psychological control were assessed by the Parental Psychological Control Scale (Shek, 2006). Ten items assess parental psychological control in a global manner (e.g., "My parents want to control everything in my life"; Cronbach's $\alpha = .86$). In addition, the Parental Psychological Control Scale 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" (e.g., "During our conversation, my teacher always dominates the conversation and wants me to follow his or her view"; Cronbach's $\alpha = .88$). Higher scores represent a higher level of perceived psychological control in the family or classroom context.

In the CFA models, items assessing parental control were hypothesized to load onto one latent factor. The CFA yielded a good fit to the data, $\chi^2(29, N = 512) = 63.69$, $p < .05$, $\chi^2/N = .12$, RMSEA = .04, GFI = .98, NFI = .99, NNFI = .99, CFI = .99, IFI = .99, RFI = .98. Items for teachers were also hypothesized to load onto a single latent factor in the tested CFA model. Results suggested that this model provided a good fit to the data as well, $\chi^2(30, N = 512) = 62.98$, $p < .01$, $\chi^2/N = .12$, RMSEA = .04, GFI = .98, NFI = .98, NNFI = .99, CFI = .99, IFI = .99, RFI = .97.

## Results

### *Regression Analyses*

Descriptive information and correlations for study variables are displayed in Table 1. Results from regression analyses are presented first for outcomes regarding students' achievement goal orientations, and then for their perfectionistic tendencies. 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. Across regression analyses, perceived autonomy support versus psychological control in social contexts were given higher priority of entry because this set of predictors were presumed to have influences on perfectionistic tendencies (Soenens et al., 2005; Tabachnick & Fidell, 2007). O'Keefe (2003) contended that the use of alpha-adjustment procedures to control for excessive familywise error (e.g., the Bonferroni adjustment) unduly reduces statistical power and increases Type II error. To avoid such a problem, instead of employing the familywise correction procedure, 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).

### *Hierarchical Regressions Predicting Achievement Goal Orientations*

*Mastery-approach goals*. Results of hierarchical regressions predicting achievement goal orientations are displayed in Table 2. As the first set of predictor variables, students' perceptions of parental autonomy support and psychological control failed to explain a significant amount of the variance in mastery-approach goals. In Step 2, teachers' autonomy support and psychological control were entered in the equation. Adding these variables increased the amount of variance explained in mastery-approach goals by 11%, $F(4, 507) = 16.49$, $p < .001$. Perceived autonomy support provided by teachers positively predicted mastery-approach goals, $\beta = .34$, $p < .001$. In the final step of the model, students' different perfectionistic tendencies were included. Adding these variables increased the amount of variance explained by 37% for mastery-approach goals, $F(8, 503) = 59.69$, $p < .001$. When other predictors were controlled for, both the tendencies to set higher personal standards ($\beta = .39$, $p < .001$) and to be organized ($\beta = .33$, $p < .001$) were positively correlated with mastery-approach goals.

*Mastery-avoidance goals*. Students' perceived parental autonomy support and psychological control were entered in the first regression model and failed to account for a significant amount of the variance in mastery-avoidance goals. Adding teachers' autonomy support and psychological control in Step 2 increased the amount of variance explained in mastery-avoidance goals by 5%, $F(4, 507) = 7.84$, $p < .001$. Teachers' autonomy support positively predicted mastery-avoidance goals, $\beta = .23$, $p < .001$. In Step 3, students' different perfectionistic tendencies were included in the model. Adding these variables increased the amount of variance explained by 31% for mastery-avoidance goals, $F(8, 503) = 36.90$, $p < .001$. Results from this step suggested that when other predictors were controlled for, personal standards and organization both positively predicted mastery-avoidance goals, $\beta = .44$, $p < .001$, and $\beta = .13$, $p < .01$, respectively.

*Performance-approach goals*. Variables entered in Step 1 failed to predict a significant amount of the variance in performance-approach goals. Results from the second step of analysis indicated that adding teachers' autonomy support and psychological control increased the amount of variance explained in performance-approach goals by 10%, $F(4, 507) = 14.78$, $p < .001$. When other predictors were accounted for, teachers' autonomy support positively predicted performance-approach goals, $\beta = .12$, $p < .01$. In the final step, students' different perfectionistic tendencies were included. Adding these variables increased the amount of variance explained for performance-approach goals by 44%, $F(8, 503) = 73.83$, $p < .001$. When other predictors were controlled for, students' perfectionistic tendencies including personal standards ($\beta =$

**TABLE 1. Descriptive Statistics and Correlations for Study Variables (N = 512)**

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Parental autonomy support | — | | | | | | | | | | | |
| 2. Parental psychological control | −.49** | — | | | | | | | | | | |
| 3. Teacher autonomy support | .20** | −.15** | — | | | | | | | | | |
| 4. Teacher psychological control | −.10 | .48** | −.30** | — | | | | | | | | |
| 5. Personal standards | .07 | .05 | .25** | .04 | — | | | | | | | |
| 6. Organization | .12** | −.05 | .34** | −.06 | .63** | — | | | | | | |
| 7. Concern over mistakes | −.04 | .28** | .06 | .17** | .59** | .29** | — | | | | | |
| 8. Doubts about actions | −.02 | .26** | .04 | .19** | .33** | .22** | .52** | — | | | | |
| 9. Mastery-approach goals | .11* | −.03 | .32** | −.01 | .63** | .61** | .24** | .17** | — | | | |
| 10. Mastery-avoidance goals | .10* | −.03 | .21** | .04 | .59** | .46** | .38** | .22** | .64** | — | | |
| 11. Performance-approach goals | .05 | .01 | .30** | .03 | .70** | .57** | .46** | .21** | .68** | .57** | — | |
| 12. Performance-avoidance goals | .03 | .01 | .02 | .30** | .63** | .18 | .46** | .24** | −.24** | .65** | .73** | — |
| *M* | 2.40 | 2.77 | 3.32 | 2.27 | 3.03 | 3.44 | 2.59 | 2.91 | 3.42 | 3.19 | 3.24 | 3.30 |
| *SD* | 0.84 | 0.94 | 0.71 | 0.73 | 8.420 | 0.89 | 0.80 | 0.85 | 0.90 | 0.88 | 0.96 | 0.97 |

*$p < .05$. **$p < .01$.

.48, $p < .001$), organization ($\beta = .21$, $p < .001$), as well as concern over making mistakes ($\beta = .15$, $p < .001$), were all positively correlated with performance-approach goals.

*Performance-avoidance goals*. Students' perceptions of parental autonomy support and psychological control were entered in Step 1 and failed to account for a significant portion of the variance in performance-avoidance goals.

**TABLE 2. Summary of Hierarchical Regression Analyses Predicting Achievement Goals (N = 512)**

| | Mastery-approach goals | | | Mastery-avoidance goals | | | Performance-approach goals | | | Performance-avoidance goals | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | $\beta$ | $t$ | $\Delta R^2$ | $\beta$ | $t$ | $\Delta R^2$ | $\beta$ | $t$ | $\Delta R^2$ | $\beta$ | $t$ | $\Delta R^2$ |
| Step 1 | | | .01 | | | .01 | | | .00 | | | .00 |
| Parental support | .12 | 2.32 | | .10 | 1.96 | | .08 | 1.48 | | .05 | 1.06 | |
| Parental control | .03 | 0.57 | | .02 | 0.38 | | .05 | 0.93 | | .04 | 0.80 | |
| Step 2 | | | .11 | | | .05 | | | .10 | | | .05 |
| Parental support | .05 | 0.01 | | .04 | 0.85 | | .00 | 0.05 | | .00 | −0.06 | |
| Parental control | .00 | 1.10 | | −.04 | −0.61 | | .00 | −0.05 | | −.01 | −0.22 | |
| Teacher support | .34*** | 7.71 | | .23*** | 5.07 | | .34** | 7.50 | | .12 | 2.13 | |
| Teacher control | .10 | 1.99 | | .13 | 2.49 | | .14*** | 2.70 | | .13** | 2.47 | |
| Step 3 | | | .37 | | | .31 | | | .44 | | | .37 |
| Parental support | .00 | 0.07 | | −.01 | −0.23 | | −.05 | −1.50 | | −.06 | −1.56 | |
| Parental control | −.04 | −0.78 | | −.11 | −2.24 | | −.08 | −1.85 | | −.10 | −2.29 | |
| Teacher support | .12 | 3.45 | | .05 | 1.33 | | .12** | 3.59 | | .05 | 1.23 | |
| Teacher control | .05 | 1.40 | | .08 | 1.78 | | .08 | 2.25 | | .07 | 1.81 | |
| Personal standards | .39*** | 7.99 | | .44*** | 8.03 | | .48*** | 10.27 | | .43*** | 8.28 | |
| Organization | .33*** | 7.65 | | .13** | 2.83 | | .21*** | 5.07 | | .12 | 1.42 | |
| Concern over mistakes | .02 | 0.53 | | .08 | 1.66 | | .15*** | 3.56 | | .18** | 3.81 | |
| Doubts about actions | −.05 | −1.21 | | .02 | 0.46 | | −.07 | −2.06 | | −.02 | −0.50 | |

**$p < .01$. ***$p < .001$.

Results from Step 2 showed that adding teachers' autonomy support and psychological control increased the amount of variance explained by 5% for performance-avoidance goals, $F(4, 507) = 7.28$, $p < .001$. When other predictors were accounted for, teachers' psychological control positively predicted performance-avoidance goals, $\beta = .13$, $p < .01$. In Step 3, students' different perfectionistic tendencies were entered. Adding these variables increased the amount of variance explained for performance-avoidance goals by 37%, $F(8, 503) = 48.07$, $p < .001$. When other predictors were controlled for, personal standards and concern over mistakes both positively predicted performance-avoidance goals, $\beta = .43$, $p < .001$, and $\beta = .18$, $p < .01$, respectively.

### *Hierarchical Regressions Predicting Perfectionistic Tendencies*

*The setting of personal standards.* Table 3 provides results of hierarchical regressions predicting students' perfectionistic tendencies. In terms of the setting of personal standards, students' perceptions of parental autonomy support and psychological control were entered in Step 1 and accounted for a significant portion of the variance (2%), $F(2, 509) = 4.47$, $p = .01$. Parental autonomy support positively predicted personal standards, $\beta = .13$, $p = .01$. Results from Step 2 indicated that adding teachers' autonomy support and psychological control increased the amount of variance explained by 7% for personal standards, $F(4, 507) = 12.06$, $p < .001$. When other predictors were accounted for, students who perceived autonomy support from teachers tended to set higher personal standards, $\beta = .28$, $p < .001$.

*The tendency to be organized.* The amount of variance explained by variables in the first step of analysis was insignificant for the tendency to be organized. Adding teachers' autonomy support and psychological control in Step 2 increased the amount of variance explained for organization by 11%, $F(4, 507) = 16.91$, $p < .001$. When other predictors were controlled for, students who perceived autonomy support from teachers tended to lead organized lives, $\beta = .34$, $p < .001$.

*Concern over mistakes.* Students' perceptions of parental autonomy support and psychological control were entered in the first regression model and accounted for a significant amount of the variance (9%) in students' concern over making mistakes, $F(2, 509) = 25.35$, $p < .001$. Perceived parental psychological control positively predicted concern over mistakes, $\beta = .34$, $p < .001$. Adding teachers' autonomy support and psychological control in Step 2 did not significantly increase the amount of variance explained for concern over mistakes.

*Doubts about the quality of performance.* The amount of variance (8%) explained by students' perceptions of parental autonomy support and psychological control in the first step of the analysis was significant for students' doubts about the quality of their performance, $F(2, 509) = 23.08$, $p < .001$. Perceived parental psychological control is positively associated with doubts about the quality of performance, $\beta = .33$, $p < .001$. Adding teachers' autonomy support and psychological control in Step 2 failed to significantly increase the amount of variance explained for this predicted variable.

### *Differences Between Adaptive Versus Maladaptive Perfectionists*

To determine the differences in key variables of interest between students with different subtypes of perfectionism, participating adolescents were identified as adaptive versus maladaptive perfectionists. Students' scores on Adaptive and Maladaptive Perfectionism scales (Frost et al., 1990) served to identify adolescents who endorsed a certain subtype of perfectionism. Participants who scored above the mean on Adaptive Perfectionism and below the mean on Maladaptive Perfectionism were grouped as adaptive perfectionists. Conversely, those who scored above the mean on

**TABLE 3. Summary of Hierarchical Regression Analyses Predicting Perfectionistic Tendencies (N = 512)**

| | Personal standards | | | Organization | | | Concern over mistakes | | | Doubts about actions | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | $\beta$ | $t$ | $\Delta R^2$ | $\beta$ | $t$ | $\Delta R^2$ | $\beta$ | $t$ | $\Delta R^2$ | $\beta$ | $t$ | $\Delta R^2$ |
| Step 1 | | | .02 | | | .01 | | | .09 | | | .08 |
| Parental support | .13** | 2.67 | | .12 | 2.32 | | .12 | 2.31 | | .12 | 2.30 | |
| Parental control | .12 | 2.28 | | .00 | 0.06 | | .34*** | 7.07 | | .33*** | 6.79 | |
| Step 2 | | | .07 | | | .11 | | | .01 | | | .01 |
| Parental support | .08 | 1.54 | | .06 | 1.23 | | .11 | 2.12 | | .11 | 2.16 | |
| Parental control | .09 | 1.70 | | .01 | 0.18 | | .32*** | 5.72 | | .28*** | 5.09 | |
| Teacher support | .28*** | 6.22 | | .34*** | 7.60 | | .11 | 2.29 | | .10 | 2.09 | |
| Teacher control | .09 | 1.84 | | .04 | 0.73 | | .06 | 1.16 | | .09 | 1.96 | |

**$p < .01$. ***$p < .001$.

**TABLE 4. Effect Size Statistics (Cohen's *d*) for the Differences Between Adaptive Versus Maladaptive Perfectionists**

| | Adaptive perfectionists ($n = 91$) | | Maladaptive perfectionists ($n = 95$) | | |
|---|---|---|---|---|---|
| | M | *SD* | M | *SD* | Cohen's *d* |
| Parental autonomy support | $2.54_a$ | 0.91 | $2.35_a$ | 0.82 | 0.22 |
| Parental psychological control | $2.35_b$ | 0.82 | $3.06_a$ | 0.95 | 0.80 |
| Teacher autonomy support | $3.54_a$ | 0.67 | $3.20_b$ | 0.67 | 0.51 |
| Teacher psychological control | $2.09_a$ | 0.64 | $2.29_a$ | 0.71 | 0.30 |
| Mastery-approach goals | $4.00_a$ | 0.77 | $3.12_b$ | 0.76 | 1.15 |
| Mastery-avoidance goals | $3.28_a$ | 0.98 | $3.04_a$ | 0.67 | 0.29 |
| Performance-approach goals | $3.67_a$ | 0.83 | $2.95_b$ | 0.74 | 0.92 |
| Performance-avoidance goals | $3.15_a$ | 0.98 | $3.28_a$ | 0.74 | 0.15 |

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

Maladaptive Perfectionism and below the mean on Adaptive Perfectionism were selected as maladaptive perfectionists. In total, 186 of 512 students met this rigorous definition, including 91 adaptive perfectionists and 95 maladaptive perfectionists. Table 4 presents the means and standard deviations of dependent variables according to students' different perfectionistic orientations and effect size statistics (Cohen's *d*) for the differences.

The assumption of homogeneity of variance-covariance had been tested before the multivariate analysis of variance (MANOVA) was performed. Because cell sizes for independent variables (i.e., adaptive perfectionists vs. maladaptive perfectionists) were unequal, Box's M test was conducted first to check for homogeneity of covariance matrices. The result of this test was not significant ($F = 1.25$, $p > .05$), indicating the confirmation of this assumption (Tabachnick & Fidell, 2007). A MANOVA revealed significant effects for perfectionistic orientations, Hotelling's $t = .62$, $F(8, 177) = 13.76$, $p < .001$, $\eta^2 = .38$. Results of univariate analyses indicated significant effects of perfectionistic orientations on perceived parental psychological control, $F(1, 184) = 29.19$, $p < .001$, $\eta^2 = .14$; teachers' autonomy support, $F(1, 184) = 11.80$, $p = .001$, $\eta^2 = .06$; mastery-approach goals, $F(1, 184) = 61.87$, $p < .001$, $\eta^2 = .25$; and performance-approach goals, $F(1, 184) = 37.94$, $p < .001$, $\eta^2 = .17$. Adaptive perfectionists scored significantly higher on teachers' autonomy support (M = 3.54, *SD* = 0.67 vs. M = 3.20, *SD* = 0.67), mastery-approach (M = 4.00, *SD* = 0.77 vs. M = 3.12, *SD* = 0.76), and performance-approach goals (M = 3.67, *SD* = 0.83 vs. M = 2.95, *SD* = 0.74) than did maladaptive perfectionists. In contrast, maladaptive perfectionists (M = 3.06, *SD* = 0.95) reported significantly higher levels of perceived parental psychological control than did adaptive perfectionists (M = 2.35, *SD* = 0.82).

## Discussion

Findings of the present study lend support to the applicability of the hierarchical model of achievement motivation proposed by Western theorists (Elliot, 2006; Elliot & Church, 1997; Elliot & Thrash, 2001) to the Taiwanese context. Moreover, this study addresses the paucity of attention to antecedents of goal adoption. It is found that perceived autonomy support versus psychological control together with perfectionistic tendencies play a role in predicting Taiwanese adolescents' achievement goal orientations. Also, the present findings sustain beneficial effects of autonomy support versus deleterious effects of psychological control repeatedly found in Western cultures (Vansteenkiste, Lens, & Deci, 2006). I subsequently discuss several important findings in more detail.

### *Predictors of Achievement Goals*

Depending on the nature of the predicted type of achievement goal, different environmental factors and perfectionistic tendencies function as antecedents of goal adoption. In terms of environmental influences, teachers' autonomy support positively predicts mastery-oriented and performance-approach goals. It may be that autonomy support in classroom settings nurtures students' aspirations to achieve task mastery (mastery-oriented goals) and to demonstrate themselves (performance-approach goals). In contrast, psychologically controlling practices in classroom contexts focus students on avoiding failure in order for teacher approval. As it turns out, teachers' psychological control positively predicts performance-avoidance goals. Despite the unneglectable role of teaching practices in students' goal orientations, nevertheless, adolescents' own perfectionistic tendencies account for a far greater amount of variance in achievement goals than do social contexts.

Although the present findings substantiate the notion of SDT, environmental influences found in the current study do not appear as strong as those documented in the Western literature. In particular, the hypothesized effects of parental autonomy support versus control on achievement goals are not sustained. As mentioned previously, Taiwanese students tend to obey their parents in order to fulfill obligations imposed by the family (Yang, 1997). Such socialization experiences are thereby likely to somewhat offset both harmful

effects of psychological control and optimal effects of autonomy support constantly found in the Western studies.

As Table 2 shows, adding perfectionistic tendencies in regression models increases a considerable amount of variance (30%~44%) explained for achievement goals, suggesting the pivotal role of personality dispositions in individuals' goal orientations. It is noteworthy that students' concern over making mistakes emerges as the key predictor that separates between mastery-oriented and performance-approach goals. Elliot and Church (1997) maintained that performance-approach goal regulation represents a motivational hybrid. Specifically, this type of goal may be undergirded by approach (e.g., need for achievement) and avoidance motivation concerns (e.g., fear of failure). The avoidance motivation that partly underlies performance-approach goals, as the present findings indicate, may be rooted in individuals' maladaptive perfectionistic concern (i.e., concern over mistakes).

### *Relations of Autonomy Support Versus Psychological Control to Perfectionism*

The present study is the first to examine relations of autonomy support along with psychological control to the dual aspects of perfectionism. Results from regression analyses provide evidence for the differentiation between adaptive and maladaptive aspects of perfectionism. Parental psychological control positively predicts both dimensions of maladaptive perfectionism. Apparently, such parenting techniques socialize children to determine their self-worth on the basis of attainment of standards. Inability to meet standards puts these youngsters' self-worth on the line. Students are accordingly highly concerned about their performance and afraid to make mistakes. In contrast, adolescents' adaptive perfectionistic tendencies are positively predicted by teachers' autonomy support. Findings in this regard illustrate the role of adaptive teaching practices in pupils' healthy personality.

### *Profiles of Adaptive Versus Maladaptive Perfectionists*

A unique strength of the study design is that it documents profiles of students with different perfectionistic tendencies. Results of MANOVA confirm the related hypothesis and show striking differences in perceived interpersonal contexts and achievement goal orientations between adaptive and maladaptive perfectionists. Adaptive perfectionists tend to characterize social contexts as more support for volitional functioning and less control through intrusive socialization techniques. Moreover, students with these adaptive personality dispositions are inspired to approach success through pursuing approach-oriented goals. Profiles of adaptive versus maladaptive perfectionists documented in the current research reveal that adolescents are attuned to cues from the environment that shape their personality tendencies and achievement goal orientations.

Unexpectedly, there exists no difference in the performance-avoidance goal orientation between adaptive and maladaptive perfectionists. A closer look at results from regressions predicting achievement goals suggests that this lack of significant difference may be attributable to the positive correlation between personal standards and performance-avoidance goals. Students who aspire to set higher standards are prone to avoid appearing incompetent. Given that the dimension of personal standards constitutes a primary component of adaptive perfectionism, students scoring higher on Adaptive Perfectionist scales are also likely to endorse performance-avoidance goals. Consequently, in regard to performance-avoidance goal orientation, the expected difference between adaptive and maladaptive perfectionists is negligible.

### *Implications for Practice*

Results from the present study show that perceived autonomy support in environments and individuals' adaptive perfectionistic tendencies are positively related to approach-oriented goals. There are several implications for practice that can be drawn from these findings. First, in order for nourishing autonomy in the classroom, it is important to involve students in formulating classroom regulations that impact learning. Additionally, teachers should offer students leeway in selecting the means for mastering learning objectives and the opportunity to work at their own pace (Kaplan & Maehr, 2007). Further, adaptive perfectionistic strivings can be facilitated by making material relevant and interesting to students, providing support for complex and challenging tasks, and avoiding using grades and incentives to motivate students (Meece, 1991). Another implication concerns interpersonal relationships between teacher and students. Autonomy support requires the teacher's willingness to enter into relationships from the students' perspective to encourage initiative, nurture inner motivational resources, and communicate in informational, noncontrolling language (Reeve, 2006).

### *Limitations and Future Research*

Although results of the present study provide insights into the interplay among achievement goals, perfectionistic tendencies, and social environments, there are a number of limitations that need to be addressed. First, findings of the study are all based on self-report measures. Future research should benefit from incorporating other methods of data collection, such as interviews or parents' and teachers' reports. Second, the regression procedure performed in the current research does not allow illumination of pathways among perceived interpersonal contexts, perfectionistic tendencies, and achievement goal orientations. It is likely that perfectionism mediates effects of social contexts on the person's goal orientations. Future research using structural equation modeling to test the hypothesized path model is encouraged. Finally, because of the correlational nature of the design,

conclusions regarding clear causal relations among variables of interest cannot be drawn. Longitudinal studies that explore long-term effects of interpersonal contexts on adolescents' perfectionistic tendencies and achievement goal orientations may help clarify the direction of these effects. Such research has the potential for effective interventions fostering adaptive personality tendencies as well as achievement behaviors.

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