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Perfectionism and achievement goal orientations in adolescent school students

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Abstract

Perfectionism has been shown to predict individual differences in achievement goal orientations in university students, but research on perfectionism and goal orientations in school students is still very limited. Investigating 584 adolescent school students in a cross-sectional correlational design, the present study examined how self-oriented and socially prescribed perfectionism predicted students’ goal orientations. Multiple regression analyses showed that, when the overlap between the different goal orientations was controlled for, self-oriented perfectionism positively predicted mastery-approach and mastery-avoidance goal orientations whereas socially prescribed perfectionism positively predicted performance-approach orientation. The present findings indicate that perfectionism predicts individual differences in adolescent school students’ achievement goal orientations, but different forms of perfectionism are associated with different patterns of goal orientations.

Keywords: perfectionism; motivation; achievement goal orientations; performance; mastery; approach; avoidance; adolescence; school students
Introduction

Perfectionism has been shown to predict individual differences in achievement goal orientations in university students, but research on school students is still very limited. Relationships between perfectionism and goal orientations have mostly been investigated in the trichotomous framework—differentiating performance approach, performance avoidance, and mastery goals—and with university students (see Fletcher & Speirs Neumeister, 2012, for a review). To our knowledge, no study has so far investigated how self-oriented and socially prescribed perfectionism predict individual differences in achievement goal orientations in the 2 × 2 framework—differentiating performance approach, performance avoidance, mastery approach, and mastery avoidance goals—in school students. In this context, we aimed to conduct a first study examining the unique roles that self-oriented and socially prescribed perfectionism play in the prediction of the 2 × 2 achievement goal orientations in adolescent school students while controlling for the overlap between goal orientations.

Perfectionism

Perfectionism is a personality disposition characterized by striving for flawlessness and setting exceedingly high standards of performance accompanied by overly critical evaluations of one’s behavior (Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). However, perfectionism has different aspects and is best conceptualized as a multidimensional personality trait. Moreover, there are different forms of perfectionism each with different characteristics (see Enns & Cox, 2002, for a review).

Regarding multidimensional conceptualizations of perfectionism, one of the most influential and widely researched models is Hewitt and Flett’s (1991) model of perfectionism. With the recognition that perfectionism has personal and social aspects, the model differentiates two main forms of perfectionism: self-oriented perfectionism and socially prescribed perfectionism.¹ Self-
oriented perfectionism comprises internally motivated beliefs that striving for perfection and being perfect are important. Self-oriented perfectionists have exceedingly high personal standards, strive for perfection, expect to be perfect, and are highly self-critical if they fail to meet these expectations. In contrast, socially prescribed perfectionism comprises externally motivated beliefs that striving for perfection and being perfect are important to others. Socially prescribed perfectionists believe that others expect them to be perfect, and that others will be highly critical of them if they fail to meet these expectations (Hewitt & Flett, 1991, 2004).

Whereas research has shown that both forms of perfectionism are positively associated with psychological distress (see Hewitt & Flett, 2004, for a review), the majority of findings suggests that socially prescribed perfectionism is the more maladaptive form of the two, showing consistent positive correlations with indicators of psychological maladjustment such as anxiety, depression, and psychological symptoms (e.g., Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Hewitt & Flett, 1991, 2004). Moreover, socially prescribed perfectionism has shown negative correlations with intrinsic motivation for studying (Stoeber, Feast, & Hayward, 2009). In contrast, self-oriented perfectionism seems to be a more ambivalent form of perfectionism. On the one hand, it too has shown positive correlations with anxiety and psychological symptoms, albeit to a lesser degree than socially prescribed perfectionism (Hewitt & Flett, 1991, 2004). Moreover, the positive correlations it has shown with depression were often nonsignificant (e.g., Frost et al., 1993). On the other hand, it has shown positive correlations with indicators of psychological adjustment such as positive affect and intrinsic motivation for studying (e.g., Frost et al., 1993; Stoeber et al., 2009). Furthermore, in multivariate research examining factorial models of multidimensional perfectionism, the two forms of perfectionism have been shown to load on different superordinate factors. Socially prescribed perfectionism loaded on a superordinate factor labeled “maladaptive evaluation concerns” that comprised all dimensions of
perfectionism that are clearly maladaptive such as perfectionistic concern over mistakes. Self-oriented perfectionism loaded on a factor labeled “positive striving” that comprised dimensions of perfectionism that may be considered adaptive such as perfectionistic personal standards (Frost et al., 1993; see also Stoeber & Otto, 2006).

Achievement Goal Orientations

Research on achievement motivation has a long history in school psychology because achievement motivation is a central construct if one aims to predict how students engage at school, how they learn in class, and what grades they receive (e.g., Ames & Archer, 1987; Dweck, 1986; Nicholls, 1984). Within achievement motivation theory, an important line of research examines students’ achievement goal orientations. Achievement goal orientations reflect students’ general orientation for approaching, engaging in, and evaluating their academic progress and performance in achievement contexts and address the question “why” individuals attempt to accomplish certain achievement outcomes (Elliot, 1997; Pintrich, 2000).

Over the past 30 years, theory and research on achievement goal orientations have constantly developed and expanded examining students’ achievement goals first from a dichotomous framework, then a trichotomous framework, and finally a $2 \times 2$ framework. The dichotomous framework (Ames & Archer, 1987; Dweck, 1986; Nicholls, 1984) distinguished two achievement goal orientations: mastery goals and performance goals. Mastery goals (also termed task goals or learning goals) focus on task mastery and self-improvement, whereas performance goals (also termed ego goals) focus on outperforming others and the demonstration of ability. The trichotomous framework (Elliot & Church, 1997) further introduced the concept of approach and avoidance orientations in performance goals, thus differentiating three types of goal orientations: mastery, performance-approach, and performance-avoidance.

This framework was further expanded in the $2 \times 2$ framework (Elliot, 1999; Pintrich, 2000)
which proposed four types of goal orientations based on two dimensions of competence: definition and valence. The first dimension differentiates normative orientations (performance) from absolute/intrapersonal orientations (mastery). The second differentiates positive orientations (approaching success) from negative orientations (avoiding failure). With this, the 2 × 2 model encompasses performance-approach, performance-avoidance, mastery-approach, and mastery-avoidance goal orientations. Students with a performance-approach orientation are focused on the demonstration of competence relative to others by trying to outperform others. Conversely, students with a performance-avoidance orientation are focused on not demonstrating incompetence relative to others and try to avoid being outperformed by others. Students with a mastery-approach orientation are focused on the development of competence, learning, and mastery of a task. Conversely, students with a mastery-avoidance orientation are focused on not losing competence, learning, and mastery of a task (see Elliot & McGregor, 2001, for details).

Empirical research has provided a large body of evidence that the four types of goal orientations integrate different underlying cognitive and affective processes and are associated with different learner characteristics, study processes, and achievement outcomes (see Moller & Elliot, 2006, for a review). Regarding achievement outcomes, results have been consistent with respect to the positive role of mastery-approach orientation and the negative role of performance-avoidance orientation (Maehr & Zusho, 2009; Moller & Elliot, 2006; Wigfield & Cambria, 2010). In contrast, the findings regarding performance-approach and mastery-avoidance orientations have been less clear (Maehr & Zusho, 2009). The reason is that performance-approach orientation has been linked to both positive and negative outcomes (Moller & Elliot, 2006). The same goes for mastery-avoidance orientation, even though the evidence is more limited because mastery-avoidance orientation has received much less attention in the research literature than the other goal orientations (see Baranik, Stanley, Bynum, & Lance, 2010, for a
meta analysis). The limited research there is, however, suggests that mastery-avoidance orientation shows distinct patterns of relationships in comparison with the other three types of goal orientations (Baranik et al., 2010). Moreover, avoidance goals have been shown to deplete self-regulatory resources leading to decreased subjective well-being (Oertig et al., 2013). Consequently, it is important to include mastery-avoidance orientations in the investigation of academic achievement goals.

**Perfectionism and Achievement Goal Orientations**

A number of studies have shown that perfectionism predicts individual differences in achievement goal orientations in academic contexts and sports (see Stoeber, 2011, 2012, for reviews). Results from studies with university students suggest that self-oriented perfectionism is positively related to mastery-approach and performance-approach orientations, but also to performance-avoidance orientation (Van Yperen, 2006; Verner-Filion & Gaudreau, 2010). In contrast, socially prescribed perfectionism was found to be positively related with performance-approach and performance-avoidance orientations and negatively with mastery-approach orientation (e.g., Verner-Filion & Gaudreau, 2010). However, when investigating personal standards (measured with the Frost Multidimensional Perfectionism Scale; Frost et al., 1990), some studies did not find a relationship between personal standards and mastery-approach orientation (e.g., Hanchon, 2010; Vansteenkiste et al., 2010). Other studies again found multidimensional perfectionism to show positive relationships with all types of goal orientations (e.g., Fletcher, Shim, & Wang, 2012; Shih, 2013).

Despite the fact that perfectionism has been shown to play an important role in the prediction of achievement goal orientations, our understanding of these relationships in academic contexts is still limited. The reason is that, in academic contexts, relationships between perfectionism and goal orientations have mostly been investigated in the trichotomous framework and with
university students (e.g., Hanchon, 2010; Speirs Neumeister & Finch, 2006; Wang, Fu, & Rice, 2012; see Fletcher & Speirs Neumeister, 2012, for a review). Only few studies were conducted in the $2 \times 2$ framework (e.g., Eum & Rice, 2011; Shih, 2013; Van Yperen, 2006). According to the dual process model of perfectionism (Slade & Owens, 1998), adaptive forms of perfectionism are characterized by cognitions and behaviors focused on approach goals whereas maladaptive forms are characterized by cognitions and behaviors focused on avoidance goals. Consequently, it can be expected that different forms of perfectionism also show differential relationships with approach and avoidance orientations in mastery goals. Moreover, going beyond the trichotomous framework would allow an investigation into how patterns of achievement goals are related to different facets of positive and negative perfectionism. Furthermore, to our knowledge, only three studies have investigated perfectionism and goal orientations in school students (Shih, 2013; Vansteenkiste et al., 2010; Wang et al., 2012), and no study has so far investigated how self-oriented and socially prescribed perfectionism are related to the $2 \times 2$ achievement goal orientations in school students.

**The Present Study**

One reason why some studies found different forms and dimensions of perfectionism to be positively associated with all types of goal orientation may be that the different forms and dimensions of perfectionism, as well as the different types of goal orientations, show positive intercorrelations (e.g., Shih, 2013). Because the studies did not control for this overlap, they may have failed to find different forms and dimensions of perfectionism to show unique patterns of relationships with the different achievement goal orientations. Against this background, the aim of the present research was to conduct a first study examining the unique relationships of self-oriented and socially prescribed perfectionism and the $2 \times 2$ achievement goal orientations in school students using multiple regression analyses to control for the overlap between goal
orientations. To this aim, the study investigated a large sample of adolescent school students attending Grades 9-12 and used multiple regression analyses to examine what unique contribution the two forms of perfectionism made in predicting individual differences in school students’ achievement goal orientations. Based on previous findings from studies with university and school students following the tripartite model, we expected self-oriented perfectionism to show positive correlations with all achievement goal orientations and socially prescribed perfectionism to show positive correlations with performance goal orientations. Else, because this was the first study examining the two forms of perfectionism in school students including mastery-avoidance orientation and no previous study has examined unique relationships, our analyses were largely exploratory.

Method

Participants and Procedure

A sample of 584 students (207 male, 340 female, 37 without gender information) was recruited at four high schools near the first author’s university at the end of the school year. Of the 584 students, 34% attended Grade 9, 28% Grade 10, 20% Grade 11, and 17% Grade 12. Mean age of students was 17.1 years ($SD = 1.2$; range = 15-20 years). Participation was voluntary. Students were asked to complete a paper-and-pencil questionnaire in the classroom during school hours. Alternatively, they could opt out of the study and do homework or other school activities. Students received no compensation for their participation. The study was approved by the Faculty of Psychology and Educational Sciences of the first author’s university and by the schools’ principals through a written collaboration protocol.

Measures

Perfectionism. To measure perfectionism we used the Child–Adolescent Perfectionism Scale (CAPS; Flett, Hewitt, Boucher, Davidson, & Munro, 2000) capturing self-oriented
perfectionism (12 items; e.g., “I try to be perfect in everything I do”) and socially prescribed perfectionism (10 items; e.g., “Other people think that I have failed if I do not do my very best all the time”). The scale has demonstrated reliability and validity in numerous studies with adolescents (e.g., Essau, Leung, Conradt, Cheng, & Wong, 2008; Hewitt et al., 2002). The scale was translated into Romanian following standard back-translation procedures (e.g., Brislin, 1986) with two independent translators and a third person to finalize the translation. Students responded to all items on a scale from 1 (always false for me) to 5 (always true for me).

**Achievement goal orientations.** To measure achievement goal orientations, we used the achievement goal scales from the Patterns of Adaptive Learning Scales (PALS; Midgley et al., 2000) capturing performance-approach orientation (5 items; e.g., “My goal is to look smart in comparison to the other students in my class”), performance-avoidance orientation (4 items; e.g., “My goal in class is to avoid looking like I have trouble doing the work”), and mastery-approach orientation (5 items; e.g., “My goal is to master a lot of new skills this year”). Because the PALS were developed following the trichotomous framework, we additionally included Bong’s mastery-avoidance goal scale (6 items; e.g., “My goal is to avoid the possibility of not learning at school”) which has been used in combination with the PALS scales to capture all four goal orientations of the 2 × 2 framework in school students (see Bong, 2009, for details). Moreover, following recommendations by Elliot and Murayama (2008), we rephrased the beginning of all items to make sure they captured goal orientations (“My goal is to…,” “My aim is to…,” “I am striving to…” instead of values or concerns (“It is important for me…,” “I worry that…”). The reason why we used the PALS in combination with Bong’s scale, instead of Elliot et al.’s 2 × 2 measure, was that the PALS were developed using school student samples with a focus on the school environment and have demonstrated reliability and validity in numerous studies with adolescent school students (e.g., Cheng & Lam, 2013; Ross, Blackburn, & Forbes, 2005). In
contrast, Elliot et al.’s measure is a more generic measure developed using university student samples. The four scales were translated into Romanian using the same standard back-translation procedures as with the CAPS (see also Negru & Damian, 2010). Students were instructed to think of schoolwork in general (and not of any specific subject) when responding to the items on a scale from 1 (always false for me) to 5 (always true for me).

Self-reported GPA. Because we wanted to control for individual differences in students’ academic achievement but had no access to the official school records, we asked participants to self-report the grade point average (GPA) achieved in the previous semester. Self-reported GPA has shown to be highly correlated with actual GPA (Credé & Kuncel, 2012) and to predict school outcomes similar to actual GPA (e.g., Baird, 1976). Thus, it can be a reliable and valid estimate of academic achievement when students’ actual GPA is not available.

Results

Preliminary Analyses

First, we examined the item responses for missing data. Because only 1% of item responses were missing, we imputed the missing values with the expectation maximization algorithm (Graham, 2009) and then computed scale scores by averaging responses across items. Because multivariate outliers can severely distort the results of correlation and regression analyses, we next inspected the data for multivariate outliers. Four male students showed scores with a Mahalanobis distance larger than the critical value of $\chi^2(9) = 27.88, p < .001$ (Tabachnick & Fidell, 2007) and were excluded from further analyses. With this, our final sample comprised 580 students (203 male, 340 female, 37 without gender information). Finally, we inspected the reliability (Cronbach’s alpha) of all scale scores. All scores showed satisfactory reliability (alphas ≥ .70; see Table 1).

Main Analyses
First, we computed correlations between all variables including gender, grade, and self-reported GPA (see Table 1). Both self-oriented perfectionism and socially prescribed perfectionism showed positive correlations with all four achievement goal orientations. In addition, gender, grade, and self-reported GPA showed significant correlations. Female gender showed a positive correlation with mastery-approach orientation; grade showed negative correlations with all four orientations; and self-reported GPA showed positive correlations with mastery-approach and mastery-avoidance orientations. In addition, self-reported GPA showed a positive correlation with self-oriented perfectionism. Moreover, as was expected, the two forms of perfectionism showed a significant positive correlation, and all four achievement goal orientations showed positive intercorrelations (see again Table 1), indicating significant overlap between the forms of perfectionism and types of achievement goal orientations. Furthermore, performance-approach and performance-avoidance orientations showed a high correlation. However, Murayama, Elliot, and Yamagata (2011) provided strong evidence in support of the separation of these two goal constructs, despite their high correlation. Hence, we refrained from interpreting the correlations and instead turned to multiple regression analyses with the aim to examine the unique relationships the two forms of perfectionism would show with the four achievement goal orientations.

To this aim, we conducted two sets of four hierarchical regression analyses. In the first set (Model 1), we investigated whether perfectionism predicted the four achievement goal orientations while controlling for gender, grade, and self-reported GPA. The regression analyses comprised two steps. In Step 1, we entered gender, grade, and self-reported GPA. In Step 2, we entered the two forms of perfectionism. In the second set (Model 2), we additionally controlled for the overlap between the four achievement goal orientations. Hence, the regression analyses comprised three steps. In Step 1, we again entered gender, grade, and self-reported GPA. In Step
2, we entered the other achievement goal orientations (i.e., all achievement goal orientations except the one that was predicted). In Step 3, we entered the two forms of perfectionism. Table 2 shows the results. Because the predictors showed substantial intercorrelations, we checked for multicollinearity by examining if any predictor’s variance inflation factor (VIF) exceeded the critical value of 10 (Kutner, Nachtsheim, & Neter, 2004). No predictor showed a VIF > 2.27 indicating that multicollinearity was not an issue.

Focusing on the regression weights the two forms of perfectionism showed in the two models, results indicated that self-oriented perfectionism positively predicted performance-approach and performance-avoidance orientations only when the overlap between the goal orientations was not controlled for (Model 1), but not when it was controlled for (Model 2). However, self-oriented perfectionism positively predicted mastery-approach and mastery-avoidance orientations in both models, indicating that self-oriented perfectionism was a unique positive predictor of students’ pursuing mastery goals at school. In contrast, socially prescribed perfectionism positively predicted performance-approach orientation in both models. However, socially prescribed perfectionism positively predicted performance-avoidance orientation only when the overlap between the goal orientations was not controlled for (Model 1), but not when it was controlled for (Model 2).

**Discussion**

The aim of the present research was to provide a first study examining the unique contribution that self-oriented and socially prescribed perfectionism made in the prediction of individual differences in school students’ achievement goal orientations following the 2 × 2 achievement goal framework. To this aim, we examined a large sample of adolescent school students in a cross-sectional correlational design. Correlational analyses indicated that self-oriented and socially prescribed perfectionism showed positive correlations with all goal
orientations (performance-approach, performance-avoidance, mastery-approach, and mastery-avoidance). However, when multiple regressions were computed controlling for the overlap between the two forms of perfectionism and the four goal orientations (as well as the influence of gender, grade, and grade point average), a unique pattern of relationships emerged. Self-oriented perfectionism positively predicted mastery-approach and mastery-avoidance orientations. In contrast, socially prescribed perfectionism positively predicted performance-approach orientation.

The findings from the correlational analyses expand on findings from previous studies with university students (e.g., Van Yperen, 2006; Verner-Filion & Gaudreau, 2010) by also showing that self-oriented and socially prescribed perfectionism are positively associated with performance and mastery-approach orientations in adolescent school students. Moreover, they expand on previous findings by showing that both forms of perfectionism display positive correlations with mastery-avoidance orientation. Going beyond previous findings, the findings from the regression analyses indicate that—when the overlap between the different forms of perfectionism and different types of achievement goal orientation is controlled for—self-oriented perfectionism shows positive relationships only with mastery goal orientations (regarding both mastery-approach and mastery-avoidance). In contrast, socially prescribed perfectionism shows positive relationships only with performance-approach goals.

Interpreted within the 2 × 2 framework (Elliot & McGregor, 2001), the finding that self-oriented perfectionism positively predicted mastery goal orientations suggests that perfectionistic school students, whose perfectionism is primarily internally motivated and focused on the self and personal standards, tend to follow absolute/intrapersonal (mastery) rather than normative (performance) definitions of achievement goals. That is, they are oriented towards self-improvement and task mastery at school. In this, however, they show positively and negatively
valenced orientations because they aim to both approach success (mastery-approach) and avoid failure (mastery-avoidance). A mastery-approach orientation has been associated with positive characteristics, processes, and outcomes in academic contexts, whereas mastery-avoidance orientation has been associated with both positive and negative characteristics, processes, and outcomes (Moller & Elliot, 2006). Thus, mastery-approach goals can be regarded as a positive motivational force in academic contexts, whereas mastery-avoidance goals are at best ambivalent. Consequently, the finding that self-oriented perfectionism positively predicted both mastery-approach and mastery-avoidance orientations dovetails with previous findings that have shown self-oriented perfectionism to be an ambivalent form of perfectionism associated with both positive and negative characteristics, processes, and outcomes. It is important to note that mastery-avoidance orientation showed a very similar pattern of relationships in comparison with mastery-approach goals, but not with performance-avoidance goals, as some studies suggest (cf. Baranik et al., 2010). That is, both mastery-approach and mastery-avoidance orientations were predicted by high academic performance and self-oriented perfectionism. The main difference is that, as expected, a mastery-avoidance orientation was strongly predicted by a performance-avoidance orientation, thus confirming that the two orientations show significant overlap. When accounting for the shared variance, however, performance-avoidance and mastery-avoidance orientations show distinct patterns of relationships.

By comparison, the finding that socially prescribed perfectionism positively predicted performance-approach goals suggests that perfectionistic school students whose perfectionism is primarily externally motivated and focused on what others expect of them and how others evaluate them tend to follow normative (performance) definitions of achievement goals. That is, they are oriented towards outperforming others and the demonstration of ability (performance-approach). Performance-approach goals can be regarded an ambivalent motivational force
because they have been associated with positive and negative characteristics, processes, and outcomes in academic contexts (Moller & Elliot, 2006).

The present study has a number of limitations. First, the study had a cross-sectional correlational design. Hence, the findings from the multiple regression analyses showing that self-oriented and socially prescribed perfectionism predicted individual differences in students’ achievement goals cannot be interpreted in a causal or temporal sense. Moreover, future studies may profit from taking on recent developments in achievement goal theory that go beyond the 2 × 2 framework such as the 3 × 2 framework (Elliot, Murayama, & Pekrun, 2011) which differentiates approach and avoidance goal orientations in three areas of relative comparison: task, self, and others. This may allow for further, even more fine-grained analyses of the unique relationships that different forms of perfectionism show with achievement goals in school students. Furthermore, because Romania is a post-socialist country and thus expected to be more collectivistic than Western European or North American countries (even though longitudinal research shows that adolescents from post-socialist countries are very fast becoming more individualistic; Fülöp & Ross, 2005), future studies need to examine whether the findings generalize to other nationalities and cultures.

Despite these limitations, the present study makes a significant contribution to our knowledge of the relationships between perfectionism and achievement goals as it is the first study examining the relationships of self-oriented and socially prescribed perfectionism with achievement goal orientations in school students including mastery-avoidance goals. In addition, the findings from the present study demonstrate the importance of considering the overlap between different forms of perfectionism and different types of achievement goals if we want to understand the unique patterns of relationships that different forms of perfectionism show with the different achievement goals that students pursue at school. Finally, the present findings point
to the importance of perfectionism in the school context suggesting that teachers need to be more aware of students’ perfectionism. Perfectionism is not only a source of children’s and adolescents’ distress at school (cf. Flett & Hewitt, 2013), but may also contribute to individual differences in the achievement goals students pursue at school.

Footnotes

1The model differentiates a third form, other-oriented perfectionism, that however is largely disregarded in research with children and adolescents (cf. Flett, Hewitt, Boucher, Davidson, & Munro, 2000; Hewitt et al., 2002).

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Table 1
Correlations and Descriptive Statistics

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<td>0.76</td>
<td>0.75</td>
<td>–</td>
<td>–</td>
<td>0.75</td>
</tr>
<tr>
<td>Cronbach’s alpha</td>
<td>.78</td>
<td>.81</td>
<td>.82</td>
<td>.70</td>
<td>.83</td>
<td>.72</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Note. *N* = 580 for all correlations except those with gender (*N* = 543). All scores are mean scores (see Method section). Gender (female) was coded 0 = male, 1 = female. GPA = grade point average. “–” = not applicable.

*p < .05. **p < .01. ***p < .001.
Table 2
Summary of Hierarchical Regression Analyses Predicting Achievement Goal Orientations: Model 1 (Not Controlling for Overlap Between Orientations) and Model 2 (Controlling for Overlap)

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Performance-approach</th>
<th>Performance-avoidance</th>
<th>Mastery-approach</th>
<th>Mastery-avoidance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\Delta R^2$</td>
<td>$\beta$</td>
<td>$\Delta R^2$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>Model 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1: Control variables</td>
<td>$.027^{**}$</td>
<td>$.022^{**}$</td>
<td>$.055^{***}$</td>
<td>$.091^{***}$</td>
</tr>
<tr>
<td>Gender (female)</td>
<td>-.07</td>
<td>-.00</td>
<td>.16^{***}</td>
<td>-.05</td>
</tr>
<tr>
<td>Grade</td>
<td>-.15^{**}</td>
<td>-.14^{**}</td>
<td>-.09^{*}</td>
<td>-.14^{***}</td>
</tr>
<tr>
<td>Self-reported GPA</td>
<td>-.00</td>
<td>-.02</td>
<td>.13^{**}</td>
<td>.29^{***}</td>
</tr>
<tr>
<td>Step 2: Perfectionism</td>
<td>$.156^{***}$</td>
<td>$.103^{***}$</td>
<td>$.181^{***}$</td>
<td>$.076^{***}$</td>
</tr>
<tr>
<td>Self-oriented perfectionism</td>
<td>.22^{***}</td>
<td>.17^{***}</td>
<td>.46^{***}</td>
<td>.27^{***}</td>
</tr>
<tr>
<td>Socially prescribed perfectionism</td>
<td>.25^{***}</td>
<td>.21^{***}</td>
<td>-.06</td>
<td>.02</td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1 (same as Model 1, Step 1)</td>
<td>$.027^{**}$</td>
<td>$.022^{**}$</td>
<td>$.055^{***}$</td>
<td>$.091^{***}$</td>
</tr>
<tr>
<td>Step 2: Achievement goal orientations</td>
<td>$.513^{***}$</td>
<td>$.515^{***}$</td>
<td>$.147^{***}$</td>
<td>$.244^{***}$</td>
</tr>
<tr>
<td>Performance-approach</td>
<td>–</td>
<td>.65^{***}</td>
<td>.16^{**}</td>
<td>.15^{**}</td>
</tr>
<tr>
<td>Performance-avoidance</td>
<td>.65^{***}</td>
<td>–</td>
<td>-.03</td>
<td>.24^{***}</td>
</tr>
<tr>
<td>Mastery-approach</td>
<td>.09^{**}</td>
<td>-.02</td>
<td>–</td>
<td>.27^{***}</td>
</tr>
<tr>
<td>Mastery-avoidance</td>
<td>.10^{**}</td>
<td>.17^{***}</td>
<td>.33^{***}</td>
<td>–</td>
</tr>
</tbody>
</table>

[Table continued on next page]
[Table continued from previous page]

<table>
<thead>
<tr>
<th>Step 3: Perfectionism</th>
<th>.022***</th>
<th>.002</th>
<th>.102***</th>
<th>.006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-oriented perfectionism</td>
<td>.06</td>
<td>-.01</td>
<td>.37***</td>
<td>.09*</td>
</tr>
<tr>
<td>Socially prescribed perfectionism</td>
<td>.12***</td>
<td>.05</td>
<td>-.08</td>
<td>-.06</td>
</tr>
</tbody>
</table>

*Note. N = 543. Model 1 = not controlling for the overlap between the achievement goal orientations; Model 2 = controlling for the overlap. Gender (female) was coded 0 = male, 1 = female. GPA = grade point average. “–” = not applicable. *

*p < .05. **p < .01. ***p < .001.