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## RESEARCH ARTICLE

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# Students' perfectionistic profiles: Stability, change, and associations with achievement goal orientations

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## Abstract

In this study, we examined what kind of perfectionistic profiles (i.e., different patterns of perfectionistic strivings and concerns) can be identified among general upper-secondary school students, how stable those profiles are over the school year, and how they are connected with students' motivation (i.e., achievement goal orientations). Four distinct profiles were identified. Students with high strivings and low concerns had their focus mainly on mastery, while students with an opposite profile emphasized performance-avoidance and work-avoidance orientations. Students with high strivings and concerns favored both performance- and mastery-related goals, whereas students characterized by low strivings and low concerns did not display a dominant tendency toward any orientation. Perfectionistic profiles were relatively stable over time, with the majority of students reporting similar tendencies across the measurements, and with no extreme changes observed. Some indications of more students displaying less adaptive perfectionistic tendencies by the end of the school year were nevertheless found. Our findings demonstrate not only stability in perfectionistic

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tendencies, but also their motivational relevance in the academic context where students' goals and performance concerns play an important role.

#### KEYWORDS

achievement goal orientations, adolescents, change, motivation, perfectionism, stability, upper-secondary education

## 1 | INTRODUCTION

Perfectionism is a multidimensional personality disposition comprising a combination of two facets: *perfectionistic strivings* (i.e., excessively high personal standards and striving for perfection) and *perfectionistic concerns* (i.e., overly critical self-evaluations, concerns about making mistakes, and feelings of discrepancy between one's standards and performances; Bieling et al., 2004; Frost et al., 1990; Hewitt & Flett, 1991; Stoeber & Otto, 2006). These facets are connected to various psychological and educational outcomes, such as students' perceived stress and academic adjustment (Rice et al., 2006), self-evaluations (Gaudreau et al., 2018), and academic performance (Stoeber, 2012). Individuals also differ in their relative emphases on these facets (i.e., perfectionistic profiles; Stoeber & Otto, 2006), and even though some stability has been reported on individual facets (e.g., Damian et al., 2017a) or their developmental trajectories (e.g., Hong et al., 2016), the stability of perfectionistic profiles has not been addressed.

In achievement contexts, students' perfectionistic profiles appear to be connected with their generalized preferences for certain types of goals and outcomes (e.g., Hanchon, 2011; Shih, 2013). Previous research indicates that the more perfectionistic strivings are emphasized, the more the student focuses on mastery, whereas the more perfectionistic concerns are highlighted, the more the student exhibits performance- or avoidance-related goals (Hanchon, 2010; Ståhlberg et al., 2019). However, the consistency of these predictions has not been examined. The present study, therefore, investigated the stability of perfectionistic profiles and their associations with achievement goal orientations over a school year.

### 1.1 | Dimensions and profiles of perfectionism

Research on the two facets of perfectionism, perfectionistic strivings and perfectionistic concerns, usually follows either a dimensional approach examining significant relations between the variables, or a group-based approach investigating the similarities and differences among groups of individuals with different patterns of these facets (see Stoeber & Otto, 2006).

The dimensional approach has shown perfectionistic strivings to be linked with positive academic and psychological outcomes, such as goal of developing social skills (Shim & Fletcher, 2012), GPA (Rice et al., 2011), academic confidence (Nounopoulos et al., 2006), and school engagement (Damian et al., 2017a). Perfectionistic concerns, in turn, have been found to be associated with less adaptive outcomes, such as overgeneralization of failures (Hill, 2014), negative attitude toward school and teachers (Gilman & Ashby, 2003), and lower academic confidence (Nounopoulos et al., 2006). Yet, both facets seem to be connected with having self-worth contingent on one's academic performances (Ståhlberg et al., 2019) and performances in comparison to others (Hill, 2014).

Studies from the group-based approach often refer to either the tripartite (see Rice & Ashby, 2007; Rice et al., 2011) or the  $2 \times 2^1$  (see Gaudreau & Thompson, 2010) models of perfectionistic profiles and types. The tripartite model describes three patterns of perfectionistic facets, high strivings and low concerns, high strivings and high concerns, and low strivings and low concerns, respectively, while the more recent  $2 \times 2$  model distinguishes also the fourth combination of low strivings and high concerns. Research following the latter model has shown this fourth pattern to be the most problematic in terms of academic and psychological outcomes. Thus, further division into four subtypes might be stronger in terms of explaining individuals' behavior in various domains (see Hill & Madigan, 2017).

Studies from a group-based approach also provide information on how educational and psychological outcomes vary as a function of perfectionistic profiles. Students with a combination of high strivings and low concerns have reported positive outcomes, such as self-image of mastery, coping, and superior adjustment (Dixon et al., 2004), while among students expressing high strivings and concerns, positive correlates (e.g., self-regulation strategies in studying; Sironic & Reeve, 2012) have been mixed with negative ones (e.g., anxiety and depression; Wang et al., 2016). Individuals low on both facets have reported moderate levels on self-esteem, positive affect, and anxiety (Rice & Slaney, 2002), and high school maladjustment (Gilman & Ashby, 2003), whereas the outcomes of individuals characterized by low strivings and high concerns seem to be the least adaptive: relatively high anxiety, depression (Wang et al., 2007), interpersonal sensitivity, and dysfunctional coping strategies (Dixon et al., 2004).

## 1.2 | Stability and change in perfectionistic facets

Perfectionism exists (Fletcher et al., 2014) and develops (Flett et al., 2002) within the context of relationships with other people and is likely affected by the changes in the surrounding world (for a review, see Curran & Hill, 2019). Also in the educational context, the person  $\times$  context interactions in personality development play an important role by providing insight into the personal (e.g., temperament), parental (e.g., parenting style), and environmental (e.g., peer relationships) factors that contribute to the pressure to be perfect. Yet, relatively few studies have directly focused on the stability or change in perfectionism. The available findings come from studies following a dimensional approach, and often the longitudinal nature of perfectionistic facets is assessed in conjunction with other constructs, or the focus has been on the causes and consequences of perfectionism (see Flett et al., 2002; Gilman & Ashby, 2006; Stoeber & Childs, 2011).

Research has reported both short-term (Hewitt & Flett, 1991; Levinson & Rodebaugh, 2016; Mackinnon et al., 2011, 2013; Rice & Aldea, 2006; Rice & Dellwo, 2001; Smith et al., 2017) and long-term (Azevedo et al., 2010; Damian et al., 2017a, 2017b; Maia et al., 2011; Nilsson et al., 2008; Nordin-Bates et al., 2014; O'Connor et al., 2009; Stricker et al., 2019) stability in the facets of perfectionism among students, both in relation to rank-order (Damian et al., 2013; Damian et al., 2017a; Levinson & Rodebaugh, 2016; Mackinnon et al., 2011; Rice & Aldea, 2006; Rice & Dellwo, 2001; Sherry et al., 2013) and interindividual (Cox & Enns, 2003; Damian et al., 2017; Gautreau et al., 2015; Maia et al., 2011; Rice et al., 2012; Stricker et al., 2019) variation.

Findings on mean-level changes are somewhat more mixed. Some studies demonstrate mean-level changes in the facets of perfectionism, but they have usually been small and unsystematic, and even then, the rank-order stability has remained considerably high (Nilsson et al., 2008; Rice & Aldea, 2006; Sherry et al., 2013). However, the overall stability in means might partly be masked due to different trajectories of change (Hong et al., 2016),

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<sup>1</sup>Note, that the empirical realization of the  $2 \times 2$  model of perfectionism (Gaudreau & Thompson, 2010) is based on interactions of regressions, and thus does not represent a group-based analysis as such. However, since the interactions are postulated as four subtypes of perfectionism, the group-based interpretation of this typology relies on the model's hypotheses and corresponding combinations of perfectionistic facets rather than on the method by which these patterns are formed.

meaning that there might be groups of individuals with somewhat different patterns of change over a longer period of time.

Research investigating daily fluctuations in perfectionism has also observed substantial variation within individuals, although the average state levels do not seem to be independent of the trait levels of perfectionistic tendencies (Boone et al., 2012). This, together with findings showing small changes in the mean-levels in response to treatment or intervention (Pleva & Wade, 2006; Vekas & Wade, 2017; Wilksch et al., 2008), implies that perfectionism might also be susceptible to change.

In sum, the facets of perfectionism seem relatively stable over time, thus reflecting their dispositional nature. Yet, they seem not to be entirely fixed or immune to influence, as there is some evidence of treatment effects and individual variation in the developmental trajectories. The daily fluctuation found in perfectionism likely demonstrates the triggering of certain cognitions associated with perfectionistic tendencies (see Xie et al., 2019), thus implying some degree of contextual sensitivity. The stability of perfectionistic profiles has not been addressed previously, but based on the above evidence, one would expect them to be relatively stable over time. Possible changes in the profiles would likely be a function of development, context, or both.

### 1.3 | Connections between perfectionism and achievement goal orientations

Achievement goal orientations refer to another relevant construct in the present context that reflects students' overarching orientation for approaching, engaging in, and evaluating their academic progress in achievement contexts (Kaplan & Maehr, 2007; Pintrich, 2000). Originally, students' achievement goals were classified into two: a goal of developing competence (i.e., mastery) and a goal of demonstrating competence (i.e., performance; Dweck, 1986; Nicholls, 1984). The inclusion of valence resulted in a division of performance goals into approach and avoidance components: the goal of outperforming others and demonstrating competence (i.e., performance-approach) and the goal of avoiding failure and looking incompetent in front of others (i.e., performance-avoidance; Elliot & Harackiewicz, 1996). The conceptual approach and avoidance division has also been extended to mastery goals (2 × 2 model; Elliot, 1999), although less so empirically. Another extension includes the consideration of mastery in terms of outcomes or absolute success (i.e., outcome goals, Grant & Dweck, 2003; mastery-extrinsic orientation, Niemivirta, 2002). The most recent model has followed a somewhat different approach by considering the definition of competence in reference to task, self, and others, and then differentiating these according to valence (i.e., approach vs. avoidance), thus resulting in the so-called 3 × 2 model (Elliot et al., 2011). Note that although some of the later models have not included work avoidance goals in their conceptualization due to its lack of explicit reference to competence, such a goal was, nevertheless, included in the early approaches (Nicholls et al., 1985). This type of goal implying effort reduction by avoiding challenging tasks and putting forth as little effort as possible has shown to be linked with students' achievement behavior, and thus undoubtedly reflects students' attempts to cope with demands inherent in the classroom (Niemivirta et al., 2019).

An orientation toward mastery has usually found to be associated with positive educational outcomes (e.g., intrinsic motivation, Church et al., 2001; academic achievement, Duchesne & Larose, 2018). Mastery-extrinsic orientation (i.e., striving for good grades and academic success) has mostly been linked with favorable outcomes (e.g., academic achievement, commitment, effort, Tuominen-Soini et al., 2008, 2011) but also with some unfavorable ones (e.g., stress, emotional exhaustion, Tuominen-Soini et al., 2008). Similarly, performance-approach orientation has been connected with both positive (e.g., effort, self-efficacy, Wolters, 2004) and negative (e.g., emotional exhaustion, academic withdrawal, Tuominen-Soini et al., 2008, 2011) correlates. Instead, rather unambiguous connections to less positive outcomes have been found for both

performance-avoidance (e.g., lower interest and performance, Elliot et al., 1999) and work-avoidance orientation (e.g., lower engagement, higher cynicism, Harackiewicz et al., 2002; Tuominen-Soini et al., 2008), although performance-avoidance orientation seems to be more systematically linked with unfavorable affective correlates (e.g., anxiety, stress, and even depressive symptoms, Pekrun et al., 2009; Sideridis, 2005).

Achievement goals and goal orientations have also been found to be associated with perfectionism, which is understandable, as both of these constructs reflect different aspects of goal striving in an achievement-related context. Studies from the dimensional approach suggest mastery goals to be related to perfectionistic strivings, performance-avoidance goals to perfectionistic concerns, and performance-approach to both strivings and concerns (Kim et al., 2015; Stoeber, Damian, et al., 2018; Wang et al., 2012). In some instances, mastery-avoidance goals have also been positively connected with concerns (Gucciardi et al., 2012; Hill, 2014). Studies following the group-based approach are relatively scarce but suggest students exhibiting high strivings and low concerns to be inclined toward mastery goals (Gucciardi et al., 2012; Hanchon, 2010; Shih, 2013), and individuals characterized by high strivings and concerns to emphasize both mastery and performance goals (Gucciardi et al., 2012; Hanchon, 2010, 2011). Individuals with low perfectionistic tendencies have been found to prefer mostly performance goals (Hanchon, 2010, 2011), or have relatively low levels on all goals (Gucciardi et al., 2012), while students reporting low strivings and high concerns seem to emphasize performance- and work-avoidance goals (Ståhlberg et al., 2019).

## 1.4 | Present study

As previous studies have informed us about the stability and change only in relation to the facets of perfectionism (e.g., Rice & Aldea, 2006), and since some findings suggest that people might display different developmental patterns in these facets over time (Herman et al., 2013; Hong et al., 2016), it would seem to be of particular importance to investigate the stability of the patterning of the perfectionism facets (i.e., following the group-based approach). Moreover, to further understand the implications of these patterns and the possible change in them, linking them to other educationally relevant motivational factors would seem highly meaningful. We believe that knowledge on students' different perfectionistic profiles as well as their stability and connections to achievement motivation will provide us with a better understanding of how teachers could identify and take into account such individual differences to accommodate their instructional strategies and pedagogical practices (e.g., goal setting, feedback, and evaluation, see Flett & Hewitt, 2014a; Nugent, 2000; Wade, 2018) accordingly. Following this, the objective of the present study was to investigate (a) what kind of perfectionistic profiles can be identified among general upper-secondary students; (b) the stability and change in these profiles over a school year; and (c) how those profiles are connected with students' achievement goal orientations.

Research on the relations between perfectionistic profiles and achievement goal orientations is yet somewhat scant and has mostly focused only on mastery, performance-approach, and performance-avoidance goals (for a review, see Fletcher & Speirs Neumeister, 2012). However, as the different emphases on the facets of perfectionism could arguably be linked with a broader set of achievement-related strivings—for example, high perfectionistic strivings linked with an orientation to seek absolute success, or low strivings with an orientation to minimize effort spent on schoolwork (see Ståhlberg et al., 2019)—we took this into account and utilized an approach that explicitly included these tendencies (i.e., mastery-extrinsic and work-avoidance goal orientations, respectively, Niemivirta, 2002).

First, following previous results, we expected students to exhibit high or low levels in both perfectionism facets, or just in one of them (Chan, 2010b; Rice & Ashby, 2007; Rice et al., 2011; Rice et al., 2014; Sironic & Reeve, 2012; Wang et al., 2016). Second, based on the findings suggesting stability in perfectionistic facets (e.g., Damian et al., 2017b; Rice & Aldea, 2006), we expected also the profiles to be rather stable over time.

Third, as to their relationships with achievement goal orientations, we anticipated an emphasis on perfectionistic strivings to be associated with mastery orientations, and an emphasis on perfectionistic concerns to be connected with performance orientations (Hanchon, 2010, 2011). We also expected low perfectionistic strivings to be linked with avoidance orientation (Ståhlberg et al., 2019). These relations were presumed to remain similar over the year.

## 2 | METHOD

### 2.1 | Participants and context of the study

The participants were 1st-year students (age 16–17, girls 57%) from the only general upper-secondary school of a middle-sized, middle-class town in Central Finland.<sup>2</sup> The participants represent typical Finnish youths from nonmetropolitan towns with relatively heterogeneous population regarding the socioeconomic status. Students' perfectionistic tendencies and achievement goal orientations were measured twice, 7 months apart ( $n_{T1} = 154$ ,  $n_{T2} = 157$ ). Questionnaires were administered during regular classes by teachers who had been given instructions by the researchers on the data collection procedure. Participation was voluntary, all students were eligible to participate in the research, and the confidentiality of the respondents was assured.

### 2.2 | Measures

#### 2.2.1 | Perfectionism

We measured two types of perfectionism facets based on the Short Almost Perfect Scale (SAPS, Rice et al., 2014): perfectionistic strivings (originally “standards”: e.g., *I have high expectations for myself*) and perfectionistic concerns (originally “discrepancy”: e.g., *I am hardly ever satisfied with my performance*). The facets were measured with four items each and rated using a seven-point Likert-type scale ranging from 1 (*not true at all*) to 7 (*completely true*). The Almost Perfect Scale has shown high validity and reliability in prior studies (e.g., Rice et al., 2019; Vandiver & Worrell, 2002; for a review, see Flett & Hewitt, 2014b) including different cultures (e.g., Arana et al., 2018; Öngen, 2009; Wang et al., 2016).

#### 2.2.2 | Achievement goal orientations

Five types of achievement goal orientations were measured with three items for each dimension (Niemivirta, 2002): mastery-intrinsic (e.g., *An important goal for me in my studies is to learn as much as possible*), mastery-extrinsic (e.g., *An important goal for me is to do well in my studies*), performance-approach (e.g., *An important goal for me in my studies is to do better than the other students*), performance-avoidance (e.g., *I try to avoid situations where I might fail or make mistakes*), and work-avoidance orientation (e.g., *I try to do only the compulsory assignments and nothing more*). Each item was rated with a seven-point Likert-type scale ranging from 1 (*not true at all*) to 7 (*completely true*).

<sup>2</sup>After a 9-year comprehensive education, approximately 94% of the students in Finland continue either to a general upper-secondary education (53% of the students) with an academic focus, or to vocational upper-secondary education (41% of the students) providing professional qualifications (Official Statistics of Finland, 2019).

The instrument has been used in several studies showing high reliability and validity (e.g., Pulkka & Niemivirta, 2013; Tuominen-Soini et al., 2008).

### 2.3 | Analyses

As previous applications of the SAPS in different cultures and languages indicate that there might be slight variation in its structure depending on the context (Arana et al., 2018; Kira et al., 2018; Loscalzo et al., 2018), exploratory structural equation modeling (ESEM, Marsh et al., 2014) was used to examine the assumed structure. The exploratory approach of the ESEM accommodates possible cross-loadings by letting the items load freely onto the specified factors. Thus, an ESEM model in which all items loaded onto both expected factors, error terms of the items were uncorrelated, and factors were let to correlate under the oblique geomin rotation was specified. Regarding achievement goal orientations, confirmatory factor analysis (CFA) was used, as prior studies have demonstrated the measure to result in stable factorial structure. For evaluating model fit, comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR) along with the  $\chi^2$  statistics (see Hu & Bentler, 1999) were utilized. As the items were ordinal, all solutions were generated using the mean- and variance-adjusted weighted least squares (WLSMV) estimation. For handling missing data, pairwise deletion as associated with the WLSMV estimator in Mplus was used (Asparouhov & Muthén, 2010).

Next, to make sure that identical constructs were measured at both times, the longitudinal approach for measurement invariance with ESEM (Morin et al., 2013) was used. Three models that imposed accumulating equality restrictions on model parameters were tested and compared. Model 1 tested the equality of the overall factorial structure over time (i.e., configural invariance). In Model 2, the factor loadings of respective items were constrained invariant across the two measurement points (i.e., weak measurement invariance). Model 3 included additional constraints to item thresholds (i.e., strong measurement invariance). CFI, RMSEA, and SRMR were again used to evaluate the overall model fit. For assessing comparative model fit, we calculated the change in CFI, and the  $\chi^2$  difference tests were conducted using the two-step procedure with the DIFFTEST option provided by Mplus for the WLSMV estimation (Muthén & Muthén, 1998–2017).

After testing factor structures and longitudinal measurement invariance, composite scores based on the latent factors were formed, and Cronbach's alphas for evaluating the internal consistencies were calculated. To group the students based on their perfectionistic profiles and to examine individual changes in these profiles over time, the data were reorganized with the clustering-by-states method for longitudinal data (I-States as Objects Analysis; Bergman & El-Khoury, 1999). The I-state is the pattern of values provided by the individual in one time, and these I-states are used as the analytical units of classification disregarding time. After reorganizing the data, a series of TwoStep cluster analyses (Kent et al., 2014) was performed. TwoStep cluster analysis allows the emergence of naturally occurring combinations of the facets of perfectionism (i.e., perfectionistic profiles). Bayesian information criterion (BIC) was used as the statistical index for choosing the best-fitting model together with considerations regarding the theoretical meaningfulness of the profiles.

Next, a configural frequency analysis (ConFA; von Eye, 2002) with Lehmacher's test was used to examine the stability of and changes in group memberships from Time 1 to Time 2. ConFA compares the observed and expected frequencies in a cross-tabulation and shows whether cell frequencies are larger or smaller than could be expected based on a chance model. The base model selected for frequency comparison (the first-order or classical ConFA) assumes that all variables may show main effects and are independent of each other. Typical and atypical patterns of variable indices (i.e., configurations) were searched: type represents a pattern that is observed more frequently, and antitype represents a pattern that is observed less frequently than expected by chance.

Finally, a series of analysis of variance (ANOVA) was used to examine the between-group differences in achievement goal orientations separately for both measurements. The statistical analyses were conducted using



IBM SPSS Statistics Version 24, Mplus Statistics Software Version 8.4 (Muthén & Muthén, 1998–2017), and Configural Frequency Analysis Version 2000 (von Eye, 2001).

## 3 | RESULTS

### 3.1 | Preliminary analyses

Estimation of the ESEM-model for the perfectionism scale without modifications yielded a fair fit to the data,<sup>3</sup>  $\chi^2(13) = 48.558$ ,  $p < 0.001$ ; CFI = 0.942; RMSEA = 0.133 (90% CI = 0.094–0.174); SRMR = 0.031. The item “I often feel that not even my best performance is good enough for me—I could always do things better” was removed from the scale based on its content loading onto both factors, which resulted in a better fit,  $\chi^2(8) = 29.064$ ,  $p = 0.0003$ ; CFI = 0.957; RMSEA = 0.130 (90% CI = 0.081–0.183); SRMR = 0.026. For the second measurement, the fit without modifications,  $\chi^2(13) = 42.287$ ,  $p = 0.0001$ ; CFI = 0.969; RMSEA = 0.120 (90% CI = 0.081–0.161); SRMR = 0.025, and with the same modification,  $\chi^2(8) = 28.212$ ,  $p = 0.0004$ ; CFI = 0.976; RMSEA = 0.127 (90% CI = 0.078–0.179); SRMR = 0.023, were good, despite the elevated RMSEA values. The final structure included statistically significant standardized factor loadings ranging from 0.446 to 0.799 (T1) and from 0.479 to 0.818 (T2). However, two *strivings* items, “I have clear and high goals (for example, in my studies)” and “I always try to do my best,” had significant negative cross loadings onto the *concerns* factor at both times, thus suggesting some overlap of these items across the two facets.

Estimation of the CFA-model for achievement goal orientations yielded a moderate fit to the data without modifications,  $\chi^2(80) = 201.221$ ,  $p < 0.001$ ; CFI = 0.943; RMSEA = 0.099 (90% CI = 0.082–0.116); SRMR = 0.059. Based on modification indices, the item “It is important to me that I don't fail in front of other students” of the performance-avoidance scale was allowed to cross-load onto the performance-approach factor, improving the fit,  $\chi^2(79) = 177.147$ ,  $p < 0.001$ ; CFI = 0.954; RMSEA = 0.090 (90% CI = 0.072–0.107); SRMR = 0.054. At the second measurement, the fits without modifications,  $\chi^2(80) = 192.907$ ,  $p < 0.001$ ; CFI = 0.957; RMSEA = 0.095 (90% CI = 0.078–0.112); SRMR = 0.055 and with the corresponding modification,  $\chi^2(79) = 157.838$ ,  $p < 0.001$ ; CFI = 0.970; RMSEA = 0.080 (90% CI = 0.061–0.098); SRMR = 0.049 were good.

As to longitudinal measurement invariance, the comparison of models with increasing constraints to model parameters demonstrated a sufficient level of equivalence across the measurements (see Table 1). The model suggesting strong measurement invariance (Model 3) fit the data well,  $\chi^2(71) = 113.168$ ,  $p < 0.001$ ; CFI = 0.975; RMSEA = 0.059; SRMR = 0.041, and showed no deterioration in fit compared to the less restrictive models. We could thus conclude that the constructs were identical and thus comparable over time.

Based on the measurement models, composite scores were calculated for further analyses. Descriptive statistics along with internal consistencies and bivariate correlations are reported in Table 2. The interrelationships between the variables were theoretically consistent and sound. At both times, there was a weak negative correlation between *strivings* and *concerns*, and *strivings* were positively associated with all other orientations except for performance-avoidance, and negatively connected with work-avoidance orientation. *Concerns* were positively linked with performance-avoidance and work-avoidance orientations, and negatively with mastery-intrinsic orientation. The positive correlation with performance-approach orientation reached significance at the second measurement. Rank-order stabilities were relatively high for all variables, ranging from  $r = 0.45$  (mastery-extrinsic

<sup>3</sup>Note, that in the context of item factor analyses (Clark & Bowles, 2018) and with models with relatively small sample size and few degrees of freedom (Kenny et al., 2015), the RMSEA values should be interpreted with caution. Lai and Green (2016) also point out that the discrepancy between different indices is not necessarily an indication of a poor fit of the model, as these fit indices evaluate the fit from different perspectives. We have therefore included RMSEA along with SRMR and CFI to provide the reader with a comprehensive view on model fit.

**TABLE 1** Goodness of fit for alternative models testing measurement invariance

Model	Specification	df	$\chi^2$	p	CFI	RMSEA	SRMR	Hypothesis test	$\Delta\chi^2$	$p\Delta\chi^2$
M1	Configural invariance	54	107,864	<0.001	0.969	0.077	0.033			
M2	Weak measurement invariance	64	107,496	<0.001	0.975	0.063	0.041	M1–M2	0.006	16.118
M3	Strong measurement invariance	71	113,168	0.001	0.975	0.059	0.041	M2–M3	<0.001	7.757

Abbreviations: CFI, Comparative Fit Index; RMSEA, root mean square error of approximation; SRMR, standardized root mean square residual.

**TABLE 2** Descriptive statistics, internal consistencies, and bivariate correlations for all variables

Variable	M	SD	$\alpha$	1	2	3	4	5	6	7	8	9	10	11	12	13
Strivings (T1)	4.79	1.07	0.75													
Concerns (T1)	3.25	1.09	0.64	-0.13												
Mastery-intrinsic (T1)	5.11	1.13	0.86	0.48**	-0.17*											
Mastery-extrinsic (T1)	5.71	0.96	0.80	0.72**	-0.16	0.56**										
Performance-approach (T1)	3.68	1.18	0.69	0.45**	0.12	0.14	.37**									
Performance-avoidance (T1)	3.96	1.32	0.78	0.08	0.38**	-0.05	.06	0.33**								
Work-avoidance (T1)	3.70	1.31	0.78	-0.24**	0.29**	-0.35**	-.22**	0.06	0.29**							
Strivings (T2)	4.80	1.11	0.77	0.68**	-0.20*	0.40**	.55**	0.34**	0.05	-0.25**						
Concerns (T2)	3.60	1.27	0.74	-0.17*	0.66**	-0.10	-.17*	0.04	0.43**	0.25**	-0.16*					
Mastery-intrinsic (T2)	5.15	1.16	0.87	0.33**	-0.18*	0.58**	.31**	0.05	-0.16	-0.11	0.53**	-0.17*				
Mastery-extrinsic (T2)	5.53	1.01	0.85	0.49**	-0.14	0.34**	.45**	0.16	0.06	-0.15	0.70**	-0.16	0.54*			
Performance-approach (T2)	3.73	1.29	0.74	0.28**	0.33**	0.06	.15	0.45**	0.36**	0.07	0.34**	0.29**	0.09	0.30**		
Performance-avoidance (T2)	4.01	1.32	0.77	0.07	0.40**	-0.08	.03	0.21*	0.57**	0.24**	0.11	0.44**	-0.01	0.16*	0.53**	
Work-avoidance (T2)	3.98	1.31	0.83	-0.29**	0.24**	-0.31**	-0.18*	-0.07	0.27**	0.60**	-0.30**	0.36**	-0.24**	-0.24**	-0.04	0.31**

Note: Range is 1–7.  
 Abbreviations: T1, Time 1; T2, Time 2.  
 \* $p < 0.05$ .  
 \*\* $p < 0.01$ .

**TABLE 3** Information criteria values for different class solutions

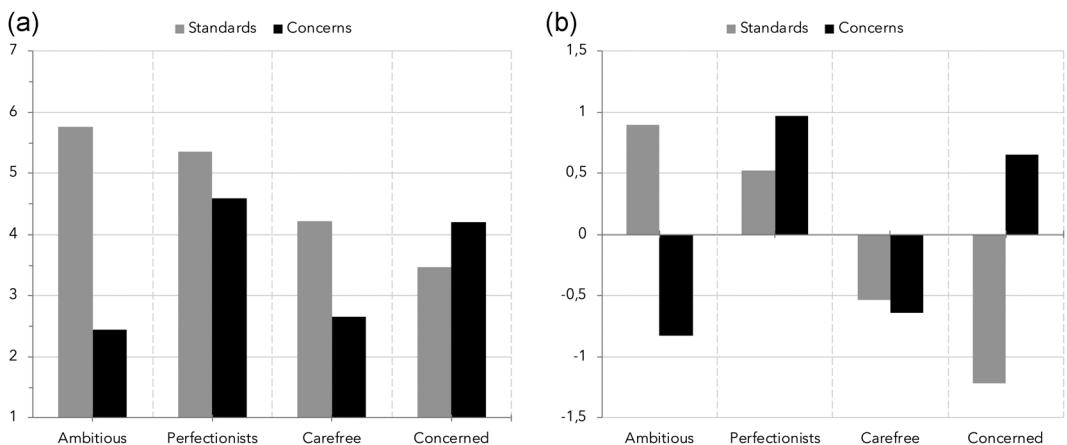
Number of classes	Bayesian information criterion	BIC change	Ratio of distance measures
1	210.337		
2	172.423	-37.914	1.300
3	148.135	-24.288	2.889
4	153.508	5.373	1.131
5	160.703	7.195	1.483
6	172.415	11.712	1.050

Note: Smaller value indicates better fit.

and performance-approach orientation) to  $r = 0.68$  (strivings), with slightly stronger correlations for the facets of perfectionism than for achievement goal orientations.

### 3.2 | Perfectionistic profiles and grouping

The first goal was to examine what kinds of perfectionistic profiles can be identified. Based on the statistical criterion obtained from the TwoStep cluster analysis (see Table 3), the emphasis that students posed on strivings and concerns (see Figure 1), and the mean differences in these facets (see Table 4), a four-group solution was deemed most suitable, even though a three-group solution had somewhat lower BIC-value. Comparing the three- and four-group solutions, and based on descriptives and theoretical considerations, the latter was considered more meaningful. Students in group 1 ( $n_{I\text{-States}} = 89$ , 28.6%,  $n_{t1} = 48$ , 31.2%,  $n_{t2} = 41$ , 26.1%) reported relatively highest strivings accompanied by low concerns, and were accordingly labeled as *ambitious*. Group 2 ( $n_{I\text{-States}} = 82$ , 26.4%,  $n_{t1} = 38$ , 24.7%,  $n_{t2} = 44$ , 28.0%) was characterized by high strivings and highest concerns and thus labeled as *perfectionists*. Group 3 ( $n_{I\text{-States}} = 75$ , 24.1%,  $n_{t1} = 44$ , 28.6%,  $n_{t2} = 31$ , 19.7%) reported relatively low levels on concerns and slightly elevated levels on strivings, and was therefore named as *carefree*. Finally, group 4 ( $n_{I\text{-States}} = 65$ , 20.9%,  $n_{t1} = 24$ , 15.6%,  $n_{t2} = 41$ , 26.1%) had relatively lowest strivings and high concerns, and was thus labeled as *concerned*.



**FIGURE 1** (a) Students' mean scores and (b) standardized scores on the facets of perfectionism as a function of I-States as Objects Analysis group membership

**TABLE 4** Mean differences in perfectionism facets between perfectionistic profiles (ISOA and at Times 1 and 2)

Variable	Ambitious ISOA <i>n</i> = 89 T1 <i>n</i> = 48 T2 <i>n</i> = 41		Perfectionists ISOA <i>n</i> = 82 T1 <i>n</i> = 38 T2 <i>n</i> = 44		Carefree ISOA <i>n</i> = 75 T1 <i>n</i> = 44 T2 <i>n</i> = 31		Concerned ISOA <i>n</i> = 65 T1 <i>n</i> = 24 T2 <i>n</i> = 41		<i>F</i>	<i>p</i>	$\eta^2$	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
ISOA strivings	5.77	0.62	5.36	0.65	4.21	0.50	3.47	0.59	(3, 307)	232.406	<0.001	0.69
ISOA concerns	2.44 <sup>a</sup>	0.68	4.58	0.77	2.66 <sup>a</sup>	0.68	4.21	0.79	(3, 307)	176.199	<0.001	0.63
T1 strivings	5.70	0.61	5.31	0.65	4.20	0.46	3.35	0.70	(3, 150)	106.678	<0.001	0.68
T1 concerns	2.45 <sup>b</sup>	0.62	4.40 <sup>a</sup>	0.69	2.67 <sup>b</sup>	0.70	4.10 <sup>a</sup>	0.78	(3, 150)	81.012	<0.001	0.62
T2 strivings	5.84	0.63	5.41	0.66	4.22	0.56	3.54	0.52	(3, 153)	126.206	<0.001	0.71
T2 concerns	2.42 <sup>a</sup>	0.75	4.74	0.82	2.65 <sup>a</sup>	0.67	4.27	0.80	(3, 153)	90.854	<0.001	0.64

Note: Range is 1–7. Profile means with the same superscript (a or b) do not differ from each other at  $p < 0.05$  with Bonferroni correction (Games–Howell correction for ISOA and T1 Strivings). ISOA refers to I-States rather than number of the students.

Abbreviations: T1, Time 1; T2, Time 2.

### 3.3 | Stability of the profiles

The second goal was to investigate the stability of and changes in the group membership from the beginning (Time 1) to the end of the school year (Time 2). The overall model was significant,  $\chi^2(9) = 85.62$ ,  $p < 0.001$ , with four types (i.e., cell frequency higher than expected by chance) and one antitype (i.e., cell frequency lower than expected by chance) identified (see Table 5). The four types referred to students remaining in the same group at both measurement points, with 55.3% of students thus displaying similar profiles over the school year (see Figure 2). The one antitype detected indicated that it was untypical for the *ambitious* students to move to the *concerned* group. No statistically significant typical configurations of change were found.

### 3.4 | Between-group differences in achievement goal orientations

The third goal was to examine how perfectionistic profiles are connected with achievement goal orientations, and whether these relations remain similar over the year. Multiple comparisons of means with the ANOVAs indicated statistically significant group differences in all orientations at both measurements (see Table 6), with slightly higher overall effects for the Time 2 measurements. The explained variance ranged from 5% (work-avoidance orientation) to 38% (mastery-extrinsic orientation at Time 1, and from 10% (work-avoidance orientation) to 38% (mastery-extrinsic orientation) at Time 2. Basically, the patterns of emphases within groups and differences between groups were similar over time, with some minor differences between the measurement points.

Overall, ambitious and perfectionists scored relatively high on mastery-intrinsic and mastery-extrinsic orientations compared to carefree and concerned students, although there were some slight variations in group differences across the two measurement points. For example, at Time 1, ambitious students scored even higher on mastery-extrinsic orientation than perfectionists, and, at Time 2, concerned students scored even lower on mastery-intrinsic orientation than carefree students (for all pairwise comparisons, see Table 6). Regarding performance-related orientations, perfectionists scored relatively high on both performance-approach and

**TABLE 5** Patterns of stability and change in perfectionistic profiles

Configuration T1/T2	Observed	Expected	$\chi^2$	<i>p</i>	
1 1	23	11.418	4.592	0.0000	T
1 2	12	13.376	-0.345	0.3650	
1 3	7	8.809	-0.595	0.2758	
1 4	4	12.397	-3.186	0.0007	A
2 1	5	8.191	-1.235	0.1084	
2 2	19	9.596	3.886	0.0000	T
2 3	2	6.319	-1.924	0.0272	
2 4	7	8.894	-0.623	0.2668	
3 1	7	9.929	-1.047	0.1476	
3 2	8	11.631	-1.284	0.0910	
3 3	17	7.660	4.182	0.0000	T
3 4	8	10.780	-0.957	0.1694	
4 1	0	5.461	-2.656	0.0040	
4 2	2	6.397	-1.985	0.0236	
4 3	1	4.213	-1.594	0.0554	
4 4	19	5.929	6.552	0.0000	T

Note: Lehmacher's test with continuity correction was used. Perfectionistic profiles in configuration: 1, ambitious; 2, perfectionists; 3, carefree; 4, concerned.

Abbreviations: T1, Time 1; T2, Time 2; T, type; A, antitype.

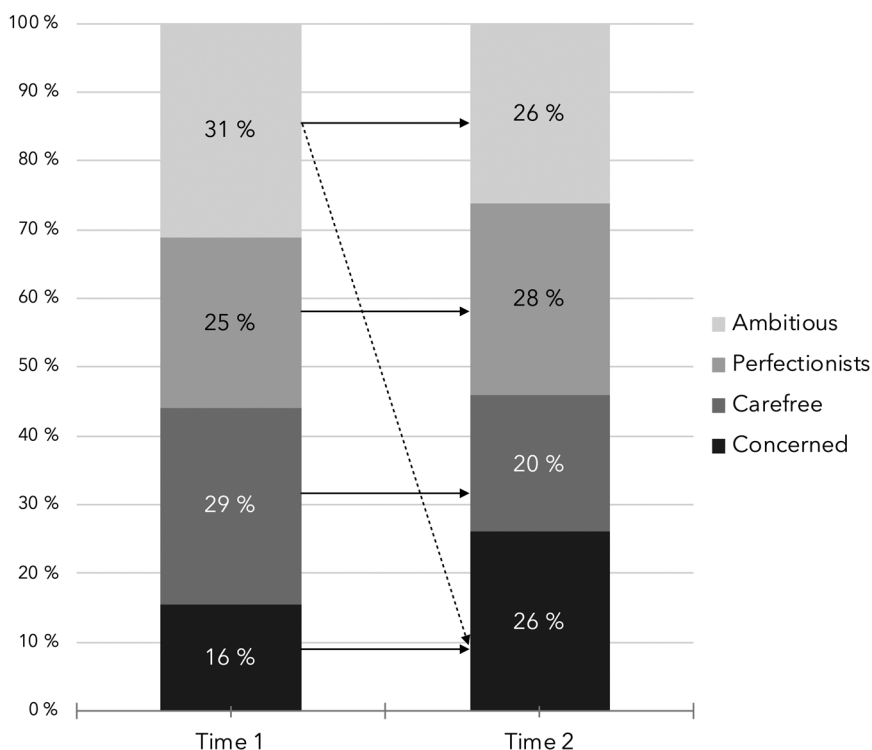
performance-avoidance orientations (at Time 2, even the highest in performance-avoidance), while ambitious students scored relatively high only on performance-approach orientation, and concerned students only on performance-avoidance orientation. Carefree students reported overall rather low performance orientations. With respect to work-avoidance orientation, concerned students displayed relatively high avoidance orientation, differing from ambitious students at Time 1 and from ambitious and carefree students at Time 2.

## 4 | DISCUSSION

The purpose of this study was to investigate what kind of perfectionistic profiles can be identified among upper-secondary students, how stable they are over a school year, and how they predict students' achievement goal orientations at the beginning and at the end of the school year. As, to the best of our knowledge, there are no prior studies examining the stability of perfectionistic profiles, the results obtained from the present study importantly add to what we know about the dispositional nature of perfectionistic tendencies among students, and how perfectionism is connected with students' motivation.

### 4.1 | Perfectionistic profiles

We identified four groups of students with different perfectionistic profiles. The first group consisted of students with a combination of high strivings and low concerns. A similar profile has been identified in previous studies as



**FIGURE 2** Statistical types and antitypes in the patterns of stability and change in perfectionistic profiles. Solid lines indicate patterns identified as statistical types, dashed line denotes statistical antitype

well, and it has usually been labeled as healthy or adaptive perfectionists (Chan, 2010a; Rice & Ashby, 2007; Suh et al., 2014). However, as these students clearly expected a lot from themselves without serious worries about failure or disappointment, we wanted to emphasize this contrast and avoid the negative connotation of the term perfectionism (see below), and labeled them simply as *ambitious*.

Following the same descriptive logic, the second group consisting of students with relatively high strivings and concerns was named *perfectionists*, as this profile is most consistent with the definition of perfectionism as a combination of both facets, high personal standards and overly critical evaluations of one's accomplishments. In previous studies, this group has often been specified further as maladaptive, mixed, or unhealthy perfectionists (Chan, 2010b; Gilman & Ashby, 2003; Lee & Anderman, 2020).

The third group comprising students with below average level of strivings and relatively low concerns was labeled as *carefree*. The students in this group resemble those commonly identified as nonperfectionists (e.g., Shim & Fletcher, 2012), but since their strivings effectively were not the lowest in the sample, this characterization did not seem entirely accurate. As the profile suggests having moderate strivings while feeling no particular dissatisfaction with their achievements, the kind of disengagement typically associated with non-perfectionism seems partly absent. Hence the term *carefree*.

The fourth group consisting of students with low strivings and high concerns was labeled as *concerned*. Despite rather low personal standards, these students still report being dissatisfied with or concerned about their accomplishments. A similar profile has also emerged in some previous studies, although it has been labeled in various ways (e.g., "maladaptive perfectionist group," Lee & Anderman, 2020; "negative self-evaluation (discrepancy) group," Rice et al., 2011; "low standards maladaptive perfectionists," Sironic & Reeve, 2012; "low standards, high discrepancy," Wang et al., 2007).

**TABLE 6** Mean differences in achievement goal orientations between perfectionistic profiles at Times 1 and 2

Variable	Ambitious (1) T1 n = 48 T2 n = 41		Perfectionists (2) T1 n = 38 T2 n = 44		Carefree (3) T1 n = 44 T2 n = 31		Concerned (4) T1 n = 24 T2 n = 41		F(3, 150 T <sub>1</sub> / 153 T <sub>2</sub> )	p	$\eta^2$	Pairwise comparison <sup>a</sup>
	M	SD	M	SD	M	SD	M	SD				
T1 Mastery-intrinsic	5.66	0.98	5.25	1.06	4.81	1.05	4.30	1.04	10.994	<0.001	0.18	1 > 3, 4; 2 > 4
T1 Mastery-extrinsic	6.39	0.54	5.97	0.78	5.28	0.67	4.86	1.09	30.101	<0.001	0.38	1 > 2 > 3, 4
T1 Performance-approach	4.05	1.03	3.93	1.26	3.34	1.14	3.24	1.10	4.860	0.003	0.09	1 > 3, 4
T1 Performance-avoidance	3.69	1.23	4.46	1.23	3.54	1.25	4.53	1.39	6.092	0.001	0.11	1, 3 < 2, 4
T1 Work-avoidance	3.37	1.44	3.72	1.13	3.72	1.25	4.31	1.28	2.835	0.040	0.05	1 < 4
T2 Mastery-intrinsic	5.63	0.87	5.55	1.16	5.07	0.88	4.32	1.16	13.951	<0.001	0.22	1, 2, 3 > 4
T2 Mastery-extrinsic	6.16	0.93	6.01	0.77	5.15	0.72	4.67	0.76	31.367	<0.001	0.38	1, 2 > 3, 4
T2 Performance-approach	3.77	1.31	4.42	1.23	3.15	1.02	3.37	1.20	8.435	<0.001	0.14	2 > 3, 4
T2 Performance-avoidance	3.72	1.25	4.78	1.16	3.30	1.19	4.00	1.28	10.062	<0.001	0.17	1, 3, 4 < 2
T2 Work-avoidance	3.50	1.35	4.07	1.12	3.69	1.23	4.59	1.29	5.906	<0.001	0.10	1, 3 < 4

Note: Range is 1–7.

<sup>a</sup>Statistically significant differences between the groups at  $p < .05$  with Bonferroni correction (Games-Howell correction for T1 Mastery-extrinsic).



The identified profiles are quite similar to those implied by the  $2 \times 2$  model of perfectionism (Gaudreau & Thompson, 2010), except for the *carefree* profile, which had slightly elevated levels on strivings in comparison to the low strivings and concerns -combination of the  $2 \times 2$  model. However, the presence of this group instead of a “pure” low strivings, low concerns group might be due to the nature of our sample, which represents a somewhat selective group of Finnish general upper-secondary students.

## 4.2 | Stability of the profiles

Regarding the longitudinal stability of perfectionism, the between measurement correlations for both facets, strivings and concerns, were high, thus indicating high rank-order stability also found in previous studies (e.g., Damian et al., 2017a; Rice & Aldea, 2006; Sherry et al., 2013).

As to the main question of profile stability, approximately 55% of the students remained in the same perfectionism group during the school year. Moreover, as the observed patterns of change were statistically insignificant, and as the most extreme change, in a sense, (i.e., from the *ambitious* profile to the quite opposite *concerned* profile) was even more rare than could be expected by chance alone, we can rightly conclude the profiles of perfectionism to be considerably stable over time.

It is, however, worth noting that nearly one-third of the students exhibit an adaptive profile reflecting high standards (i.e., *ambitious* students) at the beginning of the school year, while by the end of the year, the share of these students drops closer to one fourth. Similar decrease in relative number also applies to students with below average strivings and concerns (i.e., *carefree* students). Conversely, four out of ten report relative concerns about their accomplishments (i.e., *perfectionists* and *concerned* students) at the beginning of the school year, while by the end of the year, already more than half of the students do the same.

In a sense, then, changes in the overall distribution suggest the prevalence of less adaptive types of perfectionism to increase over the school year. This might imply the presence of a contextual effect, whereby students in between different profiles might gradually move toward the more maladaptive ones, perhaps due to the increasing demands and expectations set by the learning environment. Indeed, students in both secondary and higher education face a wide range of ongoing stressors related to academic demands (Pascoe et al., 2019), and there is some evidence in the Finnish context of secondary students reporting increasingly feeling stressed or emotionally exhausted and anxious about school testing (Finnish Institute for Health and Welfare, 2020; OECD, 2017). Future research should pay particular attention on this.

In sum, these findings importantly add to what we know about the longitudinal nature of perfectionism by demonstrating stability in the configurations of perfectionism facets over time in addition to the rank-order stability in individual facets. This also exemplifies the value of the group-based (or person-oriented, see Bergman & El-Khoury, 2003) approach to studying individual differences in perfectionism, complementing the research of the dimensional approach.

## 4.3 | Profile differences in achievement goal orientations

Regarding the connections between perfectionism profiles and achievement goal orientations, *ambitious* students endorsed predominantly mastery-related goals at both times, which is in line with previous studies (Gucciardi et al., 2012; Hanchon, 2010; Shih, 2013), and thus substantiates the kind of adaptiveness associated with the given profile. *Perfectionists* were characterized by a strive for performance along with mastery, also in line with previous results (Gucciardi et al., 2012; Hanchon, 2010, 2011; Ståhlberg et al., 2019), suggesting that the inclusion of high concerns with high strivings might indicate a shift in focus on social comparison and relative ability. Whether these simultaneous and even somewhat conflicting tendencies translate into different outcomes depending on the academic context (e.g., competition vs. exploration) remains an interesting topic for future research (see Stoeber,

Edbrooke-Childs, et al., 2018, for a discussion on perfectionism as a double-edged sword). *Carefree* students displayed a rather passive pattern of motivation with their relatively low scores on all orientations at both times, which is also in line with previous findings (Gucciardi et al., 2012). Yet, this pattern does not seem to point out any particular motivational problems, which might be the case with *concerned* students. The relatively most elevated emphasis on performance-avoidance and work-avoidance orientations by the *concerned* students indicates this to be the most vulnerable perfectionism group in terms of motivation, and thus perhaps also the most likely at-risk group of students. This is also in line with Gaudreau and Thompson's (2010) suggestion of the profile of low strivings and high concerns being the most problematic or unbeneficial.

Interestingly, and in a sense validating the present findings, there is a rather strong resemblance between the motivational patterns of different perfectionism groups found here and the achievement goal orientation profiles identified in previous motivation research. Especially, the motivational emphases of *concerned*, *ambitious*, and *perfectionists* seem to parallel the profiles of avoidance-oriented, mastery-oriented, and success- or performance-oriented students, respectively (e.g., Pulkka & Niemivirta, 2013; Tuominen-Soini et al., 2011). This not only confirms the types of goal striving tendencies identified as prevalent and relevant in an achievement context, but also speaks for the usefulness of the given analytical approach.

It is also worth noting, that although the patterns of connection between perfectionism and motivation were generally similar at both measurement points, the slight changes in the emphases might be taken to indicate further accentuation in the observed differences between the groups. As if the patterns became more refined and/or profiles more consolidated over time. Again, future research should take a closer look at such processes over longer periods of time.

## 5 | LIMITATIONS AND FUTURE DIRECTIONS

Our sample represented a somewhat selective student population as it included youth attending general upper-secondary education, which is more academic than vocational upper-secondary studies. Also, although we aimed to minimize external sources of variation (e.g., in terms of different instructional practices, pedagogical culture, and other related contextual factors) by focusing on the whole age group in a single educational context, our sample size ended up being relatively small, thus reducing statistical power. Therefore, while our findings were robust and none of the analyses were compromised, future research should nevertheless expand on this and investigate more heterogeneous and representative samples of students.

In a related matter, as the educational context likely has an effect on these constructs and their relations, it would be important to examine the stages of transitions from one educational setting to another (e.g., from lower-secondary to upper-secondary education, or from upper-secondary to higher education) and over a longer period of time. This would allow us to identify key stages in personal development and educational careers that contribute to both the patterns and trajectories of perfectionism.

Our design was also limited in the sense that we did not explore such background factors that might have a role in these developments. These might include socioeconomic status, perceived parenting styles, and family and peer relations as well as some school-related factors such as perceived pressure, student–teacher relations, and academic climate (Domocus & Damian, 2018; Flett et al., 2002; Hibbard & Walton, 2014). As to various relevant consequences of the different perfectionistic profiles, looking more closely into students' general and academic well-being would seem of particular importance in future studies.

## 6 | PRACTICAL IMPLICATIONS

Intervention studies on perfectionism in the school context are rather rare, so the information available for considering practical implications in relation to our findings is sparse. However, drawing on some recent reviews

identifying key themes for decreasing perfectionism in classroom settings (Flett & Hewitt, 2014a; Wade, 2018), we would highlight the following general guidelines: lower excessive standards and put less weight on high achievements, consider failure as a stepping stone for learning instead of a measure of self-worth, and promote self-acceptance through compassion. Since our findings implicate perfectionistic concerns to be of particular motivational relevance, we would also stress the importance of reducing competition and social comparison.

The challenge here is how to translate the above principles into classroom practices and instructional strategies, especially given the key point of our findings, that is, the multitude of different perfectionistic profiles and their stability. In essence, a supportive atmosphere in the classroom without unnecessary competition and ability comparison between the students, along with pedagogical practices highlighting learning and healthy self-development would likely benefit all students. To further take into account the above-mentioned differences in perfectionistic tendencies, more individualized approaches might be needed. Some students might be provided with more challenging tasks and helped with keeping their goal level achievable, some might need guidance and suitable tasks to become engaged in the first place, while others might benefit from being provided with feelings of success and getting help with appreciating their accomplishments. Nevertheless, just being aware of the different perfectionistic profiles and their implications for motivation and well-being might already help the teachers to take better into account the diversity and various needs among the students.

## 7 | CONCLUSION

In agreement with previous research, our findings show that students can be reliably characterized in terms of their different emphases on the facets of perfectionism, that is, perfectionistic profiles. Perfectionism is thus not a trait on a continuum, but rather a combination of strivings and concerns, each with different implications. As the first one of its kind, our study further shows these profiles to be relatively stable over time, thus adding to our understanding of the developmental nature of perfectionism. Perfectionistic profiles are also systematically connected with students' academic motivation, which further elucidates their relevant role in the educational context. Especially important from a pedagogical perspective seems to be the connection between perfectionistic concerns and students' focus on relative ability and social comparison. In other words, high concerns, with or without high standards, seem to be linked with motivational vulnerability, and thus bears a risk for students' well-being. This implies that instead of paying particular attention to the presence of perfectionism as such (i.e., the combination of high standards and high concerns), we should become more sensitive to identifying the broader complexity of perfectionistic tendencies.

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