"Emotional anticipation of high school graduation: Similarity of profiles across gender, educational track, and grade"

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ABSTRACT

The present study investigated adolescents' emotional anticipation profiles at the prospect of high school graduation and examined whether these profiles were similar across gender, educational track, and grade. Our results shed light on profiles that were distinct in level and shape: a Positive Anticipatory-Positive Anticipated emotions profile, a Mixed Anticipatory-High Anticipated emotions profile, a Mixed Anticipatory- Low Anticipated emotions profile, a Negative Anticipatory-High Anticipated emotions profile, and a Positive Anticipatory-High Anticipated emotions profile. Contrasting with variable-centered results, differences across gender, educational track, and grades were found to be rather qualitative in nature (i.e., different profile shape and prevalence) than quantitative (i.e., differences in emotional levels). Our findings offer important insights in understanding adolescents' anticipation of important life and educational transitions.

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Parmentier, Michaël ; Pirsoul, Thomas ; Bouchat, Pierre ; Nils, Frédéric. *Emotional anticipation of high school graduation: Similarity of profiles across gender, educational track, and grade.* In: *International Journal for Educational and Vocational Guidance*, (2022) http://hdl.handle.net/2078.1/256652 -- DOI : 10.1007/s10775-022-09528-0

Emotional Anticipation of High School Graduation: Similarity of Profiles Across Gender, Educational Track, and Grade

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This article has been accepted for publication in *International Journal for Educational and Vocational Guidance*. This is a post-review pre-publication version of the article. Please refer to the following link for the final version: https://doi.org/10.1007/s10775-022-09528-0

Please cite as:

Parmentier, M., Pirsoul, T., Bouchat, B., & Nils, F. (2022). Emotional anticipation of high school graduation: Similarity of profiles across gender, educational track, and grade. *International Journal for Educational and Guidance*. https://doi.org/10.1007/s10775-022-09528-0

Emotional Anticipation of High School Graduation: Similarity of Profiles Across Gender, Educational Track, and Grade

The transition following high school graduation represents an anticipated critical life and career event for adolescents (Anderson et al., 2012; Nurmi, 1991). Transitions represent turning points between two periods of stability during which individuals experience important role changes (Anderson et al., 2012; Levinson, 1986; Louis, 1980). Whether going to university or directly entering the job market, students appraise the transition as stressful and emotional as they face many challenges such as developing career awareness and exploration, adjusting to a new learning or job environment, and developing adaptive study or work habits (Christie, 2009; Trautwein & Bosse, 2017). The multitude of challenges, the pursuit of different goals, and the passage from one stable period to the other have been argued to produce multiple strong emotional reactions simultaneously (Ersner-Hershfield et al., 2008; Larsen et al., 2001; Lazarus, 1991). When anticipating their transition, students might experience anticipatory anxiety at the prospect of failing exams and enthusiasm at the prospect of making new friends during higher education. At the same time, students may also imagine how their transition will feel. They might anticipate feeling happy and proud when imagining successful socialization at university or work, and if unsuccessful, they might anticipate feeling disappointed and sad.

Much work has already shed light on the role of emotions–and individual affective differences–among adolescents at the end of high school (Brissette et al., 2002; Christie, 2009; Conley et al., 2014; Kerr et al., 2004; Parker et al., 2004; Postareff et al., 2017; Srivastava et al., 2009). However, the literature has mainly overlooked the emotions that students experience at the prospect of anticipated life and educational events, namely future-oriented emotions (Baumgartner et al., 2008). Such a lack of evidence is unfortunate given

that the anticipation of positive and negative future outcomes and emotions is argued to act as one of the main drivers of behaviors (Aspinwall & Taylor, 1997; Baumeister et al., 2007). Simultaneously, the literature has primarily relied on a variable-centered approach investigating the average relationships between positive or negative emotions with outcomes for the entire sample. This approach remains relatively limited and gives a partial view of reality as it overlooks the heterogeneity in the levels and shapes of students' emotional experiences. Indeed, the numerous hopes and fears associated with high school graduation and the following transition are likely to induce *multiple* emotions simultaneously (Ersner-Hershfield et al., 2008; Lazarus, 1991; Shuman et al., 2013). To this end, a different, yet complementary, approach is to adopt a person-centered perspective that offers the possibility of considering the combinations of *multiple* emotions experienced by students (i.e., an emotion profile) at the prospect of the end of high school (Fernando et al., 2014). Person-centered approaches are typological methods that seek to identify subpopulations, called profiles, who display different configurations on a set of interacting variables (Morin et al., 2020; Spurk et al., 2020).

Using a person-centered approach, we investigated adolescents' profiles of future-oriented emotions at the prospect of high school graduation and the associated educational (i.e., transition to university) or career (i.e., transition to the job market) transition. To the best of our knowledge, the present study represents the first attempt to assess students' profiles of both anticipatory and anticipated emotions simultaneously. Therefore, the construct validity of profiles is a crucial endeavor to ascertain their theoretical value and their proper use as a guide to research inferences and career-related interventions (Morin et al., 2016; Olivera-Aguilar & Rikoon, 2018). In this context, the replication of profile solutions across samples and groups represents a key element (Morin et al., 2020). Our second objective pertained to

the careful investigation of differences and similarities in adolescents' emotional profiles across gender, educational track, and grades.

The current study brings important contributions in different ways. First, we adopt a future-oriented and preventive approach on how students emotionally anticipate their transition. From this perspective, we complement earlier work that showed the role of affective mechanisms in helping students to prepare for and cope with upcoming transitions and inform the design of both emotion- and career-related interventions (Hodzic et al., 2018; Motlova & Honsova, 2021; Parker et al., 2004). Second, we respond to calls for a more comprehensive picture of students' multiple emotional experiences using person-centered approaches (Fernando et al., 2014; Ganotice et al., 2016) and offer a typological picture of emotional experiences likely to better identify at-risk students about the anticipation of their future transition. Importantly, person-centered results are naturally aligned with counselors' and practitioners' willingness to design effective interventions based on clients' and students' types with distinct needs (Macrae & Bodenhausen, 2000). Finally, the examination of differences and similarities based on gender, institutional track, and grade has the potential to investigate the generalizability of future-oriented emotions profiles and to inform the relevance of some profiles, and related interventional needs, for distinct groups of interest.

Future-oriented emotions

The anticipation of future events is associated with strong emotional reactions (Van Boven & Ashworth, 2007), what has been referred to as future-oriented emotions (Baumgartner et al., 2008). Two distinct yet complementary forms of emotions encompass the range of individuals' emotional reactions at the prospect of future events: anticipatory and anticipated emotions. On the one hand, anticipatory emotions refer to currently experienced emotions at the prospect of a future event (Ortony et al., 1988). On the other hand, anticipated

emotions are affective beliefs about the emotions one expects to experience in the future (Wilson & Gilbert, 2003). Two critical features distinguish anticipatory emotions from anticipated emotions. First, anticipatory emotions are currently experienced and, per se, represent real affective responses to possible future events. In contrast, anticipated emotions correspond to affective beliefs—or affective forecasts (Wilson & Gilbert, 2003)—based on pre-factual thinking about imagined positive or negative events and their consequences (M. D. Robinson & Clore, 2001). In other words, anticipated emotions are the product of a mental simulation process about a future event and beliefs about how one will react in the future. Second, because anticipatory emotions are currently experienced affective responses at the prospect of a possible event, uncertainty about the future and the likelihood of the anticipated event is part of–and partially causes–the anticipatory emotion (Moors, 2013). In contrast, as the product of one's mental simulation, anticipated emotions do not involve uncertainty because one is imagining whether a future event has occurred or not.

Specific future-oriented emotions have been differentiated (Baumgartner et al., 2008). Anticipatory emotions comprise the subset of emotions that have been defined as *prospect* emotions by Ortony et al. (1988). These emotions result from reacting to the prospect of desirable or undesirable future events and, respectively, are prototypically referred to as anticipatory hope and anticipatory fear. Importantly, anticipatory hope and fear are construed as broad families of emotional states and comprise facets such as excitement, confidence, or enthusiasm for anticipatory hope, and worry, anxiety, nervousness for anticipatory fear. Several anticipated emotions have also been delineated in the context of goal-directed behaviors, and thus, are consistent with future transitions (Baumgartner et al., 2008; Ortony et al., 1988). First, predicting the confirmation or the disconfirmation of a desired or undesired event will likely produce differentiated emotions. A (dis)confirmed desired event will likely

bring about satisfaction or happiness and disappointment, respectively. In contrast, the confirmation of an undesired event will probably generate fears-confirmed emotions such as distress, and the disconfirmation of an undesired event will induce relief. Second, agent-based emotions related to one's actions and behaviors are likely to arise since one is likely to visualize one's actions and behaviors concerning imagined future events. Consequently, (dis)approving one's actions will lead to guilt and pride, respectively.

Profiles of future-oriented emotions

The possibility that people can experience multiple emotions at the same time, which has been referred to as mixed emotions, has been debated for several decades (Larsen & McGraw, 2014). However, existing empirical evidence now brings convincing support for the co-occurrence of multiple emotions (Larsen et al., 2017). The experience of multiple emotions can arise in various contexts and situations such as learning (Ganotice et al., 2016), moving to a new house (e.g., nostalgia and excitement), and graduation from college (e.g., anxiety and determination; Ersner-Hershfield et al., 2008). Diary and experience sampling studies have shown that individuals experience mixed emotions across situations (Trampe et al., 2015; Watson & Stanton, 2017). Person-centered approaches are well suited to investigate the patterns or combinations of multiple emotions among students. Indeed, variable-centered approaches implicitly infer that emotions are correlated to each other similarly for all individuals. Consequently, these approaches overlook that naturally-occurring groups of individuals might be defined by distinct emotional patterns. Person-centered approaches move away from a focus on average relations and relax the homogeneity assumption of model parameters. Instead, person-centered approaches address the heterogeneity of individuals' emotional combinations by grouping individuals in groups called classes or profiles that share the same pattern or combination (Morin et al., 2020). Using latent profile analysis (LPA), we

adopted a person-centered approach to explore the combinations of students' emotional anticipation at the prospect of high school graduation. Profiles are differentiated upon their level and shape. Level describes how students feel either positive or negative emotions, from low to high levels. Shape describes profiles in terms of different forms (e.g., high levels of positive *and* low levels of negative anticipatory emotions).

Research Question 1. How many profiles of emotional anticipation at the prospect of the transition following the end of high school years that vary quantitively (in level) and qualitatively (in shape) emerge in the data?

Previous work has already brought convincing empirical evidence regarding the co-occurrence of multiple emotions within school and learning contexts using a person-centered approach. Ganotice et al. (2016) exhibited distinct academic emotions profiles both in the general context of high school and specifically in mathematics among Asian students. They found four profiles: (1) high positive emotions, (2) high positive and negative emotions, (3) moderate positive and negative emotions, and (4) high negative emotions. They examined the effects of emotion profiles on learning outcomes. Their findings suggested that the High positive and the High Positive and Negative emotions profiles were the most adaptive with regard to school achievement, motivation, and math achievement. More recently, Robinson et al. (2020) used a similar approach to achievement emotions for science classes among high school students and found four profiles: (1) a Negative, (2) a Positive, (3) a Moderate-Low Deactivated, and (4) a Moderate-High All emotions profiles. They further showed that control and value appraisals predicted distinct patterns of emotions, which, in turn, were significantly associated with career intentions related to science and grade point average. Finally, Authors (2021a) showed that students exhibited three distinct profiles of anticipatory emotions at the prospect of the transition to higher education: (1) a positive dominant, (2) a negative

dominant, and (3) a mixed emotions profile. Overall, these studies suggest that students tend to experience multiple emotions in a high school context, whether related to specific courses, the school context, or anticipated future transitions. However, no study had combined both anticipatory and anticipated emotions simultaneously in investigating students' emotional profiles. It thus remains unclear how the previous findings would spread in the present context. We left our research question relatively open to reflect the rather exploratory nature of our research question, consistent with the person-centered approach (Morin et al., 2020; Spurk et al., 2020). Still, consistent with the previous studies reviewed above, we expected the emergence of distinct profiles characterized by either dominant positive or negative emotions, referring to high levels on all positive or negative emotions; a deactivated profile, characterized by particularly low levels on all emotions; a moderated profile, characterized by moderate levels on all emotions; and a high all emotions profile, characterized by high levels on all emotions.

Differences according to gender, educational track, and grade

Person-centered approaches suffer from the same limitations as the variable-centered approach with regards to generalizability. Additionally, the exploratory perspective implied by person-centered research makes it critical to systematically assess the construct validity of the profiles to ascertain that the profiles are meaningful in their own right and can be expected to generalize across samples and time (Morin et al., 2016). The investigation of similarity of profiles in different groups is important to ascertain that the profiles are not related to the extraction of spurious profiles or a statistical artifact, provide evidence for the relevance and generalizability of the profiles in distinct groups of students, and argue that person-centered approaches are useful in the study of emotional anticipation profiles (Morin et al., 2016, 2020). The exploration of differences between groups of interest is also essential from a

practical point of view. It is indeed important to address the similarity between person-centered solutions to support their use as guides for the development of intervention strategies directed at distinct profiles of students (Olivera-Aguilar & Rikoon, 2018). In the present study, we examined the extent to which profiles were similar across distinct students' subpopulations based on (1) gender, (2) educational track, and (3) grade.

Research Question 2. To what extent are profiles similar in number, shape, resemblance, and size across gender, educational track, and grades?

These three variables have been chosen as previous research has demonstrated that they influenced emotions and how students anticipated the transition following high school graduation. During childhood and adolescence, many studies have documented that girls tend to express more positive emotions, internalizing emotions and symptoms, such as sadness and anxiety, and self-conscious emotions such as guilt and shame, compared to boys (Alfeld-Liro & Sigelman, 1998; Ge et al., 1994; Jose & Ratcliffe, 2004; Matud, 2004; Nolen-Hoeksema & Girgus, 1994; Orth et al., 2010; Pomerantz et al., 2002). In contrast, boys tend to express more externalizing emotions such as anger (Archer, 2004). Within the school context, research showed that girls tend to develop school burnout more than boys (Salmela-Aro et al., 2008). However, recent meta-analytic findings report null to small effect sizes regarding emotions between boys and girls and bring caution in the magnitude of gender differences (Chaplin & Aldao, 2013; Else-Quest et al., 2012), consistent with the gender similarities hypothesis (Hyde, 2005). In addition to gender, whether students follow an academic track (leading to higher education) or a vocational track (leading to apprenticeship or work) is likely to influence how they emotionally anticipate their transition. Indeed, different educational paths and associated career opportunities shape differently students' goals, temporal orientations, and beliefs associated with future goals such as commitment, perception of barriers,

expectations of success, and feeling of self-efficacy (Klaczynski & Reese, 1991; Malmberg & Trempała, 1997). For example, compared to academic students, vocational students generally report a higher number of immediate professional and adult preparatory goals such as gaining independence from parents, getting a job, and have a family, as they usually enter the job market after high school (Klaczynski & Reese, 1991). At the same time, they reported fewer career preparatory goals such as continuing education, being successful, and establishing a career. Finally, the third covariate that deemed additional scrutiny was school grade. From a vocational developmental perspective, the high school years include many career development tasks such as the crystallization of career goals, the commitment to a career choice, and engagement in preparation for a chosen career path. All of which thus develop until adolescents graduate from high school and might influence students' emotional anticipation (Hartung et al., 2005; Porfeli & Lee, 2012). From a cognitive appraisal account of emotions, as students approach the transition, the distinct features—both positive and negative—of the transition might become more salient, increase appraisals of urgency, and thus influence how they anticipate the transition (Dejonckheere et al., 2021; Scherer, 2001). The remaining time before the transition represents a core feature of the transition appraisal process within Schlossberg's Transition Framework (Anderson et al., 2012). In the present study, we decided to focus on the four last years of high school as the two first might be too temporally distant for students to experience similar emotional anticipation levels.

Method

Participants and procedure

Data were collected among 1,361 high school students from Grade 9 to Grade 12 – which correspond to the four last years of high school – in 19 different schools in [country]. Agreement to participate voluntarily and informed consent was obtained from participants.

Being a prerequisite for profile similarity analyses (Olivera-Aguilar & Rikoon, 2018), data collection efforts were specifically designed to balance the sample proportions of gender, educational track, and grade. Concerning gender, 729 were girls (53.7%), 628 were boys (46.3%), and four participants omitted to indicate their gender. About 55% of students followed an academic track leading to higher education, and 45% followed a vocational track leading to apprenticeship or job market. Grade proportions were 24.2%, 26.3%, 23.2%, and 26.3% for Grade 9, Grade 10, Grade 11, and Grade 12, respectively.

Measures

To measure anticipatory and anticipated emotions, we adapted the original scale developed by Baumgartner al. (2008). The discrete perspective on emotion and the person-centered approach adopted in the present study motivated the adaptation of the scale to restrict and balance the number of positive and negative, anticipatory and anticipated emotions. Indeed, the number of profile indicators is argued to have a significant influence on statistical power (Nylund et al., 2007; Tein et al., 2013). Such an adaptation resulted in the addition of two emotional states for anticipatory emotions (i.e., hopeful and nervous) and the selection of specific emotional states in accordance with our discrete approach delineated above for anticipated emotions. Importantly, the set of emotions is very close to the original scale (Baumgartner et al., 2008) and involves 12 emotional states equally distributed in the four dimensions of positive anticipatory, negative anticipatory, positive anticipated, and negative anticipated emotions.

For anticipatory emotions, students were asked to indicate how they felt here and now at the prospect of the transition with the following instructions: “After completing your studies, you will probably enter the job market and search for a first job. At that time, your goals, your interests, and your personal and professional projects may take a variety of forms.

Please indicate you feel *here and now* at the prospect of your transition from secondary school to higher education (or work).” On 7-point Likert scales, students rated the extent to which they felt optimistic, confident, hopeful, worried, anxious, and nervous. Anticipated emotions were assessed by two separate (i.e., positive and negative outcomes) instructions: “Now please imagine that you have made the transition from secondary school to higher education (or work). Please indicate how you think you will feel if the months following your entry into higher education (or job market), and what you will have done by then, will have had positive (or negative) consequences for you and allowed (or prevented) you to reach some of your personal and professional goals.” Students were asked to rate how happy, proud, and relieved for anticipated positive emotions in the positive imagined situation and how disappointed, guilty, and sad they would feel in the negative imagined situation. The order of positive and negative imagined situations was presented at random.

Results

We conducted the analyses using M*plus* 8. Descriptive statistics and difference tests across groups are displayed in Table 1. Except for optimism and hope, boys and girls showed significant differences in all anticipatory and anticipated emotions. Girls reported more intense negative anticipatory and anticipated emotions. However, girls reported being less confident than boys. Significant differences were also found when comparing students following an academic vs. a vocational track. Academic students reported more intense emotions, except for anticipatory confidence and anticipated pride and relief. For grade, most anticipatory and anticipated emotions, except for anticipated happiness, pride, and guilt, showed significant increases from Grade 9 to Grade 12.

Profiles of future-oriented emotions were first investigated using LPA for each group separately, distinguishing gender (boys and girls), educational track (academic and vocational

track), and grade (Grade 9, Grade 10, Grade 11, and Grade 12). The profile enumeration process for group-specific LPAs and the rationale for model selection are described in the online supplements. The fit statistics associated with the profile enumeration across gender, educational track, and grades are displayed in Table S1, Table S2, and Table S3, respectively. Across groups, our results supported a 4-profile solution, thereby suggesting configural similarity across gender, educational track, and grade.

INSERT TABLE 1

Profile similarity analyses

Starting from the configural similarity model previously established in the group-specific LPAs, we sequentially compared configural, structural, dispersion, and distributional similarity models for gender, educational track, and grade. Results of profile similarity analyses for gender, educational track, and grade are available at the top, center, and bottom parts of Table 2, respectively. From the model of configural similarity, which models the same number of profiles in each group, we compared a model in which the means of the profile indicators were constrained to be equal (i.e., structural similarity), a model in which the variances of the profile indicators were held equal (i.e., dispersion similarity), and a model in which the relative sizes of the profiles were similar across groups (i.e., distributional similarity). The Akaike Information Criterion (AIC), the Consistent AIC (CAIC), the Bayesian Information Criterion (BIC), and the sample-adjusted BIC (SABIC) were used for model comparison with decreasing statistics indicating the similarity model to be retained. We privileged the BIC, SABIC, and CAIC as these were recommended, the AIC being oversensitive in detecting profile dissimilarity (Morin et al., 2016; Olivera-Aguilar & Rikoon,

2018). Besides, researchers are strongly encouraged to consider theoretical and practical issues when considering the profile similarity between groups, especially when these profiles are likely to target specific groups for interventions.

INSERT TABLE 2

For gender, the structural similarity model produced increased fit statistics for AIC and SABIC and decreased fit statistics for BIC and CAIC, thus bringing mixed evidence for a model of structural similarity. A partial structural similarity model that constrained only two profiles to be structurally equivalent between boys and girls fitted the data better. We then compared models of partial dispersion and distributional similarity, but they did not fit the data better. Thus, the partial structural similarity model was retained for further interpretation (see Figure 1). Given these differences between boys and girls, the following profile similarity analyses were conducted while controlling for gender.

For educational track, results showed that the structural similarity model fitted the data better than the configural similarity model, suggesting that boys (girls) in the academic track exhibited the same means of emotions than boys (girls) in the vocational track. However, neither the dispersion nor the distributional similarity model provided a better fit to the structural similarity model, suggesting that both within-profile variances and profile sizes differed between academic and vocational students.

For grade, results showed that the structural, dispersion, and distributional similarity models fitted the data better than the configural similarity model, demonstrating the similarity across grades in terms of means, variances of the emotions, and profile sizes. We thus retained the distributional similarity model as the best description of the data.

Description of profiles

Profiles of emotional anticipation from high school graduation for girls and boys are depicted in Figure 1.

INSERT FIGURE 1

Consistent with the partial structural similarity model, the first and second profiles are invariant across gender. The other two are different between boys and girls. For boys, the first profile was characterized by moderately high positive anticipatory emotions and very low negative anticipatory emotions. About anticipated emotions, this first profile was characterized by moderate positive anticipated emotions (i.e., anticipated happiness, pride, and relief) and very low negative anticipated emotions (i.e., anticipated disappointment, guilt, and sadness). To take into account these features, we labeled this profile *Positive Anticipatory–Positive Anticipated*. The second profile consisted of students who reported high positive anticipatory emotions and, although to a lesser extent, also high negative anticipatory emotions. Interestingly, a compensatory pattern was observed among positive anticipatory emotions, with confidence being similar in magnitude to negative anticipatory emotions. At the same time, they reported high levels of both positive and negative anticipated emotions. For these reasons, we labeled this profile as *Mixed Anticipatory–High Anticipated*. The third profile also showed co-occurrence of positive and negative emotions, both for anticipatory and anticipated emotions but to a lesser extent. Compared to other profiles, this third profile exhibited lower levels of positive and negative anticipated emotions; although, the *Positive Anticipatory–Positive Anticipated* profile has the lowest levels of negative anticipated emotions. To reflect these features and distinguish it from the *Mixed Anticipatory–High*

Anticipated profile, this profile was labeled *Mixed Anticipatory–Low Anticipated*. The fourth profile was composed of students who demonstrated high positive anticipatory emotions with low negative anticipatory emotions similar to the first profile. In contrast, this fourth profile showed both high positive and negative anticipated emotions (except for anticipated guilt). To denote the similarity and singularity of this profile compared to the first profile, we labeled it *Positive Anticipatory–High Anticipated.*

The first (i.e., *Positive Anticipatory–Positive Anticipated*) and second (i.e., *Mixed Anticipatory–High Anticipated*) profiles were similar between boys and girls in terms of their means, as shown in Figure 1. Contrary to boys, the third profile among girls was composed of students who reported relatively low levels of positive anticipatory emotions and high levels of negative anticipatory emotions. This third profile showed moderate levels of positive, and high levels of negative, anticipated emotions. We labeled it *Negative Anticipatory–High Anticipated* to reflect these differences and underline the differences with other profiles. Interestingly, this third profile was particularly distinct from overall patterns found among boys. Again, note the specific pattern for guilt. The fourth profile exhibited a very similar pattern with the *Positive Anticipatory–High Anticipated* profiles found among boys. Accordingly, we used the same label to reflect this similarity. Still, profile similarity analyses did not show that these two profiles were similar. Interestingly, the two profiles are particularly distinct about specific emotions such as anticipatory confidence, anticipatory hope, and anticipated sadness. These results suggest that emotional anticipation differences between boys and girls are due to profile differences (i.e., *Mixed Anticipatory–Low Anticipated* vs. *Negative Anticipatory–High Anticipated*) along with differences in intensity for specific emotions.

We interpreted profile membership across both gender and educational track given our profile similarity results (see Figure 2). For the profiles that are invariant across gender, differences between academic and vocational students were similar, although differences in profile prevalence were also found between boys and girls. Specifically, the *Positive Anticipatory–Positive Anticipated* was more prevalent among vocational students (and boys) than academic students (and girls). In contrast, the *Mixed Anticipatory–High Anticipated* was more prevalent among academic (and girls) than vocational students (and boys). Among girls, academic and vocational students were similarly prevalent in the *Negative Anticipatory–High Anticipated*. A slightly higher number of vocational students were in the *Positive Anticipatory–High Anticipated* compared to academic track. Among boys, academic students were more prevalent in the *Mixed Anticipatory–Low Anticipated* compared to vocational students, whereas vocational students were more prevalent in the *Positive Anticipatory–High Anticipated* compared to academic students.

INSERT FIGURE 2

For grades, our results showed that profiles were fully invariant with regard to their means, variances, and profile sizes. The proportions in each profile thus correspond to those reported above.

Discussion

Grounded in a future-oriented emotional perspective, the present research highlights the graduation from high school and its associated educational transition as a major period of emotional turmoil for most adolescents. Using a person-centered approach, the present study

aimed to explore students' profiles of emotional anticipation at the prospect of high school graduation and investigated profile similarity across gender, educational track, and grades. Our results showed the emergence of profiles of emotional anticipation that differed both in level and shape in all groups under our scrutiny. Our findings echo previous correlational, person-centered, and experience sampling research showing that individuals tend to experience multiple emotions simultaneously and that individuals differ in the co-occurrence between these emotions (Authors et al., 2021a; Ganotice et al., 2016; Larsen et al., 2001, 2017; Trampe et al., 2015). While some students tended to display a somewhat bipolar–and exclusive–pattern of emotions, such as students in the *Positive Anticipatory–Positive Anticipated emotions* profile, many students reported multiple emotions at the same time, as was mostly the case in the *Mixed Anticipatory–High Anticipated* and *Mixed Anticipatory–Low Anticipated emotions* profiles. Our findings also bring important implications for research on future-oriented emotions. Little research has jointly considered both anticipatory and anticipated emotions (Barsics et al., 2016; Baumgartner et al., 2008) and, to the best of our knowledge, the present study is the first to adopt a person-centered approach on the two facets of future-oriented emotions. Interestingly, our findings showed critical differences in profiles when comparing anticipatory and anticipated emotions. At the quantitative level, our results showed that anticipatory emotions are experienced at a relatively lower level compared to anticipated emotions. This finding is consistent with the theoretical and conceptual features of anticipatory and anticipated emotions. Anticipatory emotions are construed as real and current affective reactions at the prospect of a future event, whereas anticipated emotions refer to affective beliefs about the experience of future emotions in imagined future situations (Baumgartner et al., 2008). In line with our findings, previous research has extensively demonstrated the biases and the individual tendency to overestimate one's affective

experiences in the future (Wilson & Gilbert, 2003). These biases and overestimation are further argued to act as adaptive mechanisms for individuals (Miloyan & Suddendorf, 2015). A second interesting finding relates to the co-occurrence of anticipatory and anticipated emotions. Our findings revealed that anticipated emotions were more likely to co-occur than anticipatory emotions. Indeed, most profiles exhibited relatively high levels of both positive and negative anticipated emotions. Only the *Positive Anticipatory–Positive Anticipated emotions* exhibited a bipolar pattern for anticipated emotions. This finding is consistent with previous variable-centered results (Baumgartner et al., 2008) and suggests that both positive and negative anticipated emotions are coordinated due to the overarching goal to attain good outcomes and avoid bad outcomes at the same time in imagined situations. Said otherwise, individuals tend to expect the best from positive imagined outcomes while preparing for the worst about negative imagined outcomes (Aspinwall et al., 2005).

As Morin and colleagues (2016) argued, investigating profile similarity across several groups of key interest is particularly important for generalizability issues and informing the design and implementation of interventions. Our second objective pertained to the investigation of profile similarity across gender, educational track, and grade. Among boys, four distinct profiles emerged: (1) a *Positive Anticipatory–Positive Anticipated emotions* profile, (2) a *Mixed Anticipatory–High Anticipated emotions* profile, (3) a *Mixed Anticipatory–Low Anticipated emotions* profile, and (4) a *Positive Anticipatory–High Anticipated emotions* profile. The *Positive Anticipatory–Positive Anticipated emotions* and the *Mixed Anticipatory–High Anticipated emotions* profiles were similar in shape among boys and girls. However, the *Mixed Anticipatory–Low Anticipated emotions* profile did not emerge among girls, and a *Negative Anticipatory–High Anticipated emotions* profile emerged, instead. This pattern of findings suggests qualitative differences between boys and girls in

their emotional experience when anticipating high school graduation. Interestingly, the *Positive Anticipatory–High Anticipated emotions* profile was relatively similar in shape between boys and girls. However, quantitative differences were found with girls reporting lower levels of anticipatory hope and confidence, and higher levels of anticipated sadness. Besides shape differences, profiles were dissimilar between boys and girls in terms of prevalence. Among boys, the most prevalent profile was the *Positive Anticipatory–High Anticipated emotions*, followed by the *Mixed Anticipatory–Low Anticipated emotions*, the *Mixed Anticipatory–High Anticipated emotions*, and the *Positive Anticipatory–Positive Anticipated emotions* profile. In contrast, the *Mixed Anticipatory–High Anticipated emotions* and the *Positive Anticipatory–High Anticipated emotions* profile were the most prevalent among girls. Importantly, one-third of the sample of girls belonged to the *Negative Anticipatory–High Anticipated emotions* profile, which did not emerge among boys. Finally, almost one-fifth of the boys belonged to the *Positive Anticipatory–Positive Anticipated emotions* profile, whereas only about one-tenth of girls belonged to this profile. Overall, our findings suggest that differences in emotional experience between boys and girls are mainly driven by qualitative differences in emotional patterns as demonstrated by different profiles (i.e., *Mixed Anticipatory–Low Anticipated emotions* vs. *Negative Anticipatory–High Anticipated emotions* profile) and different profile prevalence between boys and girls. Different psychological mechanisms can explain such differences. First, Brody et al. (2016) argue that girls and men differ when they are children and that these gender differences are amplified or exacerbated by gender role socialization. Indeed, it is expected from girls to express their emotions, whereas boys have to be in control of their emotions. It is a potential explanation why a *Negative Anticipatory-High Anticipated* profile emerged among girls but not among boys. In addition, the differential vulnerability hypothesis has also been developed

and argues that women tend to perceive some situations as more stressful than men (McDonough & Walters, 2001; Roxburgh, 1996). Quantitative differences in emotion levels were also found but were less prevailing and specific to anticipatory hope and confidence, and anticipated guilt and sadness, especially in the *Positive Anticipatory–High Anticipated emotions* profile. When contrasting person-centered and variable-centered results (i.e., *t-tests*; see Table 1), our findings strongly suggest extreme caution when interpreting quantitative differences between boys and girls on specific emotions since our person-centered results showed that qualitative differences mostly prevail.

Overall, our results bring new insights into gender differences with regard to emotional experiences. Despite slight differences (i.e., *Negative Anticipatory-High Anticipated profile* for girls), our results mainly echo the gender similarities hypothesis developed by Hyde (2005), arguing that boys and girls are similar on most, but not all, psychological variables. Even if stereotypes have disseminated mainly in the society assuming that girls are more sensitive and boys more in control of their emotions, these results have been partially disconfirmed with recent meta-analyses investigating emotions during childhood and adolescence (Chaplin & Aldao, 2013; Else-Quest et al., 2012). Our study is one of the first using a person-centered approach helping in understanding that differences between boys and girls are mostly qualitative in nature with different profiles found among boys and girls but also different proportions in profiles between boys and girls. When not taken into account, these differences are likely to increase the quantitative differences previously found in the *t-tests* performed at the beginning of the analyses. Ultimately, these differences can yield misleading inferences about gender differences. Profiles were similar in shape when comparing academic and vocational students. However, differences in within-profile resemblance and profile sizes were found significant between the

two groups. Importantly, these results were found while controlling for gender differences. Compared to academic students, vocational students displayed more within-profile variability, suggesting less resemblance with the prototypical profiles found in our analyses. In terms of profile sizes, the *Positive Anticipatory–Positive Anticipated* and the *Positive Anticipatory–High Anticipated* profiles were more prevalent among vocational students, both among girls and boys. In contrast, the *Mixed Anticipatory–High Anticipated* was more prevalent among academic than vocational students, among both girls and boys. The *Negative Anticipatory–High Anticipated* profile, which emerged among girls only, was equivalently prevalent among academic and vocational students. The *Mixed Anticipatory–Low Anticipated* profile, which emerged among boys only, was slightly more prevalent among academic than vocational students. Our findings are partially consistent with previous literature that showed that academic and vocational students were distinct on a number of features likely to induce differences in their emotional anticipation of high school graduation (Klaczynski & Reese, 1991; Malmberg & Trempała, 1997; Salmela-Aro et al., 2008). If one were to rely exclusively on variable-centered results (see Table 1), one would infer strong differences between academic and vocational students, as has been shown in prior variable-centered studies. In sharp contrast, our person-centered results showed that academic and vocational students displayed the same combinations or profiles when anticipating high school graduation. They were different, however, in their within-profile resemblance with vocational students exhibiting more variability and in the proportions of the profiles. This last difference is particularly likely to pull variable-centered results on a difference between the two groups since vocational students were more prevalent in bipolar patterns (with low negative emotions) compared to academic students. Our findings are tentative at best as we did not incorporate potential psychological mechanisms that might explain these differences.

However, our findings suggest that inferring differences between the two groups should take the naturally-occurring patterns of emotions into account and that more person-centered research is needed to disentangle the qualitative (i.e., profile shape, profile size) and the quantitative (i.e., raw levels of emotions) differences between the two groups.

From Grade 9 to Grade 12, students belonged to profiles that were similar in number, shape, within-profile resemblance, and profile size. Importantly, our investigation is cross-sectional and does not investigate the developmental paths of emotional anticipation over time. It only suggests that the structure of profiles is stable among groups that differ regarding their temporal distance from the transition and thus does represent a transient phenomenon that only occurs right before the transition. It provides evidence for the construct validity of the profiles and has practical implications for choosing an adequate temporal window to develop emotional anticipation interventions (Morin et al., 2016; Olivera-Aguilar & Rikoon, 2018). Previous studies showed that the stability over time points of emotional anticipation profiles does not preclude the emergence of within-person transitions between profiles over time (Authors, 2021a).

Limitations and future directions

Several limitations may have restricted the generalizability of our findings. First, the cross-sectional nature of our design limits our ability to properly investigate developmental effects (i.e., differences in grade) and longitudinal design using a person-centered approach (e.g., latent transition analysis; Collins & Lanza, 2010) would not only benefit our understanding of developmental processes related to emotional anticipation but also address the potential transitions between profiles over time as well as the predictors of such emotional anticipation profiles (Authors, 2021a). Second, while our focus was to provide a first empirical investigation of profiles of emotional anticipation across three key covariates, the

present study did not investigate important antecedents and outcomes of the emotional anticipation profiles found in the present study. For example, investigating the impact of emotional anticipation profiles on adaptation outcomes after their transition either to higher education or the job market could offer valuable insights into our understanding of students' psychosocial adaptation to the transition (Conley et al., 2014). This is especially important when considering that previous research highlighted how students might overestimate how well they will adapt to the transition–thus reporting high levels of positive and low levels of negative emotions–and, as a consequence, develop unrealistic expectations and inadequate preparation (Gerdes & Mallinckrodt, 1994). Third, the features of profile similarity tests are limited to compare groups using a categorical perspective. However, both gender and educational track could be construed using different conceptualizations likely to bring more nuance in students' profiles of emotional anticipation. For example, investigating gendered self-concept may shed light on existing beliefs and expectations required by the social environment during a specific transition. For educational track, investigating the impact of specific educational climate or culture between different tracks is a fruitful avenue for future research. Fourth, the use of self-report measures is imbued with several limitations, especially regarding gender. It is difficult to disentangle whether gender differences are due to real distinct emotional experiences or whether it is the product of gender stereotyping or gender role socialization (Wood & Eagly, 2002).

Practical implications

Overall, this research can inform guidance, counseling, and parents about the complexity and the nature of emotional experience among students and offers a number of relevant information for assisting students before the transition. Even if our study did not investigate adaptation outcomes in relation to the profiles, we can, however, emphasize the

importance of helping students belonging to specific profiles. Based on the emotion literature, we can speculate, for example, that students in the *Positive Anticipatory–Positive Anticipated emotions* profile might be at risk of overestimating their chances to successfully adapt to the transition (Gerdes & Mallinckrodt, 1994), whereas students in the *Negative Anticipatory–High Anticipated emotions* profile might be especially at risk of ruminative and internalized symptoms or avoidance coping strategies. Given the important role held by parents in helping students to deal with their emotions and the transition following high school graduation (Lowe & Dotterer, 2018; Vignoli et al., 2020), parents are invited to pay particular attention to the multiple emotions students experience and often express and share, as well as the multiple challenges, goals, and barriers associated with these multiple emotions. Indeed, the capacity to appraise the complexities of emotional events and experience mixed emotions has been associated with beneficial outcomes in terms of well-being (Berrios et al., 2018; Braniecka et al., 2014). Parents could therefore help their children to accept the complexity and ambiguity of future transitions and to understand that mixed emotions can help in bringing about positive outcomes and forestall negative ones (Baumgartner et al., 2008). Our research also highlights the importance of developing a preventive approach during the high school period. Indeed, previous research showed that negative emotions such as anxiety, academic success, and attention problems were determinants of the adjustment trajectories during the college transition and that interventions adopting a preventive approach on these constructs might be effective (Larose et al., 2019). In this regard, schools and teachers can rely on the profiles found in the present study to design and implement interventions or specific courses devoted to helping students better prepare for their transition. These interventions could, for example, focus on developing resources for positive anticipatory and anticipated emotions but bring caution about overconfidence about future transitions and, simultaneously, help students

understand the causes of negative anticipatory and anticipated emotions. These interventions could also focus on well-documented and validated interventions on emotional intelligence and career adaptability given their role on future-oriented emotions (Authors, 2021b). Our profile similarity tests also bring interesting insights for practice as schools, teachers, and professionals might be aware of important qualitative differences in emotional anticipation among boys or girls. Similarly, our findings suggest that interventions might be effective irrespectively of educational track and grade.

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Table 1. *Descriptive and comparison statistics of emotions across groups*

	Gender			Educational track			Grade				
	Boys	Girls	*t*-test	Academic	Vocational	*t*-test	Grade 9	Grade 10	Grade 11	Grade 12	*F*-test
Anticipatory emotions											
Optimistic	4.82 (1.46)	4.86 (1.36)	–0.50	4.96 (1.29)	4.68 (1.54)	3.55***	4.71 (1.52)	4.75 (1.43)	4.76 (1.37)	5.12 (1.26)	6.45***
Confident	4.78 (1.33)	4.13 (1.42)	8.49***	4.38 (1.31)	4.48 (1.53)	–1.21	4.43 (1.42)	4.49 (1.44)	4.24 (1.48)	4.53 (1.31)	2.71*
Hopeful	5.26 (1.57)	5.09 (1.64)	1.95	5.25 (1.54)	5.07 (1.69)	2.08*	4.99 (1.69)	5.31 (1.57)	5.00 (1.61)	5.35 (1.55)	4.93**
Worried	3.20 (1.68)	3.92 (1.75)	–7.75***	3.81 (1.66)	3.32 (1.83)	5.13***	3.37 (1.69)	3.37 (1.75)	3.73 (1.79)	3.88 (1.75)	7.46***
Anxious	3.29 (1.66)	3.93 (1.81)	–6.63***	3.78 (1.72)	3.45 (1.82)	3.38***	3.35 (1.77)	3.55 (1.73)	3.70 (1.81)	3.92 (1.75)	6.26***
Nervous	3.46 (1.84)	4.22 (1.86)	–7.50***	4.01 (1.79)	3.69 (1.98)	3.06**	3.68 (1.84)	3.77 (1.94)	4.01 (1.91)	4.01 (1.84)	2.68*
Anticipated emotions											
Happy	5.87 (1.16)	6.07 (0.97)	–3.46***	6.03 (1.02)	5.91 (1.12)	2.05*	6.04 (1.02)	6.02 (1.09)	5.92 (1.05)	5.93 (1.10)	1.13
Proud	5.80 (1.23)	6.01 (1.07)	–3.33***	5.91 (1.10)	5.91 (1.20)	0.06	5.85 (1.13)	5.92 (1.18)	5.91 (1.16)	5.91 (1.15)	0.51
Relieved	5.54 (1.40)	5.72 (1.32)	–2.40*	5.68 (1.30)	5.57 (1.44)	1.41	5.72 (1.25)	5.52 (1.44)	5.52 (1.48)	5.77 (1.26)	3.12*
Disappointed	5.46 (1.78)	6.05 (1.29)	–6.94***	5.92 (1.38)	5.60 (1.74)	3.86***	5.70 (1.61)	5.59 (1.72)	6.07 (1.29)	5.79 (1.53)	5.64***
Guilty	4.20 (2.05)	4.56 (1.99)	–3.29***	4.50 (2.01)	4.26 (2.05)	2.12*	4.37 (1.97)	4.38 (2.10)	4.48 (2.00)	4.35 (2.03)	0.27
Sad	4.67 (2.03)	5.73 (1.55)	–10.88***	5.49 (1.64)	4.93 (2.07)	5.52***	5.26 (1.88)	4.96 (2.02)	5.38 (1.75)	5.38 (1.75)	3.96**

Note. Reported statistics are means and standard deviations are in brackets. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2. Multigroup Profile Similarity Fit Statistics

Models of similarity	LL	fp	SCF	AIC	BIC	SABIC	CAIC	Entropy
Gender								
Configural	–28,397.46	127	1.291	57,048.93	57,710.98	57,307.55	57,837.98	.879
Structural	–28,556.14	79	1.385	57,270.28	57,682.11	57,431.16	57,761.11	.878
Partial structural	–28,444.26	103	1.259	57,094.53	57,631.47	57,304.28	57,734.47	.880
Dispersion	–28,481.16	91	1.229	57,144.32	57,618.70	57,329.63	57,709.70	.879
Distributional	–28,467.07	100	1.269	57,134.14	57,655.45	57,337.79	57,755.45	.879
Educational track								
Configural	–29056.52	255	1.273	58623.04	59951.61	59141.58	60206.61	.923
Structural	–29147.22	171	1.273	58636.45	59527.37	58984.18	59698.37	.920
Dispersion	–29213.92	147	1.291	58721.84	58721.84	59020.76	58868.84	.910
Distributional	–29222.36	141	1.285	58726.73	59461.30	59013.50	59602.35	.909
Grade								
Configural	–29880.38	511	1.248	60782.75	63446.61	61823.38	63957.61	.950
Structural	–30175.48	223	1.280	60796.95	61959.46	61251.08	62182.46	.930
Dispersion	–30200.31	163	1.203	60726.62	61576.35	61058.56	61739.35	.930
Distributional	–30225.79	145	1.236	60741.58	61497.5	61036.90	61642.47	.929

Note. LL = log likelihood; fp = free parameters; SCF = scaling correction factor; AIC = Akaike Information Criteria; BIC = Bayesian Information Criteria; SABIC = Sample-size Adjusted BIC; CAIC = Consistent AIC.

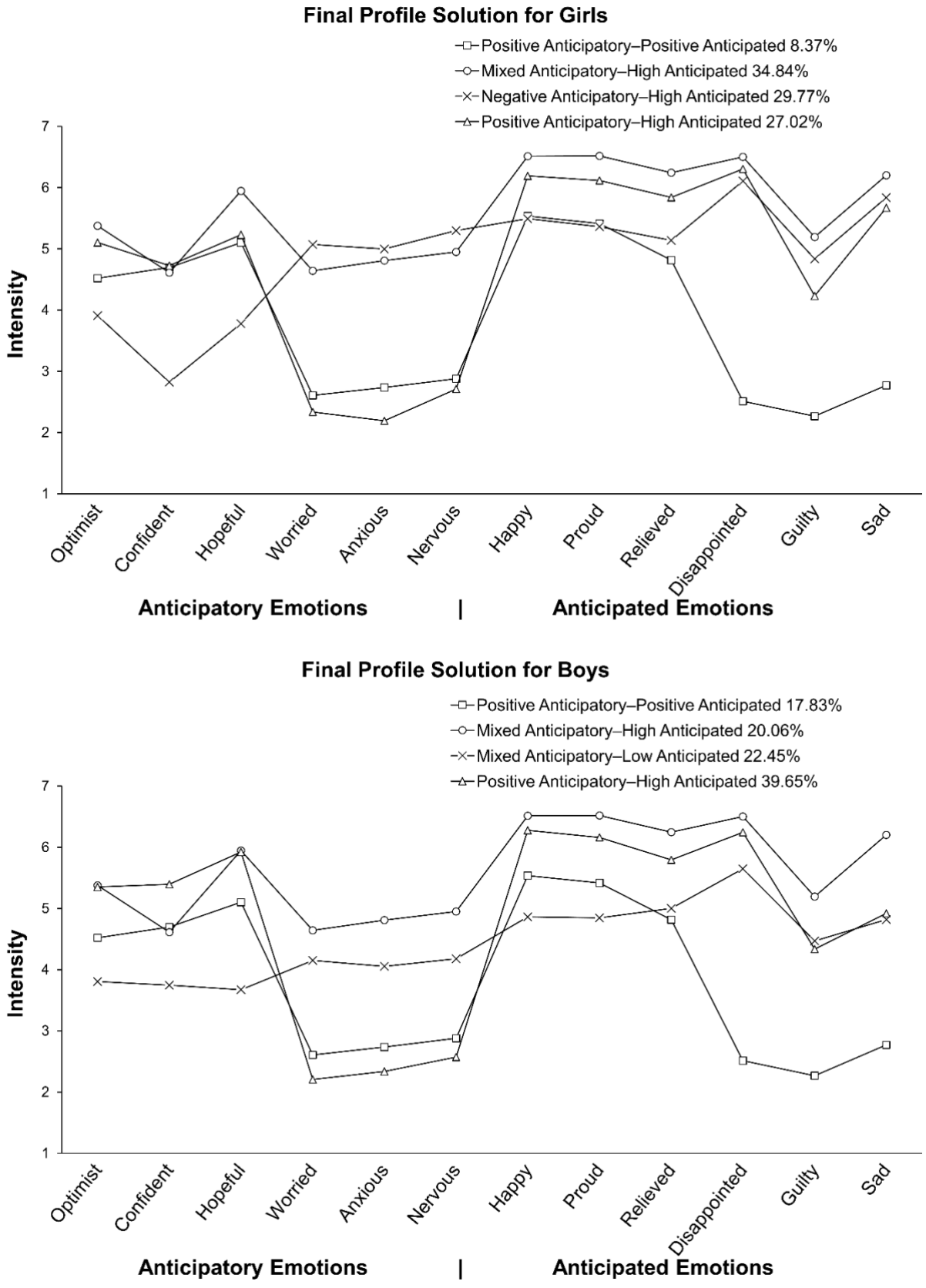

Figure 1. Final LPA solutions with partial structural similarity for girls and boys

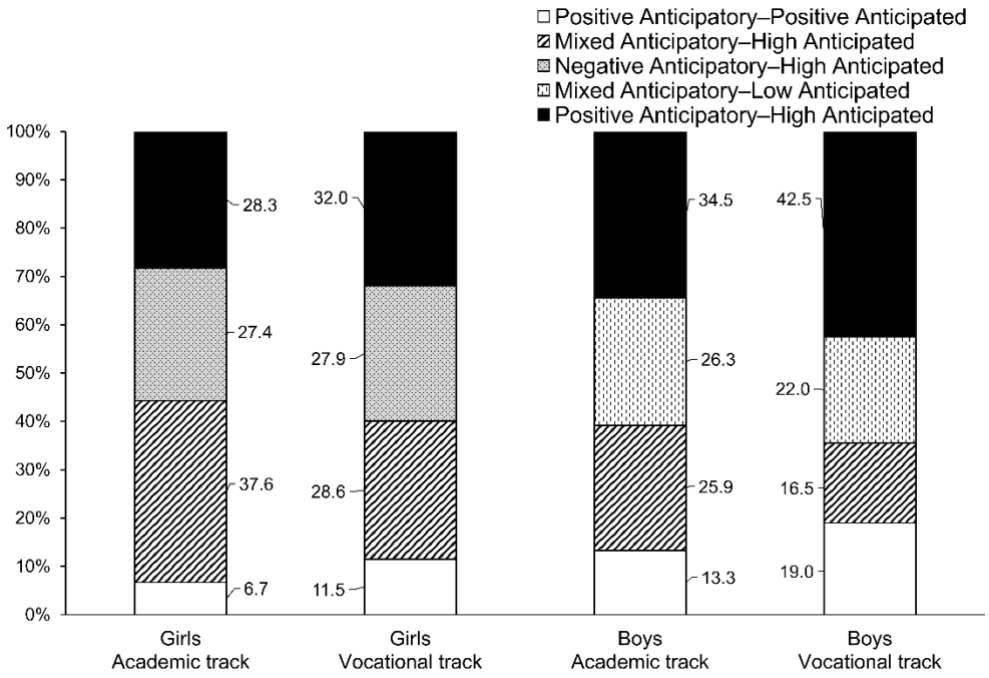

Figure 2. Profile membership across gender and educational track