Trajectories of perceived parenting across an educational transition: Associations with psychosocial adjustment and identity development among Swiss adolescents

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Abstract

Educational transitions involve a number of changes for adolescents and can be challenging for adolescents and parents alike. The present study was designed to gain a better understanding as to how adolescents' perceptions of parenting evolves across a major educational transition and how the parenting perceived across this transition may facilitate adolescents' psychosocial adjustment and identity formation. Swiss adolescents (N=483, M_{age} = 14.96 years old; 64.6% female) in their last year of mandatory secondary school completed self-report measures at two semi-annual time points both prior to and following their educational transition. Adolescents reported on their perceptions of their parents' autonomy support and psychological control as well as their self-esteem, risk-taking behaviors, and identity processes. Group-based trajectory analyses identified three parenting trajectory classes (i.e., Highly Supportive Parenting, Decreasing Supportive Parenting, Stable Controlling Parenting), three psychosocial adjustment trajectory classes (i.e., Low Self-Esteem/Low Risk-Taking, High Self-Esteem/Low Risk-Taking, Moderate Self-Esteem/Increasing Risk-Taking) and four identity trajectory classes (i.e., Lost Searchers, Guardians, Pathmakers, Successful Searchers). These solutions support the contention that adolescents are likely to experience academic transitions differently, whether in terms of their parent-adolescent relationship, their psychosocial adjustment, or their identity. Furthermore, parenting trajectory classes were associated with specific identity and psychosocial adjustment classes. Notably, Highly Supportive Parenting was associated with the High Self-Esteem/Low Risk-Taking class and the Pathmaker identity class, whereas Stable Controlling Parenting was most strongly associated with the Low Self-Esteem/Low Risk-Taking class and the Lost Searcher identity class. These findings highlight the importance of autonomy supportive parenting for adolescent development during educational transitions.

Keywords: academic transition, autonomy support, identity formation, self-esteem, risk-taking

Trajectories of perceived parenting across an educational transition: Associations with psychosocial adjustment and identity development among Swiss adolescents

It is well established that parents play a fundamental role in supporting the optimal development of their children throughout adolescence (Steinberg & Silk, 2002). Although adolescents increasingly seek to assert their independence and take on more responsibility during this maturation process, parents remain an essential source of support (Duineveld et al., 2017; Steinberg & Silk, 2002). Such support may be of particular importance for adolescents during educational transitions, such as the transition from general education (e.g., high school) to tertiary education (e.g., university, vocational school) or from general education to the professional world (Zarett & Eccles, 2006). Given the importance of this academic transition and the number of simultaneous developmental changes, parent-adolescent relationships may evolve, with some parents adjusting more seamlessly than others to the new needs of their adolescent child (Steinberg & Silk, 2002).

Developmentally, adolescents of high school age are also confronted with figuring out who they are and forming an identity of their own (Erikson, 1968; Flum & Kaplan, 2012). Indeed, academic transitional moments may act as a catalyst for pushing adolescents to take a deeper look at themselves, whether they are happy with the path they are on, who they are becoming, and/or whether they would like to reorient the direction they are taking (Crocetti, Rubini, & Meeus, 2008). Given that these academic transitions push adolescents to reflect on issues they may not consider otherwise, these transitions can prompt changes in how adolescents feel about themselves, potentially eliciting self-doubt and facilitating certain risk behaviors (Eccles et al., 1993; Schwartz, Mason, Pantin, Wang, et al., 2009). In this light, the way parents accompany their adolescents along this transition may have important implications for their child's overall adjustment and healthy identity development (Ryan & Deci, 2017). Accordingly, the goal of the current study was to examine how parenting is perceived by adolescents over the year prior to, and following, a major academic transition, and whether parenting would serve as a resource for adolescents vis-à-vis their psychosocial adjustment and

identity development.

The Swiss Education System and the Association of Academic Transitions with Self-Esteem and Risk-Taking Behaviors

School transitions can represent particularly vulnerable moments for adolescents, with youth often confronted with large changes in their social environment, school structure, and day-to-day life (Duineveld et al., 2017; Zarett & Eccles, 2006). Not only do adolescents need to balance new academic demands and responsibilities, but many struggle with concerns regarding their new peer network (Zarett & Eccles, 2006). In the French-speaking part of Switzerland, all youth attend a 3-year obligatory secondary school from ages 12/13 to ages 14/15. Obligatory secondary school is divided into two streams, with one leading to vocational studies and the other leading to gymnasium/senior high school studies (ultimately allows access to university studies). The decision as to which stream to follow is reached during the last year of primary school when youth are 11-12 years old (Nakamura et al., 2007). Thus, unlike youth in many other countries, Swiss adolescents must already make important profession-related decisions at a relatively young age.

These stressful educational transitions can evoke changes in adjustment for adolescents, including vis-à-vis their self-esteem, with self-esteem being defined as a general evaluation of one's self-worth (Grolnick et al., 2000; Harter, 1988). Although a large body of evidence has suggested that many young people become more negative about themselves during these transitions, studies investigating self-esteem over school transitions have not been conclusive with some reporting increases (Proctor & Choi, 1994; Wagner et al., 2013), others reporting decreases (e.g., Wigfield et al., 1991), and still others reporting stable self-esteem during the transition (Białecka-Pikul et al., 2019; e.g., Hirsch & Rapkin, 1987). In this regard, Zimmerman, Copeland, Shope, and Dielman (1997) identified four self-esteem trajectories in early to middle adolescents (consistently high, moderate and rising, decreasing, and consistently low) suggesting that adolescents follow different self-esteem trajectories.

Similarly, school transitions may also act as a precipitating factor for risk taking-behaviors

(Igra & Irwin, 1996). Risk-taking behaviors include a number of potentially health-damaging behaviors that increase the chance of illness, injury, or death, including for example, substance use, risky sexual behaviors, and impaired driving (Igra & Irwin, 1996). The majority of studies investigating risk-taking during school transitions have focused on American emerging adults transitioning from high school to college/university (e.g., Fromme et al., 2008). In general, these studies found risk-taking behaviors, especially those associated with alcohol and drug use, to increase following academic transitions (Jackson & Schulenberg, 2013; Zimmerman et al., 1997). Nevertheless, the American high school to college/university transition is different from Swiss middle adolescents transitioning out of obligatory secondary school at age 14/15. While this may be true, academic transitions may also be associated with changes in risk-taking behaviors among younger adolescents, given their increased desire for independence, exploration, and freedom (Steinberg & Silk, 2002). Although some adolescents may demonstrate larger increases in alcohol use (Jackson & Schulenberg, 2013), others may not (Zimmerman et al., 1997). Thus, overall trends in risk-taking may not adequately characterize how different adolescents experience academic transitions at the individual level (Keijsers & van Roekel, 2018). For this reason, it is necessary to use person-centered approaches to capture meaningful differences among adolescents. Furthermore, as with self-esteem, increases in risk-taking behaviors may be mitigated by environmental factors such as a supportive family environment (Igra & Irwin, 1996). Complicating matters, all of these changes occurring during school transitions are intertwined with the construction of their personal identity.

Identity Development

Processes of Personal Identity Formation.

Personal identity refers to the amalgamation of one's goals, values, and beliefs in a number of life domains, including career and education (Erikson, 1968). In essence, personal identity involves how one defines oneself. Thus, all education related decisions contribute to the formation of adolescents' personal identity. For example, an adolescent may think to themselves "I never thought I wanted to go to university, but maybe this is what I would like to do". This

would then entail a certain reworking of their identity. In this sense, decisions may either be in line with the identity they are forming or alternatively require certain adjustments to be made (Crocetti, Rubini, & Meeus, 2008). In fact, the school environment may directly stimulate further identity questioning by helping youth to rethink their career plans and other aspects of their identities (Flum & Kaplan, 2012; Lannegrand-Willems & Bosma, 2006).

To capture the dynamic nature of identity formation, recent models of identity have proposed using a process-based approach to assess the underlying processes at play in adolescent identity construction (Crocetti & Meeus, 2015). One such model, based on the work of Erikson and Marcia (1966), is the a five-dimensional model proposed by Luyckx and colleagues (Luyckx, Goossens, et al., 2006; Luyckx, Schwartz, Berzonsky, et al., 2008), consisting of three types of exploration (*exploration in breadth*, *exploration in depth*, and *ruminative exploration*) and two types of commitment (*commitment making* and *identification with commitment*). *Exploration in breadth* refers to a general exploration of identity alternatives, whereas *exploration in depth* refers to a thorough exploration of commitments that one has already enacted, and *ruminative exploration* refers to a maladaptive type of exploration characterized by indecisiveness and indecision in which one repeatedly mulls over different identity alternatives. Further, whereas *commitment making* refers to the degree to which adolescents have made choices, *identification with commitment* refers to the extent to which one identifies with and has integrated identity commitments into one's sense of self. More recently, a sixth process originally conceptualized by Meeus and Crocetti (Crocetti, Rubini, & Meeus, 2008; Crocetti, 2017) has been added to this model, namely *reconsideration of commitment* (Albert Sznitman et al., 2019; Zimmermann et al., 2015). Reconsideration of commitment refers to rethinking previously formed commitments in favor of other alternatives and may be indicative of willingness to change a commitment.

Person-Centered and Profile-Based Approaches to Identity Formation.

Prior research has often utilized person-centered approaches to identify profiles of identity formation in order to ascertain different ways in which adolescents approach the task of identity

development. Indeed, the principal assumption of person-centered approaches is that each individual is unique, but that these unique individuals can be summarized by a finite number of evolutions identified by patterns that are shared within a specific subgroup (Crocetti & Meeus, 2015). Studies using the Luyckx model have typically yielded six identity statuses/profiles: achievement, foreclosure, searching moratorium, ruminative moratorium, troubled diffusion, and carefree diffusion (e.g., Albert Sznitman et al., 2019; Luyckx, Schwartz, Berzonsky, et al., 2008; Skhirtladze et al., 2016). The achievement status (commitment following healthy exploration) is often regarded as the most well-adjusted status, followed by the foreclosure status, with adolescents in both statuses demonstrating high levels of self-esteem and low levels of risk taking behaviors (Schwartz et al., 2011). Adolescents in the searching moratorium status (presence of both commitment and exploration) demonstrate relatively moderate levels of self-esteem and risk taking (Crocetti, Rubini, Luyckx, et al., 2008; Schwartz et al., 2011). Adolescents in the ruminative moratorium status (exploration, including maladaptive exploration, and without commitment) as well as the troubled diffusion status (presence of only maladaptive exploration) for their part demonstrate lower levels of self-esteem and high levels of internalizing and risk taking behaviors (Crocetti, Rubini, Luyckx, et al., 2008; Luyckx, Schwartz, Berzonsky, et al., 2008). Lastly, adolescents in the carefree diffusion status (lack of exploration and commitment) demonstrate similar outcomes to those in the troubled diffusion, although they seem to fare slightly better in regard to self-esteem (Crocetti et al., 2011).

To fully understand identity formation as a developmental process, it is important to move beyond cross-sectional studies and to examine how identity evolves over time. Far less research has looked at how identity processes develop longitudinally. In one such study, Luyckx, Schwartz, Goossens, Soenens, and Beyers (2008) derived identity trajectories among university students, based on four identity dimensions (exploration in breadth, exploration in depth, commitment making, and identification with commitment). These authors identified four developmental trajectories roughly equivalent to certain identity statuses. Pathmakers (similar to achievement) are active in forming, evaluating, and strengthening their commitments,

demonstrating high increasing scores on all four identity dimensions. Searchers (equivalent to searching moratorium) were especially engaged in exploring potential commitments, providing high scores on exploration dimensions and low scores on commitment dimensions, with exploration in breadth increasing over time. Guardians (similar to foreclosure) were relatively firm in their commitments and closed to exploration, characterized by stable moderate scores on all identity dimensions. Lastly, a novel developmental pathway was identified – consolidators (a subtype of foreclosure), who provided high and increasing scores on commitment making over time, low stable scores on exploration in breadth, and high stable scores on exploration in depth and identification with commitment. Surprisingly, Luyckx and colleagues did not identify a trajectory class similar to the diffusion status (Drifters). Although the results of that study provide great insight into the potential developmental pathways possible in regard to identity development in university students, Luyckx and colleagues (2011) underline the need for future studies to investigate similar trajectories in younger adolescents. Furthermore, given that academic transitions may stimulate identity related work, it seems imperative to examine identity trajectories across such transitions and their immediate parenting context that may support adolescents' development during this time.

Parenting as a Resource During Academic Transitions

Parenting and adolescent development are tightly intertwined. In general, warm and supportive parenting is associated with lower parent-adolescent conflict, fewer adolescent internalizing problems, and higher academic achievement (for a review see Smetana & Rote, 2019). With regard to academic transitions, one specific way in which parents can act as a resource to their adolescent children is in supporting their adolescent's need for autonomy (Grolnick et al., 2000). Autonomy support refers to the degree to which parents encourage their children to act upon personally endorsed values and interests (Ryan et al., 2006). In contrast, psychological control hampers adolescents' autonomy (Barber, 1996; Soenens & Vansteenkiste, 2010). When parents act in an autonomy supportive way, children are more in touch with their inner self, leading to feelings of authenticity, and contributing to overall well-being (Soenens et

al., 2018). However, when parents act in a psychologically controlling way, this thwarts a child's need for autonomy and may result in feelings of being controlled, inner conflict, and lack of competence (Ryan et al., 2016). A large body of research has evidenced that autonomy support relates to higher well-being and healthy identity development (Luyckx et al., 2009), whereas psychological control has been related to more internalizing and risk-taking behaviors (Soenens & Vansteenkiste, 2010), increased risk-taking behaviors (Fischer et al., 2007), and higher levels of stress (Bartholomew et al., 2011). Furthermore, parenting that supports adolescents' autonomy has been found to relate to higher levels of self-esteem, whereas psychologically controlling parenting to lower levels of self-esteem (Barber, 1996; Bean & Northrup, 2009; Lo Cascio et al., 2016).

Although a vast amount of research has examined the relationship between autonomy supportive parenting and outcomes in children and adolescents (e.g., Luyckx et al., 2009; Van Petegem et al., 2015), fewer studies have investigated trajectories of perceived autonomy support and psychological control during adolescence. In two such studies, three trajectories of perceived autonomy support (high increasing, moderate stable, and low decreasing; Van Petegem et al., 2017) and two trajectories of psychological control (low increasing, moderate stable/decreasing; Rogers et al., 2020) were identified. Together, these studies suggest that parents follow different trajectories in terms of their support of their children's autonomy needs. More specifically, some parents may become more autonomy supportive, others less autonomy supportive or more psychologically controlling, and still others may remain stable.

With regard to academic transitions, however, no study to date has used an analytic approach allowing for the identification of parenting trajectories based on both autonomy supportive parenting and the two types of psychologically controlling parenting (dependency-oriented and achievement-oriented). Whereas dependency-oriented psychological control focuses on maintaining interpersonal closeness, achievement-oriented psychological control is used as a means of maintaining parental standards of achievement (Soenens et al., 2010). Instead, several studies have investigated how perceived parenting relates in general to

psychosocial adjustment and identity development during academic transitions, suggesting that maintaining an autonomy supportive parenting style can help children during these stressful school transitions (e.g., Duineveld et al., 2017; Grolnick et al., 2000) as well as encourage healthy identity development (e.g., Luyckx et al., 2009; Soenens et al., 2005). When parents are autonomy supportive, they allow their adolescents to explore personally endorsed interests, ultimately helping them to fulfill their basic need for autonomy and to develop a more integrated sense of identity (Luyckx et al., 2009). However, parents who act in a psychologically controlling manner frustrate their adolescent's need for autonomy, potentially derailing their adolescent's ability to construct a coherent identity. Previous longitudinal research has highlighted the importance of an autonomy supportive parenting style versus a psychologically controlling parenting style for optimal identity development (Beyers & Goossens, 2008; Luyckx et al., 2007). Taken together, results from these studies suggest that not all parents' parenting will evolve in the same manner, thus highlighting the utility of person-centered analytic approaches in identifying developmentally different subgroups.

The Present Study

Not all adolescents experience academic transitions in the same way. Thus, using a person-centered approach, the first aim of the present study was to examine how perceived parenting, psychosocial adjustment, and identity evolve over a major academic transition in the lives of Swiss adolescents. Consistent with the theoretical background, we proposed several hypotheses.

First, with regard to perceived parenting typologies, in line with previous findings (Rogers et al., 2020; Van Petegem et al., 2017) we expected to identify three trajectory classes: (1) Moderate Stable Autonomy Support/ Low Stable Psychological Control), (2) Low Decreasing Autonomy Support/ Moderate Increasing psychological Control, and (3) High Increasing Autonomy Support/ Low Decreasing Psychological Control.

Second, with regard to psychosocial adjustment we expected to identify four adjustment trajectories: (1) High Stable Self-Esteem / Low Stable Risk-Taking, (2) Low Stable Self-esteem

/High Stable Risk-Taking/, (3) Moderate Increasing Self-Esteem/ Moderate Decreasing Risk-Taking, and (4) Moderate Decreasing Self-Esteem/Moderate Increasing Risk-Taking (Zimmerman et al., 1997).

Third, with regard to identity, we expected to identify at least four identity trajectories: Pathmakers, Guardians, Searchers, and Drifters (Luyckx, Schwartz, Goossens, et al., 2008). We expected Pathmakers to demonstrate high increasing scores on commitment dimensions, high stable scores on exploration in breadth and exploration in depth, and low stable scores on ruminative exploration and reconsideration of commitment. Next, we expected Guardians to demonstrate high increasing scores on commitment dimensions, low stable scores on exploration in breadth and in depth, and low stable scores on ruminative exploration and reconsideration of commitment. We expected Searchers to be characterized by moderate and increasing scores on exploration in breadth and exploration in depth, with low stable/increasing scores on the commitment dimensions. Lastly, Drifters were expected to demonstrate low scores on all identity processes.

The second objective of the present study was to examine how trajectories of perceived parenting would relate to trajectories of both psychosocial adjustment and identity. We expected parenting trajectories characterized by high levels of perceived autonomy support and low levels of perceived psychological control to be associated with psychosocial adjustment trajectories characterized by moderate to high self-esteem and low risk-taking as well as a more mature identity trajectories. Conversely, we expected parenting trajectories characterized by low perceived autonomy support and high perceived psychological control to be associated with psychosocial adjustment trajectories characterized by lower self-esteem and higher risk taking as well as by the least mature identity trajectories.

Method

Participants and Missing Data

The sample for the present study consisted of 483 adolescents (64.6% female) in their last year of mandatory secondary school (i.e., age 14/15) who were participating in a broader

longitudinal study examining family dynamics and adolescent development. The study, entitled A longitudinal study of the associations between identity, family relationships and risk-taking as exploratory behaviors in adolescence, was in compliance with the ethical standards of the Swiss Society of Psychology (SSP) and was approved by the Coordinating committee for educational research of the canton de Vaud. This study was not preregistered. Data, study materials, and analysis code are freely available upon request from the first author. Adolescents were asked to complete self-report questionnaires at four time-points (i.e., T1, T2, T3, and T4), separated by six-month intervals. At T1, the mean participant age was 14.96 years (*SD* = 0.56). Most adolescents were of Swiss nationality (77.9%) and came from intact two-parent (76.7%) or divorced families (22.1%). The remaining adolescents reported having one deceased parent (0.4%), adoptive parents (0.4%), or other family constellations (0.4%). In terms of socio-economic status, the majority of adolescents reported that their families were of average financial standing relative to other families (59.6%). A very small proportion (0.6%) felt they were very below average, 6.8 % slightly below average, 29.4% above average, and 3.6% very above average. Regarding educational tracks, approximately two thirds (67.6%) and one third (32.4%) of adolescents followed academic and vocational/technical streams, respectively.

In terms of attrition, 1096 students participated initially at T1, with attrition rates between waves as follows: T1 to T2 = 3.83%, T2 to T3 = 60.0%, and T3 to T4 = 21.3%. Such attrition rates are comparable to other transitional samples (Duineveld et al., 2017), with the largest drop in participation occurring between when students participated in class (T2) to when students were no longer in obligatory school (T3). Due to the longitudinal nature of the study and the timing of the school transition between T2 and T3, adolescents were included in the present study if they had completed questionnaires at either T1 or T2 (i.e., before academic transition) and at either T3 or T4 (i.e., after academic transition). In total, of the 483 adolescents fulfilling these criteria, 253 adolescents (52.4%) participated at all four waves, 203 adolescents (42.0%) participated at three waves, and 27 adolescents (5.6%) participated at two waves. Overall, 14.3% of data were missing. To include cases with missing data, we used full information

maximum likelihood (FIML), which uses all available information to estimate parameters (Schafer & Graham, 2002).

Procedure

Adolescents were recruited from 10 public schools across the French-speaking Swiss canton of Vaud in accordance with the canton's School and Youth Department. Before the study began, passive parental consent was obtained through an informational letter sent to parents by the participating schools. Parents were given the opportunity to opt their child out of the study by completing and returning this form. The first two waves of data were collected in class in the presence of trained research assistants. At the third and fourth waves, questionnaires were mailed out to adolescents with a pre-stamped envelope for return. Upon receipt of completed questionnaires, adolescents were mailed out 15 CHF (US$15) gift certificates to local stores.

Measures

All questionnaires were administered in French. When French translations were not already available, we employed a back translation procedure in accordance with the International Test Commission (Hambleton, 2001). Unless otherwise specified, participants responded to each of the following items on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). All measures were administered at all four waves.

Perceived autonomy supportive parenting. Adolescents reported on the extent to which they felt that their parents supported their volitional functioning using the seven-item autonomy support (AS) subscale from the Perceptions of Parents Scale (Grolnick et al., 1991). A sample item is "My parents help me to choose my own direction". Previous studies indicated adequate psychometric properties of the AS subscale (e.g., Soenens et al., 2007), which also provided scores with acceptable reliability in the present study, with McDonald omegas ranging from .71 to .80 across study waves.

Perceived psychologically controlling parenting. Perceived parental psychological control was assessed using the 17-item Dependency-Oriented and Achievement-Oriented Psychological Control Scale (Mantzouranis et al., 2012; Soenens et al., 2010). This scale is

composed of two subscales: (1) dependency oriented psychological control (eight items), assessing the extent to which adolescents feel their parents use psychological control in an effort to keep them emotionally and/or psychically close, and (2) achievement-oriented psychological control (seven items), assessing the extent to which adolescents feel that their parents provide them with conditional positive regard based on their compliance with parental standards for achievement. A sample item for dependency-oriented psychological control reads "My parents are only happy with me if I rely exclusively on them for advice" and for achievement-oriented psychological control reads "My parents are less friendly with me if I perform less than perfectly". Both subscales provided scores with adequate internal consistency at all study waves, with McDonald omegas for dependency-oriented psychological control ranging from .72 to .79 and ranging from .90 to .94for achievement-oriented psychological control. These reliability coefficients are similar to those previous reported (Mantzouranis et al., 2012).

Self-esteem. Adolescents reported on their general feelings of self-worth using the global self-esteem subscale of the Self-Perception Profile for Adolescents (SPPA; Harter, 1988). The SPPA provided scores with satisfactory internal consistency, with omegas ranging from .77 to .88 across the four study time points. These coefficients are similar to those previously reported with adolescent populations (e.g., Van Petegem et al., 2015).

Risk behaviors. Adolescents were asked to report on the frequency with which they engaged in a variety of risky behaviors over the last six months using the 30-item Risk Involvement and Perception Scale-Revised (RIPS-R; Zimmermann, 2010). Risk behaviors included the broad categories of alcohol and drug use (e.g., "Drinking alcoholic beverages"), unsafe sexual behaviors (e.g., "Having unprotected sex"), physical aggression (e.g., "Engaging in physical fights"), rule breaking (e.g., "Stealing from a store"), and social aggression (e.g., "Insulting people on the internet"). The response scale consisted of five choices: 1 (*never*), 2 (*rarely*), 3 (*sometimes*), 4 (*often*), and 5 (*every day*). Past research has demonstrated adequate psychometric properties for scores generated by the RIPS-R (Zimmermann, 2010). In the present study, the RIPS-R also demonstrated scores with satisfactory internal reliability, with

omegas ranging from .76 to .90 across waves.

Identity. Personal identity dimensions were assessed using the Dimensions of Identity Development Scale (DIDS; Luyckx, Goossens, et al., 2006; Luyckx, Schwartz, Berzonsky, et al., 2008; Zimmermann et al., 2015). The questionnaire contains 25 items and assesses six dimensions of personal identity formation. These six dimensions, as well as sample items and McDonald's omegas, are as follows: exploration in breadth (5 items; e.g., "I think actively about different directions I might take in my life"; .78 to .87), commitment making (5 items; "I have decided on the direction I want to follow in my life; .88 to .92), identification with commitment (5 items; e.g., "I sense that the direction I want to take in my life will really suit me"; .84 to .90), ruminative exploration (5 items; e.g., "I keep wondering which direction my life has to take"; .78 to .85), exploration in depth (2 items; e.g., "I keep wondering which direction my life has to take"; inter-item correlation .30 to .40), and reconsideration of commitment (3 items; e.g., "I think about whether my future plans match what I really want"; .61- .67). Internal consistencies were comparable to other studies (Zimmermann et al., 2015).

Sociodemographic information. Adolescents provided the following sociodemographic information: Age (birthdate), gender (male/female), educational track (university or apprenticeship bound), nationality, family constellation (parents married/divorced/separated/ other), number of siblings, languages spoken at home, and family financial situation relative to other families (very below average/ below average/ average/ above average/ very above average).

Plan of Analysis

Analyses conducted for the present study proceeded in two phases. In the first phase, we carried out our preliminary analyses. We first estimated measurement models and conducted invariance analyses to ensure the adequacy of our measures. We then examined within-time correlations between perceived parenting and psychosocial adjustment as well as between perceived parenting and identity dimensions, to gain a better understanding as to how the study constructs interrelate at each measurement wave. Next, we investigated rank-order stabilities by

computing autocorrelations between adjacent measurement waves for each of the study variables. We then used repeated measures analysis of variance to estimate mean-level change in study variables as well as gender, time, and time x gender effects.

Next, we conducted our primary analyses to identify groups of adolescents following heterogenous developmental trajectories. Using group-based trajectory modeling (GBTM), a specialized form of finite mixture modeling (see Nagin, 2005; Nagin et al., 2018), trajectories of developmental change were modeled as a function of time and represent mean development over time within each latent class (van der Nest et al., 2020). Before carrying out the GBTM analyses we first estimated unconditional latent growth curve models for each construct. We then compared the linear growth curve model and the curvilinear growth curve model in order to identify the optimal trajectory specification for each model (van der Nest et al., 2020). Once these preliminary analyses supported the better approximation of the curvilinear growth curve model, we then carried out three separate sets of GBTM models to derive trajectory classes for perceived parenting, psychosocial adjustment, and identity development. Several solutions were tested with different numbers of classes. The final number of classes was determined based on a number of considerations. First, the best fitting solution should have a relatively low Bayesian Information Criterion (BIC). Second, the best fitting solution would need to demonstrate confident case classification with entropy values >.80 (Grimm et al., 2017). Third, we considered the average posterior probability of assignment (APPA) and the odds of correct classification (OCC; Klijn et al., 2017). The APPA estimates the assignment probability to each class for each individual, which should ideally be equal to 1, with values > .70 considered satisfactory (Nagin, 2005). The OCC estimates the ratio of the odds of correctly classifying individuals as compared to randomly assigning individuals to classes. For each class, this ratio should be > 5 (Nagin, 2005). Fourth, class sizes needed to be statistically robust (Hill et al., 2000). Finally, classes needed to be theoretically meaningful and not simply slight variations on a common theme (Nagin et al., 2018).

As a final step, we examined whether adolescents' membership in a given parenting

trajectory class would render them more likely to belong to a specific identity and adjustment trajectory class. Thus, chi-square analyses were conducted to determine the degree of overlap between parenting classes and identity classes as well as between parenting classes and adolescent adjustment classes. To determine the degree of dependence between classes, we used adjusted standardized residuals, with elevated residuals (i.e. > |2.00|) suggesting an association between the two classes (Beh, 2012; Haberman, 1973).

Results

Measurement models, as well as invariance analyses, were conducted on all study variables and can be found in the supplementary materials along with a comprehensive zero-order correlation matrix. In all cases, measurement models fit the data well (CFI and TLI ≥ .90, SRMR ≤ .08; Hu & Bentler, 1999; Little, 2013), and the assumption of measurement invariance was retained (AIC, BIC, ΔCFI ≤ .01; Cheung & Rensvold, 2002) with all models reaching at least metric invariance.

Within-Time Correlations of Parenting-Identity and Parenting-Adjustment

Table 1 provides an overview of the concurrent relations between perceived parenting and identity dimensions as well as between perceived parenting and adjustment variables across study waves.

Rank-Order Stabilities and Mean-Level Changes

The 6-month rank-order stabilities for all study variables was assessed using the Spearman rank-order correlation between adjacent study waves. Perceptions of parenting dimensions were relatively stable over-time, with stability coefficients for perceived autonomy support ranging from .62 to .72 (*M*=.66), dependency-oriented psychological control ranging from .58 to .65 *(M*=.61), and achievement-oriented psychological control ranging from .57 to .67 (*M*=.62), all *p*s < .001. Identity dimensions demonstrated stability coefficients similar to those previously reported (Luyckx, Schwartz, Goossens, et al., 2008; Luyckx, Soenens, et al., 2006), with commitment making ranging from .63 to .66 (*M*=.64), exploration in breadth from .39 to .50 (*M*=.45), identification with commitment from .57 to .65 (*M*=.61), exploration in depth from .34

to .49 (*M*=.42), ruminative exploration from .54 to .57 (*M*=.55), and reconsideration of commitments from .42 to .45 *(M*=.43), all *p*s < .001. Thus, although all autocorrelations were statistically significant, stability coefficients did indicate slight change in individuals' relative standings with respect to identity dimensions. Last, stability coefficients ranged from .59 to .73 (*M*=.67) for self-esteem and from .74 to .80 (*M*=.77) for risk taking, all *p*s < .001. These autocorrelations suggest that adolescents generally maintained their relative standing on adjustment variables over time.

Gender differences and mean-level linear changes in study variables were evaluated through repeated-measures multivariate analysis of variance, with gender as a between-subjects variable, measurement occasion as a within-subjects variable, and the study variables as dependent variables. Significant multivariate effects of time and gender emerged, as did a significant interaction effect. Subsequent univariate analyses indicated significant effects for time on commitment making (increasing), identification with commitment (increasing), risk-taking (increasing), ruminative exploration (decreasing), and reconsideration of commitment (decreasing) (see Table 2).

Gender differences emerged for achievement oriented psychological control, commitment making, exploration in breadth, identification with commitment, exploration in depth, ruminative exploration, reconsideration of commitment, self-esteem, and risk-taking. Compared to girls, boys scored lower on exploration in breadth (M_G = 3.91, M_B = 3.78), exploration in depth (M_G = 3.75, M_B = 3.58), ruminative exploration (M_G = 3.00, M_B = 2.63), and reconsideration of commitment (M_G = 3.21, M_B = 3.00). On the other hand, boys scored higher than girls on achievement-oriented psychological control (M_G = 1.69, M_B = 1.82), commitment making (M_G = 3.77, M_B = 3.96), identification with commitment (M_G = 3.59, M_B = 3.81), risk-taking (M_G = 1.33, M_B = 1.42), and self-esteem (M_G = 3.3.77, M_B =4.13). A significant time x gender interaction was observed for reconsideration of commitment and risk-taking. We thus examined the final trajectory solutions for differences based on gender.

Trajectory Class Analysis

Three sets of GBTMs were performed: the three parenting dimensions simultaneously, the two psychosocial adjustment dimensions simultaneously, and the six identity dimensions simultaneously. Within each model, we included an intercept, linear slope, and quadratic slope for two through five class solutions. An overview of the selection criteria for these solutions is presented in Table 3.

Parenting Trajectory Classes. Based on the criteria for determining the number of parenting classes to retain, the three-class solution was selected. The three-class solution had a lower BIC value than the two-class solution and a higher entropy value than the four-class solution. Further, the additional class in the three-class solution, as compared to the two-class solution, provided new valuable information. The three-class solution demonstrated excellent classification accuracy with APPA values ranging from .93 to .94 and OCC values > 5. Table 4 provides estimates of mean intercepts, linear slopes, and quadratic slopes for each parenting trajectory class. A graphical representation of the trajectory classes is presented in Figure 1. A first class (*Highly Supportive Parenting*; n = 194) was characterized by the highest levels of perceived autonomy support and lowest levels of perceived psychological control, with a downward linear trend in dependency-oriented and achievement-oriented psychological control. Class 2 (*Decreasing Supportive Parenting*; n = 214) was moderate on perceived autonomy support as well as both types of perceived psychological control. A downward linear trend was observed for perceived autonomy support and a positive quadratic trend for achievement-oriented psychological control. Class 3 (*Stable Controlling Parenting; n* = 75) was lowest on perceived autonomy support and highest on both types of perceived control, all of which remained stable.

Adjustment Trajectory Classes. With regard to adjustment trajectory classes, a three-class solution was selected. Although the four-class solution had a slightly lower BIC value as compared to the three-class solution as well as equal entropy values, the four-class solution included classes that were variations on a single theme. Thus, we favored the more parsimonious three-class solution. The three-class solution demonstrated excellent classification

accuracy with APPA values ranging from .91 to .95 and OCC values > 5. Parameter estimates for each class are provided in Table 4 and a graphical representation of classes is depicted in Figure 2. Class 1 (*Low Self-Esteem/Low Risk-Taking*; *n* = 129) was lowest on self-esteem and risk-behaviors, both of which remained stable. Class 2 (*High Self-Esteem/Low Risk-Taking; n* = 284), was highest on self-esteem and lowest on risk behaviors, which also remained stable. Class 3 (*Moderate Self-Esteem/ High Risk-Taking*; *n* = 70) was characterized by moderate levels of self-esteem which remained stable over time and highest levels of risk behaviors which demonstrated an upward linear trend.

Identity Trajectory Classes. Lastly, with regard to identity, we selected a four-class solution. In the five-class solution some classes were variations on a single theme and did not provide additional meaningfulness. Furthermore, the more parsimonious four-class solution had a lower BIC and a similar entropy value as compared to the five-class solution. The four-class solution demonstrated excellent classification accuracy with APPA values ranging from .90 to .94 and OCC values > 5. Parameter estimates for each class are provided in Table 4, and a graphical representation of classes is presented in Figure 3. The first class (*Lost Searchers*; *n* = 124) was lowest on commitment making, identification with commitment, exploration in breadth, and exploration in depth, highest on ruminative exploration, and moderate on reconsideration of commitment, all of which remained stable over time. Class 2 (*Guardians*; *n* = 124) was moderate on both commitment dimensions, low on exploration in breadth, exploration in depth, ruminative exploration, and reconsideration of commitment. All identity dimensions remained stable over time except for identification with commitment, which was characterized by a negative linear trend. Class 3 (*Pathmakers*; *n* = 104) was highest on both commitment dimensions and exploration in depth, lowest on ruminative exploration and reconsideration of commitment, and relatively moderate on exploration in breadth. Commitment making increased linearly and reconsideration of commitment decreased linearly. A positive linear trend, coupled with a negative quadratic trend, was observed for identification with commitment, whereas ruminative exploration evidenced a negative linear trend coupled with a positive quadratic

trend. Exploration in breadth and exploration in depth remained stable over time. Class 4 (*Successful Searchers*; *n* = 131) was relatively moderate on both commitment dimensions as well as on exploration in depth, relatively high on ruminative exploration, and highest on exploration in breadth and reconsideration of commitment. Identification with commitment increased linearly and ruminative exploration, and reconsideration of commitment decreased linearly. Exploration in depth evidenced a positive quadratic trend. Commitment making and exploration in breadth remained stable over time.

Associations between trajectory classes

To estimate the degree of association of parenting classes with both psychosocial adjustment classes and identity classes, we performed two sets of chi-square analyses (Table 5). A statistically significant association between parenting classes and psychosocial adjustment classes, $\chi^2(4) = 89.23$, $p < .001$, $V = .30$, as well as between parenting classes and identity classes, $\chi^2(6) = 14.71$, $p = .02$, $V = .12$, emerged. More specifically, with respect to parenting classes and psychosocial adjustment, all categories except two demonstrated important associations. The Highly Supportive Parenting class was characterized by an overrepresentation of adolescents in the High Self-Esteem/Low Risk-taking class and an underrepresentation of both the Low Self-Esteem/Low Risk-Taking and Moderate Self-Esteem/Increasing Risk-Taking classes. For Decreasing Supportive Parenting, there was a trend towards overrepresentation of the Moderate Self-Esteem/Increasing Risk-Taking classes. Finally, Stable Controlling Parenting was characterized by an underrepresentation of High Self-Esteem/Low Risk-Taking and an overrepresentation of both Low Self-Esteem/Low Risk-Taking and Moderate Self-Esteem/Increasing Risk-Taking. Regarding the overlap between parenting and identity classes, Highly Supportive Parenting was characterized by an overrepresentation of Pathmakers, whereas Decreasing Supportive Parenting overlapped significantly with Guardians. Lastly, Stable Controlling Parenting was underrepresented within the Pathmaker class and evidenced a trend toward overrepresentation within the Lost Searcher class.

Lastly, we examined all trajectory classes for differences based on gender. A

statistically significant association between gender and identity, $\chi^2(3) = 25.75$, $p < .001$, $V = .23$, as well as between gender and psychosocial adjustment, $\chi^2(2) = 25.46$, $p < .001$, $V = .23$, emerged. Most notably, there was an overrepresentation of boys in the Guardian class ($z = 2.50$), an overrepresentation of girls in the Low Self-Esteem/Low Risk-Taking class ($z = 2.37$) and an overrepresentation of boys in the Moderate Self-Esteem/Low Risk-Taking class ($z = 2.25$). We similarly examined for differences based on educational track. A statistically significant difference emerged for identity, $\chi^2(3) = 12.84$, $p < .001$, $V = .17$, parenting, $\chi^2(2) = 7.10$, $p = .03$, $V = .13$, and psychosocial adjustment, $\chi^2(4) = 13.76$, $p = .001$, $V = .18$. More specifically, there was an overrepresentation of students in the gymnasium stream in the Lost Searchers class ($z = 1.47$), an overrepresentation of students in the vocational stream in the Pathmaker class ($z = 2.03$), an overrepresentation of students in the vocational stream in the Stable Controlling Parenting class ($z = 2.00$), and an overrepresentation of students in the vocational stream in the Low Self-Esteem/Low Risk-Taking class ($z = 2.47$).

Discussion

Adolescence is a time full of developmental changes during which youth are also faced with important academic transitions. While parents are an important source of support to adolescents, little is known regarding the different ways in which parenting may evolve during such transitions. The current investigation was designed to provide a novel contribution to the developmental literature – specifically, we identified trajectories of perceived parenting, psychosocial adjustment, and identity development over an important educational transition in the lives of Swiss adolescents, and we examined the degree of overlap among these groups of latent trajectories. We derived three trajectory classes for parenting, three trajectory classes for psychosocial adjustment, and four trajectory classes for identity development. Furthermore, parenting trajectory classes overlapped significantly with both psychosocial adjustment and identity trajectory classes.

Trajectories of Perceived Parenting, Psychosocial Adjustment, and Identity Development

Although popular media often present adolescence as a time of major turmoil, this is

typically not the case (Smetana & Rote, 2019). In fact, adolescents in the present study largely traversed this major educational transition in a positive manner, as evidenced by the large proportion of adolescents identified in the more adaptive trajectories in all three domains (perceived parenting, psychosocial adjustment, and identity development). With regard to parenting and in line with our hypotheses, three trajectory classes were identified, suggesting that parental levels of perceived autonomy support and psychological control evolve in three overarching ways. Parents who were, prior to the transition, perceived as demonstrating higher levels of autonomy support and lower levels of psychological control (i.e., Highly Supportive Parenting) were perceived as maintaining this developmentally favorable level of autonomy support and decreased levels of perceived psychological control. In fact, this class represented nearly half of adolescents (roughly 40%). However, when parents were already struggling prior to the transition relying on relatively elevated levels of (perceived) psychological control and relatively low levels of (perceived) autonomy support (i.e., Stable Controlling Parenting), parents appeared to maintain this strategy across the academic transition. On the other hand, a large subset of parents (44%) who were initially perceived as moderately autonomy supportive and psychological controlling (i.e., Decreasing Supportive Parenting) decreased their levels of support and increased their levels of achievement-oriented control across the transition. This finding is in line with previous research suggesting that parents who feel they are losing control are more likely to increase in their use of psychological control (Rogers et al., 2020). Thus, the school transition may be experienced as stressful for certain parenting and may especially incite an increased use of achievement-oriented control.

With respect to psychosocial adjustment, we identified three trajectory classes. The large majority (59%) of adolescents were characterized by the High Self-Esteem/Low Risk-Taking class, maintaining these levels across the school transition. Thus, these adolescents appeared unphased by the change in academic demands and environment, at least in terms of their self-esteem and their engagement in risky behaviors. Interestingly, a group of adolescents was characterized by Moderate Self-Esteem/Increasing Risk-Taking. Potentially, for these

adolescents risk-taking may serve as a form of healthy exploration, allowing adolescents the opportunity to figure out their likes and dislikes, ultimately contributing to their sense of self (Marcia, 1980; Ravert, 2009). Indeed, this type of exploratory behaviors in the form of risk-taking has been considered normative during adolescence (Zimmermann et al., 2017). For the third group of adolescents with already low self-esteem, the educational transition did not endanger their self-esteem any further. Thus, in general, while previous research documented slight decreases in self-esteem during academic transitions to be relatively normative (Harter & Whitesell, 2003; Wigfield et al., 1991), none of the psychosocial adjustment classes in our study demonstrated such an evolution.

In regard to identity classes and in line with Luyckx and colleagues (2008), we identified Pathmakers and Guardians. Pathmakers, representing nearly a quarter of participants, exemplified adolescents who have explored identity possibilities and made identity commitments. Guardians represent a type of identity foreclosure with high levels of commitment and little exploration and reconsideration. Interestingly, the school transition appeared to insight increases in commitment dimensions, which returned to initial levels following the transition. This is emblematic of the foreclosure type, who are characterized by rigidity and reluctance to explore (Marcia, 2006). When faced with challenges or threats to their commitments, such as during a school transition, they typically would react defensively, giving more push back (Kroger & Marcia, 2011). Once they feel the threat has subsided, commitment levels would return to normal.

Notably, whereas past research (Luyckx, Schwartz, Goossens, et al., 2008) identified one trajectory exemplifying the Moratorium status (i.e., Searchers), in the present study we identified two trajectory classes reflecting both the bright and dark sides of moratorium (i.e., Searching Moratorium and Ruminative Moratorium; Crocetti & Meeus, 2015), those being Successful Searchers and Lost Searchers. Together these two classes represented nearly 50% of adolescents, thus reflecting the large amount of identity work typical of middle adolescence (Luyckx et al., 2011). These two trajectories are also in line with previous longitudinal identity

research and theorizing on identity progression versus regression (Meeus et al., 2010; Waterman, 1982). In fact, Waterman (1982) in his developmental hypotheses suggests that not only can there be identity stability or maturation, but that regression in identity can be experienced if previous identity commitments are evaluated as unsatisfactory or no longer retain their initial meaning. Waterman's hypothesis could serve as a plausible explanation for the regressive trajectory experienced by the Lost Searchers during this transition, during which time they may have been prompted to revisit previous commitments and make decisions as to what path to take. For Successful Searchers on the other hand, the school transition seemed to stimulate their healthy identity work as evidenced by increases in identification with commitment and decreases to their moderate/high levels of ruminative exploration and reconsideration of commitment.

Associations Between Trajectories of Parenting, Psychosocial Adjustment, and Identity

In line with the second aim of the study, the present results evidenced overlap between parenting trajectory classes and both (a) psychosocial adjustment trajectory classes as well as (b) identity trajectory classes. First, adolescents in the Highly Supportive Parenting trajectory were particularly likely to maintain high stable levels of self-esteem and low stable levels of risk. Thus, when adolescents' needs for autonomy are supported, they are more likely to experience better overall adjustment, avoiding the decline in wellbeing that often typifies school transitions (Eccles et al., 1993). Also, in line with our hypotheses, adolescents in the Highly Supportive Parenting trajectory were more likely to follow the Pathmaker trajectory, demonstrating the most mature identity development. In line with previous longitudinal research, satisfaction of one's need for autonomy seems to be especially helpful in aiding one to make identity commitments and integrate these commitments into one's sense of self (Luyckx et al., 2009). This principle is exemplified in the present study, with Pathmakers being characterized by high levels of commitment. Need satisfaction is of paramount importance if one is to internalize identity commitments (Deci & Ryan, 2000; Luyckx et al., 2009). Thus, adolescents who experienced greater autonomy need satisfaction were better able to engage in

healthy exploratory behaviors and to engage in and integrate commitments. Such identity success may result from these adolescents forming identities that are representative of their own values and interests that they were able to identify and explore given the supportive environment provided by their parents.

Conversely, a significant proportion of adolescents in the Stable Controlling Parenting trajectory were characterized by Low Self-esteem/Low Risk-Taking. One possible explanation may be that parenting that is highly controlling control thwarts adolescents' need for autonomy, ultimately being negatively associated with adolescents' self-esteem (Soenens & Vansteenkiste, 2010). These adolescents were also more likely to follow a more troubled identity trajectory (i.e., Lost Searchers). During stressful educational transitions, adolescents may need greater support from their parents (Fenzel, 1989), however, parents of these adolescents steadily employed intrusive techniques, thereby continuously thwarting their child's need for autonomy (Barber, 1996; Barber & Harmon, 2002). When parents pressure children to comply with parents' own standards and interests, adolescents are less in touch with their own sense of self and experience difficulties forming commitments (Luyckx et al., 2007). This pattern is exemplified by Lost Searchers' low levels of commitment. Furthermore, in line with the high levels of ruminative exploration evidenced by Lost Searchers, previous research has suggested that adolescents whose parents use intrusive and psychologically controlling techniques to be more likely to develop an indecisive orientation (Luyckx et al., 2007). Thus, the high levels of perceived psychological control and low levels of perceived autonomy support appeared to be detrimental to proactive identity development for these adolescents.

Lastly, adolescents in the Decreasing Supportive Parenting trajectory were most likely to demonstrate moderate levels of self-esteem and increasing risk-taking behaviors. One possible explanation for this association is that, while these parents were initially perceived as relatively autonomy supportive, the school transition coupled with their adolescents' increased risk behaviors brought out higher levels of perceived achievement-oriented control following the school transition. Furthermore, these adolescents were also more likely to be Guardians,

demonstrating higher levels of commitment and lower levels of identity exploration. Given that Guardians typically adhere to parental standards (Kroger, 2004), when parents felt their adolescent to be straying "too far", they may have tried to refocus their child on academic-oriented topics (Soenens & Vansteenkiste, 2010). Indeed, these increases in commitment may be externally imposed rather than autonomously motivated, given their levels return to initial levels (Soenens et al., 2011).

Overall, these results highlight the significant role parents can have in accompanying their adolescent children along difficult transitions. When parents are able to maintain higher levels of autonomy support coupled with lower levels of psychological control, adolescents feel supported. This may be particularly important during stressful school transitions. Adolescents whose parents are autonomy supportive demonstrate a more coherent sense of self and in turn a stable self-esteem (Deci & Ryan, 1995). These findings are in line with the concept of stage-environment fit (Eccles et al., 1993), which suggests that negative developmental consequences can result when one's environment does not support one's needs, but on the other hand, when there is a good match between one's needs and one's environment adolescents can flourish. Furthermore, while new school environments can often be frustrating to an adolescent's need of autonomy, previous research has suggested that the provision of parental autonomy support can serve as a substitute (Duineveld et al., 2017), thus, even when the school transition is experienced as more need frustrating, parents can be an additional source of support for their child's need satisfaction. Thus, parenting should not be seen as fixed in place, but rather as a set of interactional skills that can evolve over time.

These findings have important implications for intervention work with parents of adolescents. Parenting interventions focused on helping parents improve their ability to support their child's need for autonomy, especially during important transitional moments, could serve as an invaluable resource for parents to guide their youth. Such interventions could help equip parents with the necessary tools to be autonomy supportive, including helping them to recognize and acknowledge their child's feelings and to listen empathically to their child (Faber &

Mazlish, 1980), ultimately helping them to support their child's health psychosocial and identity development. Although such parenting programs exist, the majority of them focus on parents of young children (e.g., Joussemet et al., 2014). The present study highlights the crucial role and the necessity for such programs to be expanded and evaluated for parents of adolescents.

Limitations and Future Directions

Although the present study provides novel insight into adolescent development and the evolution of parenting during an important academic transition, a number of limitations should be considered. First, the present study relied solely on adolescent self-report measures. Although self-report questionnaires are considered the most appropriate method for assessing internal and subjective processes, such as identity development and perceived parenting (Barber, 1996), relying solely on single informant data may artificially inflate relationships between constructs (Podsakoff et al., 2012). Future studies could employ observational methods to objectively assess autonomy supportive parenting as well as take into account parents' subjective perception of their autonomy supportive parenting. Second, it should be mentioned that in regard to measurement invariance, we followed the recommendations of Cheung and Rensvold (2002), who suggest that ΔCFI is a superior method to evaluating model fit over and above $\Delta\chi^2$. However, if one were to rely solely on $\Delta\chi^2$ to evaluate measurement invariance, it should be noted that perceived parenting and psychosocial adjustment would only have met configural invariance.

Third, the present study took place over a relatively short amount of time, in particular in regard to the moment of transition (one-year pre-transition and one year post-transition). A longer follow-up post-transition could provide further insight into how adolescents and parents adjust over time, especially given the difficult nature of such a transition (Salmela-Aro et al., 2008). Fourth, in the present study we used GBTM analyses to derive trajectories. It should be noted that other methods exist to derive trajectories and to examine differences based on trajectory membership. For example, covariance pattern growth mixture modeling (McNeish & Harring, 2020) could be used to identify primary trajectories followed by latent transition

analysis (Asparouhov & Muthén, 2014; Morin & Litalien, 2020) in order to predict the probability of trajectory group membership in identity and psychosocial adjustment based on parenting trajectory membership. The use of such analytic approaches could be employed in future research.

Fifth, the analytic technique employed in the present study does not allow directional or causal conclusions to be drawn. In the present study, we were interested in observing how typologies of perceived parenting and adolescent development evolve in parallel. Thus, we cannot say with certainty that a certain parenting trajectory predicts a specific identity development trajectory, for example. An abundance of longitudinal research does, however, support that family functioning predicts adolescent development (e.g., Beyers & Goossens, 2008). These predictive relationships are not only in one direction, i.e., family functioning to adolescent development, but rather have been found to be bidirectional in nature (Schwartz, Mason, Pantin, & Szapocznik, 2009). Thus, not only has parenting been found to predict adolescent development, but adolescent development may elicit certain parenting styles. Therefore, although the present study cannot speak to predictive or causal relationships, past research has suggested bidirectional relationships among family functioning, identity development, and adolescent psychosocial adjustment. Future studies should take inspiration from the present results and investigate the direction of effect of such developmental trajectories. Lastly, the present results concerning self-esteem trajectories should be interpreted as a description of how self-esteem evolves across an academic transition. Past findings suggest that bolstering the self-esteem of adolescents with already low self-esteem can be detrimental (Forsyth et al., 2007), thus, future studies should investigate the best approaches to helping support adolescent students with already low self-esteem. It is our hope that the present study will inspire further longitudinal research examining how parenting and adolescent development evolve during important transitions in the lives of adolescents, ultimately helping parents to understand how best to support their children during these challenging moments.

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Table 1

Concurrent relations between perceived parenting, psychosocial adjustment, and identity from Time 1 through Time 4

Dimensions	Perceived parenting											
	Autonomy support				Dependency oriented control				Achievement oriented control			
	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
Commitment making	.19**	.08	.12*	.12*	-.05	-.09*	-.08	-.06	-.07	-.05	-.06	-.04
Exploration in breadth	.10*	.16**	.11*	.17**	.07	-.02	.03	.04	-.05	-.04	-.04	-.05
Identification with commitment	.16**	.14	.23**	.18**	-.05	-.09	-.13**	-.06	-.02	-.06	-.10*	-.05
Exploration in depth	.30**	.18**	.22**	.26**	-.10*	-.11*	-.12**	-.07	-.16**	-.10*	-.11*	-.14*
Ruminative exploration	-.18**	-.03	-.09	-.08	.17**	.11*	.19**	.13**	.10*	.03	.09	.08
Reconsideration of commitment	-.04	-.02	-.01	.00	.14**	.09*	.15**	.18**	.04	.06	.12*	.10*
Self-esteem	.37**	.46**	.51**	.52**	-.25**	-.32**	-.32**	-.24**	-.27**	-.38**	-.38**	-.30**
Risk taking	-.18**	-.18**	-.20**	-.22**	.20**	.24**	.16**	.31**	.18**	.21**	.24**	.30**

Note. $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

Table 2
Mean-level differences and standard deviations in perceived parenting, psychosocial adjustment, and identity across time

Dimension	T1 *M*(*SD*)	T2 *M*(*SD*)	T3 *M*(*SD*)	T4 *M*(*SD*)	time		gender		time x gender	
					F-value (3,1443)	η^2	F-value (1,481)	η^2	F-value (3,1443)	η^2
Autonomy support	3.79 (0.62)	3.78 (0.64)	3.81 (0.61)	3.77 (0.63)	1.08	.00	1.97	.00	1.36	.00
Dependency-oriented psychological control	2.30 (0.69)	2.25 (0.68)	2.22 (0.72)	2.25 (0.71)	2.44	.00	2.11	.00	1.26	.00
Achievement-oriented psychological control	1.76 (0.79)	1.72 (0.81)	1.71 (0.84)	1.74 (0.81)	0.89	.00	4.30*	.01	0.32	.00
Commitment making	3.77 (0.87)	3.92 (0.84)	3.81 (0.88)	3.83 (0.86)	7.83***	.02	7.78**	.02	.40	.00
Exploration in breadth	3.88 (0.67)	3.90 (0.72)	3.80 (0.78)	3.87 (0.70)	1.81	.00	5.68*	.01	1.01	.00
Identification with commitment	3.60 (0.77)	3.71 (0.77)	3.66 (0.82)	3.69 (0.75)	3.94**	.01	13.77***	.03	.27	.00
Exploration in depth	3.67 (0.82)	3.74 (0.76)	3.64 (0.78)	3.69 (0.80)	1.84	.00	9.22**	.02	.27	.00
Ruminative exploration	3.05 (0.91)	2.89 (1.00)	2.77 (0.96)	2.76 (0.92)	19.66***	.04	26.27***	.05	1.27	.00
Reconsideration of commitment	3.28 (0.87)	3.16 (0.84)	3.03 (0.83)	3.08 (0.77)	9.44***	.02	19.70***	.03	6.48***	.01
Self-esteem	3.88 (0.95)	3.92 (0.90)	3.93 (0.86)	3.87 (0.88)	1.56	.00	24.71***	.05	.77	.00
Risk-taking	1.33 (0.27)	1.37 (0.33)	1.35 (0.30)	1.41 (0.35)	22.61***	.05	12.96***	.03	3.71*	.01

Note. $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

Table 3

Fit indices of group-based trajectory modeling

			Trajectory group counts (%)				
Solution	BIC	Entropy	1	2	3	4	5
	Parenting Trajectory Models						
2-class	10033.24	0.88	65.50	36.50			
3-class	**9659.76**	**0.85**	**39.78**	**44.82**	**15.41**		
4-class	9617.14	0.81	36.14	34.97	17.69	11.20	
5-class	9393.90	0.84	7.69	25.74	39.19	20.51	6.87
	Adjustment Trajectory Models						
2-class	5414.72	0.79	29.89	70.11			
3-class	**4998.28**	**0.82**	**27.01**	**59.47**	**13.53**		
4-class	4851.24	0.82	9.25	36.21	43.23	11.31	
5-class	4761.14	0.81	9.53	5.36	39.23	34.85	11.03
	Identity Trajectory Models						
2-class	24933.46	0.90	57.84	42.15			
3-class	24463.86	0.86	36.69	31.36	31.95		
4-class	**24162.42**	**0.86**	**25.35**	**26.62**	**21.14**	**26.89**	
5-class	23955.34	0.87	16.99	27.51	13.30	24.53	17.66

Note. BIC= Bayesian Information Criterion. Bolded rows represent those chosen as final solutions. N=483

Table 4

Parameters estimates for parenting, psychosocial adjustment, and identity trajectory models

	Parenting Trajectory Models		
Parenting Dimension	Highly Supportive	Decreasing Supportive	Stable Controlling
Autonomy support			
Mean intercept	4.25 (0.03)***	3.67 (0.03)***	3.00 (0.06)***
Mean linear slope	0.03 (0.18)	-0.03 (0.02)*	-0.02 (0.03)
Mean quadratic slope	-0.01 (0.02)	0.00 (0.02)	0.00 (0.03)
DPC			
Mean intercept	1.75 (0.04) ***	2.37 (0.04) ***	3.03 (0.07) ***
Mean linear slope	-0.07 (0.02)**	0.00 (0.02)	0.05 (0.04)
Mean quadratic slope	0.02 (0.02)	0.00 (0.02)	0.03 (0.04)
APC			
Mean intercept	0.78 (0.06) ***	1.68 (0.06) ***	2.99 (0.08) ***
Mean linear slope	-0.10 (0.03)**	0.00 (0.03)	0.04 (0.05)
Mean quadratic slope	0.04 (0.04)	0.06 (0.03)*	-0.05 (0.05)
	Adjustment Trajectory Models		
Adjustment Dimensions	Low SE/ Low Risk-Taking	High SE/ Low Risk-Taking	Moderate SE/ Increasing Risk-Taking
Self-esteem (SE)			
Mean intercept	3.03 (0.12)***	4.43 (0.55) ***	3.86 (0.17) ***
Mean linear slope	0.00 (0.04)	0.00 (0.03)	-0.01 (0.06)
Mean quadratic slope	0.00 (0.05)	0.03 (0.03)	-0.09 (0.07)
Risk-taking			
Mean intercept	1.30 (0.04) ***	1.25 (0.01) ***	1.88 (0.03) ***
Mean linear slope	0.00 (0.01)	0.01 (0.00)	0.11 (0.02)***
Mean quadratic slope	0.00 (0.01)	0.00 (0.01)	0.02 (0.02)
	Identity Trajectory Models			
Identity Dimensions	Lost Searchers	Guardians	Pathmakers	Successful Searchers
CM				
Mean intercept	2.89 (0.07)***	4.11 (0.07)***	5.04 (0.08)***	4.00 (0.06)***
Mean linear slope	-0.05 (0.04)	-0.01 (0.04)	0.13 (0.05)**	0.05 (0.04)
Mean quadratic slope	-0.01 (0.04)	-0.08 (0.04)*	-0.02 (0.04)	-0.03 (0.04)
EB				
Mean intercept	3.58 (0.06)***	3.59 (0.07)***	3.99 (0.07)***	4.37 (0.06)***
Mean linear slope	-0.04 (0.04)	0.00 (0.04)	-0.03 (0.04)	0.03 (0.04)
Mean quadratic slope	0.05 (0.04)	0.01 (0.04)	0.00 (0.04)	-0.02 (0.04)
IC				
Mean intercept	2.87 (0.06)***	3.73 (0.06)***	4.75 (0.07)***	3.78 (0.05)***
Mean linear slope	0.01 (0.03)	-0.05 (0.03)	0.08 (0.04)*	0.07 (0.03)*
Mean quadratic slope	0.05 (0.03)	-0.09 (0.03)**	-0.11 (0.04)**	0.02 (0.03)
ED				
Mean intercept	3.22 (0.07)***	3.48 (0.07)***	4.34 (0.08)***	3.98 (0.07)***
Mean linear slope	-0.02 (0.04)	-0.05 (0.04)	0.03 (0.04)	0.03 (0.04)
Mean quadratic slope	0.02 (0.04)	-0.04 (0.04)	-0.09 (0.05)	0.09 (0.04)*
RE				
Mean intercept	3.51 (0.07)***	2.46 (0.08)***	1.65 (0.08)***	3.39 (0.07)***
Mean linear slope	-0.06 (0.04)	-0.03 (0.04)	-0.19 (0.04)***	-0.15 (0.04)***
Mean quadratic slope	0.01 (0.04)	0.06 (0.04)	0.12 (0.04)**	-0.03 (0.04)
RC				
Mean intercept	3.13 (0.07)***	2.81 (0.07)***	2.70 (0.08)***	3.62 (0.07)***
Mean linear slope	-0.01 (0.04)	-0.01 (0.04)	-0.14 (0.04)***	-0.14 (0.04)***
Mean quadratic slope	0.01 (0.04)	0.01 (0.04)	0.07 (0.05)	0.06 (0.04)

Note. DPC= dependency-oriented psychological control; APC= achievement-oriented psychological control; CM= commitment making; EB= exploration in breadth; IC= identification with commitment; ED= exploration in depth; RE= ruminative exploration; RC= reconsideration of commitment $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

Table 5

Cross-tabulation for parenting trajectory classes with adjustment and identity trajectory classes

	Parenting Trajectory Clusters		
Adjustment Trajectory Clusters	Highly Supportive Parenting (n=194)	Decreasing Supportive Parenting (n=214)	Stable Controlling Parenting (n=75)
Low SE/Low risk (n=129)			
observed	30	55	44
expected	51.81	57.16	20.03
adjusted standardized residual	-4.58	-0.45	6.80
High SE/Low risk (n=284)			
observed	155	121	12
expected	114.07	125.83	44.10
adjusted standardized residual	6.96	-0.90	-8.19
Mod SE/Increasing risk (n=70)			
observed	13	38	19
expected	28.12	31.01	10.87
adjusted standardized residual	-3.99	1.82	2.90
Identity Trajectory Clusters			
Lost Searchers (n=124)			
observed	48	51	25
expected	49.81	54.94	19.25
adjusted standardized residual	-0.38	-0.83	1.65
Guardians (n=124)			
observed	42	65	17
expected	49.81	54.94	19.25
adjusted standardized residual	-1.65	2.11	-0.65
Pathmakers (n=104)			
observed	54	42	8
expected	41.77	46.08	16.15
adjusted standardized residual	2.76	-0.91	-2.49
Successful Searchers (n=131)			
observed	50	56	25
expected	52.62	58.04	20.34
adjusted standardized residual	-0.55	-0.42	1.32

Note. SE= self-esteem; risk= risk-taking; Observed= observed counts; Expected= expected counts based on the assumption of independence.

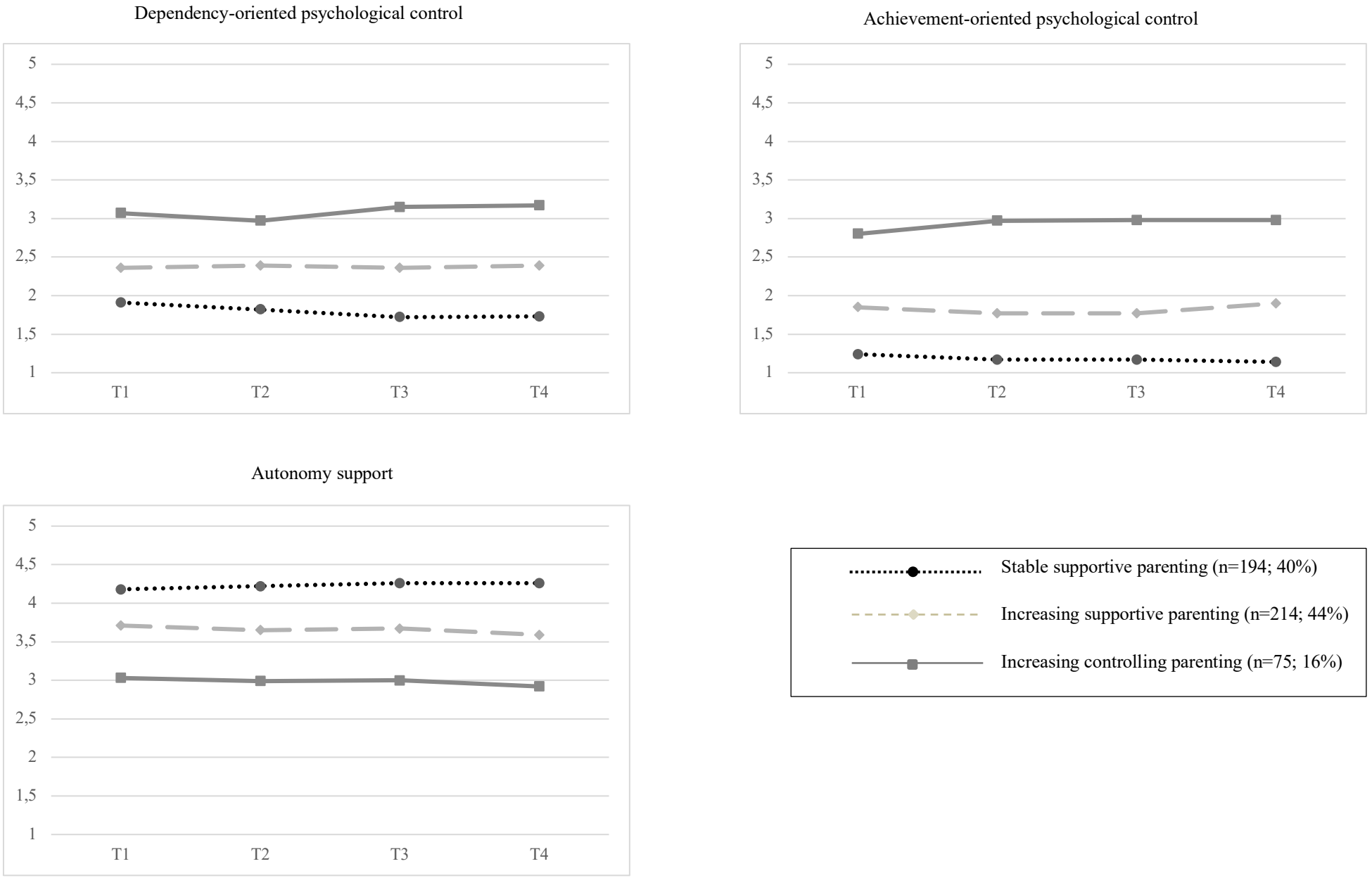

Figure 1. Observed mean trends for the three parenting dimensions in the three parenting trajectory classes

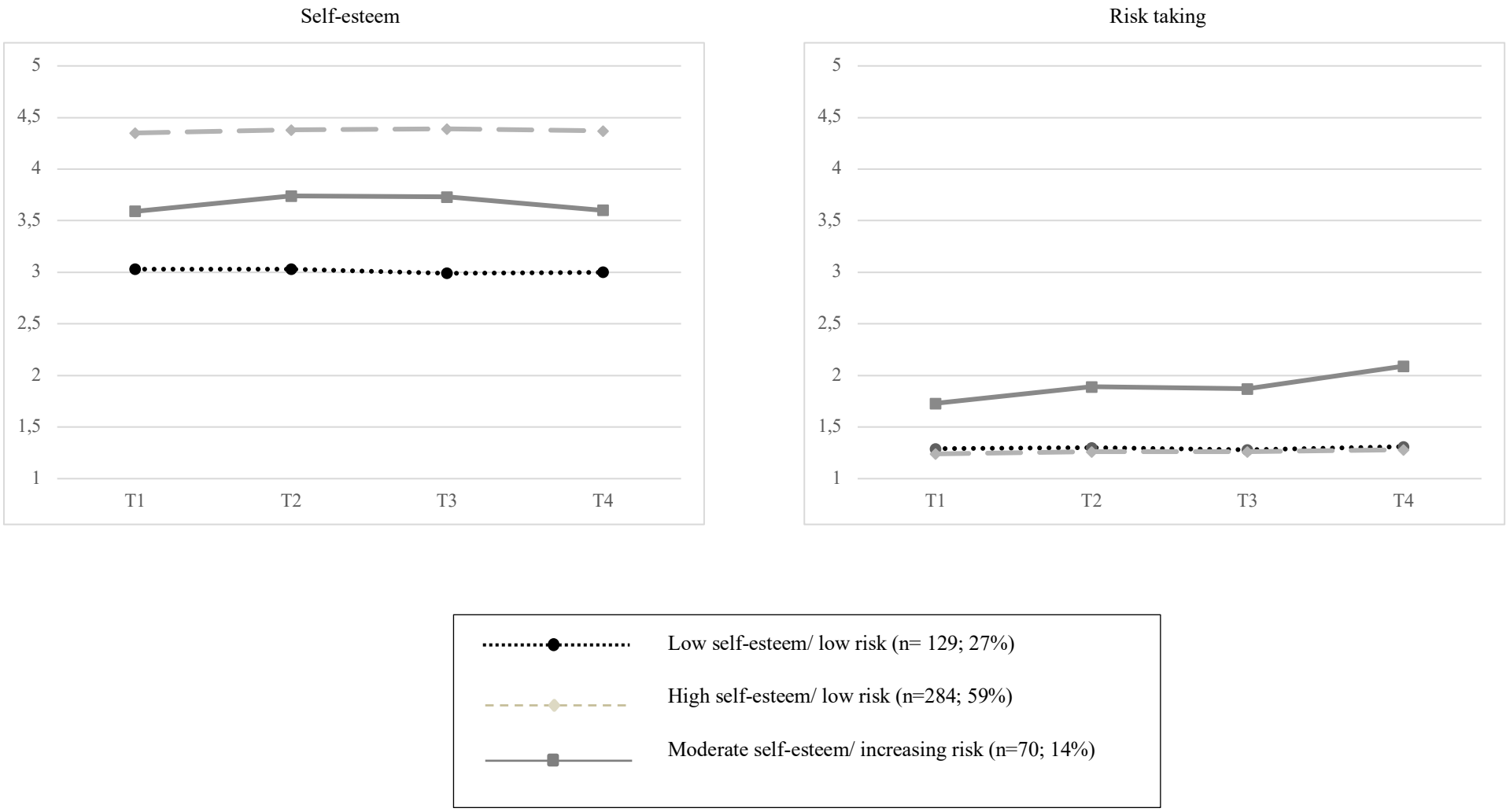

Figure 2. Observed mean trends for self-esteem and risk behaviors in the three adjustment trajectory classes

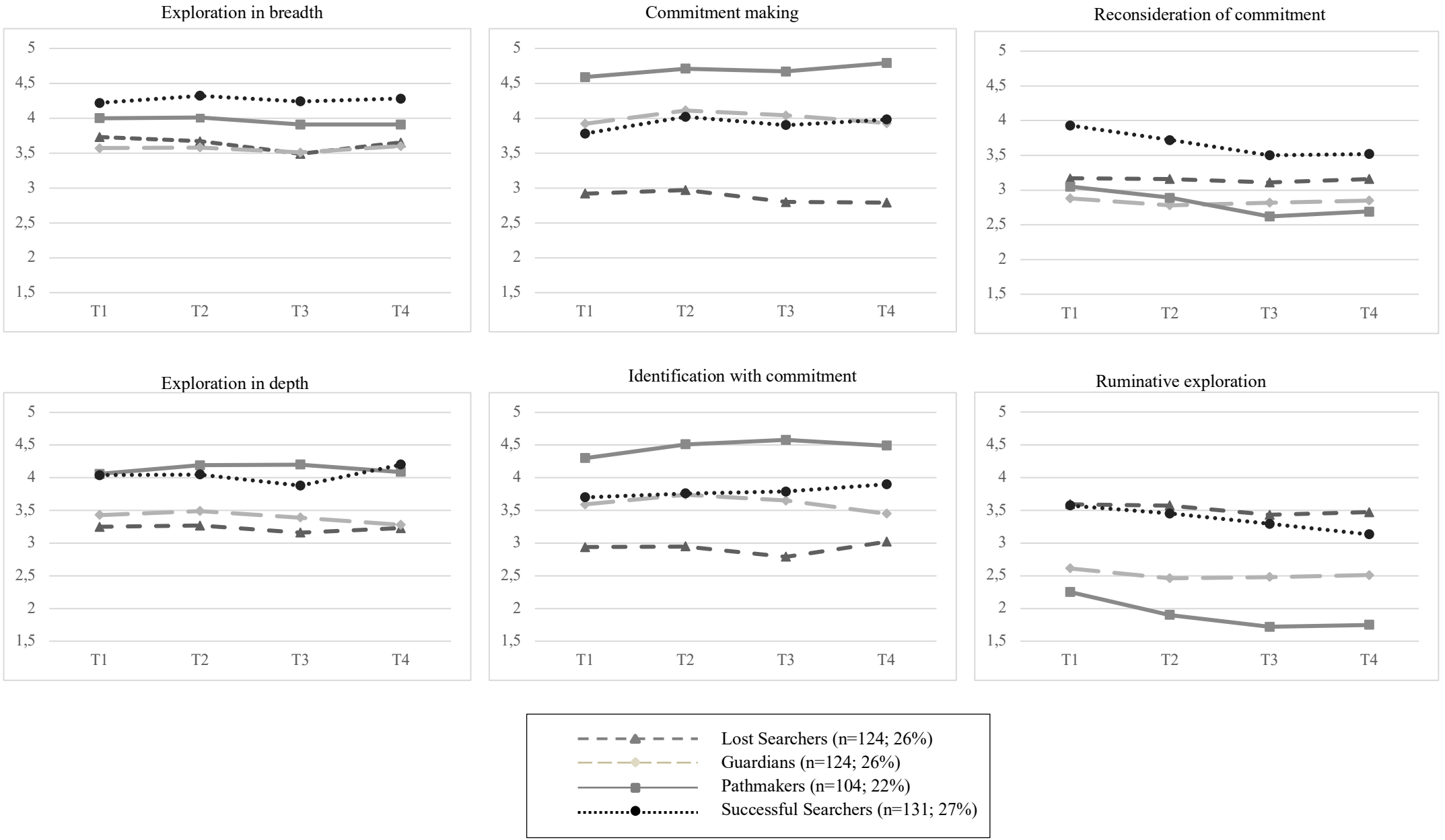

Figure 3. Observed mean trends for the six identity dimensions in the four identity trajectory classes