BABEŞ-BOLYAI UNIVERSITY
FACULTY OF PSYCHOLOGY AND EDUCATIONAL SCIENCES
DEPARTMENT OF PSYCHOLOGY

PhD Dissertation

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Scientific supervisor: Professor OPRE ADRIAN, PhD

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IDENTITY DYNAMICS IN EDUCATIONAL CONTEXT IN ADOLESCENTS AND EMERGING ADULTS

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ABSTRACT

Identity formation is the dominant developmental task in adolescence and emerging adulthood. Research on identity development has demonstrated its important implications in personal and psychosocial adjustment. However, there are still several open questions that we identified in the literature (Chapter 1). Against this background, we proposed three empirical studies that aimed at examining: (a) how identity develops in adolescents, (b) what contextual and personal factors shape its development in school settings, and (c) the role educational identity plays in motivation in academic context. Methodological issues in approaching these aims are detaild in Chapter 2. Study 1 (Chapter 3) aimed to investigate the patterns of stability and change of educational identity in adolescents throughout one school year and the directionality of effects between educational identity and academic achievement. Using a three-wave longitudinal design, we found that educational commitment decreased significantly, while reconsideration of educational commitment increased significantly over time. These growth paths were moderated by age (early-to-middle versus middle-to-late adolescents), gender (girls versus boys), and the type of school adolescents attended (theoretical versus vocational). Moreover, we found that academic achievement shapes identity development in school context, with GPA (i.e., Grade Point Average) positively predicting educational commitment and negatively predicting reconsideration of commitment. No effect from educational identity to academic achievement was found. Study 2 (Chapter 4) aimed to examine the patterns of stability and change of personality traits in adolescets during the span of one school year and the longitudinal links between personality traits and educational identity development. Using a three-wave longitudinal design, we found that adolescents become less agreeable and conscientious and more neurotic as they approach the end of the school year. These developmental patterns were moderated by age, gender, and the type of school adolescents attended. Moreover, we found that personality traits drive educational identity development and not the other way around. Specifically, Agreeableness positively predicted educational commitment and negatively predicted reconsideration of educational commitment. Study 3 (Chapter 5) aimed to examine the role educational identity plays in motivation (conceptualized in terms of teaching ability beliefs) in university students enrolled in a teaching training program. Using a cross-sectional design and

a person-centered approach of educational identity, we found that most pre-service teachers in our sample were characterized by identity achievement, followed by searching moratorium, diffusion, and foreclosure. Searching moratorium pre-service teachers scored higher than the foreclosed ones on both teaching as innate ability beliefs and teaching as learned ability beliefs, influencing the manner they approach teaching tasks. We discussed the theoretical and practical implications of the findings, as well as limitations and contributions of the present dissertation in Chapter 6.

Keywords: identity development, academic achievement, personality traits, motivation, adolescents, emerging adults, longitudinal, cross-sectional, variable-centered approach, person-centered approach

CHAPTER 1.

CONTEMPORARY APPROACHES ON IDENTITY DEVELOPMENT: THEORETICAL AND EMPIRICAL EVIDENCE[2, 3]

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Abstract

Identity development is considered one of the central developmental tasks in adolescence and emerging adulthood. Most of the theoretical and empirical evidence on identity development is rooted in Erikson's (1950) and Marcia's (1966) approaches on identity. The present chapter focuses on critical analysis of the recent process-oriented models in identity development research, especially on the model proposed by Crocetti and Meeus (Crocetti, Rubini, & Meeus, 2008), which serves as theoretical and methodological framework for the present dissertation. We also pointed out the open questions identified in the field of identity development which we approached in the present dissertation.

Keywords: identity, process-oriented models, stability and change, gender differences, Romanian context

1.1. Introduction

Identity development was initially considered a specific developmental task of adolescence. Gradually, studies have shown that reaching a sense of personal identity is an extensive process that takes place throughout the life span (Erikson, 1950, 1968). This process involves testing opportunities and gradual transition to long-term decisions in relevant areas of life (e.g., education, vocation, relationships). Identity development intensifies during adolescence and become more dynamic during emerging adulthood (Arnett, 2000; Erikson, 1980; Valde, 1996).

Marcia (1980) defined identity as a dynamic set of goals, skills, and beliefs that people identify, select, and then internalize. Depending on how well they manage to do so, people base their decisions on their own assessment, or seek external support in order to make a decision. Depending on the approach they choose and the decision they make, Marcia (1980) describes four different ways of addressing identity issues, called identity statuses. The four identity statuses are: diffusion, moratorium, foreclosure, and achievement. These statuses reflect the extent to which people have assumed certain commitments in different life domains and whether these commitments are the result of a previous exploration of several options or not.

Individuals with a diffuse identity are those who do not have well-defined purposes and have not assumed any commitments in relevant areas of life, but neither have explored other available alternatives. Moratorium indicates that the person is in a phase of active exploration of viable alternatives and has not opted for a particular alternative yet. Foreclosure involves taking decisions based on significant others' expectations (e.g., parents or those within the social group), not on personal exploration. Achievement follows a period of intense exploration and is characterized by making firm commitments in the area of life which has been previously explored (Meeus, van de Schoot, Keijsers, Schwartz, Branje, 2010).

The four identity statuses are not simple stages of development, their inter-relationship is complex. Thus, at the beginning of the adolescence, diffusion and foreclosure appear to be the two dominant statuses (Moshman, 2005). Gradually, adolescents reach identity maturation. According to Marcia (1966), a mature identity refers to making clear and firm commitments in areas such as religion, political ideology, sexuality, and career. The transition from one status to another is marked by periods of identity crisis, occurring amid personal or social events that require a change. It occurs gradually, slowly and the adolescent is not necessarily aware of the nature of events that generate the change (Marcia, 1980).

The transition from foreclosure towards moratorium is marked by adolescents' loss of confidence in current commitments and the search for other viable alternatives, while the transition from diffusion towards moratorium will be distinguished by adolescents' engagement in the process of exploration of various options in order to identify viable alternatives and undertaking basic commitments. Moratorium is a relatively unstable status, during which the identity crisis can be resolved by making commitments and regaining the sense of identity or returning to identity diffusion. Unlike moratorium, achievement is a relatively stable status, even if adolescents can question their present commitments and seek alternatives (Moshman, 2005). To conclude, the transition from one identity status to another must be analyzed along a continuum, not as a sudden transition from one developmental stage to another. Although there is considerable evidence of identity progression, when shifting from one identity status to another identity regression was also reported (Kroger, Martinussen, Marcia, 2010; Meeus et al., 2010). Unfortunately, the identity status model fails to capture the individual identity development on this continuum. Instead it captures the characteristics of those who have a certain identity status

and ranks individuals according to them. Moreover, the status perspective proves to be too coarse, unable to identify subtle changes that occur within each status and during the transition from one identity status to another. Additionally, inconsistent results with regard to longitudinal changes in identity statuses impel researchers to a more granular analysis of identity development. Thus, recent longitudinal approaches of identity focused on the processes underlying the identity statuses (Klimstra, Hale, Raaijmakers, Branje, & Meeus, 2010). There are two types of such approaches. The macro-level approach marks the manner in which identity processes vary across long-term periods (i.e., 6 months to 1 year interval between measurement points), while the micro-level approach apprises short-term fluctuations (e.g., day-to-day fluctuations) of identity processes (Lichtwarck-Aschoff, van Geert, Bosma, & Kunnen, 2008). However, studies focusing on short-term fluctuations of identity are very scarce.

1.2. Identity Development: A Process-Oriented Approach

Based on the Eriksonian theory and the criticism brought on the identity status model, several theoretical models were developed in the attempt to capture more accurately the process of identity development. Two of these models, the one proposed by Luyckx (Luyckx, Goossens, Soenens, 2006a; Luyckx, Goossens, Soenens, & Beyers, 2006b; Luyckx, Schwartz, Goossens, Soenens, Beyers, 2008) and the one proposed by Crocetti and Meeus (Crocetti et al., 2008a; Meeus et al., 2010) prevailed in the scientific literature. Although both approaches developed Marcia's model (1966), they rather focused on capturing the mechanism of identity formation than on the description of different identity types/ typologies. The two process-oriented models are viewed as complementary, as the first one focuses on future strivings and evaluates global identity whereas the latter focuses on present strivings and evaluates identity both globally and in a specific life domain (e.g., education).

According to the model proposed by Luyckx (Luyckx et al., 2006a; Luyckx et al., 2006b), identity formation involves the following sequence: exploration in- breadth, commitment making, exploration in-depth, and identification with commitment. In 2008, Luyckx and colleagues have added a new dimension to the model, the ruminative exploration. This new identity dimension captures maladaptive aspects of the process of exploration which is extended due to long indecision and hesitation in making commitments.

Similar to the Luyckx's model, Crocetti and Meeus (Crocetti et al., 2008a) identified three identity processes whose dynamic reflects the mechanism by which identity is formed. The three processes are: commitment, in-depth exploration, and reconsideration of commitment.

Commitment refers both to the choices that individuals make in certain areas of identity (eg. education, vocation, political ideology, religion) and their identification with those choices. In-depth exploration is the extent to which people continue to reflect on their present commitments, seeking new information about them or discussing them with others. Reconsideration of commitment refers to comparing current commitments with other possible alternatives, as the former are considered unsatisfactory (Crocetti et al., 2008a).

The three components of the model are interrelated, giving the identity formation process a cyclical, iterative character (see Figure 1.1). Thus, commitment making is positively associated with exploration in-depth, allowing people who have already made choices to try to justify their decisions, exploring them further (Crocetti et al., 2008a; Crocetti, Rubini, Berzonsky, & Meeus , 2009a). In-depth exploration also correlates positively with reconsideration of commitment. Therefore, people who spend more time analyzing the choices they made are more likely to identify inconveniences, something that could lead them to seeking more suitable alternatives (Crocetti et al., 2008a; Crocetti et al., 2009a). In conclusion, in-depth exploration can lead either to maintaining the commitments made or to reconsidering them, in the effort and willingness to change these commitments. In-depth exploration is adaptive when it helps the individual to internalize his own choices, to strengthen, and to support them. Instead, in-depth exploration becomes maladaptive when adolescents tend to over-think and are skeptical about their choices, postponing the decision on maintaining or changing current commitments. In adolescence commitment and reconsideration of commitment are not associated (Crocetti et al., 2008a; Crocetti, Rubini, Luyckx, & Meeus, 2008b; Crocetti, Schwartz, Fermani, & Meeus, 2010), while in emerging adulthood they become negatively related (Crocetti, Scrignaro, Sica, Magrin, 2012; Karaś, Cieciuch, Negru, & Crocetti, 2015; Sugimura, Niwa, Takahashi, Sugiura, Jinno, & Crocetti, 2015), indicating that these two processes lead identity development in opposite directions. Specifically, commitment leads to identity synthesis, while reconsideration of commitment leads to identity confusion (Crocetti et al., 2010; Luyckx et al., 2006; Meeus, van de Schoot, Keijsers, & Branje, 2012).

The identity processes model proposed by Crocetti and Meeus has been used in different studies (Crocetti et al., 2008b; Crocetti et al., 2010) to derive the identity statuses described by Marcia (1966). It was found that people with achieved identity have high scores on commitment and in-depth exploration and low scores on reconsideration of commitment. Those in foreclosure have average scores on commitment and exploration, and low scores on reconsideration of commitment. People in moratorium score low on commitment, average on in-depth exploration, and high on reconsideration of commitment. This is the maladaptive facet of moratorium. Crocetti and colleagues (Crocetti et al., 2008b; Crocetti et al., 2010) identified an adaptive facet of moratorium, namely, the searching moratorium, characterized by high levels of the above mentioned three processes. Diffused status is characterized by low scores in all identity processes. Table 1.1 presents the five identity statuses based on the three identity processes.

Given the factorial and cross-cultural validity of this model (Crocetti, Hale, Dimitrova, Abubakar, Gao, & Pesigan, 2015; Crocetti et al, 2008a; Dimitrova et al., 2015), in the present research we used the model proposed by Crocetti and Meeus as a theoretical and methodological framework.

1.3. Stability and Change of Identity Processes from Adolescence to Adulthood

At different time points throughout adolescent development, different areas of life become relevant in terms of identity changes. For example, in early adolescence biological transformations (e.g., Are all these changes I am going through normal?) and acceptance of significant others (e.g.., Will I succeed in making friends? Does he/she like me?) are dominant identity issues. Concerns about the future, the work place and romantic relationships are less common in this developmental period. In middle-adolescence instead, the biological changes become a less significant concern compared with the interest in the opposite gender, friends, the need to live up to social expectations and the concerns about one's future (i.e., education, career). Gradually, the moral concerns gain ground (e.g., issues of justice, values). In late adolescence and emerging adulthood, the dominant identity issues are those related to the responsibilities associated with future adult life (e.g., parenthood, having a career), the meaning of life and the contribution to ones' own and the others' welfare, the questioning of ones' own capacity to face up future adult responsibilities and the fear to fail (Kroger, 2007). Since education is considered

one of the most important life domains in adolescence and emerging adulthood, which prepare youths for adult roles, in the present dissertation we focused on the development of educational identity.

Studies on the patterns of stability and change of identity processes have examined several indicators like: mean-level change, rank-order stability, and profile stability/ similarity. The mean-level change is an indicator of changes that occur in each identity process over time. When changes occur, this indicator shows the direction of change (positive versus negative) and how big this change is. Commitment does not change significantly over time. The results of longitudinal studies highlight slight increases (Meeus, Iedema, Helsen, & Vollebergh, 1999; Luyckx et al., 2006a), slight decreases (Luyckx et al., 2008) or stable levels (Klimstra et al., 2010a) regarding this identity process. Over time, in-depth exploration tends to increase (Klimstra et al., 2010a; Luyckx et al., 2006a, Luyckx et al., 2008; Meeus et al., 1999) and reconsideration of commitment to decrease in early-to -middle adolescence and then increases again in middle-to-late adolescence (Klimstra et al., 2010a). A recent study (Crocetti et al., 2013) shows that in specific groups of adolescents (i.e., groups with high risk versus low risk for externalizing problems) the identity development pattern may be different, with decreases in the commitment level and increases of the reconsideration of commitment for some adolescents. This fact makes us expect in a specific area of identity development (e.g., educational domain) different patterns compared with the global identity development patterns that have been evaluated in most longitudinal studies so far. As previous longitudinal evidence has shown, commitment and in-depth exploration are best characterized by linear changes whereas the reconsideration of commitment is best characterized by curvilinear or quadratic changes (Crocetti et al., 2013; Klimstra et al., 2010a).

The rank-order stability indicates if the changes observed are stable over time and valid for most individuals in a group / population. Also, this indicator shows at what point during the ontogenetic development, inter-individual differences become more stable (normative). Previous studies with 6 months to one year between measurement points showed high levels of stability with regard to identity processes (Klimstra et al, 2010a; Luyckx et al., 2008; Luyckx et al., 2006a).

The profile stability / similarity informs about how stable the identity pattern is in time (i.e., the configuration of the three identity processes for each individual) or if there were intra-individual changes over time in terms of identity profile. Studies deriving the identity profiles / identity statuses based on the three identity processes have highlighted five identity statuses (i.e., achievement, foreclosure, moratorium, searching moratorium, and diffusion; Crocetti et al., 2008b; Meeus et al., 2010). Longitudinal analyzes have revealed the high stability over time of these identity statuses (i.e., 63% participants of the study sample; Meeus et al., 2010). Also, studies that analyzed the conventional identity statuses (i.e., identity statuses suggested by Marcia, 1966) have pointed out that most adolescents maintain their identity status for long periods of time (49% participants of the study sample reported stability), some register progress from a less adaptive identity status to a more adaptive one (36% participants of the study sample), and very few regress to a less adaptive identity status than the initial one (15% participants of the study sample) (Kroger et al., 2010).

The idea of progressive change in identity development is supported by previous empirical evidence not only in terms of identity statuses, but also in terms of identity processes (Meeus, 2011). Specifically, it was found that, as time passed, adolescents and emerging adults transited from maladaptive identity statuses such as diffusion and moratorium to adaptive statuses like foreclosure and achievement. Also, over time, they began to display decreases in maladaptive identity processes (i.e., reconsideration of commitment) and increases in adaptive identity processes (i.e., commitment, in-depth exploration) (Meeus, 2011).

1.4. Gender Differences in Identity Development

Previous studies have emphasized that gender differences should be considered in the analyses of the developmental patterns of identity. Due to the fact that there is a temporal gap between girls and boys in terms of both physical and psychological maturation, with girls' advantage over boys (Beunen et al. 2000; Giedd et al., 1999), identity development can be influenced by these discrepancies. The results of previous research (Klimstra et al., 2010a; Meeus et al., 2010; Meeus et al., 2012) confirmed this hypothesis by showing that girls have a head start in comparison with boys in identity formation in early-to-middle adolescence. Specifically, girls explore their choices more and have the tendency to reconsider them less than

boys (Klimstra et al., 2010a). It is also more likely for girls to commit than for boys. It is more likely for girls to be classified in foreclosure (i.e., commitment without prior exploration) or achievement statuses (i.e., exploration of alternatives and commitment making), whereas boys have a more diffuse identity status or moratorium (Meeus et al., 2010; Meeus et al., 2012). Nevertheless, towards the end of adolescence the differences between girls and boys, in terms of identity formation, become considerably diminished. Thus, compared to girls, boys have recorded significantly higher rank-order stability than girls for commitment and reconsideration of commitment throughout adolescence, but also significantly lower levels of profile similarity in early-to-middle adolescence compared to girls (indicators of maturity). These gender differences in profile similarity were no longer found in middle-to-late adolescence (Klimstra et al., 2010a).

1.5. Important Correlates of Identity Development

Identity processes have been studied in relation to various variables in cross-sectional and longitudinal studies. Cross-sectional studies have found positive associations of commitment with different personality characteristics (e.g., Agreableness, Extraversion, Conscientiousness, and Openness to new experiences). Also, commitment was found to be positively correlated with self-concept clarity (Crocetti et al., 2008a) and negatively associated with internalizing symptoms (Crocetti et al., 2012b).

In-depth exploration proved to be positively related to dimensions of personality such as Agreeableness, Conscientiousness, and Openness to new experiences (Crocetti et al., 2008a), with positive parent-adolescent relationships (Crocetti et al., 2009b), but also with internalizing problems (Luyckx et al., 2006c; Crocetti et al., 2008b). This identity process is negatively related to self-concept clarity and Emotional Stability. Both commitment and in-depth exploration are positively related to social involvement (e.g., community volunteer activities) (Crocetti et al., 2012a).

Reconsideration of commitment was negatively associated with positive personality dimensions and self-concept clarity in previous studies (Crocetti et al., 2008a). Also, reconsideration of commitment correlated positively with Neuroticism, depression, anxiety, involvement in delinquent behaviors, and poor family relationships (Crocetti et al., 2009b).

Studies analysing identity processes in migrant groups pointed out the fact that

adolescents brought up in families of migrants reconsider their commitments more frequently than natives (Crocetti et al., 2011). Adolescents with delinquent behaviors do not make firm educational and relational commitments, they explore less their ongoing educational commitments, and frequently tend to reconsider their relational commitments (Klimstra, Crocetti, Hale, Kolman, Fontanier, & Meeus, 2011). Studies on different ethnic groups have also revealed a number of differences. For example, Dutch adolescents make more easily firm educational and relational commitments compared to Italian adolescents who tend to commonly reconsider their commitments in the two life domains (Crocetti et al., 2010).

Longitudinal studies have shown that commitment increases and reconsideration of commitment decreases as adolescents mature, while in-depth exploration remains relatively stable. Even if girls reconsider their commitments less frequently during early adolescence, in time, they seem to record a higher rate of change than boys. Moreover, even if in early adolescence girls have a more stable identity profile than boys, during middle and late adolescence, the fluctuations in the three identity processes become less significant as far as boys are concerned (Crocetti et al., 2009b; Klimstra et al., 2009; Meeus et al., 2010).

Regarding the longitudinal association of identity processes with various psychosocial variables, it was found that, over time, adolescents with high levels of anxiety are becoming more skeptical about their commitments, unlike those with low levels of anxiety, whose commitments become firmer and firmer. As adolescents mature, there is a general trend of decrease in the level of anxiety (Crocetti et al., 2009b). The stability of romantic relationships is more strongly affected by relational reconsideration of commitment, seen as a sign of uncertainty about whether or not to invest in a relationship, than by the lack of relational commitment. In addition, identity processes have greater predictive value than personality traits in terms of stability or breakup in romantic relationships (Klimstra et al., 2013). Both girls and boys at risk to develop externalizing problems show a significant decrease of commitment in early adolescence, combined with an increase in reconsideration of commitment in late adolescence. Boys at high risk to externalizing problems have an unstable identity profile (Crocetti et al., 2013). Also, educational identity is a good precursor of vocational identity (Branje, Laninga-Winjen, Yu, & Meeus, 2014).

1.6. Open Questions in the Literature of Identity Development

First, the literature on identity development has mainly focused on the development of personal identity, which incorporates the answer to the question "Who am I?" relative to various aspects of life (e.g., education, religion, friendship, personal values and goals, Marcia, 1966). However, in specific stages of development some areas of life become more likely to be explored and to change compared to others. Therefore, a domain-specific approach (e.g., educational identity development, ethnic identity development) rather than a general approach (e.g., personal/ global identity) on identity development could capture more accurately its formation and change over time. Hence, in the present dissertation we employed a domain-specific approach of identity. We examined how identity develops in educational domain, which is the major life domain in adolescence and emerging adulthood, since youths spend significant amount of time in educational activities. We tapped into the development of educational identity in middle-school and high school students, and university students, considering that different levels of educational preparation might impact differently the identity formation processes. Middle-school and high school students are provided with a more general education, while university students receive a domain-specific education.

Second, most of the previous research on identity dynamics in adolescence and emerging adulthood used macro-level approaches (Meeus, 2011), which capture the manner in which identity processes vary across long-term periods (i.e., 6 months to 1 year interval between measurement points). Recent evidence indicated that more attention should be paid to short-term fluctuations of identity as they can predict the long-term fluctuations, especially in educational domain (Klimstra, Luyckx, Hale, Frijns, van Lier, & Meeus, 2010b). Thus, early identification of maladaptive patterns of identity development could foster early interventions, reducing psychosocial costs for youths. Yet, short-term dynamics of identity have been under-investigated (Klimstra et al., 2010b). In the present study we used a "meso-level design" with a 3 to 4 months period between each measurement point for capturing short-term fluctuations of educational identity processes during the span of one academic year. This time-frame (i.e., the academic year) is normative for adolescent cognitive and psychosocial development (Rones & Hoagwood, 2000).

Third, to date, few studies have analyzed adaptive and maladaptive facets of identity development in adolescence in relation to contextual and individual correlates which are relevant in the academic settings (i.e., academic achievement, personality traits, motivation). For example, research on the relationship between educational identity processes and academic achievement has been scarce. To date, only one study has investigated the longitudinal relationships between educational identity and academic achievement (Klimstra, Luyckx, Germeijs, Meeus, & Goossens, 2012). This study was conducted with university students, mostly female, and academic achievement was conceptualized in terms of academic progress from one academic year to the next. But university students might register delays in the advancement to the next year of their studies for other reasons than their academic abilities or performance. In addition, only two of the three identity processes (i.e., commitment, in-depth exploration) were assessed. Few studies have investigated the connections between identity and personality developmental patterns in adolescence. Most of these studies analyzed personality types and evaluated identity future strivings rather than present strivings. There is no evidence regarding the connections between reconsideration of commitment and personality. Finally, although motivation and identity processes were theoretically linked in previous studies (Kaplan & Flum, 2012), there is a lack of empirical evidence with regard to identity and motivation interplay in educational context. Hence, the present dissertation aims at tapping these issues using the identity three-factor model developed by Crocetti and Meeus (Crocetti et al., 2008a).

1.7. Integration of Identity Process-Oriented Approach in the Analysis of Educational Identity Development in Adolescents and Emerging Adults in Romania

Given the results of longitudinal studies on identity, we have to draw attention on the following aspects:

(a) the transition from one identity status to another occurs slowly;

(b) generally, the transition from one status to another is progressive, from a status considered maladaptive to an adaptive one- for example, from diffuse identity to moratorium or foreclosure; identity processes progressive changes are also supported by evidence (Kroger et al., 2010; Meeus et al., 2010);

(c) there is a higher probability to rather transit from some identity status than towards those identity statuses (for example, it is more likely to transit from diffuse identity or moratorium,

than to transit to diffuse identity or moratorium) (Meeus et al., 2010);
(d) even though the transition to another identity status has not occurred, it does not mean there is no change in identity development, which can be verified by analyzing the fluctuations in identity processes within each identity status;
(e) identity process approach allows not only the identification of changes occurring at identity level, but also how significant they are and the direction in which these changes vary;
(f) process-oriented models of identity allow us to identify to what extent the identity changes are characteristic of all individuals in a sample / or at population level and at what point, during ontogenetic development, the inter-individual differences at various identity processes begin to stabilize.

In conclusion, we consider the process-oriented approach as the best one for the study of identity development among Romanian adolescents and emerging adults as the process-oriented models: (a) allow the identification of changes in identity development; (b) capture the dynamics of these distinct but interrelated identity processes; (c) can be used more flexibly in the variable-centered research (in order to see the links between identity and various related processes) as well as in individual-centered research (inter-individual differences among individuals with different identity statuses).

Educational identity development in Romanian adolescents and emerging adults should be analyzed in the light of Romanian socio-economic and historical context. Since the collapse of communism, the Romanian educational system has gone through many changes which have led to both positive and negative consequences for the direct and indirect beneficiaries of educational services (Romanian Education for All-Review Report, 2014). For example, through recent educational reforms access to education for disadvantaged groups (e.g., students from rural areas, Roma students, students with disabilities) has been facilitated. Schools became more autonomous in managing their human, financial, and educational resources (The EFA 2000 Assessment: Country Report, 2000). However, educational reforms have led to the dissolution of professional schools as a result of industrial decline, which transformed the Romanian education into a mainly theoretical one, which offers students knowledge and skills to prepare them for university studies. Thus, schools started to guide their educational activities towards more scholastic models without taking into consideration how important it is for students to be able to

use their knowledge in practice and in life outside school. This led automatically to the expansion of students' educational preparation before entering the labor market, currently characterized by a reduced range of options and therefore greater competitiveness. Therefore, on the one hand, as employment and the level of income depend on the qualification level, the number of students pursuing upper-secondary, post-secondary or tertiary education increased in the last years. On the other hand, the number of jobs available on the labor market in specific economic sectors is limited and exceeded by the number of graduates of higher levels of education (i.e., graduates of non-tertiary and especially tertiary education). This gap between educational system and labor market requirements tightened the selection processes of future employees, who had to prove their capabilities mostly through their academic performance. Hence, the pressure to perform well in school increased, as students were reinforced to see the connection between academic achievement and subsequent inclusion on the labor market.

In Romania, the pressure to be the best operates in a vicious cycle. Thus, schools are pressured to thoroughly prepare students for both options they can choose from: university studies or the labor market (Iosifescu, 2000). The reputation and prestige of a school is enhanced when their graduate students continue their studies or enter the labor market. Thus, in order to achieve these goals, it's in the interest of schools to attract students with previously high academic achievements and thus ensure they will maintain their achievement levels. Since school prestige depends on students' performance, the system puts pressure on teachers, whose efficiency is often evaluated through their students' achievements (Iosifescu, Bălăşoiu, Blendea, Mihail, & Paraschiv, 2007). In turn, teachers put pressure on students to perform well in school. As they feel responsible for the educational and professional success of their children, parents search for the best school, the best class, and the best teachers to provide their offspring with the best school conditions. The access to all these special school conditions depends on how well students perform in school in general. It is not enough to perform well in a specific curriculum area and to develop competencies in that area, one has to perform well in all school subjects. Thus, academic achievement drives and pushes the system.

However, what are the costs of being the best school with students who strive to be the best? The costs include school truancy and absenteeism (i.e., "An absence is better than a bad grade.") and bad decisions with regard to future educational and vocational paths (e.g., due to

their high grades, sometimes students overestimate their competencies and might choose specializations or occupations unsuited for their actual abilities, Plăeşu, Dalu, & Marcovici, 2012), cheating on tests (Teixeira & Rocha, 2006), school anxiety (Pomerantz, Rydell Altermatt, & Saxon, 2002), or grade inflation (Johnson, 2003). A grade focused culture implies the risk of fostering the development of questionable values, lack of responsibility and equity in young people. Namely, students learn that results matter more than knowledge or competencies, that they can be obtained more easily through cheating, and that effort has to be rewarded externally, otherwise it is not worth it. Later on, they will be the adults who are expected to contribute to the improvement of life in their communities.

To sum up, the present dissertation aims at providing evidence regarding the personal and individual factors involved in young people's educational identity development in order to be used as guidelines for the development of specific educational policies and interventions in academic settings.

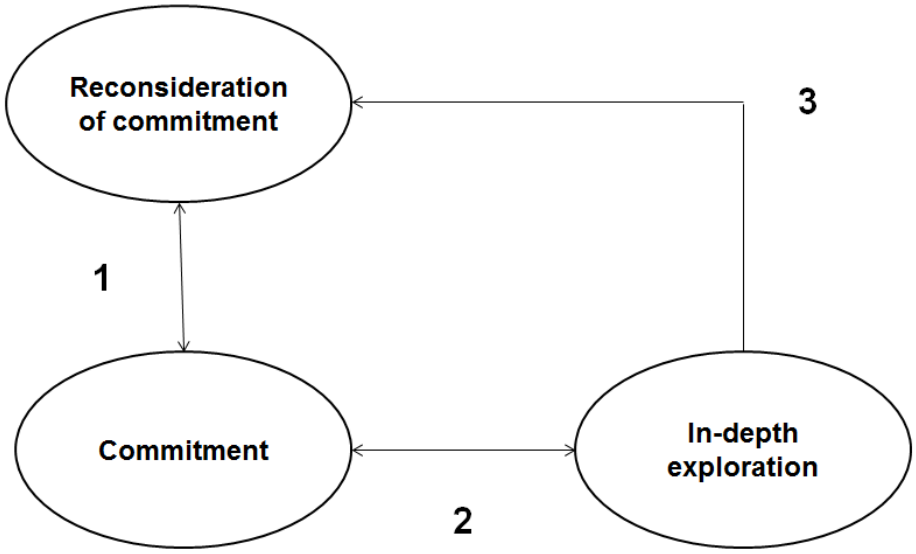

Figure 1.1 The three-factor model of identity (Crocetti, Rubini, & Meeus, 2008)

Table 1.1
Identity statuses derived from three identity processes

Identity processes	Identity statuses				
	Achievement	Foreclosure	Moratorium	Searching Moratorium	Diffusion
Commitment	High	Moderate or High	Low	High	Low
Exploration in depth	High	Low	Low or High	High	Low
Reconsideration of commitment	Low	Low	High	High	Low

Note. Descriptive note. Adapted from *The Oxford Handbook of Identity Development* (pp. 107), by K. C. McLean and M. Syed (Eds.), 2014, New York: Oxford University Press. Copyright 2015 by Oxford University Press. Adapted with permission.

CHAPTER 2.

OUTLINE AND METHODOLOGICAL ISSUES OF THE PRESENT DISSERTATION

2.1. Aims and designs of the present dissertation

Based on the gaps and questions identified in the literature on identity development, the present dissertation has two main objectives. The first main objective is to investigate the role of academic achievement and personality traits in predicting identity formation in school context. In order to address this objective we conducted two studies (Study 1 and Study 2), in which we used longitudinal designs with three measurement points spaced 3-to-4 months apart. The longitudinal sample consisted of 1,151 adolescents recruited at seven schools (Grades 8-12), with a mean age of 16.45 years at Time 1.

The aims of the Study 1 were: (a) to investigate how educational identity develops in adolescents throughout one academic year, testing for patterns of stability and change (multivariate Latent Growth Curve Analyses) and (b) to examine the directionality of effects between academic achievement and educational identity (Cross-Lagged Analyses). In addressing both aims, we considered age-group (i.e., early-to-middle adolescents versus middle-to-late adolescents), gender (i.e., boys versus girls), and the type of school attended by adolescents (i.e., theoretical versus vocational schools) as possible moderators.

The aims of the Study 2 were: (a) to analyze the patterns of stability and change in personality traits (Latent Growth Curve Analyses) during one academic year and (b) to examine the directionality of effects between personality traits and educational identity (Cross-Lagged Analyses) across time. For both these aims we tested the moderating effects of age-group (i.e., early-to-middle adolescents versus middle-to-late adolescents), gender (i.e., boys versus girls), and the school-type (i.e., theoretical versus vocational schools).

The second main objective of the present dissertation is to test how educational identity relates to motivation in academic context in a sample of 294 emerging adults with a mean age of 19.94 years, using a cross-sectional design (Study 3). For this, the present dissertation formulated two specific aims. The first aim was to derive educational identity statuses (i.e., achievement, foreclosure, moratorium, searching moratorium, and diffusion) based on the three identity processes described by Meeus and Crocetti (Crocetti et al., 2008a) in their three-factor model (i.e., commitment, in-depth exploration, and reconsideration of commitment). In order to derive pre-service teachers' educational identity statuses from the identity processes (i.e., commitment, in-depth exploration, reconsideration of commitment) we conducted a Cluster Analysis. The

second aim was to investigate the effects of educational identity statuses on motivation, which was conceptualized in terms of teaching ability beliefs (i.e., teaching as innate ability beliefs and teaching as learned ability beliefs, Fives & Buehl, 2008). The connections between pre-service teachers' beliefs about teaching ability and educational identity statuses were investigated through a Multivariate Analysis of Variance (MANOVA).

2.2. Variable-Centered versus Person-centred Approaches of Identity Development

The variable-centered and person-centered approaches are "two distinct strategies of examining psychological phenomena" (Crocetti & Meeus, 2014, p. 98). While the variable-centered approaches use variables as basic units both in theory construction and data analysis, person-centered approaches use a configuration of variables within an individual person (von Eye & Bogat, 2006).

Identity formation represents a synthesis of choices in different life domains which best explains "who we are" at a certain point in life. Considering its complexity, a double approach of identity development (variable-centred and person-centered approaches) would lead to a more comprehensive understanding of this process (Crocetti & Meeus, 2014). Thus, in the present dissertation we used a variable-centered approach (mean-level change, rank-order stability, cross-lagged analyses) in Study 1 and Study 2, and a peson-centered approach (cluster analyses) in Study 3.

2.3. Measures

2.3.1. The Utrecht-Management of Identity Commitments Scale

The Romanian version (Negru & Crocetti, 2010) of the Utrecht-Management of Identity Commitments Scale (U-MICS, Crocetti et al., 2008a) was used to assess the three identity processes in the educational domain: commitment, in-depth exploration, and reconsideration of commitment. The instrument consisted of 13 items scored on a 5-point Likert-type rating scale, ranging from 1 (does not apply to me at all) to 5 (applies to me very well). Sample items include: "My education gives me certainty in life" (commitment; 5 items), "I think a lot about my education" (exploration in-depth; 5 items), and "I often think it would be better to try to find a different education" (reconsideration of commitment; 3 items).

In the current dissertation we performed Confirmatory Factor Analysis (CFA) with the Maximum Likelihood estimation in M*plus* 6.12 to check the factor structure of the Romanian version of the Utrecht-Management of Identity Commitments Scale. In line with the validation study (Crocetti et al., 2008a), findings indicated that the three-factor structure fit the data very well, $\chi^2 = 118.950$, df = 24 $p < .001$; CFI = .992, RMSEA = .059; SRMR = .032 (see Table 2.1).

2.3.2. The Big Five Inventory

The Big Five Inventory (BFI, John & Strivastava, 1999) was employed in order to measure the big five personality traits: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness. The instrument comprised 5 scales and a total of 44 items scored on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Sample items include: "I am someone who is talkative" (Extraversion, 8 items), "I am someone who is helpful and unselfish with others" (Agreeableness, 9 items), "I am someone who perseveres until the task is finished (Conscientiousness, 9 items), "I am someone who can be tense" (Neuroticism, 9 items), "I am someone who is curious about many different things (Openness, 10 items). Some of the items (16 items) are reverse-coded. The present scale has been used in numerous studies, in various cultures, on different age-groups, proving its reliability and validity in the assessment of personality traits (e.g., Denissen, Geenen, van Aken, Gosling, & Potter, 2008; Donnellan & Lucas, 2008; Fossati, Borroni, Marchione, & Maffei, 2011; Plaisant, Courtois, Reveillere, Mendelsohn, & John, 2010). It has been demonstrated that self-report is a reliable and valid method of measuring Big Five traits in adolescents (e.g., De Fruyt, Mervielde, Hoekstra, & Rolland, 2000; Soto, John, Gosling, & Potter, 2008).

The Big Five Inventory was translated into Romanian following standard back-translation procedures as recommended by Brislin (1986) using two independent translators. A third person then finalized the Romanian version.

For the Romanian version of the Big Five Inventory (BFI; John & Srivastava, 1999) we performed an Exploratory Structural Equation Modeling (ESEM) in M*plus* 6.12 to check the factor structure. We used the Maximum Likelihood estimation procedure and the geomin rotation method recommended by Browne (2001). Recent advances in this methodology have demonstrated that, unlike CFA, ESEM can adequately model data from five factor model

inventories (Marsh et al., 2010; Rosellini & Brown, 2011). In order to evaluate the model fit, we inspected three indices: the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). CFI with values higher than .90 indicates an acceptable fit, while CFI with values higher than .95 suggests an excellent fit. Values lower than .08 of the RMSEA and SRMR indices suggest an acceptable fit, while values lower than .05 indicate a good fit (Byrne, 2012).

For the version of the BFI employed in this study we found an acceptable fit of the original five-factor structure (John & Srivastava, 1999) to the current data (including four error covariances between similarly worded items patterning on the same latent factor), χ^2 = 1775.444, df = 732 $p < .001$, CFI = .888, RMSEA = .035, SRMR = .032 (see Table 2.1).

2.3.3. The Teaching Ability Belief Scale

We used two subscales from the Teaching Ability Belief Scale (TABS; Fives & Buehl, 2008) in order to measure how pre-service teachers perceive teaching abilities (as innate or as learned abilities). The first subscale captures beliefs about teaching as an innate ability (11 items; e.g., "Teaching is a calling"). The second subscale captures beliefs about teaching as a learned ability (7 items; e.g., "Teaching is a skill that is developed with training and expertise"). Items were scored on a 5-point Likert-type rating scale ranging from 1 (strongly disagree) to 5 (strongly agree). Both subscales were translated into Romanian following standard back-translation procedures as recommended by Brislin (1986), using two independent translators. A third person then finalized the Romanian version. For the Romanian version of the Teaching Ability Belief Scale (TABS; Fives & Buehl, 2008) we performed a Confirmatory Factor Analysis (CFA) with the Maximum Likelihood estimation in M*plus* 6.12 to check the factor structure. CFA results indicate that the 2-factor structure (Fives & Buehl, 2008) fit the current data well (including two error covariances between similarly worded items patterning on the same latent factor), χ^2 = 272.605, df = 131 $p < .001$, CFI = .929, RMSEA = .060, SRMR = .062 (see Table 2.1).

Table 2.1

Indicators of the Factor Analyses: Comparison between Validation Studies and Present Study

Studies	*N*	Participants (M_{age})	Factor Analysis	Model fit indices χ^2	df	CFI	RMSEA	S
Identity								
Crocetti et al.(2008)	1,952	14.2y	CFA	100.000	27	.995	.040	
Present study	1,151	16.45y	CFA	118.950	24	.992	.059	
Personality								
Booth & Hughes (2014)	425	ns	ESEM	1498.985	736	.863	.049	
Present study	1,151	16.45y	CFA	1775.444	732	.888	.035	
Teaching Ability Beliefs								
Fives & Buehl (2008)	351	ns	EFA	-	-	-	-	
Present study	294	19.94y	CFA	272.605	131	.929	.060	

Note. *N* = number of participants; M_{age} = Mean age; CFA = confirmatory factor analysis; ESEM = exploratory structural equation modeling; χ^2 = Chi-square; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual;

CHAPTER 3.

ON THE INTERPLAY BETWEEN EDUCATIONAL IDENTITY AND ACADEMIC ACHIEVEMENT: A LONGITUDINAL STUDY[4]

[4] Part of this chapter was submitted for publication in **Pop, E.I.**, Negru-Subtirica, O., Crocetti, E., Opre, A., & Meeus, W. On the interplay between academic achievement and educational identity: A longitudinal study. *Journal of Adolescence (Special Issue on Identity)*

Abstract

The present three-wave longitudinal study provides empirical evidence for the mechanisms of the bright and dark sides of identity development in the academic context. First, we aimed at investigating the patterns of stability and change in educational identity and academic achievement among adolescents. Second, we aimed at examining the reciprocal associations between identity processes (i.e., commitment, in-depth exploration, and reconsideration of commitment) and academic achievement (GPA). The main results of the study highlighted that academic achievement predicts the manner in which adolescents deal with their identity issues in the academic context. Thus, high levels of GPA lead to high levels of commitment (identity synthesis), while low levels of GPA lead to high levels of reconsideration of commitment (identity confusion). This unidirectional pattern of effects applied equally to (a) adolescent boys and girls, (b) early-to-middle and middle-to-late adolescents, and (c) adolescents attending theoretical and vocational schools. Practical implications are discussed.

Keywords: academic achievement, educational identity, adolescence, longitudinal study

3.1. Introduction

In adolescence, the construction of a synthesized sense of identity becomes a prominent developmental task with important implications for personal and social adjustment (Erikson, 1968). One of the key questions of identity theory is where identity springs from. According to a number of theories, a positive self-view is dependent on positive feedback from the environment to the individual. For instance, attachment theory (Bowlby, 1982) proposes that a positive self-view is dependent on a positive bond with primary care-takers. Similarly, the sociometer theory (Leary, 2005) proposes that a positive self-view springs from general positive social interactions with relevant others. In the school context, academic achievement (i.e., GPA) represents the gauge of students' success or failure, which might foster or threaten adolescents' social acceptance and implicitly strengthen or weaken their educational identity. In the present study we first analyzed the over-time links between educational identity and academic achievement

(i.e., GPA). Second, we examined the directionality of effects between these two constructs: Does GPA drive identity or is it the other way around?

3.1.1. Identity Development

Most of the research on identity development is rooted in Erikson's theory of identity (1968). As the first empirical attempt to investigate identity, Marcia's status model (1966) focused more on identity as an outcome that individuals should achieve by late adolescence, when identity conflicts are supposed to be solved and firm commitments assumed. Inconsistent results regarding longitudinal changes in identity statuses impelled researchers to a more granular analysis of identity development. Thus, recent approaches of identity focused on the processes underlying identity statuses (Crocetti et al, 2008a; Luyckx et al., 2006b).

Compared with the identity status model, which assumes that achieving a sense of identity in adolescence includes having strong commitments preceded by an intense exploration of various alternatives, the process model developed by Meeus and Crocetti (Crocetti et al., 2008a; Meeus et al., 2010) emphasizes that adolescent identity development implies choosing and revising commitments that adolescents already possess when they enter this developmental period. Adolescents deal with their commitments through in-depth exploration and reconsideration (Meeus, 2011). Specifically, in-depth exploration is the process by which adolescents monitor and reflect on their current commitments, making them more aware of their choices. Reconsideration of commitment is the process by which adolescents compare their present commitments with other possible alternatives and try to change the present unsatisfactory commitments with new ones (Crocetti et al., 2008a). Hence, the dynamics of the three processes delineate two different cycles of identity development. The identity formation cycle (commitment-reconsideration of commitment) describes the strife to overcome identity confusion driven by the existent unsatisfactory commitments. The identity maintenance cycle (commitment-in-depth exploration) illustrates a synthesized identity derived from the growing confidence in present commitments as they become more familiar and seem to fit with one's own potential (Meeus, 2011).

The associations between commitment and several positive psychosocial correlates support the idea that commitment is an indicator of positive identity development (Crocetti et al.,

2008b). In fact, commitment was found to be positively related to: positive personality traits (i.e., extraversion, agreeableness, conscientiousness, and openness to experience), self-concept clarity (Crocetti et al., 2008a; Klimstra et al., 2012), sense of coherence (Crocetti et al., 2012b); self-esteem, academic and social adjustment (Luyckx et al., 2006a); nurturing parent-child relationships (e.g., parental trust, parental support; Crocetti et al., 2008a; Luyckx et al., 2006a); and civic engagement and social responsibility (Crocetti et al., 2012a). Moreover, commitment was found to be negatively related to: depressive symptoms and anxiety (Crocetti et al., 2008a; Crocetti et al., 2012b; Luyckx et al., 2006; Meeus et al, 2012); externalizing problems (Crocetti, Klimstra, Hale, Koot, & Meeus, 2013b; Crocetti et al., 2009b; Meeus et al., 2012); and parent-child conflicts (Luyckx et al., 2006b).

In contrast, previous research has shown that reconsideration of commitment is indicative of an identity crisis, being positively related to depressive and anxiety symptoms, delinquency, poor parent-child relationships, and negatively associated with self-concept clarity and adaptive personality traits (Crocetti et al., 2008a; Crocetti et al., 2010; Schwartz, Klimstra, Luyckx, Hale, & Meeus, 2012). Hence, despite the fact that it serves positive long-term goals (i.e., through reconsideration, adolescents discard inadequate commitments and look for appropriate ones), reconsideration of commitment has negative short-term effects (Klimstra et al., 2010a; Schwartz et al., 2012).

While commitment and reconsideration of commitment have a clear positive and negative core respectively, in-depth exploration has a dual nature, being considered both an adaptive and a maladaptive process (Crocetti et al., 2008a; Crocetti et al., 2012b; Luyckx et al., 2006b). Namely, in-depth exploration was found to be positively connected with adaptive psychosocial characteristics (i.e., positive personality traits, Crocetti et al., 2008a; social responsibility, civic engagement, Crocetti et al., 2012a; academic adjustment, and supportive parenting, Luyckx et al., 2006b), but also with maladaptive psychosocial aspects (i.e., depressive symptoms, anxiety, problematic parent-child relationships, Crocetti et al., 2008a).

3.1.2. Academic Achievement

In a period of rapid technological and economic changes, expanded educational preparation has become a necessity for adolescents. Hence, academic achievement became an

important criterion for academic and socio-economic success (Kuncel, Credé, & Thomas, 2005; Poropat, 2009). So far, research on adolescent functioning highlighted that academic achievement is an antecedent as well as a consequence of several emotional, behavioral, and social outputs. For example, it was found that depressive problems led to poor academic achievement, which in turn enhanced depressive problems. These bidirectional associations were found only in girls (Verboom, Sijtsema, Verhulst, & Ormel, 2014). However, prior cross-sectional results (Fröjd et al., 2008) pointed out that high academic achievement protected boys against severe depressive symptoms, the two variables being negatively related.

Previous studies also found that low-achieving students were more prone to anxiety and externalizing problems (i.e., aggression, antisocial behavior, and delinquent behavior) compared to high-achieving students. While underachieving girls were more vulnerable to anxiety problems (Pomerantz et al., 2002), underachieving boys were more vulnerable to externalizing problems (Hinshaw, 1992). Academic underachievement was also associated with peer rejection and discrimination, especially among underachieving girls (Bakker, Denessen, Bosman, Krijger, & Bouts, 2007).

The grade point average (GPA) is one of the dominant operationalizations of academic achievement (Poropat, 2009). Despite the criticism about its use (e.g., grade inflation, Johnson, 2003; different grading criteria in different educational institutions, Didier, Kreiter, Buri, & Solow, 2006), GPA was found to be a reliable indicator of academic achievement (Bacon & Bean, 2006) and also a strong predictor for several important outcomes: subsequent academic performance (Kobrin, Patterson, Shaw, Mattern, & Barbuti, 2008; Kuncel, Hezlett, & Ones, 2001), work performance (Roth, BeVier, Switzer, & Schippman, 1996), and occupational status (Strenze, 2007).

The advantage of using GPA as indicator of academic achievement instead of other types of indicators (i.e., standardized tests of cognitive abilities) is that GPA reflects not only students' capacities, but also how they use these capacities in academic contexts over long periods of time (i.e., persistence and effort in learning tasks, motivation). Thus, GPA is related to both intellective (i.e., cognitive capacities) and non-intellective (i.e., personality traits, motivation, learning strategies, psychosocial contextual factors) aspects (Richardson, Abraham, & Bond, 2012).

In the present study, we used the GPA (the mean of grades earned in all subject areas) achieved by students as indicator of their academic achievement level.

3.1.3. The Present Study

The present three-wave longitudinal study had two main goals. The first goal was to investigate the patterns of stability and change in educational identity development and academic achievement among adolescents. The second goal was to examine the reciprocal associations between identity processes (i.e., commitment, in-depth exploration, and reconsideration of commitment) and academic achievement (i.e., GPA). In addressing both goals, we considered age-group, gender, and school type as possible moderators. The study was conducted throughout the span of one academic year.

Mean-level development of identity processes and academic achievement. Recent longitudinal studies examining linear changes in identity processes found relatively stable levels of commitment and in-depth exploration (Crocetti et al., 2013; Klimstra et al., 2010a) and increases in reconsideration of commitment (Crocetti et al., 2013) during adolescence. Based on these findings, in the present study we expected to identify stable levels of commitment and in-depth exploration and increases in reconsideration of commitments.

Education is considered a "closed domain" of adolescent identity development. Closed domains are less open to change compared to open domains (i.e., relational identity) of identity development (Meeus et al., 1999). In middle school and high school, adolescents are provided with a more general educational preparation compared to university students who receive a domain-specific education. Hence, middle and high school adolescents have limited options to explore and actually change the domain when they question their educational commitment. They can be either committed or not to their educational choice (Klimstra et al., 2010b) and their actions are limited to the discrimination between the liked and the disliked disciplines and the amount of time they want to spend solving tasks for a specific discipline. Thus, we expected the patterns of educational identity development to be similar for early-to-middle and middle-to-late adolescents in our sample.

Since previous longitudinal studies revealed that girls reach identity maturation earlier than boys (Klimstra et al., 2010a), we expected girls to have higher levels of educational

commitment and in-depth exploration and lower levels of reconsideration of commitment compared to boys.

We assumed that the type of school attended by adolescents might play a role in how they face educational identity issues. Up to now, this issue has been poorly investigated, so our research question was mainly exploratory. In the present study we considered two types of schools: theoretical schools (university-bound schools), which provide adolescents with general knowledge and prepare them for university studies and vocational schools (work-bound schools), which prepare adolescents for specific occupations (Creed, Patton, & Hood, 2010).

With respect to academic achievement, results of previous longitudinal studies highlighted a decreasing trend of students' GPA and grades from elementary school to college (Voyer & Voyer, 2014). Thus, we expected that academic achievement levels decrease over time in our sample. We also expected to find gender differences, with adolescent girls outperforming boys, since previous research (Voyer & Voyer, 2014) pointed out girls' advantage in school marks in general, as well as in specific-domains (e.g., Math, foreign languages). In line with previous research (Jørgensen, 2015), we expected students from vocational schools to report lower levels of academic achievement compared to students from theoretical schools. We expected these differences to grow over time as students from work-bound tracks were more likely to become involved in non-academic educational streams (Creed et al., 2010).

Over-time links between identity processes and academic achievement. Research on identity and academic achievement is very scarce and largely limited to studies conducted with university students. So far, cross-sectional evidence revealed positive associations between identity and academic achievement, indicating sense of identity as a positive predictor for high GPA among university students (Lounsbury, Huffstetler, Leong, & Gibson, 2005). Moreover, longitudinal evidence showed that strong educational commitments led to progress from one academic year to the next, whereas weak educational commitments led to academic delay (Klimstra et al., 2012). Based on this evidence, we expected commitment and in-depth exploration to be positively associated with academic achievement and reconsideration of commitment to be negatively associated with academic achievement. Additionally, considering assumptions of for instance attachment (Bowlby, 1982) and sociometer theory (Leary, 2005), we expected academic achievement (i.e., GPA) to be a positive predictor for educational

commitment (identity synthesis) and a negative predictor for reconsideration of educational commitment (identity confusion) in our adolescent sample.

Drawing on prior longitudinal research which showed that socio-demographic characteristics like gender and age do not moderate the relations between adolescent identity formation and other variables (e.g., personality traits, Luyckx, Teppers, Klimstra, & Rassart, 2014), we did not expect age-group, gender, and school type to moderate the relations between identity processes and academic achievement.

3.2. Method

3.2.1. Participants

Data for the present study were collected as part of the ongoing longitudinal research project Transylvania Adolescent Identity Development Study (TRAIDES). Participants were students from the 8th to the 12th grade (40.1% early-to middle adolescents and 59.9% middle-to-late adolescents) from seven schools located in four towns in the North-West part of Romania. The total sample comprised 1,151 adolescent students (M_{age} = 16.45 years; SD_{age} = 1.40; range = 13-19 years; 58.7% female) attending theoretical (48.5%) and vocational schools (51.5%). In terms of family structure, 79.5% came from intact two-parent families, 13.4% reported that their parents had divorced, and 4.9% reported other family situation (e.g., one of the parents is deceased). The large majority of adolescents in the sample (90.8%) were living with one or both parents, while 8% were living with other students or relatives. Most of our participants were fully financially supported by their parents (85.8%), while few of them reported having some personal income (8.4%) (i.e., state-provided student allocation, scholarship) or being financially supported by relatives (1.6%).

Overall, 21.68% of data were missing at T1-T3. The range of missing items varied from 3.2% to 44.1% across the three waves. We compared participants with and without complete data using Little's (1988) Missing Completely at Random (MCAR) test. The MCAR test revealed a normed χ^2 (χ^2/df) of 1.31, which indicates a good fit between sample scores with and without imputations (Bollen, 1989). Missing values were estimated in SPSS using the Expectation Maximization procedure.

3.2.2. Procedure

All data were collected throughout the span of one academic year, with an interval of 3 to 4 months between measurements. At each time point, adolescents completed the same paper-and-pencil questionnaire in their classrooms, during school hours. Each participant received a unique code to ensure confidentiality. Participation in the study was voluntary. At each wave students could choose not to fill in the questionnaires and do other school activities instead. The study was approved by the Faculty of Psychology and Educational Sciences of the first author's university and by the schools' headmasters through a written collaboration protocol.

3.2.3. Measures

Educational identity processes. We used the Romanian version (Negru & Crocetti, 2010) of the Utrecht-Management of Identity Commitments Scale (U-MICS, Crocetti et al., 2008a) to assess the three identity processes in the educational domain: commitment, exploration in-depth, and reconsideration of commitment. The instrument consisted of 13 items scored on a 5-point Likert-type rating scale, ranging from 1 (does not apply to me at all) to 5 (applies to me very well). Sample items include: "My education gives me certainty in life" (commitment; 5 items), "I think a lot about my education" (exploration in-depth; 5 items), and "I often think it would be better to try to find a different education" (reconsideration of commitment; 3 items). Cronbach's Alphas for the three subscales ranged from .75 to .84 at Time 1; .80 to .90 at Time 2; and .82 to .90 at Time 3.

Academic achievement. In order to measure academic achievement, we asked participants to self-report the grade point average (GPA) they achieved in the previous academic year (at Time 1) and in the first semester of the current academic year (at Time 2). We collected the GPA for the second semester of the current academic year from official school records (at Time 3). Self-reported GPA was found to be highly correlated with actual GPA (Credé & Kuncel, 2013) and to predict school outcomes similar to actual GPA (e.g., Baird, 1976). Thus, self-reported GPA is considered a reliable and valid estimate of academic achievement when students' actual GPA is not available. GPA scores were ranging from 1 (minimum) to 10 (maximum), according to the Romanian grading system.

3.3. Results

3.3.1. Preliminary Analyses

Descriptive statistics, as well as between and within-time correlations among the study variables are displayed in Table 1. As can be seen, at all time-points commitment was positively related to GPA, while reconsideration of commitment was negatively related to GPA. In-depth exploration and GPA were also positively related at all time-points, but only two of these associations reached statistical significance (i.e., in-depth exploration at Time 1 and GPA at Time 1 and in-depth exploration at Time 2 and GPA at Time 3).

3.3.2. Latent Growth Curve Analyses

We conducted a multivariate Latent Growth Curve (LGC) analysis in M*plus* 6.12 (Muthén & Muthén, 1998-2010) in order to test linear changes in educational identity and academic achievement. LGC analyses provide mean levels (i.e., intercepts) and mean change rates (i.e., slopes) which are based on individual growth trajectories of all participants. We used the Maximum Likelihood Robust estimator (MLR; Satorra & Bentler, 1994) and we inspected three indices in order to evaluate the model fit: the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). CFI with values higher than .90 indicates an acceptable fit, while CFI with values higher than .95 suggests an excellent fit. Values lower than .08 of the RMSEA and SRMR indices suggest an acceptable fit, while values lower than .05 indicate a good fit (Byrne, 2012). Model fit indices for the growth model we tested revealed an acceptable to excellent data fit (χ^2 (34) = 201.48, $p < .001$, CFI = .971, RMSEA = .065 [.057-.074], SRMR = .024). Thus, the individual linear growth trajectories were adequately estimated for both educational identity and academic achievement.

The analysis of growth factors pointed out that educational identity was characterized by high initial levels of commitment, moderately high initial levels of in-depth exploration, and low initial levels of reconsideration of commitment. Educational commitment decreased significantly over time, while in-depth exploration remained relatively stable, and

reconsideration of commitment increased significantly (see Table 2). Academic achievement was characterized by moderately high initial levels of GPA which decreased over time.

Furthermore, all the variances of the intercepts and slopes for educational identity processes and academic achievement were statistically significant, suggesting inter-individual differences in the initial levels and in the rates of change. Thus, we examined whether age-group (early-to-middle versus middle-to-late adolescents), gender, and the type of school adolescents attended (theoretical versus vocational schools) were significant moderators of these developmental patterns. In order to reach this aim, we tested whether intercept and slope parameters varied significantly across age, gender, and type of school groups by means of the Wald test (see Table 3).

Regarding gender, our findings pointed out that girls were more committed and tended to explore more their present educational choice, while boys experienced greater reconsideration of their current educational commitments. However, in-depth exploration increased in boys and slightly decreased in girls over time. Reconsideration of commitment increased in both boys and girls over time, with a sharper increase in boys than in girls. Academically, girls performed better than boys, and as time passed, GPA had a sharper decrease in boys compared to girls.

With respect to age-group and type of school, results pointed out that GPA decreased over time in both early-to-middle and middle-to-late adolescents, but the decrease was sharper in early-to-middle adolescents than in the other age-group. Students from vocational schools reconsidered more their educational commitments and had lower GPA than those from theoretical schools. Furthermore, educational commitment and GPA decreased more sharply in students from vocational schools than in students from theoretical schools.

To assess rank-order stability, we computed Pearson's correlations of educational identity processes with themselves at consecutive time points (e.g., correlation between commitment at Time 1 and commitment at Time 2). Findings (see Table 3.3) indicated that rank-order stability was high. Using Fisher *r*-to-*z* transformations, we tested the statistical significance ($p < .05$) of the difference between correlation coefficients. We found that the rank-order stability increased significantly for commitment and in-depth exploration and decreased significantly for reconsideration of commitment.

3.3.3. Cross-Lagged Analyses

In order to examine reciprocal longitudinal associations between adolescent educational identity and academic achievement, we conducted cross-lagged analyses in M*plus*. Specifically, we tested for cross-lagged associations between educational identity and academic achievement (e.g., educational identity processes measured at T1 predicting academic achievement at T2 and academic achievement at T1 predicting educational identity processes at T2), controlling for: (a) one-year stability paths (e.g., educational identity processes at T1 predicting educational identity processes at T2); (b) two-year stability paths (e.g., educational identity processes at T1 predicting educational identity processes at T3); and (c) within-time correlations among all the variables. We used multi-group tests to examine the potential moderating effects of age, gender, and type of school.

To model the reciprocal associations between educational identity and academic achievement as parsimoniously as possible, we tested whether cross-lagged effects were time invariant (i.e., assumption of stationarity), using the Wald test. Results indicated that half of the paths were time invariant (i.e., from commitment to reconsideration of commitment, from commitment to GPA, from reconsideration of commitment to GPA, from GPA to commitment, from GPA to in-depth exploration, and from GPA to reconsideration of commitment). Next, we compared the model in which half of the paths were time invariant with the model in which cross-lagged paths were free to vary. In order to determine significant differences between these two models at least two out of these three criteria had to be matched: $\Delta\chi^2$ significant at $p < .05$, $\Delta CFI \geq -.010$, and $\Delta RMSEA \geq .015$. Results indicated that the model in which half of the paths were time invariant was not significantly different ($\Delta\chi^2$ (6) = 4.076, $p = .66$, $\Delta CFI = .001$, $\Delta RMSEA = -.007$) from the model in which these effects were allowed to vary across time. Thus, we decided to retain the more parsimonious partially time-invariant model as the final one. This model fit the data very well ($\chi^2 = 20.688$, df = 88, CFI = 1.00, RMSEA = .011, SRMR = .011). Significant cross-lagged paths are reported in Figure 1.

Findings of cross-lagged path analyses revealed a unidirectional effect between educational identity and academic achievement, with academic achievement predicting educational identity processes. As hypothesized, GPA positively predicted educational commitment and negatively

predicted reconsideration of educational commitments over the three waves. No significant effects from identity processes to academic achievement were found.

Standardized indirect effects on commitment and reconsideration of commitment at Time 3 (dependent variables) ranged from .011 to .017 for commitment and from .012 to .023 for reconsideration of commitment. We found that a standardized indirect (mediated) effect of both commitment and reconsideration of commitment at Time 1 on the dependent variables (commitment and reconsideration of commitment at Time 3) was statistically significant at $p < .05$ (see Figure 3.3).

We conducted multi-group analyses to test whether cross-lagged paths from educational identity to academic achievement and from academic achievement to educational identity were significantly moderated by age (early-to-middle versus middle-to-late adolescents), gender, or by the type of school (theoretical versus vocational schools). Results showed that for age ($\Delta\chi^2$ (18) = 24.248, p = .147, ΔCFI = -.001, ΔRMSEA = .012) and for type of school ($\Delta\chi^2$ (18) = 18.134, p = .446, ΔCFI = .000, ΔRMSEA = -.002) the unconstrained model, in which parameters were free to vary across groups, was not significantly different from the constrained model, in which the parameters were fixed across groups. With regard to gender, only one significantly different path from educational identity to academic achievement was found. Specifically, educational commitment at Time 2 was found to be a positive and significant predictor for GPA at Time 3 for boys (β= .05, p<.05), but not for girls. Therefore, the unidirectional pattern of effects from academic achievement to educational identity applies equally to: (a) early-to-middle and middle-to-late adolescents, (b) adolescents attending theoretical and vocational schools, and (c) boys and girls (with the only exception of the T2-T3 path from educational commitment to GPA).

3.4. Discussion

The present study sheds new light on adolescents' identity development, providing empirical evidence for the mechanism that leads adolescents towards identity synthesis and identity confusion in the academic context. We first analyzed the linear changes in educational identity and academic achievement among adolescents throughout one academic year. Second, we examined the directionality of effects between educational identity processes and academic achievement. In studying both issues, we tested also whether results were moderated by age-

group (early-to-middle versus middle-to-late adolescents), gender (boys versus girls), and type of school (theoretical versus vocational schools).

Results reinforced previous evidence on the certainty-uncertainty dynamic of identity formation in adolescence, characterized by the interchange between commitment and reevaluation of commitments (Klimstra et al., 2010b; Meeus, 2011). The adolescents from our sample started the academic year with high levels of educational commitment, moderately high levels of in-depth exploration, and low levels of reconsideration of commitment, which indicated a positive identity configuration (i.e., certainty, identity synthesis). However, educational commitment decreased significantly and reconsideration of commitment increased significantly by the end of the academic year, indicating an identity crisis (i.e., uncertainty, confusion). Thus, although students began the academic year with high confidence in their educational choice, a clear set of expectations and academic goals, they started to doubt and became less committed to their educational option as they faced school tasks.

Findings revealed high rank-order stability in educational identity in adolescents in our sample, meaning that changes in identity traits occur in the same direction throughout the academic year and at a similar change rate. Of the three identity processes, only reconsideration of commitment registered rank-order decreases. This means that reconsideration of commitment is the most dynamic identity process throughout the academic year. Precisely, as they face everyday academic tasks, some of the adolescents with firm educational commitment start to reconsider their commitment and some of those who doubted their their commitment to become more committed to their educational choice.

As expected, some of the adolescents displayed a more maladaptive identity structure compared to others. Namely, compared to girls, boys displayed higher initial levels of reconsideration of commitment which increased more sharply over time. Moreover, students from vocational schools displayed higher initial levels of reconsideration of commitment and a sharper decrease of their commitment compared to their peers from theoretical schools. Hence, boys and students from vocational schools faced a deeper identity crisis during the academic year.

The decrease in educational commitment and the increase in reconsideration of commitment went in tandem with the decrease in academic achievement. These results are in

line with previous evidence, which showed that as adolescents grow older they perform more poorly in school (Voyer & Voyer, 2014). Although their academic achievement levels at the beginning of the academic year were relatively high and similar, the GPA decreased significantly by the end of the academic year for all students, especially for middle-to-late adolescents. As they pass from one academic level to another, adolescents have to deal with new challenges: more complex academic tasks, new teachers and schoolmates, and new performance standards. Moreover, as they approach the transition to university, high-school students become more focused on specific academic subjects (e.g., subjects that are important for the admission to the university) and less interested in how well they perform in school in general.

Boys exhibited lower initial levels of GPA and also a sharper decrease of their GPA over time. In this respect it should be noted, as prior research has shown (Higgins, 1991; Pomerantz et al., 2002), that adults (i.e., parents, teachers) have higher academic outcome expectations with regard to girls compared to boys. Girls feel the pressure to live up to these expectations, which heightens their achievement motivation, leading them to high academic achievement. Unlike girls, boys face academic tasks in the absence of such pressure, which sometimes might negatively impact their effort to perform well in school. Furthermore, boys and girls approach academic achievement situations differently. While girls are focused mainly on developing their competence, boys are more performance-oriented. Therefore, girls manage to control their behavior during classes (i.e., effort, concentration) better than boys, which contributes to their success in school (Kenney-Benson, Pomerantz, Ryan, & Patrick, 2006).

Similar to boys, students from vocational schools also displayed a decline of their academic achievement level. Namely, their initial levels of GPA were lower compared to those of students from theoretical schools and continued to decrease by the end of the academic year. Previous studies explained this academic achievement decline through the lenses of teachers' prejudices about the poor capacities of students enrolled in vocational schools. These prejudices might negatively impact teachers' academic outcome expectations, the manner in which they prepare their classes, how they motivate and evaluate students from this type of schools (Creed et al., 2010; Voyer & Voyer, 2014).

Importantly, the present study revealed a positive association between academic achievement and commitment and a negative association between academic achievement and

reconsideration of commitment over the three waves. More specifically, the manner in which students perform in school (i.e., their GPA) triggers the development of their educational identity. In fact, high levels of GPA lead to high levels of commitment (identity synthesis), while low levels of GPA lead to high levels of reconsideration of commitment (identity confusion), as we hypothesized. Thus, when they experience academic success, students feel competent and gain more confidence in their education, while when they face academic failure, students doubt their competence and lose confidence in their education (Bakker et al., 2007; Leary, 2005), especially when they make efforts to succeed and instead they fail. Overall, this pattern applied equally to all participants in the study, regardless of gender, age-group, and type of school. Partly, these results dovetail with previous findings about the positive connection between identity and academic achievement. Nevertheless, our longitudinal findings suggest that, in adolescence, academic achievement predicts educational identity development and not the other way around, as previous cross-sectional and longitudinal studies with university student samples indicated (Klimstra et al., 2012; Lounsbury et al., 2005).

A very important finding of the present study is the empirical support of identity maintenance and identity formation cycles. Thus, our results pointed out that in-depth exploration at Time 2 mediates the relations between: (a) commitment at Time 1 and commitment at Time 3, (b) commitment at Time 1 and reconsideration of commitment at Time 3, (c) reconsideration of commitment at Time 1 and commitment at Time 3, and (d) reconsideration of commitment at Time 1 and reconsideration of commitment at Time 3. Therefore, in-depth exploration is the identity process that guides adolescents' decision of maintaining or changing their educational commitments.

Practical Implications

Several practical implications arise from the results of the present study. Adolescent boys and vocational schools students should be the primary targets for identity interventions, since they appear to be the most vulnerable to difficulties in educational identity formation. These interventions could assist them in transitioning from identity confusion to identity synthesis in the academic domain. As our study revealed, one of the underlying mechanisms for this transition is the enhancement of adolescents' academic achievement level. Interventions

targeting vulnerable students could include teachers and parents, as they play a key role in adolescents' personal and academic development. Thus, along with the teaching and motivational strategies they use, teachers could pay more attention to the manner in which they set and communicate their expectations to students, communicate marks, and manage the classroom environment in evaluative situations. Together with teachers and school counselors, parents could also help their children to make informed decisions with regard to their educational path in order to prevent academic achievement problems. Adolescents at risk could be provided with specialized support (e.g., school counseling and guidance, psychological counseling, social assistance) when their academic achievement problems are caused by psychosocial impediments.

Limitations and Strengths of the Present Study

The present study should be considered in light of some limitations. First, academic achievement was measured using a single indicator (the GPA), while more indicators could be considered (e.g., subject grades, prizes, participation in thematic contests, hobbies, academic scholarships) because some adolescents might have excellent results in specific academic subjects but still be judged as underachievers because their global GPA is low. Second, the three-wave design restricts our investigation to the analysis of linear changes, while some of the identity processes might be characterized by non-linear developmental patterns.

Despite its limitations, the present study provides a relevant contribution to research on adolescent identity development, revealing for the first time that academic achievement is one of the precursors for educational identity. In this endeavor, we employed a longitudinal short-term design, which helped us determine the bright and the dark side of the educational identity and academic achievement interplay. We also used a domain-specific approach to identity development (i.e., education), which is more explanatory than a global approach since identity develops differently in specific life domains (Goossens, 2001; Meeus et al., 1999). Importantly, the present study brings forward empirical evidence to support the two identity cycles - identity formation and identity maintenance cycles, which had little empirical support to date.

Table 3.1

Descriptive Statistics and Correlations among the Study Variables at Times 1-3

Variable	Descriptive statistics	Correlations at Times 1-3											
	M (*SD*)	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.ComT1	4.12 (0.68)	-											
2.ComT2	4.02 (0.76)	.64**	-										
3.ComT3	4.00 (0.75)	.59**	.68**	-									
4.IndET1	3.22 (0.76)	.36**	.25**	.26**	-								
5.IndET2	3.16 (0.79)	.28**	.35**	.32**	.46**	-							
6.IndET3	3.23 (0.76)	.22**	.29**	.39**	.45**	.57**	-						
7.RecT1	2.13 (0.97)	-.19**	-.15**	-.19**	.21**	.15**	.12**	-					
8.RecT2	2.22 (0.95)	-.12**	-.20**	-.21**	.10**	.24**	.13**	.53**	-				
9.RecT3	2.48 (0.95)	-.14**	-.13**	-.19**	.10**	.20**	.36**	.37**	.45**	-			
10.GPAT1	8.40 (0.98)	.11**	.17**	.22**	.07*	.04	.03	-.16**	-.19**	-.18**	-		
11.GPAT2	8.23 (1.07)	.11**	.17**	.21**	.05	.04	.02	-.17**	-.19**	-.18**	.92**	-	
12.GPAT3	8.22 (1.19)	.12**	.16**	.21**	.05	.06*	.03	-.17**	-.17**	-.18**	.83**	.89**	-

Note. Com = commitment; IndE = in-depth exploration; Rec = reconsideration of commitment; GPA = grade point average.

M = Mean; *SD* = Standard Deviation. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3.2

Latent Growth Curve (LGC) Analyses: Growth Factors for Educational Identity and Academic Achievement

	Growth factors	
	Intercept (I)	Slope (S)
	M (σ^2)	*M* (σ^2)
Educational identity		
Commitment	4.12^{***} (0.37^{***})	-0.06^{***} (0.06^{***})
Exploration in depth	3.20^{***} (0.28^{***})	0.01 (0.04^{**})
Reconsideration of commitment	2.12^{***} (0.64^{***})	0.17^{***} (0.12^{**})
Academic achievement		
GPA	8.40^{***} (0.97^{***})	-0.10^{***} (0.09^{***})

Note. ** $p < .01$; *** $p < .001$; *M* = Mean; σ^2 = Variance.

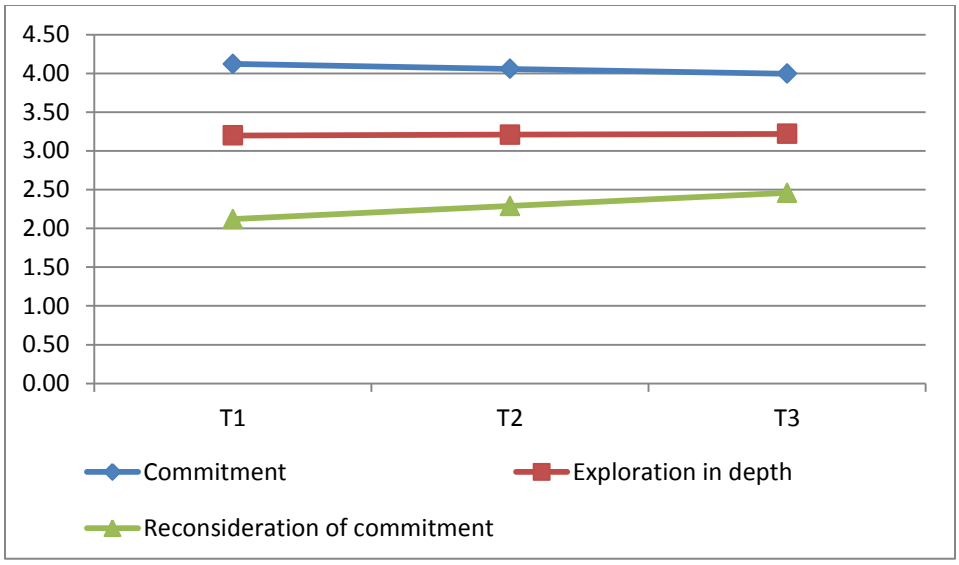

Figure 3.1 Estimated growth of educational identity processes

Table 3.3

Rank-Order Stability of Educational Identity Processes

Variables	Time 1-Time 2	Time 2-Time 3
Commitment	.635**	.682**
Exploration in depth	.464**	.569**
Reconsideration of commitment	.527**	.450**

Note. ** $p < .01$

Table 3.4

Intercepts and Slopes across Age, Gender, and Type of School Groups

	Intercepts						Slopes					
	Age		Gender		Type of school		Age		Gender		Type of school	
	Early-to-middle	Middle-to-Late	Boys	Girls	Theor	Voc	Early-to-middle	Middle-to-late	Boys	Girls	Theor	Voc
Commitment	4.12	4.13	**4.01**	**4.19**	4.15	4.11	-.05	-.07	-.09	-.05	**-.04**	**-.09**
In-depth exploration	3.20	3.19	**3.09**	**3.27**	3.19	3.23	-.02	.03	**.05**	**-.01**	.02	.01
Reconsideration of commitment	2.11	2.10	**2.23**	**2.04**	**1.97**	**2.22**	.14	.20	**.21**	**.14**	.17	.19
GPA	8.54	8.45	**8.08**	**8.65**	**8.94**	**7.82**	**-.17**	**-.05**	**-.15**	**-.07**	**-.06**	**-.15**

Note. Intercepts and slopes significantly different across age, gender, and type of school groups at the Wald test ($p < .05$) are noted in bold. Theor = Theoretical schools; Voc = Vocational schools; GPA = grade point average.

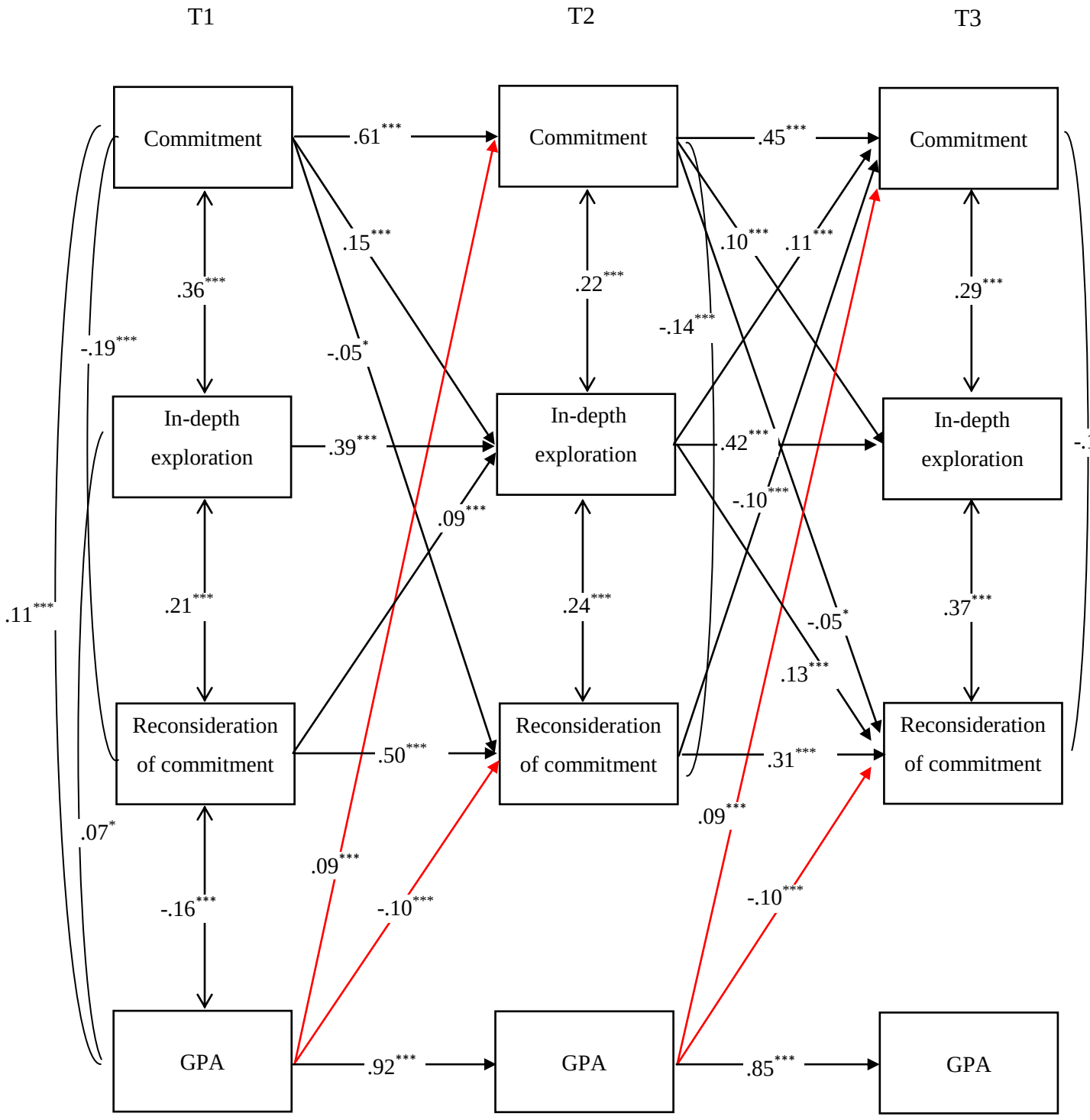

Figure 3.2 Cross-lagged associations among educational identity and academic achievement variables (for the sake of clarity the one-year stability paths are not reported in the figure).

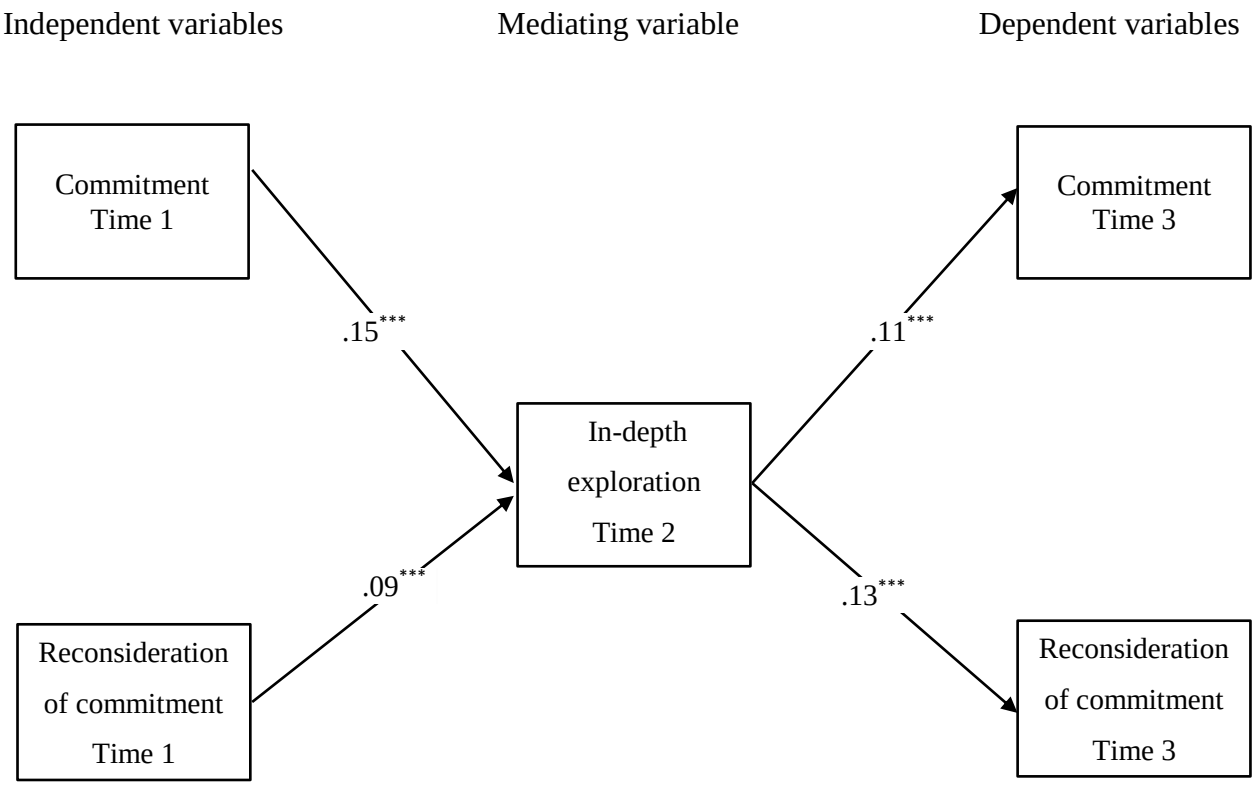

Figure 3.3 Indirect paths of educational identity development

CHAPTER 4.

DEVELOPMENTAL PATTERNS OF EDUCATIONAL IDENTITY AND PERSONALITY IN ADOLESCENCE

Abstract

The present investigation focused on the longitudinal associations between two key components of adolescent development: identity processes and personality traits. Despite the growing body of evidence about the co-occurrence of changes in identity and personality throughout adolescence, little research has been done with regard to their longitudinal associations, especially in the academic contexts. Thus, the present three-wave study aimed at (1) investigating the patterns of stability and change in adolescent personality traits and (2) examining the directionality of effects between educational identity and personality traits during the span of one academic year. In approaching both aims, we considered age-group (early-to-middle versus middle-to-late adolescents), gender (boys versus girls), and school-type (theoretical versus vocational) as possible moderators. Participants (N = 1,151) were adolescents from seven different schools in North-West Romania, aged between 13 and 19 years (M_{age} = 16.4 years; SD_{age} = 1.40). Results pointed out significant linear decreases in Agreeableness and Conscientiousness, linear increases in Neuroticism, and relatively stable levels of Extraversion and Openness across time. Personality traits growth paths were moderated by age-group, gender, and school-type. The cross-lagged analyses revealed a unidirectional pattern of effects from personality traits to educational identity. Surprisingly, Agreeableness was the only positive predictor of educational commitment and negative predictor of reconsideration of commitment, independent of age-group, gender, and the school-type. Implications for research and practice from a cross-cultural perspective are discussed.

Keywords: educational identity, personality traits, adolescence, longitudinal

4.1. Introduction

Adolescence is regarded as a period of significant physical and cognitive changes which gradually prepare adolescents for the future adult life roles. During this developmental period, adolescents deal especially with defining themselves as persons (personality-related issues) and

questioning or identifying themselves with certain aspects of their current life (identity-related issues) (Luyckx et al., 2014).

4.1.1. Educational Identity Development in Adolescence

Identity development was defined as a lifelong process with multiple implications for personal and social development, especially in adolescence (Erikson, 1968). To date, studies in the field mainly focused on personal identity development, which integrates aspects of different life domains (i.e., education, relationships, career). Since education and friendship are two of the most important life domains in adolescence, they are expected to be the most dynamic in terms of identity development (Crocetti et al., 2010). Most of the studies examining educational and relational identity development in adolescence (see Meeus, 2011 for a review) used the identity model proposed by Meeus and Crocetti as theoretical framework (Crocetti et al., 2008a; Meeus et al., 2010). This model describes commitment, in-depth exploration, and reconsideration of commitment as the critical identity processes. Their dynamic highlights the mechanism by which adolescents construct and revise their identity. Specifically, in the academic context, as they pass from one academic year to another, students have to make several choices (e.g., they make their own choices or adhere to others' choices) regarding their education (e.g., school to attend, extracurricular activities, time to spend for learning activities). Firm educational commitments reflect that students are satisfied with and have confidence in their educational choices. After they assume certain commitments, adolescents usually continue to explore these commitments, talking and searching for more information about them. This way students become more aware of their educational options and can decide if they fit their expectations or not. If current educational options fit their expectations, they will decide to maintain them (identity maintenance cycle). If the present educational options do not fit their expectations, they will start to reconsider their choices and decide to change them with more satisfactory ones (identity formation cycle) (Meeus, 2011).

Longitudinal empirical evidence on adolescent identity development supports maturation principle. Namely, as they grow older, adolescents exhibit increases or stable levels of commitment and in-depth exploration and decreases in reconsideration of commitment (Klimstra et al., 2010). Research has shown that adolescent girls reach identity maturation (i.e., higher

levels of commitment and in-depth exploration and lower levels of reconsideration of commitment) earlier than boys, but gender differences decrease by the end of this developmental period (Meeus, 2011).

Prior cross-sectional and longitudinal research (Crocetti et al., 2008a; Crocetti et al., 2010; Schwartz et al., 2012) stressed the idea that the identity formation cycle indicates an identity crisis and negatively impacts on students' well-being (i.e., anxiety and depressive symptoms) and personal and social adjustment (i.e., maladaptive personality traits, delinquency, poor parent-child relationships). In contrast, the identity maintenance cycle is indicative of identity synthesis, which positively impacts on students' well-being (Crocetti et al., 2008a; Meeus et al, 2012) and personal and social adjustment (i.e., self-concept clarity, sense of coherence, adaptive personality traits, positive parent-child relationships, academic adjustment, social engagement, cf. Crocetti et al., 2012b; Crocetti et al., 2008a; Klimstra et al., 2012; Luyckx et al., 2006a).

Although there is a growing body of research on adolescent identity development, there is little evidence on what shapes adolescents' identity, especially in school contexts.

4.1.2. Personality Development in Adolescence

The Big Five personality traits model (Goldberg, 1992) is a broadly used conceptualization in the study of personality at different stages of life and in various cultural contexts (De Clercq & De Fruyt, 2012; De Fruyt & Van Leewen, 2014; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). According to this model, personality can be described through five core traits: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness (Caspi, Roberts, & Shiner, 2005).

Extraversion refers to the preference for social interaction and the positive emotions that people experience when they are socially active. Agreeableness refers to the willingness to maintain positive relationships with others, compliance, and modesty. Conscientiousness reflects how responsible, organized, and motivated people are when dealing with specific activities. Neuroticism refers to the vulnerability to stress and anxiety. Openness reflects the willing to experience new things, creativity and imagination when dealing with new information (Goldberg, 1993; John & Srivastava, 1999).

Recent meta-analyses (Roberts & DelVecchio, 2000; Roberts, Walton, & Viechtbauer, 2006) support the idea that changes in personality traits occur across the lifespan, being the most prominent from adolescence through young adulthood (Roberts et al., 2006). These changes are considered to be driven by both biological (e.g., maturation, genes) and social factors (e.g., different life roles or tasks). Genetic mechanisms have a dominant role in the change of personality traits during childhood (Plomin & Nesselroade, 1990), whereas environmental factors become mainly responsible for the changes in personality traits in adulthood (Roberts & Caspi, 2003). Despite the extensive literature on personality development, relatively few studies focused on adolescent personality development.

As shown by previous studies, the Big Five traits apply to adolescent personality in the same way that they do to adult personality (Branje, van Lieshout, & Gerris, 2007; Digman & Inouye, 1986; John, Caspi, Robins, Moffitt, & Stouthamer-Loeber, 1994). Overall, longitudinal data pointed out that, as they grow older, adolescents become more mature, reaching higher levels of positive personality traits (i.e., Extraversion, Agreeableness, Conscientiousness, and Openness) and exhibiting lower levels of negative personality traits (i.e., Neuroticism) (Roberts et al., 2006). Still, because they used different time frames, numbers of waves, and samples with different characteristics (e.g., age-range, ethnicity), several inconsistencies were identified in previous studies. Namely, several studies revealed small changes in Agreeableness (Branje et al., 2007; DeFruyt, Bartels, Van Leeuwen, De Clercq, Decuyper, & Mervielde, 2006; McCrae et al., 2002; Pullmann, Raudsepp, & Allik, 2006; Roberts et al., 2006), while others reported important increases in Agreeableness throughout adolescence (Klimstra et al., 2009). Some studies reported small increases in Openness (Branje et al., 2007; Klimstra et al., 2009; McCrae et al., 2002; Pullmann et al., 2006), while other studies revealed small decreases (DeFruyt et al., 2006) or stable levels of Openness over time (Roberts et al., 2006). Neuroticism increased in some adolescent samples (Branje et al., 2007), whereas in other samples it remained relatively stable (Klimstra et al., 2009) or slightly increased (Roberts et al., 2006).

Studies examining gender differences in personality development also revealed some inconsistencies. Although it has been stated that girls mature earlier than boys (Branje et al., 2007; Klimstra et al., 2009, 2011; Meeus, 2011), some studies showed that adolescent girls report higher scores on Agreeableness and Conscientiousness than adolescent boys, adolescent

boys of the same age have lower scores on Neuroticism and higher scores on Openness than adolescent girls (Luyckx et al., 2014), balancing maturational differences between them.

Previous studies emphasized the important role that personality traits play in predicting various psychological and social outcomes, like: internalizing problems, conflicts with parents (Klimstra et al., 2012), intimate relationships (Meeus et al., 2011), delinquency (Klimstra et al., 2010a), identity achievement (Crocetti et al., 2008b; Luyckx, Goossens, Soenens, Beyers, & Vansteenkiste, 2005), and academic achievement (Poropat, 2009).

4.1.3. Longitudinal Interplay between Identity and Personality in Adolescence

Research linking identity and personality development is on the rise, but still very scarce. Most of the existing studies either focused on personality and identity in university students (Klimstra et al., 2012; Luyckx et al., 2012; Luyckx et al., 2005), or were cross-sectional (Crocetti et al., 2008a; Klimstra et al., 2013). Additionally, only one cross-sectional study measured reconsideration of commitment in relation to personality traits (Crocetti et al., 2008a).

Previous cross-sectional studies found positive associations between commitment and positive personality traits (i.e., Extraversion, Agreeableness, Conscientiousness, and Openness) and negative associations between commitment and negative personality traits (i.e., Neuroticism). Moreover, negative associations were found between reconsideration of commitment and positive personality traits and positive associations between reconsideration of commitment and negative personality traits. As it has both adaptive and maladaptive valences, in-depth exploration was found to be positively associated with both positive and negative personality traits (Crocetti et al. 2008b).

So far, longitudinal data revealed that personality and identity are interconnected and remain interconnected throughout adolescence (Klimstra et al., 2012; Luyckx et al., 2014). Thus, increases in commitment are associated with increases in Extraversion, Agreeableness, and Conscientiousness and decreases in Neuroticism. Increases in in-depth exploration are associated with increases in Conscientiousness and Openness (Klimstra et al., 2012). Results regarding the effects from identity processes to personality traits and from personality traits to identity processes revealed inconsistent patterns of effects. In some studies, commitment was positively predicted by Extraversion, Agreeableness, and Conscientiousness, and negatively predicted by

Neuroticism (Klimstra et al, 2012), while in other studies only Extraversion predicted commitment (Luyckx et al., 2014). In-depth exploration was positively predicted by Openness and negatively predicted by Neuroticism in some studies (Luyckx et al., 2014), while in other studies in-depth exploration was positively predicted by both Extraversion and Conscientiousness (Klimstra et al., 2014). These patterns of effects were not moderated by adolescents' gender or age.

4.1.4. The Present Study

The purpose of the present longitudinal study was two-fold. First, we investigated patterns of stability and change in personality traits (i.e., Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness) in adolescents throughout one academic year. Second, we examined the reciprocal associations between personality traits and educational identity processes (i.e., commitment, in-depth exploration, and reconsideration of commitment). In addressing both goals, we tested the moderating effects of age-group (early-to-middle versus middle-to-late adolescents), gender (boys versus girls), and school-type (theoretical versus vocational).

Most of the previous studies in the field of adolescent personality development (Branje et al., 2007; Klimstra et al., 2009; Luyckx et al., 2014) assessed personality traits across several years, with 1-year interval between measurements. Analyzing the limitations of this time frame, Klimstra and colleagues (2009) stressed the importance of measuring personality traits short-time fluctuations (i.e., what happens within one year) as they might capture how susceptible personality traits are to day-to-day events and thereby bring additional explanation to stability and change in adolescent personality. Therefore, in the present study we investigated the dynamics of personality traits across multiple time-points within a single school year.

Given the results of previous studies on longitudinal changes in personality traits (Branje et al., 2007; Klimstra et al., 2009; Pullmann et al., 2006; Roberts et al., 2006), we expected: (H1a) mean-level increases in Agreeableness, Conscientiousness, Neuroticism, and Openness and stable levels or small decreases in Extraversion, in the course of one academic year; (H1b) relatively high rank-order stability of personality traits; (H1c) age and gender differences, with middle-to-late adolescents and girls displaying more mature personality

profiles (i.e., higher levels of Extraversion, Agreeableness, Conscientiousness, and Openness) than early-to-middle adolescents and boys. We also expected the type of school adolescents attended to moderate the developmental patterns of personality traits (i.e., adolescents from theoretical schools to report steeper increases in Agreeableness, Conscientiousness, and Openness compared to adolescents from vocational schools).

In line with previous cross-sectional and longitudinal studies on the links between identity processes and personality in adolescence (Crocetti et al., 2008a; Klimstra et al., 2013; Luyckx et al., 2014), we expected: (H2a) educational commitment to be positively associated with positive personality traits (i.e., Extraversion, Agreeableness, Conscientiousness, and Openness) and negatively associated with negative personality traits (i.e., Neuroticism); (H2b) in-depth exploration to be positively associated with both positive and negative personality traits; (H2c) reconsideration of commitment to be negatively related to positive personality traits and positively related to negative personality traits; (H2d) personality traits to predict educational identity and not the other way around (i.e., commitment to be positively predicted by Extraversion and Conscientiousness; in-depth exploration to be positively predicted by Extraversion, Conscientiousness, and Openness; reconsideration of commitment to be positively predicted by Neuroticism); (H2e) no moderation effects of age, gender or school-type on these relationships.

Because of the lack of evidence, the hypotheses regarding the moderating effects of school-type on personality traits trajectories and on their connections with identity processes (see H1c and H2e), and the hypothesis regarding the predictive value of Neuroticism for reconsideration of commitment are exploratory (see H2d).

4.2. Method

4.2.1. Participants

Data for the present study were collected as part of the three-wave longitudinal research project Transylvania Adolescent Identity Development Study (TRAIDES). The total sample comprised 1,151 adolescent students (M_{age} = 16.45 years; SD_{age} = 1.40; range = 13-19 years; 58.7% female) from seven schools located in four towns in the North-West part of Romania. Participants were students from the 8th to the 12th grade attending theoretical (48.5%) and

vocational schools (51.5%), 40.1% were early-to middle adolescents (age range = 13-15 years) and 59.9% were middle-to-late adolescents (age range = 16-19 years). The majority of the adolescents in the sample (79.5%) came from intact two-parent families, while 13.4% reported that their parents had divorced, and 4.9% reported other family situation (e.g., one of the parents is deceased). In terms of living arrangements and financial support, most of the adolescents in the sample (90.8%) were living with one or both parents and were fully financially supported by their parents (85.8%), while 8% were living with other students or relatives and few of them reported having some personal income (8.4%) (i.e., state-provided student allocation, scholarship) or being financially supported by relatives (1.6%).

Sample attrition was 22% across waves. The range of missing items varied from 15.8% to 29.5% across the three waves. We compared participants with and without complete data using Little's (1988) Missing Completely at Random (MCAR) test. The MCAR test revealed a normed χ^2 (χ^2/df) of 1.15, which indicates a good fit between sample scores with and without imputations (Bollen, 1989). Missing values were estimated in SPSS using the Expectation Maximization procedure.

4.2.2. Procedure

Data for the present study were collected throughout the span of one academic year, with an interval of 3 to 4 months between measurement-points. At each wave, adolescents completed the same paper-and-pencil questionnaire in their classrooms, during school hours. Adolescents could choose not to fill in the questionnaires and do other school activities instead. Participation in the study was voluntary and anonymous. The study was approved by the Faculty of Psychology and Educational Sciences of the author's university and by the schools' headmasters through a written collaboration protocol.

4.2.3. Measures

Educational identity processes. The Romanian version (Negru & Crocetti, 2010) of the Utrecht-Management of Identity Commitments Scale (U-MICS, Crocetti et al., 2008a) was used to assess the three identity processes in the educational domain: commitment, in-depth exploration, and reconsideration of commitment. The instrument consisted of 13 items scored on a 5-point Likert scale, ranging from 1 (does not apply to me at all) to 5 (applies to me very well). Sample items include: "My education gives me certainty in life" (commitment; 5 items), "I think a lot about my education" (exploration in-depth; 5 items), and "I often think it would be better to try to find a different education" (reconsideration of commitment; 3 items). Cronbach's Alphas for the three subscales ranged from .75 to .84 at Time 1; .80 to .90 at Time 2; and .82 to .90 at Time 3.

Big Five personality traits. The Big Five Inventory (BFI, John & Strivastava, 1999) was used to assess the big five personality traits: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness. The instrument consists of 44 items scored on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Sample items include: "I am someone who is talkative" (Extraversion, 8 items), "I am someone who is helpful and unselfish with others" (Agreeableness, 9 items), "I am someone who perseveres until the task is finished (Conscientiousness, 9 items), "I am someone who can be tense" (Neuroticism, 9 items), "I am someone who is curious about many different things (Openness, 10 items). Some of the items (16 items) are reverse-coded. Cronbach's Alphas for the five scales ranged from .61 to .72 at Time 1; .65 to .73 at Time 2; and .62 to .70 at Time 3.

The Big Five Inventory was translated into Romanian following standard back-translation procedures as recommended by Brislin (1986) using two independent translators. A third person then finalized the Romanian version.

4.3. Results

4.3.1. Preliminary Analyses

Descriptive statistics and correlations among the study variables across the three-waves are displayed in Tables 4.1 and 4.2. As expected, at all measurement-points commitment

showed positive correlations with all positive personality traits (i.e., Extraversion, Agreeableness, Conscientiousness, and Openness), and negative correlations with Neuroticism, which is considered to be a negative personality trait. In contrast, reconsideration of commitment showed negative correlations with all positive personality traits (i.e., Extraversion, Agreeableness, Conscientiousness, and Openness) and positive correlations with Neuroticism. In-depth exploration was positively related to all personality traits within and across the three time points, but some of these connections lost statistical significance (i.e, in-depth exploration at Time 2 and Agreeableness at Time 2, in-depth exploration at Time 3 and Agreeableness and Time 3).

4.3.2. Mean-Level Change in Personality Traits

The first aim of this study was to examine the development of personality traits in adolescents throughout one academic year. In order to address this aim, we analyzed mean-level changes in the five personality traits. We conducted Latent Growth Curve (LGC) analyses in M*plus* 6.12 (Muthén & Muthén, 1998-2010), using Maximum Likelihood Robust estimator (MLR; Satorra & Bentler, 1994). LGC analyses provide mean levels (i.e., intercepts) and mean change rates (i.e., slopes) which are based on individual growth trajectories of all participants. We inspected three indices in order to evaluate the model fit: the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). CFI with values higher than .90 indicates an acceptable fit, while CFI with values higher than .95 suggests an excellent fit. Values lower than .08 of the RMSEA and SRMR indices suggest an acceptable fit, while values lower than .05 indicate a good fit (Byrne, 2012).

Results are displayed in Table 4.3 and in Figure 4.1. Model fit indices showed adequate to excellent data fit for all linear growth models.

The analysis of growth factors pointed out that all positive personality traits (i.e., Agreeableness, Conscientiousness, Extraversion, and Openness) were characterized by high and moderately high initial levels, while Neuroticism was characterized by low initial levels. Agreeableness and Conscientiousness decreased significantly, while Neuroticism increased

significantly over time. Extraversion and Openness remained relatively stable throughout the academic year (see Table 4.3 and in Figure 4.1).

All the variances of the intercepts and most of the slope variances for the five personality traits were statistically significant, suggesting inter-individual differences in the initial levels and in the rates of change displayed by adolescents in the sample. Thus, we examined whether age-group (early-to-middle versus middle-to-late adolescents), gender, and the type of school adolescents attended (theoretical versus vocational schools) were significant moderators of these developmental patterns. In order to reach this aim, we tested whether intercept and slope parameters varied significantly across age, gender, and type of school groups by means of the Wald test (see Table 4.4).

With respect to age-group differences, results pointed out that middle-to-late adolescents were more conscientious compared to early-to-middle adolescents. However, conscientiousness decreased for both age groups with no significant differences between early-to-middle and middle-to-late adolescents.

Regarding gender differences, our findings indicated that girls exhibited higher levels of Extraversion, Agreeableness, and Openness to experience at the beginning of the academic year compared to boys. Instead, boys displayed higher levels of Neuroticism than girls. Throughout one academic year, boys became less extroverted, while girls displayed slight increases in Extraversion. Additionally, boys reported steeper decreases in Agreeableness and steeper increases in Neuroticism compared to girls.

Results also revealed differences between adolescents attending theoretical schools versus adolescents attending vocational schools. Thus, those attending vocational schools displayed lower levels of Extraversion, Agreeableness, and Openness compared to those attending theoretical schools. Slope comparisons indicated that Agreeableness decreases more sharply in students from theoretical schools than in students from vocational schools during one academic year.

4.3.3. Rank-Order Stability of Personality Traits

Rank-order stability was assessed by computing Pearson's correlations of personality traits with themselves at consecutive time points (e.g., correlation between Extraversion at Time

1 and Extraversion at Time 2). Findings (see Table 4.5) indicated that rank-order stabilities of personality traits were high. Using Fisher *r*-to-*z* transformations, we tested the statistical significance ($p < .05$) of the difference between correlation coefficients. We found that the rank-order stability decreased significantly for Openness.

4.3.4. Longitudinal Associations between Educational Identity and Personality Traits

The second aim of the present study was to examine reciprocal longitudinal associations between adolescent educational identity and personality traits. In order to approach this aim we conducted cross-lagged analyses in M*plus*. Specifically, we tested for cross-lagged associations between educational identity and personality traits (e.g., educational identity processes measured at T1 predicting personality traits at T2 and personality traits at T1 predicting educational identity processes at T2), controlling for: (a) 3-to-4 months stability paths (e.g., educational identity processes at T1 predicting educational identity processes at T2); (b) one-year stability paths (e.g., educational identity processes at T1 predicting educational identity processes at T3); and (c) within-time correlations among all the variables. We used multi-group tests to examine the potential moderating effects of age-group (early-to-middle versus middle-to-late adolescents), gender (boys versus girls), and type of school (theoretical versus vocational schools).

To model the reciprocal associations between educational identity and personality traits as parsimoniously as possible, we tested whether cross-lagged effects were time invariant (i.e., assumption of stationarity). Thus, we compared the model in which cross-lagged paths were free to vary with the model in which they were fixed across time. In order to determine significant differences between these two models at least two out of these three criteria had to be matched: $\Delta\chi^2$ significant at $p < .05$, $\Delta CFI \geq -.010$, and $\Delta RMSEA \geq .015$. Results indicated that the model in which cross-lagged effects were time invariant was not significantly different ($\Delta\chi^2$ (56) = 134.494, $p = 2.09$, $\Delta CFI = -.008$, $\Delta RMSEA = -.001$) from the model in which these effects were allowed to vary across time. Thus, we decided to retain the more parsimonious time-invariant model as the final one. This model fit the data very well ($\chi^2 = 272.628$, df = 112, CFI = .984, RMSEA = .035, SRMR = .022). Significant cross-lagged paths are reported in Figure 4.2.

Findings of cross-lagged path analyses revealed unidirectional effects from personality traits to educational identity across the three waves. Namely, agreeableness was found to be a positive predictor of commitment and a negative predictor of reconsideration of commitment.

We conducted multi-group analyses to test whether cross-lagged paths from personality traits to educational identity were significantly moderated by age (early-to-middle versus middle-to-late adolescents), gender, or by the type of school (theoretical versus vocational schools). Results showed that for age ($\Delta\chi^2$ (56) = 68.435, p = .123, ΔCFI = -.002, ΔRMSEA = -.002) the unconstrained model, in which parameters were free to vary across groups, was not significantly different from the constrained model, in which the parameters were fixed across groups. Therefore, the unidirectional pattern of effects displayed in Figure 4.2 applies equally to early-to-middle and middle-to-late adolescents. With regard to gender ($\Delta\chi^2$ (56) = 80.224, p < .05, ΔCFI = -.002, ΔRMSEA = -.002) and the type of school attended by adolescents ($\Delta\chi^2$ (56) = 82.531, p < .05, ΔCFI = -.003, ΔRMSEA = -.002), we found differences between the unconstrained model and the constrained model. Specifically, 7 out of 56 paths were moderated by gender and 8 out of 56 paths were moderated by type of school. Thus, with regard to gender, Agreeableness was found to be a negative and significant predictor for reconsideration of commitment (β= -.09, p<.01) for girls, but not for boys (see Figure 4.3). With regard to type of school, Conscientiousness was found to be a positive predictor for commitment (β= .10, p<.01) in adolescents attending theoretical schools, but not for those from vocational schools (see Figure 4.4).

Therefore, the unidirectional pattern of effects from personality traits to educational identity applies equally to: (a) early-to-middle and middle-to-late adolescents, (b) adolescents attending theoretical and vocational schools, and (c) boys and girls only regarding the predictive value of Agreeableness for educational commitment.

4.4. Discussion

The present three-wave longitudinal study pointed out that personality traits play an important role in shaping identity in the school context. First, we analyzed the linear changes in personality traits among adolescents throughout one academic year. Second, we examined the directionality of effects between educational identity processes and personality traits. In studying

both issues, we tested also whether results were moderated by age-group (early-to-middle versus middle-to-late adolescents), gender (boys versus girls), and type of school (theoretical versus vocational schools).

4.4.1. Patterns of Stability and Change in Personality Traits in Adolescence

Adolescents from our sample started the academic year with positive personality configurations (i.e., resilient personality type; Block & Block, 1980; Klimstra et al., 2009) described by high levels of Agreeableness, Conscientiousness, Extraversion, moderately high levels of Openness, and low levels of Neuroticism. As previous studies have shown, adolescents displaying this type of personality profile are less vulnerable to emotional and behavioral problems (Klimstra et al., 2009) and they tend to be strongly committed to their goals and plans, which they explore steadily (Luyckx et al., 2014). However, in the span of one academic year adolescents' personality went throughout important changes. Specifically, in contrast with our expectations (H1a) Agreeableness and Conscientiousness decreased significantly, while Extraversion and Openness remained relatively stable over the three waves. Instead, Neuroticism increased significantly, as we hypothesized. Hence, as the academic year unfolds, adolescents become more prone to stress, less cooperative, less motivated, and less organized in their activities. The most surprising results were the significant decreases in Agreeableness and Conscientiousness, which in previous studies registered either small variations (Branje et al., 2007; DeFruyt et al., 2006; Pullmann et al., 2006; Roberts et al., 2006), or important increases (i.e., Agreeableness, Klimstra et al., 2009). These results might be related to several peculiarities of the Romanian educational system. On the one hand, nowadays Romanian school is mainly grounded on a scholastic model that offers high school students theoretical knowledge and skills, which are useful if they intend to prepare for university studies, but incomplete if they intend to enter the labor market (Damian, Negru-Subtirica, Pop, & Baban, 2015). Thus, the learning experiences that school provides might differ considerably from what students expect to achieve through academic learning and what they really need outside school, making them to become less compliant and less committed. On the other hand, the Romanian educational system strongly fosters performance goals (i.e., high grades) which can become overwhelming for students (Damian et al., 2015). The pressure to perform well in school that adolescents perceive might

enhance their stress and anxiety, disorganize their activity, and encourage them to adopt oppositional behaviors in their interactions with others. This downward trend of Conscientiousness and Agreeableness threatens adolescents' academic achievement, as previous studies underscored the positive relationships between academic performance, Conscientiousness, and Agreeableness (Di Fabio & Busoni, 2007; Graziano & Ward, 1992; Hair & Graziano, 2003; Noftle & Robins, 2007).

Our findings revealed several inter-individual differences in adolescent personality development. Namely, compared to early-to-middle adolescents, middle-to-late adolescents displayed higher levels of Conscientiousness at the beginning of the academic year. These results are in line with our hypothesis (H1c) and with previous longitudinal studies, which showed that as they mature, adolescents become more conscientious (Klimstra et al., 2009; Roberts et al., 2006). However, Conscientiousness decreased equally for early-to-middle and middle-to-late adolescents throughout the academic year. Thus, over the school year, as they face academic tasks, adolescents become more careless and disorganized in their activities. This might be partly because of the pressure to perform well in school which is extremely overwhelming, partly because of the outdated curricula, which maintain the gap between school preparation and labor market requirements (Damian et al., 2015).

In line with previous studies, our findings pointed out that girls were more extraverted, agreeable, and open to experience compared to boys and boys were more neurotic than girls when the academic year started. By the end of the academic year, girls become even more extraverted, while boys become more introverted. Both girls and boys become less agreeable and more neurotic over time, with boys exhibiting steeper changes in these personality traits than girls. Previous studies explained similar gender differences through girls' advantage against boys in terms of cognitive and emotional maturation (Beunen et al., 2000; Giedd et al., 1999).

Adolescents attending theoretical schools appeared to be more extroverted, agreeable, and open to experience than those attending vocational schools. Although all adolescents in the sample from both theoretical and vocational schools displayed similar developmental trajectories of personality traits (i.e., decreases in Extraversion, Agreeableness, Conscientiousness and increases in Neuroticism and Openness), Agreeableness decreased more sharply in students from theoretical schools than in those from vocational schools during one academic year.

In Romania, especially in theoretical schools, which are more socially valued than vocational schools, competition is strongly encouraged (Negru-Subtirica, Pop, & Crocetti, 2015). This might negatively impact inter-personal relationships.

Findings revealed high rank-order stability in personality traits among adolescents in our sample, meaning that changes in personality traits occur in the same direction throughout the academic year and at a similar change rate. Of the five personality traits, Openness is the only personality trait which registered rank-order decreases. This makes Openness the most dynamic personality trait in our adolescent sample and the most amenable to change. Precisely, by the end of the academic year, some adolescents become more open to new experiences as they were and some of them become less open to new experiences as they were at the beginning of the academic year. Maybe these changes occur as they face different events or tasks during the academic year (e.g., dealing with teaching strategies that encourage adolescent students to be creative and imaginative versus teaching strategies which require adolescents to be compliant to very strict rules).

4.4.2. Longitudinal links between educational identity and personality traits

As we hypothesized, educational commitment positively correlated with all personality traits and negatively correlated with negative personality traits (H2a). In contrast, reconsideration of educational commitment was positively correlated with negative personality traits and negatively correlated with all positive personality traits (H2c). Due to its dual valence, in-depth exploration positively correlated with all personality traits (H2b). Thus, the more satisfied with their educational choices adolescents were, the more extraverted, agreeable, conscientious, open to experience, and less vulnerable to stress they were. The opposite happened when they were unsatisfied with their educational choices; the more they reconsider and try to change their educational choices, the less extroverted, agreeable, conscientious, and open to experience adolescents become, and also more prone to anxiety and stress. When they explore their current educational options, adolescents might register increases in their positive traits but with some emotional costs.

In line with previous empirical research, results of the present study highlighted that personality traits predict the manner in which adolescents deal with identity related issues in

academic context and not the other way around (H2d). Although multiple interconnections between educational identity and personality traits were found, unexpectedly, Agreeableness was the only predictor of educational identity. Specifically, Agreeableness positively predicted educational commitment and negatively predicted reconsideration of educational commitment across the three waves. These results might suggest that it is more likely for the modest, compliant, and sympathetic adolescents to evaluate more positively their current commitments. That is because sometimes adolescents may benefit from being obedient in the school context (e.g., positive relationships with teachers, higher grades; cf. Damian et al., 2015). These results might also suggest that adolescents' trust in relevant others (i.e., their parents, teachers or peers) fosters their faith in their current educational commitments. In a previous study, Meeus and colleagues (Meeus, Oosterwegel, & Vollebergh, 2002) found positive connections between trust-based relationships with parents and peers, on the one hand, and identification with commitment, on the other hand. This pattern of effects applies equally to early-to-middle and middle-to-late adolescents. However, we found few differences between boys and girls and between adolescents from theoretical school and those from vocational schools regarding the longitudinal interplay of personality traits and educational identity, which brings only partial support for our hypothesis (H2e).

When analyzing if the unidirectional pattern of effects from personality traits to educational identity applies equally to boys and girls, we found that Agreeableness is a negative and significant predictor for reconsideration of commitment only for girls, not for boys. Specificaly, the more agreeable girls are, the less they will reconsider their educational commitments. Thus, girls take into account the quality of their relationships with others (e.g., teachers, peers) when deciding if they maintain or change their educational commitments. These results are in line with previous findings which have shown the important role that social acceptance plays in girls in the school context (e.g., academic achievement, self-concept, motivation, cf. Wigfield, Battle, Keller, & Eccles, 2002).

The school-type also moderated the effects of personality traits on educational identity. Explicitly, we found that Conscientiousness was a positive predictor of educational commitment for adolescents attending theoretical schools, but not for those attending vocational schools. Thus, in theoretical schools, conscientious students, who have a high capacity of self-control, set

their goals, and plan how to pursue them, are more likely to feel certain about their current educational commitments. Thus, in theoretical schools, which are considered to be more prestigious (i.e., in these schools the admission grade point average is higher, students have higher grades, the majority of the students pursue university studies) than vocational schools, striving for achievement seems to be an important key to educational identity.

4.4.3. Limitations and Future Directions

Results of the present study should be considered in light of some limitations. First, the three-wave design confines our investigation to the analysis of linear changes. Considering that some of the personality traits might be characterized by non-linear developmental patterns in adolescence (Klimstra et al., 2009), including more waves in the study and extending this investigation to several academic years would allow us to identify possible curvilinear changes in personality traits. Second, we explained some of the personality patterns of development (i.e., the Openness rank-order stability decreases) through the influence of daily events in the school context, but we did not directly measure them. Thus, future studies should assess different school-related factors (e.g., teacher-student relationship, teaching strategies being used, participation in school competitions) which might impact personality traits development throughout the academic year. In addition, in order to disentangle intrinsic maturation and social influences on the development of personality, future studies could investigate developmental patterns of personality across several academic years. Third, we captured in our analyses the connections between identity processes and broad Big Five personality traits. Considering that each broad trait comprises several specific facets, connections with educational identity processes might be differently explained by different personality facets (Klimstra et al., 2013). Future studies could follow a more granular approach of personality (e.g., facet-level of personality) for tapping into different shades of the personality-identity interplay.

Despite its limitations, the present study provides a relevant contribution to research on adolescent development, bringing further evidence with respect to personality developmental trajectories and the role personality traits plays in adolescent identity development in academic context. Findings showed that adolescents registered important changes in personality traits throughout one academic year (i.e., larger decreases in Agreeableness, larger increases in

Neuroticism, and small decreases in Conscientiousness), which went in tandem with changes in educational identity (i.e., larger decreases in educational commitment and larger increases in reconsideration of educational commitment). In constrast to previous studies, our study pointed out that Agreeableness is the only positive predictor of educational commitment in adolescents. This underscores the necessity of further longitudinal investigations regarding the interplay between personality and identity in various cultural contexts in order to establish which of these findings can be generalized and which are specific to a particular culture.

Table 4.1

Descriptive Statistics and Within-time Correlations at Time 1

Variable	Descriptive statistics			Within-time correlations at Time 1							
				Identity processes			Personality traits				
	Time 1 *M* (*SD*)	Time 2 *M* (*SD*)	Time 3 *M* (*SD*)	Com	IndE	Rec	Ext	Agr	Cons	Neu	Open
Com	4.12 (.68)	4.02 (.76)	4.00 (.75)	-	.36***	-.19***	.21***	.28***	.31***	-.09**	.16***
IndE	3.22 (.76)	3.16 (.79)	3.23 (.76)		-	.21***	.08**	.12***	.17***	.10***	.15***
Rec	2.13 (.97)	2.22 (.95)	2.48 (.95)			-	-.05	-.17***	-.18***	.15***	-.02
Ext	3.44 (.54)	3.50 (.54)	3.43 (.52)				-	.17***	.22***	-.21***	.38***
Agr	3.83 (.52)	3.80 (.53)	3.64 (.55)					-	.46***	-.35***	.25***
Cons	3.50 (.57)	3.50 (.56)	3.41 (.52)						-	-.36***	.29***
Neu	2.63 (.61)	2.70 (.61)	2.80 (.58)							-	-.09**
Open	3.40 (.51)	3.43 (.52)	3.40 (.52)								-

Note. Com = Commitment, IndE = In-depth exploration, Rec = Reconsideration of commitment, Ext = Extraversion, Agr = Agreeableness, Cons = Conscientiousness, Neu = Neuroticism, Open = Openness; *M* = Mean; *SD* = Standard Deviation. ** $p < .01$; *** $p < .001$.

Table 4.2

Within-time Correlations at Time 2 and Time 3

Variable	Within-time correlations at Time 2 and Time 3							
	Identity processes			Personality traits				
	Com	IndE	Rec	Ext	Agr	Cons	Neu	Open
Com	-	.35***	-.20***	.24***	.27***	.36***	-.14***	.27***
IndE	.40***	-	.25***	.01	.06*	.17***	.08**	.13***
Rec	-.19***	.36***	-	-.10***	-.23***	-.20***	.18***	-.12***
Ext	.23***	.03	-.10***	-	.16***	.24***	-.22***	.43***
Agr	.33***	.06*	-.26***	.28***	-	.44***	-.36***	.31***
Cons	.31***	.08**	-.20***	.26***	.43***	-	-.39***	.33***
Neu	-.12***	.05	.18***	-.18***	-.37***	-.40***	-	-.11***
Open	.26***	.15***	-.08**	.42***	.31***	.28***	-.08**	-

Note. Time 2 within-time correlations are shown above the diagonal, Time 3 within-time correlations appear below the diagonal. Com = Commitment, IndE = In-depth exploration, Rec = Reconsideration of commitment, Ext = Extraversion, Agr = Agreeableness, Cons = Conscientiousness, Neu = Neuroticism, Open = Openness.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 4.3

Latent Growth Curve (LGC) Analyses: Growth Factors and Model Fit for the Linear Models

	Growth factors			Model fit indices				
	Intercept (I) M (σ^2)	Slope (S) M (σ^2)	r (I, S)	χ^2	*df*	CFI	RMSEA 90% CI	SRMR
Extraversion	3.45^{***} (0.24^{***})	-0.01 (0.03^{***})	$-.03^{**}$	6.770^{**}	1	.993	.071 [.028-.125]	.015
Agreeableness	3.84^{***} (0.19^{***})	-0.10^{***} (0.02^{**})	-.01	2.216	1	.998	.033	.009
Conscientiousness	3.50^{***} (0.26^{***})	-0.04^{***} (0.03^{***})	$-.03^{***}$	3.914^{*}	1	.996	.050 [.004-.107]	.011
Neuroticism	2.64^{***} (0.28^{***})	0.07^{***} (0.03^{***})	$-.03^{**}$	0.000	1	1.00	.00	.00
Openness	3.41^{***} (0.21^{***})	0.01 (0.02^{***})	$-.02^{**}$	9.902^{**}	1	.989	.088 [.044-.141]	.020

Note. M = Mean; σ2 = Variance. χ^2 = Chi-Square; *df* = degrees of freedom; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual;

* $p < .05$; ** $p < .01$; *** $p < .001$.

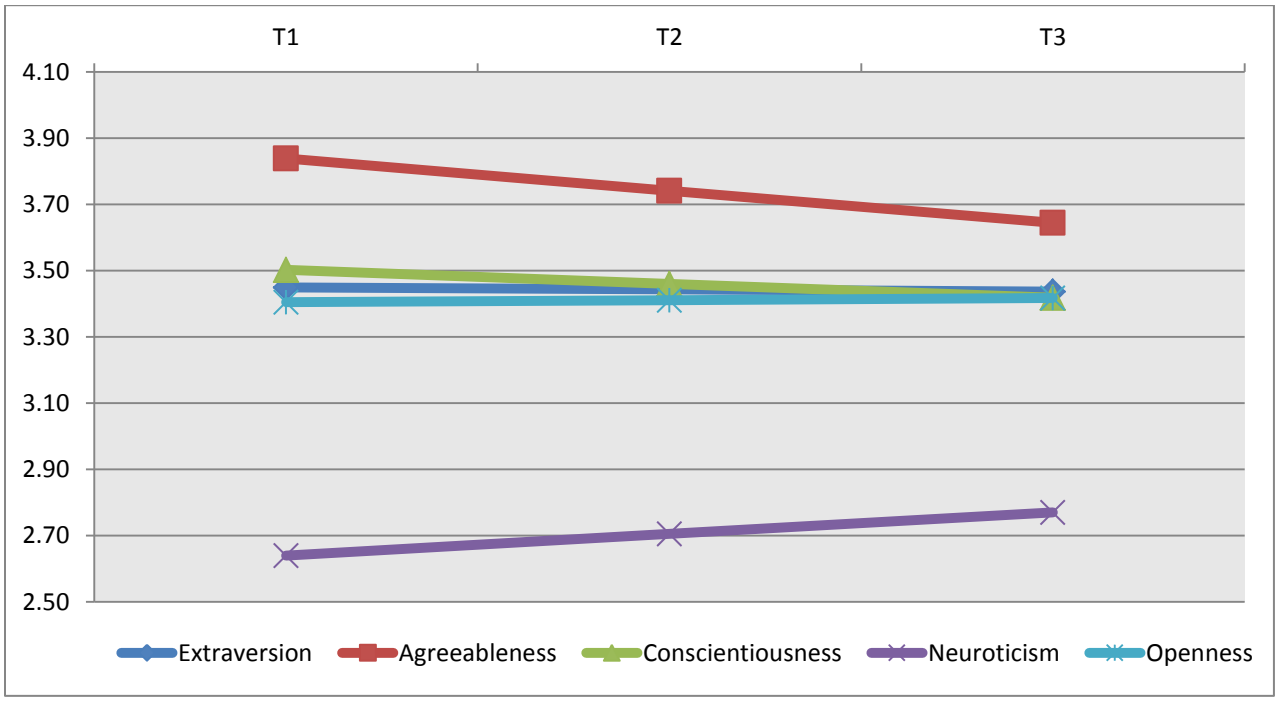

Figure 4.1 Estimated growth of Big Five personality traits

Table 4.4

Intercepts and Slopes across Age, Gender, and Type of School Groups

	Intercepts						Slopes					
	Age		Gender		School-type		Age		Gender		School-type	
	Early-to-middle	Middle-to-Late	Boys	Girls	Theor	Voc	Early-to-middle	Middle-to-late	Boys	Girls	Theor	Voc
Extraversion	3.45	3.47	**3.41**	**3.49**	**3.52**	**3.39**	-.00	-.02	**-.04**	**.02**	-.01	-.01
Agreeableness	3.84	3.85	**3.80**	**3.90**	**3.94**	**3.74**	-.09	-.10	**-.12**	**-.08**	**-.11**	**-.08**
Conscientiousness	**3.43**	**3.55**	3.50	3.52	3.51	3.51	-.03	-.05	-.05	-.04	-.03	-.05
Neuroticism	2.66	2.63	**2.44**	**2.77**	2.65	2.64	.07	.06	**.10**	**.04**	.06	.07
Openness	3.40	3.43	**3.34**	**3.45**	**3.50**	**3.33**	.01	.01	-.01	.02	.01	.01

Note. Intercepts and slopes significantly different across age, gender, and type of school groups at the Wald test ($p < .05$) are noted in bold. Theor = Theoretical schools; Voc = Vocational schools.

Table 4.5

Rank-Order Stability of Personality Traits

	Time 1-Time 2	Time 2-Time 3
Extraversion	.696**	.673**
Agreeableness	.637**	.638**
Conscientiusness	.692**	.695**
Neuroticism	.663**	.680**
Openness	.679**	.632**

Note. ** $p < .01$

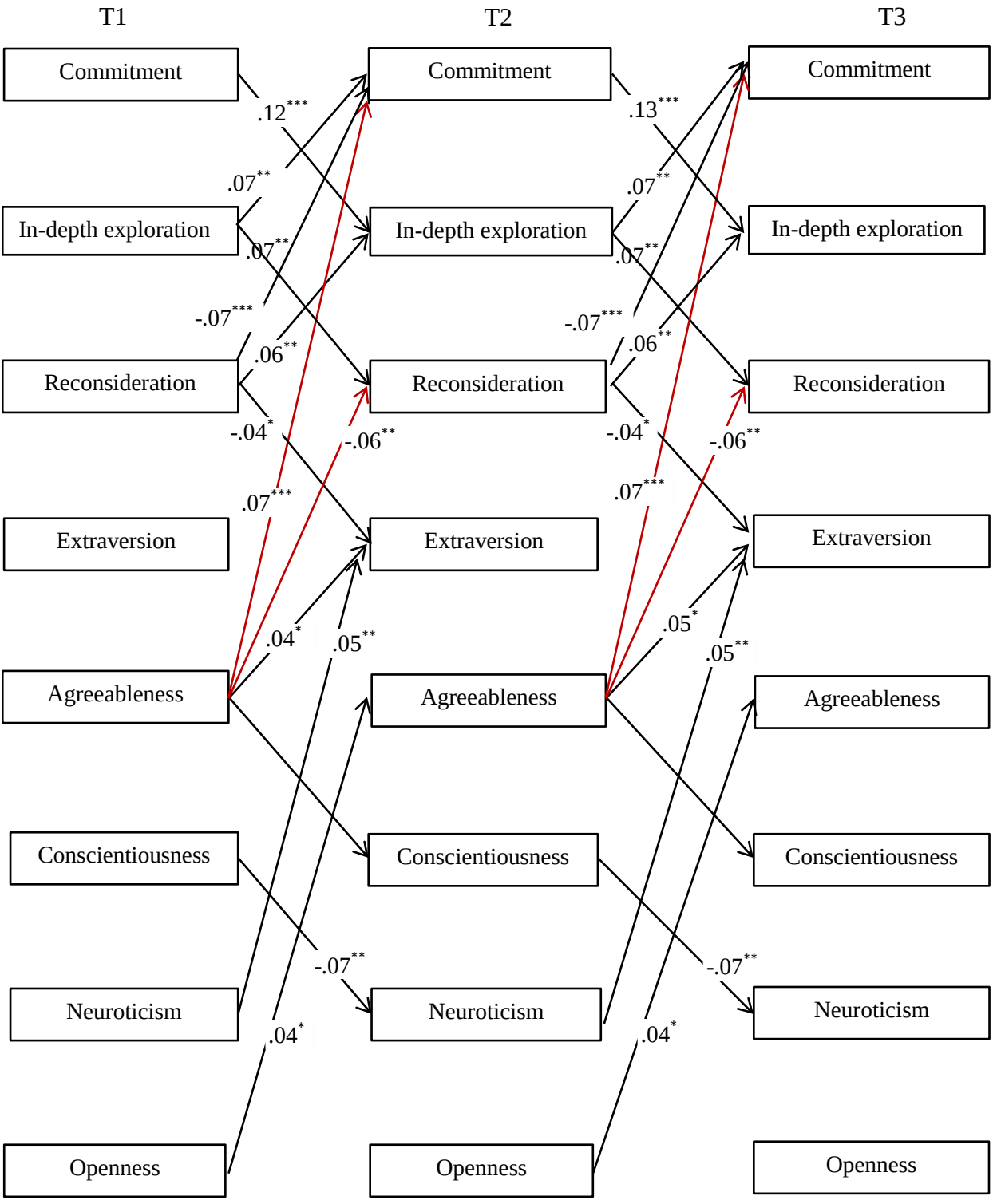

Figure 4.2 Significant cross-lagged paths from personality traits to educational identity processes (marked in red). For the sake of clarity, within-time correlations and stability paths are not reported in the figure. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

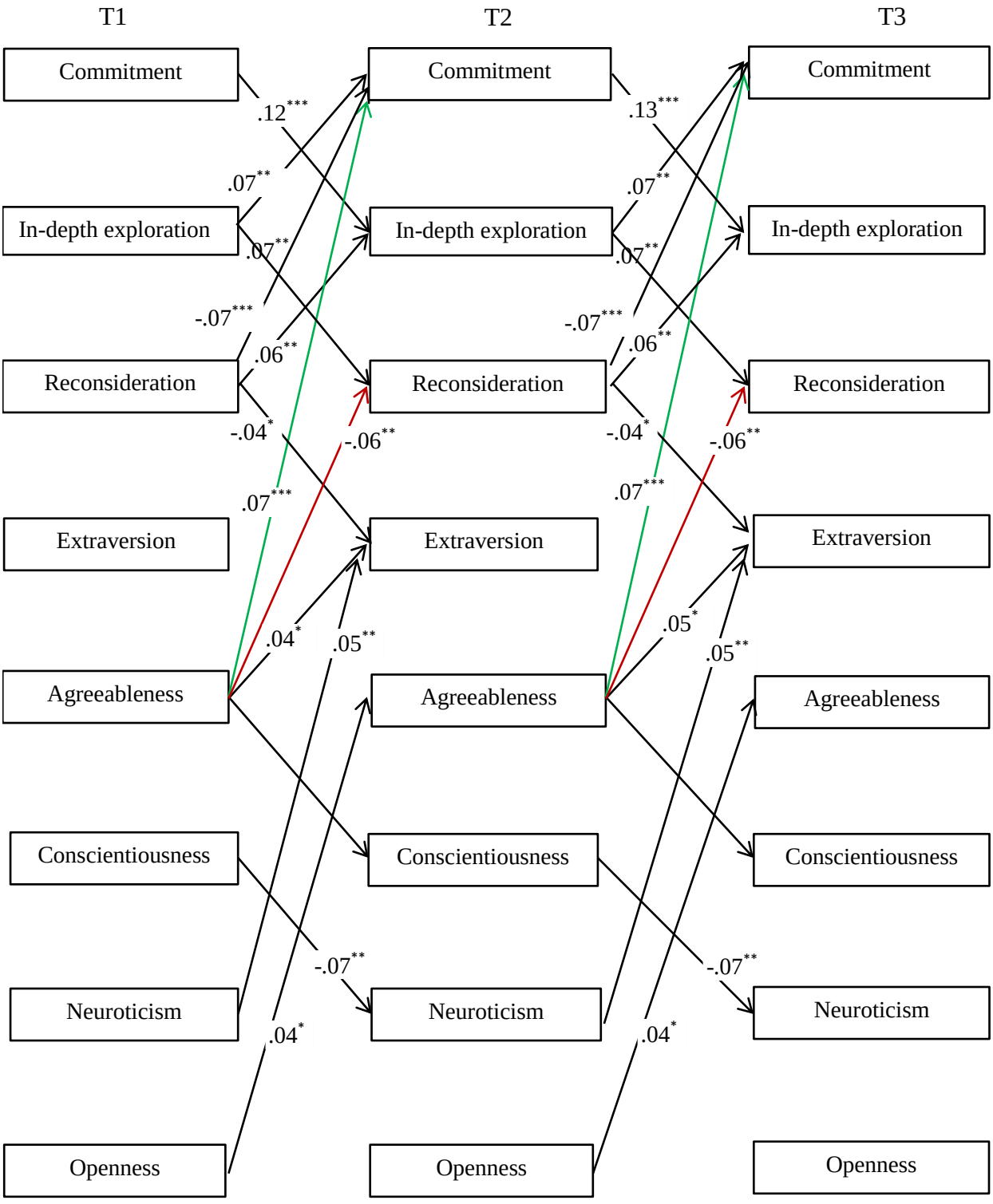

Figure 4.3 Significant cross-lagged paths from personality traits to educational identity processes moderated by gender. Common paths are marked in green, the paths specific to girls are marked in red. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

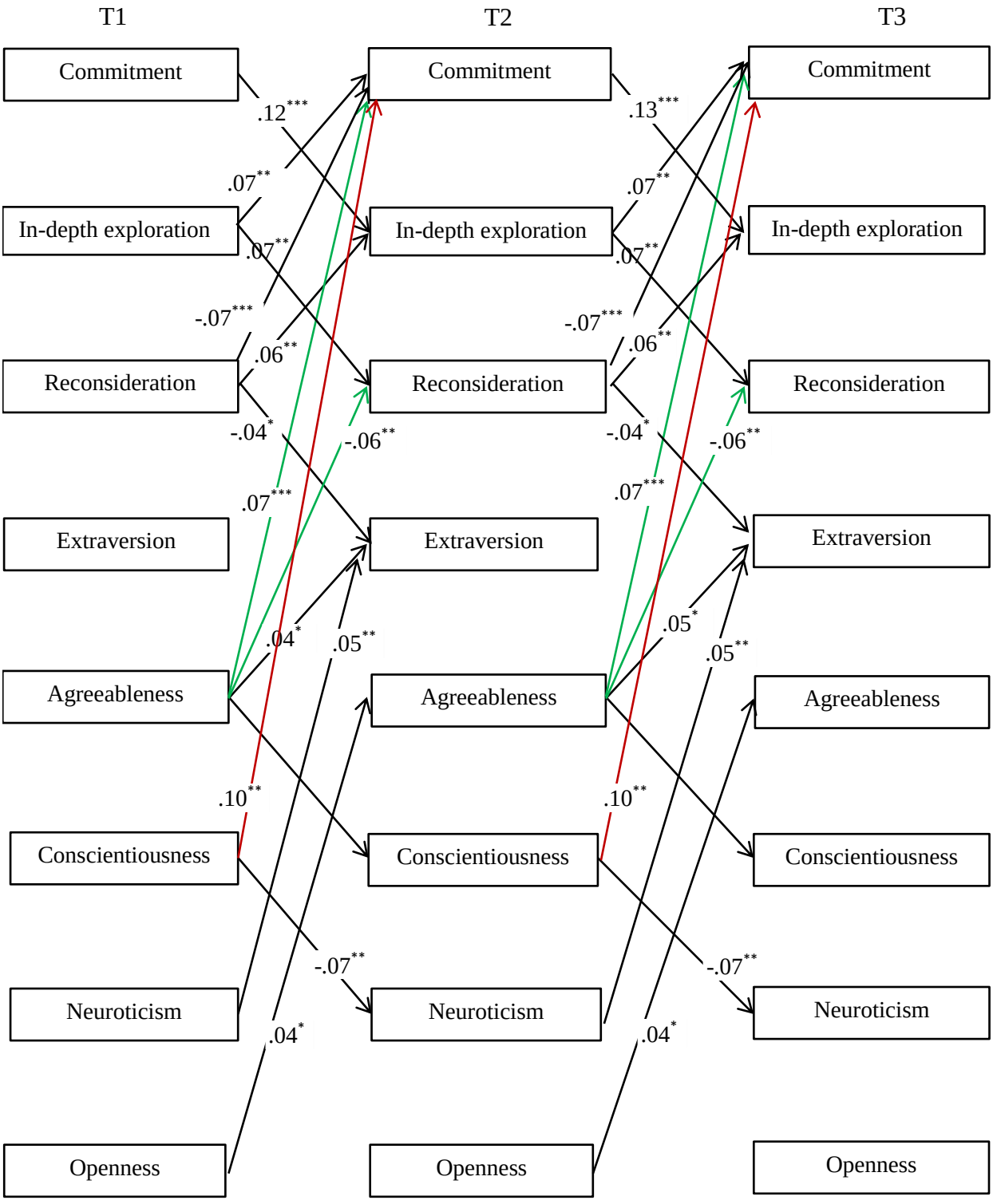

Figure 4.4 Significant cross-lagged paths from personality traits to educational identity processes moderated by school-type. Common paths are marked in green, the paths specific to adolescents from theoretical schools are marked in red. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

CHAPTER 5.

CHALLENGING OR CONSERVING YOUR BELIEFS: A PERSON-CENTERED APPROACH OF PRE-SERVICE TEACHERS' EDUCATIONAL IDENTITY[5]

[5] Part of this chapter was published in **Pop, E.I**., Negru, O**.,** Opre, A. (2015). Challenging or conserving your beliefs: A person-centered approach of pre-service teachers' educational identity. *Procedia - Social and Behavioral Sciences, 187,* 147-152. doi:10.1016/j.sbspro.2015.03.028

Abstract

Emerging adulthood is considered one of the most challenging periods in terms of identity development in different areas of life, especially education and career. Educational choices are components of career development (Germeijs, Luyckx, Notelaers, Goossens, & Verschueren, 2012; Super, 1980). Thus, a student's decision to enroll in a teaching training program indicates that a future teaching career is considered a viable career path, and hence an important component of their educational identity. The manner in which students approach this educational choice could be partially shaped by students' explicit or implicit theories about teaching (i.e., personal beliefs about the innate or learned nature of the teaching ability). This research area is still lacking empirical evidence. The present study set out to analyze educational identity statuses in pre-service teachers (N = 294, *Mean age* = 19.94 years, *SD age* = 1.28) from a person-centered approach and explored the effect of derived identity statutes (i.e., achievement, moratorium, searching moratorium, foreclosure, diffusion) on teaching ability beliefs (i.e., teaching as innate ability versus teaching as learned ability). We used the Utrecht-Management of Identity Commitments Scale (Crocetti et al., 2008a) and the Teaching Ability Beliefs Scale (Fives & Buehl, 2008) in order to assess pre-service teachers' identity processes and beliefs about the nature of their teaching ability, respectively. In order to derive pre-service teachers' educational identity statuses from the identity processes (i.e., commitment, in-depth exploration, reconsideration of commitment) we conducted a cluster analysis. The connections between pre-service teachers' beliefs about teaching ability and educational identity statuses were investigated through a multivariate analysis of variance (MANOVA). Results indicated that most pre-service teachers in our sample were characterized by identity achievement, followed by searching moratorium, diffusion, and foreclosure. Searching moratorium pre-service teachers scored higher than the foreclosed ones on both teaching ability beliefs, pointing out that beliefs about teaching influence pre-service teachers' engagement in professional development tasks. The present study findings could serve as guidelines for the designing of effective teaching training programs addressed to pre-service teachers.

Keywords: educational identity, career, pre-service teachers, beliefs about teaching ability

5.1. Introduction

Emerging adulthood encompasses intense career exploration and career-related decisions, such as choosing specific educational programs or occupational paths (Arnett, 2000; Negru, Pop, Damian, & Moraru, 2011). The purpose of the present study was to investigate educational identity processes and beliefs about teaching in Romanian emerging adults enrolled in a pre-service teaching program.

Identity development is a process characterized by repeated cycles of commitment, in–depth exploration, and reconsideration of commitment (Crocetti et al., 2008a). These processes capture the manner in which people adhere to chosen career alternatives (i.e., commitment), how they gather information about their choices by consulting with others (i.e., in-depth exploration), or how they relinquish no longer viable choices (i.e., reconsideration of commitment). Person-centered approaches on identity can offer a better glimpse on the interplay between these processes, as they coexist in the same individual, for the same identity domain (Crocetti & Meeus, 2014). In the process model developed by Meeus, Crocetti at al. (Crocetti et al., 2008b), five identity statuses were identified: achievement (i.e., high levels of commitment and in-depth exploration, and low levels of reconsideration of commitment), moratorium (i.e., low levels of commitment, moderate levels of in depth-exploration, and high levels of reconsideration of commitment), searching moratorium (i.e., high levels of commitment, in-depth exploration, and reconsideration of commitment), diffusion (i.e., low levels of commitment, in-depth exploration, and reconsideration of commitment), and foreclosure (i.e., high levels of commitment, moderate levels of in-depth exploration, and low levels of reconsideration of commitment).

Pre-service teachers' educational identity statuses are partially shaped by their implicit or explicit theories about teaching, which partly refer to the nature of one's teaching ability. Expanding Dweck's theory about ability conceptions (entity versus incremental theories of intelligence, 2002) to the teaching domain, Fives and Buehl (2008) described two types of beliefs about teaching ability: the belief that the ability to teach is innate and the belief that the ability to teach is learned. Those who consider that the teaching ability is innate will be more outcome-oriented, focusing on measuring and validating their ability to teach. Those who consider that their teaching ability is learned will be more process-oriented, concentrating on the effort and strategies they use when they approach teaching tasks. Thus, when they deal with difficult

teaching tasks and fail, pre-service teachers who believe in the innate nature of their teaching ability tend to invest less effort or avoid future similar tasks, considering that their performance is out of their control, while those who believe in the learned nature of teaching ability tend to invest more time and effort in similar tasks, considering that they are able to change their own performance. Based on previous data, we expected that the beliefs in the innate and learned nature of teaching beliefs coexist (Fives & Buehl, 2008). We also assumed that the beliefs about teaching ability are incorporated in pre-service teachers' general belief system and that they systematically guide behavior in academic context (Dweck, 2002; Fives & Buehl, 2012).

Since there is no empirical evidence regarding the links between teaching ability beliefs and identity statuses, we examined the following hypotheses: (a) pre-service teachers with high levels of in-depth exploration and commitment (i.e., achievement, searching moratorium) will predominantly display beliefs about teaching as a learned ability compared to those with low levels of in-depth exploration and high levels of reconsideration of commitment (i.e., diffusion, moratorium); (b) pre-service teachers with high levels of commitment and low levels of in-depth exploration (i.e., foreclosure) will score significantly lower on both teaching ability beliefs than those with high levels of both commitment and in-depth exploration (i.e., achievement, searching moratorium).

5.2. Method

5.2.1. Participants and procedure

A total of 302 freshmen and sophomore students attending university courses at five different faculties in North-West Romania completed the printed self-report questionnaires in the present study. All the participants were enrolled in the first level of an initial teaching training program. In the Romanian educational system the initial training of future teachers consists of a two-level pedagogical module that students can attend during their undergraduate and postgraduate studies. The pedagogical module is compulsory for the preparation of future teachers in their field of professional development. For the present analyses, 6 participants were excluded from the study (univariate and multivariate outliers). Thus, the final sample comprised 294 students (75.5% females), aged between 18 and 30 years (*Mean age* = 19.94 years, *SD age* =

1.28). Students completed the questionnaires on a voluntary basis after a teaching training course. They received no compensation for participating in the study.

5.2.2 Measures

Identity processes. We used the Romanian version (Negru & Crocetti, 2010) of The Utrecht-Management of Identity Commitments Scale (U-MICS; Crocetti et al., 2008a) to assess the three identity processes in the educational domain: commitment, exploration in-depth, and reconsideration of commitment. The instrument consisted of 13 items scored on a 5-point Likert-type rating scale, ranging from 1 (does not apply to me at all) to 5 (applies to me very well). Sample items include: "My education gives me certainty in life" (commitment; 5 items), "I think a lot about my education" (exploration in-depth; 5 items), and "I often think it would be better to try to find a different education" (reconsideration of commitment; 3 items). In the present study Cronbach's alphas were .85 for commitment, .72 for exploration in-depth, and .88 for reconsideration of commitment.

Teaching ability beliefs. We measured the perceived nature of teaching abilities through two subscales from the Teaching Ability Belief Scale (TABS; Fives & Buehl, 2008). The first subscale captures beliefs about teaching as an innate ability (11 items; e.g., "Teaching is a calling"). The second subscale captures beliefs about teaching as a learned ability (7 items; e.g., "Teaching is a skill that is developed with training and expertise"). Participants responded to all items on a scale from 1 (strongly disagree) to 5 (strongly agree). Both subscales were translated into Romanian following standard back-translation procedures as recommended by Brislin (1986), using two independent translators. A third person then finalized the Romanian version. In the present study Cronbach's alphas were .88 for beliefs about teaching as an innate ability and .79 for beliefs about teaching as a learned ability.

5.3. Results

5.3.1. Preliminary Analyses

First, we used the expectation maximization algorithm to impute missing data (Graham, 2009). Only 1.51% of all item responses were missing and were estimated by averaging answers across items, enabling us to perform the analyses on the full sample. Second, we removed the

univariate (z-scores > 3.29, $p < .001$ two-tailed) and multivariate outliers (scores with a Mahalanobis distance larger than the critical value of $\chi^2(5) = 20.51$, $p < .001$) which can severely distort the results of correlation and cluster analysis. Third, we examined the descriptive data and the correlations among all the study variables. As displayed in Table 5.1, participants scored higher on educational commitment and on beliefs about teaching as a learned ability, and lower on reconsideration of commitment and beliefs about teaching as an innate ability. Moreover, commitment was positively related to exploration in-depth and beliefs about teaching as innate ability, and negatively to reconsideration of commitment. Educational exploration in-depth and reconsideration of commitment were positively associated with both types of beliefs about one's teaching ability. We found a negative but not significant correlation between beliefs about teaching as innate ability and beliefs about teaching as learned ability.

5.3.2. Cluster Analysis

Cluster analysis on the identity processes was conducted using a two-step procedure (Gore, 2000). First, a hierarchical cluster analysis using Ward's method with squared Euclidean distances was carried out. Second, we used the obtained initial cluster centers as non-random starting points in an iterative *k*-means clustering procedure. In line with prior studies (Crocetti et al., 2008b; Crocetti et al., 2011; Crocetti et al., 2012a; Klimstra et al., 2011), several cluster solutions were evaluated in terms of substantive interpretability, parsimony, and explanatory power (i.e., the cluster solution had to explain approximately 50% of the variance in each of the processes).

A total of five clusters were retained. This cluster solution explained between 53% and 67% of the variance in the identity processes. Figure 5.1 presents the final five-cluster solution; the Y-axis represents z-scores. Similarely to Cohen's *d* (1988), we considered that 0.2 *SD* is a small effect, 0.5 *SD* is a moderate effect, and 0.8 *SD* is a large effect. The achievement cluster (*n* = 76; 25.9%) scored high on commitment and exploration in-depth, and low on reconsideration of commitment. The foreclosure cluster (*n* = 53; 18%) scored moderately high on commitment, very low on exploration in-depth, and low on reconsideration of commitment. The moratorium cluster (*n* = 41; 13.9%) scored very low on commitment, moderately low on exploration in-depth, and very high on reconsideration of commitment. The searching moratorium cluster (*n* =

67, 22.8%) scored moderately high to high on all three identity processes. The diffusion cluster (n = 57; 19.4%) scored very low on commitment, low on exploration in-depth, and moderately low on reconsideration of commitment. The five-cluster solution we obtained replicated the solution found in the previous studies (Crocetti et al., 2008b; Crocetti et al., 2011; Crocetti et al., 2012b; Klimstra et al., 2011).

In order to analyze the effects of cluster membership on teaching ability beliefs, a multivariate analysis of variance (MANOVA) was conducted, with cluster membership as independent variable and teaching ability beliefs as dependent variables. Based upon Wilk's Lambda (Wilks'λ = .88), a significant multivariate effect was found ($F(4, 289) = 4.57$, $p < .001$, $\eta^2 = .06$). Follow-up analyses using Tukey's Honestly Significant Difference test are presented in Table 5.2. We found significant differences ($p < .05$) only between the searching moratorium and foreclosure pre-service teachers. Searching moratorium pre-service teachers scored higher than foreclosure pre-service teachers on both teaching ability beliefs.

5.4. Discussion

The present study set out to analyze educational identity statuses in pre-service teachers from a person-centered approach and explored the effect of derived identity statutes (i.e., achievement, moratorium, searching moratorium, foreclosure, diffusion) on teaching ability beliefs (i.e., teaching as innate ability versus teaching as learned ability).

In terms of identity statuses, the results of the cluster analysis indicated that most of the pre-service teachers in our sample were characterized by identity achievement (25.9%), followed by searching moratorium (22.8%). Considering that these emerging adults were at the beginning of their preparation for becoming teachers, the two dominant statuses indicated that while some were actively committed to their educational choice (i.e., achievement status), others still actively searched, questioned, and possibly reconsidered their present choices (i.e., searching moratorium status). As diffusion (19.4%) and foreclosure (18%) were also well represented statuses, it seems that some of the pre-service teachers were rather "clueless" about their educational choices, expressing little commitment but also no reconsideration of commitment about them (i.e., foreclosure status). As for the foreclosed pre-service teachers, their strong

educational commitment was not supported by in-depth exploration of their present choice, making them vulnerable to negative effects of unexpected changes in their career paths.

In our sample, pre-service teachers in searching moratorium and achievement statuses scored higher on both types of teaching ability beliefs than those in moratorium, diffusion, and foreclosure statuses. However, only the differences between searching moratorium and foreclosure statuses were statistically significant. This means that, compared to those who made uninformed educational choices and did not explore them (i.e., foreclosure status), those who assumed firm educational choices and continued to reflect on them (i.e. searching moratorium) engaged in different educational experiences in order to verify their beliefs about teaching and to evaluate how adequate these choices are for them. As foreclosed pre-service teachers uncritically adhered to others' beliefs about their teaching ability, they avoided educational experiences that invalidate their beliefs (i.e., difficult teaching tasks in which they are likely to fail). These results highlight the fact that in this stage of preparation for a teaching career the exploration of the current educational choices is a very important process. Avoiding the early exploration and evaluation of their educational choices could later lead to difficulties in facing teaching challenges. Future research should focus on longitudinal associations between identity statuses and teaching ability beliefs in order to capture how they change as pre-service teachers acquire more teaching experience. The present study findings could serve as guidelines for the designing of effective teaching training programs addressed to pre-service teachers.

Table 5.1

Descriptive Statistics and Bivariate Correlations Between Identity Processes and Teaching Ability Beliefs (N = 294)

Variable	*M (SD)*	1	2	3	4	5
1.Commitment	4.40 (0.58)	-	.19**	-.17**	.13*	.10
2.Exploration in-depth	3.77 (0.62)		-	.24**	.21**	.25**
3.Reconsideration of commitment	2.38 (1.13)			-	.17**	.12*
4.Teaching as innate ability	3.14 (0.75)				-	-.10
5.Teaching as learned ability	3.69 (0.61)					-

Note. M = Mean; *SD* = Standard Deviation; * $p < .05$, ** $p < .01$

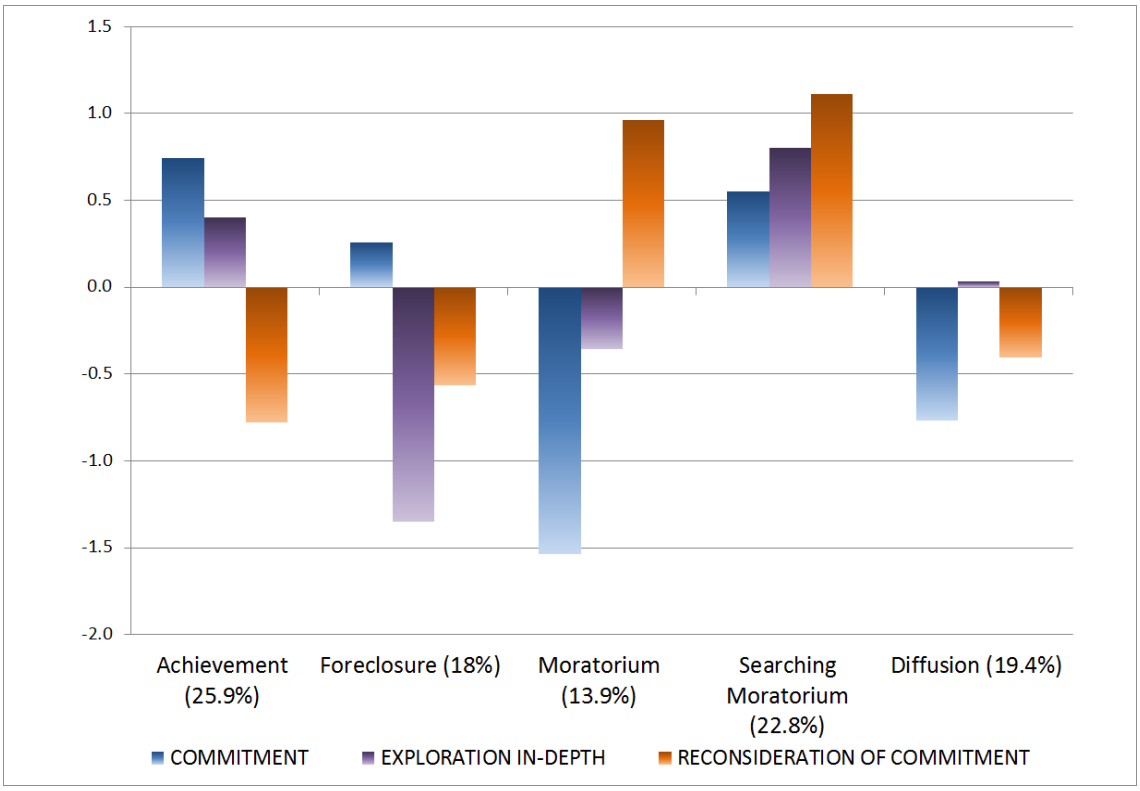

Figure 5.1 Final Cluster-Solution for the Educational Identity Processes

Table 5.2

Univariate ANOVA's and Post-hoc Cluster Comparisons for the Five Identity Statuses (N = 294)

Variables	Educational identity statuses					*F*-value	η^2
	Achievement	Foreclosure	Moratorium	Searching moratorium	Diffusion		
1.Teaching as innate ability	3.19(0.80)	2.89(0.79)[a]	3.03(0.71)	3.36(0.65)[b]	3.11(.75)	3.33*	.04
2.Teaching as learned ability	3.69(0.68)	3.47(0.63)[a]	3.65(0.57)	3.94(0.51)[b]	3.65(0.56)	4.67***	.06

Notes. The cluster means are significantly different ($p < .05$) if they have different superscripts. Standard deviations are in parentheses. $^{*}p < .05$, $^{**}p < .01$, $^{***}p \leq .001$

CHAPTER 6.

GENERAL DISCUSSION

6.1. Summary of the Main Findings

The review of the literature in the field of identity development (Chapter 1) revealed several limitations of previous studies and open questions that we addressed in the present dissertation. To date, research on educational identity has been very scarce, as previous studies focused mainly on global identity. Thus, little is known about what drives identity in the school context and how educational identity shapes students' behavior. In order to address these limitations, we conducted two longitudinal studies (Study 1 and Study 2) and one cross-sectional study (Study 3).

The aim of the present dissertation was to capture identity dynamics in the educational domain, one of the most relevant life domains in adolescence and emerging adulthood. Using the three factor model of identity developed by Crocetti and colleagues (Crocetti et al. 2008), we were interested in tapping into individual (i.e., personality traits, motivation) and contextual factors (i.e., academic achievement) that impact identity development in the academic context. For this purpose, we employed both a variable-centered approach (Study 1 and Study 2) and a person-centered approach (Study 3) to the study of identity development. The variable-centered approach allowed us to analyze how each identity process (i.e., commitment, in-depth exploration, and reconsideration of commitment) develops and relates to academic achievement and personality traits in a large sample of adolescents throughout one academic year. The person-centered approach allowed us to examine the manner in which the three identity processes co-occur within individuals and how the identity statuses derived from the three identity processes relate to academic motivation in a sample of emerging adults.

Study 1 had two main goals. The first goal was to investigate the patterns of stability and change in educational identity development and academic achievement in adolescents during one academic year, considering age-group, gender, and school-type as possible moderators. The second goal was to examine the reciprocal associations between identity processes (i.e., commitment, in-depth exploration, and reconsideration of commitment) and academic achievement (i.e., GPA).

Considering the sociometer theory (Leary, 2005) as general framework for our investigation, we hypothesized that academic achievement (i.e., GPA) is a positive predictor of

educational commitment (identity synthesis) and a negative predictor of reconsideration of educational commitment (identity confusion) and not the other way around.

The multivariate Latent Growth Curve (LGC) analyses indicated high initial levels of commitment, moderately high initial levels of in-depth exploration, and low initial levels of reconsideration of commitment. Educational commitment decreased significantly over time, while in-depth exploration remained relatively stable and reconsideration of commitment increased significantly. Academic achievement was characterized by moderately high initial levels of GPA which decreased over time. Reconsideration of commitment appeared to be the most dynamic identity process during the span of one academic year.

When testing whether these developmental patterns were moderated by age (early-to-middle versus middle-to-late adolescents), gender, and school-type (theoretical versus vocational schools), findings pointed out that GPA decreased over time in both early-to-middle and middle-to-late adolescents, but the decrease was sharper in early-to-middle adolescents than in the other age-group. With respect to gender differences, girls were more committed and tended to explore their present educational choice more, while boys experienced greater reconsideration of their current educational commitments. However, in-depth exploration increased in boys and slightly decreased in girls over time. Reconsideration of commitment increased in both boys and girls over time, with a sharper increase in boys than in girls. Academically, girls performed better than boys, although GPA decreased for both boys and girls as time passed. However, GPA had a sharper decrease in boys compared to girls. Regarding the school-type, results pointed out that students from vocational schools reconsidered their educational commitment more and had lower GPA than those from theoretical schools. Furthermore, educational commitment and GPA decreased more sharply in students from vocational schools than in students from theoretical schools.

Findings of cross-lagged path analyses revealed a unidirectional effect between educational identity and academic achievement, with academic achievement predicting educational identity processes. As hypothesized, GPA positively predicted educational commitment and negatively predicted reconsideration of educational commitments over the three waves. The multi-group tests used to examine the potential moderating effects of age-group, gender, and type of school revealed that this unidirectional pattern of effects applied equally to:

(a) early-to-middle and middle-to-late adolescents, (b) boys and girls, and (c) adolescents attending theoretical and vocational schools. With regard to gender, only one significantly different path from educational identity to academic achievement was found. Specifically, educational commitment at Time 2 was found to be a positive and significant predictor of GPA at Time 3 for girls, but not for boys.

Findings revealed that in-depth exploration at Time 2 mediates the relation between educational commitment and reconsideration of educational commitment at Time 1 and educational commitment and reconsideration of educational commitment at Time 3.

Results of Study 1 pointed out that academic achievement, operationalized in terms of GPA, predicts the manner in which adolescents deal with their identity issues in the academic context over one academic year.

Study 2 also had two main goals. First, we analyzed patterns of stability and change in personality traits (i.e., Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness) in a large sample of adolescents during the span of one academic year. Second, we examined the reciprocal associations between educational identity processes (i.e., commitment, in-depth exploration, and reconsideration of commitment) and personality traits, considering age-group (early-to-middle versus middle-to-late adolescents), gender (boys versus girls), and school-type (theoretical versus vocational) as possible moderators. In line with previous studies, we expected personality traits to predict educational identity and not the other way around.

The Latent Growth Curve (LGC) analyses indicated high and moderately high initial levels of Agreeableness, Conscientiousness, Extraversion, and Openness and low initial levels of Neuroticism. Agreeableness and Conscientiousness decreased significantly, Extraversion and Openness remained relatively stable, and Neuroticism increased significantly throughout the academic year. Age-group, gender, and school-type moderated these developmental patterns. Thus, middle-to-late adolescents were more conscientious compared to early-to-middle adolescents at the beginning of the academic year, although Conscientiousness decreased for both age-groups with no significant differences between them. At the beginning of the academic year, girls were more extraverted, agreeable, and open to experience and less neurotic than boys. Throughout the academic year, girls became even more extraverted as they were at the beginning of the academic year. Instead boys became less extraverted and more neurotic as they were at the

beginning of the academic year. Compared to girls, boys reported steeper decreases in Agreeableness and steeper increases in Neuroticism. Moreover, adolescents attending theoretical schools were more extraverted, agreeable, and open to experience compared to those attending vocational schools. By the end of the academic year, Agreeableness decreased more sharply for adolescents attending theoretical schools than for those attending vocational schools.

Of the Big Five personality traits, Openness was found to be the most dynamic personality trait and therefore the most amenable to change.

The cross-lagged analyses revealed a unidirectional pattern of effects from personality traits to educational identity, with Agreeableness positively predicting educational commitment and negatively predicting reconsideration of educational commitment. These cross-lagged paths were moderated by gender and school-type. Specifically, Agreeableness was a negative predictor of reconsideration of educational commitment only for girls. Furthermore, for adolescents attending theoretical schools, Conscientiousness was also a positive predictor for educational commitment.

Findings of Study 2 pointed out that personality traits predict the manner in which adolescents face educational identity development tasks.

Study 3 aimed at analyzing educational identity statuses in a sample of pre-service teachers and exploring the effects of identity statutes (i.e., achievement, moratorium, searching moratorium, foreclosure, diffusion) on academic motivation, conceptualized in terms of teaching ability beliefs (i.e., teaching as innate ability versus teaching as learned ability). In order to approach this aim, we used a cross-sectional design.

The results of the cluster analysis indicated that most of the pre-service teachers in our sample were characterized by identity achievement (25.9%), followed by searching moratorium (22.8%), diffusion (19.4%), foreclosure (18%), and moratorium (13.9%). The achievement cluster was characterized by high levels of educational commitment and in-depth exploration of current commitment, and low levels of reconsideration of educational commitment. The searching moratorium cluster was characterized by relatively high levels of all identity processes, while the diffusion cluster was characterized by relatively low levels of all identity processes. The foreclosure cluster was characterized by moderately high levels of educational commitment and low levels of in-depth exploration and reconsideration of educational commitment. The

moratorium cluster was characterized by low levels of educational commitment and in-depth exploration, and high levels of reconsideration of educational commitment.

Results of study 3 showed that pre-service teachers in our sample hold simultaneously both types of teaching ability beliefs (i.e., teaching as innate ability and teaching as learnes ability beliefs).

The multivariate analysis of variance (MANOVA) revealed that pre-service teachers in searching moratorium and achievement statuses scored higher on both types of teaching ability beliefs than those in moratorium, diffusion, and foreclosure statuses. However, only the differences between searching moratorium and foreclosure statuses were statistically significant. Thus, on the one hand, it is more likely for pre-service teachers in searching moratorium to challenge their teaching ability beliefs by engaging in various teaching related experiences. On the other hand, it is more likely for pre-service teachers in foreclosure to try to conserve their beliefs about teaching ability by avoiding teaching related experiences which might invalidate their beliefs.

Study 3 pointed out that pre-service teachers' motivation varies according their educational identity status.

6.2. Limitations of the Present Studies

The studies conducted and described in the present dissertation have several general and specific limitations. First, longitudinal studies of the present dissertation (Study 1 and Study 2) analyzed data collected at three different time points during one academic year. The three-wave design depicts linear changes of the variables under investigation. However, some of the variables (e.g., in-depth exploration, Extraversion, Openness), might have a non-linear pattern of change (e.g., quadratic or cubic pattern of change; cf. Klimstra et al., 2009, 2010). Thus, including more waves in future studies would allow the identification of possible curvilinear changes in both educational identity processes and personality traits.

Second, our longitudinal investigations were extended only throughout one academic year. Expanding these investigations throughout several academic years might help us to better disentangle maturation and external influences on the development of identity and personality in adolescents and thus to better explain why some of the identity processes and personality traits

are more dynamic than others in the academic context. In addition, future studies should consider several school-related factors (e.g., teacher-student relationship, teaching strategies being used, participation in school competitions) which might impact both educational identity and personality trait development throughout the academic year.

Third, in the investigation of longitudinal connections between educational identity, on the one hand, and contextual (i.e., academic achievement) and individual factors (i.e., personality traits), on the other hand, we focused on a coarse level of analysis. Thus, academic achievement was measured using a single indicator (i.e., GPA) and we assessed broad Big Five personality traits. Future studies may profit from employing a more granular approach of both academic achievement (e.g., multiple indicators of academic achievement, GPA in specific curricular areas) and personality traits (e.g., facets of each broad personality trait) by capturing different shades of the interplay between identity, academic achievement, and personality.

Fourth, Study 3 employed a cross-sectional design that captured the manner in which educational identity statuses are linked to different types of teaching ability beliefs in a specific time-point in the teaching career development, but does not inform us about how these links change over time as pre-service teachers acquire more teaching experience. Moreover, based on the theoretical framework that guided our investigation, we inferred that specific teaching ability beliefs would lead to specific behaviors when pre-service teachers deal with teaching-related tasks, but we did not specifically measure those behaviors. Thus, future studies may profit from employing longitudinal designs and also from using objective indicators of pre-service teachers' engagement in teaching-related tasks (e.g., skipping practical activities, volunteering in schools, reflecting on personal teaching experiences).

Finally, considering that Romania is a post-communist country, with its historical and socio-economic peculiarities, future studies need to examine whether the findings generalize to other nationalities and cultures.

6.3. Contributions of the Present Dissertation

In spite of these limitations, the present dissertation makes significant theoretical and methodological contributions to research on identity development. In addition, it also has

valuable practical implications. The most important contributions and practical implications of the present dissertation are listed below.

Theoretical contribution

From a theoretical perspective, the present research brings supportive empirical evidence for the mechanisms of identity formation and maintenance cycles in adolescence. Identity formation cycle is characterized by in-depth exploration of current commitments followed by adolescents' willingness and effort to change them when they are considered unsatisfactory (i.e., commitment → in-depth exploration → reconsideration of commitment), while identity maintenance cycle is characterized by firm commitments which become even firmer as they are explored in-depth by adolescents (i.e., commitment → in-depth exploration → commitment). The two identity cycles were described and explained theoretically in previous studies (see Meeus, 2011 for a review), but had little empirical support. Thus, the results of Study 1 of the present dissertation underscored that in-depth exploration at Time 2 mediates the relation between: (a) commitment and reconsideration of commitment at Time 1 and commitment and reconsideration of commitment at Time 3, covering these limitations.

Furthermore, the present research brings evidence with respect to important precursors of identity development in the academic context (i.e., academic achievement and personality traits). Specifically, Study 1 showed that academic achievement (i.e., GPA) drives educational identity development and not the other way around. Thus, the manner in which adolescents perform in academic tasks triggers the reevaluation of their educational commitments, strengthening or weakening them. Namely, when adolescents experience academic success (i.e., high levels of GPA), they gain more confidence in their education. Instead, when adolescents experience academic failure (i.e., low levels of GPA), they lose confidence in their education. To our knowledge, this is the first longitudinal study that investigates the relations between all three identity processes (i.e., commitment, in-depth exploration, and reconsideration of commitment) and academic achievement in adolescents.

Study 2 showed that personality traits (i.e., Agreeableness, Conscientiousness) also drive educational identity development and not the other way around. Thus, of the Big Five personality traits, Agreeableness appeared to be the most important precursor of educational identity in

adolescents in the Romanian academic context. Namely, Agreeableness positively predicted educational commitment in adolescents in our sample. The more agreeable adolescents were (e.g., compliant, polite, assertive), the more committed to their educational options they were. This pattern of effects applied to both early-to-middle and middle-to-late adolescents. When analyzing results for possible gender moderation, we found that Agreeableness was also a significant negative predictor of reconsideration of educational commitment in girls, but not in boys. Explicitly, as adolescent girls became less agreeable, they were more likely to reconsider their educational options, suggesting that for girls the quality of relationships with others is taken into account when they decide to maintain or to change current educational options.The pattern of effects from personality traits to educational identity was also moderated by the type of school adolescents attended. Thus, in adolescents attending theoretical schools, educational commitment was positively predicted not only by Agreeableness, but also by Conscientiousness. The more organized and hardworking these adolescents were, the more satisfied with their educational commitment they were. This study is one of the few studies on its kind to analyze personality and identity connections in adolescence, and the only one up to date which included reconsideration of commitment into the analysis.

Findings of the present research also made a significant contribution to our knowledge of the relationships between educational identity and motivation. Study 3 employed a person-centered approach of educational identity and focused on a sample of university students preparing for a teaching career (i.e., pre-service teachers). First, we established the educational identity status of each participant in the study (i.e., achievement, foreclosure, moratorium, searching moratorium, and diffusion). Second, we analyzed if there were any differences in terms of motivation between participants with different educational identity statuses. Motivation was conceptualized in terms of teaching ability beliefs (i.e., teaching as innate ability versus teaching as learned ability), based on Dweck's theory of motivation (Dweck, 2002). Findings pointed out that, although the two types of teaching ability beliefs coexist in each individual in the sample, participants with different educational identity statuses differ from one another in terms of motivation. Thus, there is a significant difference between pre-service teachers in searching moratorium, which displayed the highest rates of both types of teaching ability beliefs compared to students in all the other educational identity statuses, and those in foreclosure,

which displayed the lowest rates of both types of teaching ability beliefs compared to students in all the other educational identity statuses. Pre-service teachers in searching moratorium chose this career path based on their own evaluations and they continued exploring this choice, while those in foreclosure based their decision on others' evaluations and adhered uncritically to this choice. On the one hand, it is more likely for those in searching moratorium to test how well this option fits them by engaging in various teaching-related tasks and to make effort to learn how to teach. On the other hand, it is more likely for those in foreclosure to consider they do not need to test how well this option fits them as long as others consider it fits them. Moreover, it is more likely for those in foreclosure to avoid the teaching experiences that could invalidate these beliefs. Study 3 could serve as starting point for future longitudinal and experimental studies on identity development and motivation in the pursuit of a career path.

Methodological contribution

From a methodological perspective, the present research brings several additions to the literature on adolescent identity development. First, unlike most of the previous studies, we used a domain-specific approach to adolescent identity development (i.e., education). This type of approach has greater explanatory power than a global approach (i.e., personal identity) because identity develops differently in specific life domains (Goossens, 2001; Meeus et al., 1999).

Second, in Study 1 and Study 2 we used a longitudinal short-term design (i.e., with 3 to 4 months between measurement points) for tapping into the patterns of stability and change of educational identity and into its relationships with academic achievement and personality traits. Although previous studies that used multi-waves longitudinal designs with 6 months to 1 year intervals between waves discussed the necessity to adopt short-term designs in the study of identity development, to date few studies employed such a design. In addition, we used the academic year as time-frame for our investigations, as academic year represents a normative time-frame for adolescent development.

Third, we conducted our longitudinal investigations regarding educational identity development on a large and diverse sample of adolescents (i.e., adolescent girls and adolescent boys, adolescents attending theoretical and vocational schools, early-to-middle and middle-to-

late adolescents), covering the entire period of adolescence (i.e., adolescents were aged between 13 to 19 years).

Finally, the present research offered further testing of instruments appraising identity (i.e., the Utrecht Management of Identity Commitments Scale – UMICS, Crocetti et al., 2008a), personality traits (i.e., the Big Five Inventory – BFI, John &Srivastava, 1999), and teaching ability beliefs (i.e., the Teaching Ability Beliefs Scale – TABS, Fives &Buehl, 2008). For all the Romanian versions of these instruments we performed Confirmatory Factor Analysis (CFA) and Exploratory Structural Equation Modeling (ESEM) in order to validate the factor structure of the constructs we measured.

Practical implications

From a practical perspective, the findings of Study 1 have important implications for adolescent identity intervention programs. First, they inform that adolescent boys and adolescent students from vocational schools are the most vulnerable to difficulties in educational identity formation (i.e., identity confusion) and therefore they should be the primary targets for identity interventions. Second, they inform about one of the mechanisms by which these adolescents could be assisted in transitioning from identity confusion to identity synthesis in the educational domain. That is, helping them to enhance their academic achievement level and to make informed decisions with regard to their educational path in order to prevent academic achievement problems. . When their academic achievement problems are caused by psychosocial difficulties, adolescents could get specialized support (e.g., school counseling and guidance, psychological counseling, social assistance).

Moreover, the findings of Study 2 have important implications by showing that being agreeable (i.e., having confidence in others, being polite and obedient) and to some extent being conscientious (i.e., adolescent students from theoretical schools) is related to firm educational commitments in adolescent students in Romanian educational system. . Thus, when designing identity intervention programs for adolescents, professionals should take these aspects into account. In this regard, interventions could target, for example, fostering adolescent students' trust in significant others (e.g., teachers, peers), improving their relationships with significant others, training them how to set their educational goals and how to plan their pursuit.

Findings of Study 3 could serve as guidelines for the design of both effective career counseling and teaching training programs addressed to pre-service teachers. These findings highlighted that in their preparation for the future teaching career, pre-service teachers may benefit if they explore their current educational choices (i.e., teaching training program). Avoiding the early exploration and evaluation of their educational choices could later lead to difficulties in facing teaching challenges.

The results of the present dissertation are relevant for several domains in the field of psychology. By employing a longitudinal design and focusing on adolescent and emerging adult development, the present results are relevant for developmental psychology. That is, the present research indicates the way identity develops in adolescence in the academic context, informs about its patterns of stability andchange that occur throughout one academic year, as well as about its relationships with academic achievement and personality traits. Next, by focusing on identity processes and personality traits, the present results are relevant for personality psychology. That is, the present research indicates how personality traits impact adolescent identity development in the academic context. In addition, by focusing on adolescents and emerging adults' educational identity (i.e., educational identity processes and educational identity statuses) and analyzing the associations between educational identity and motivation for a specific training program for the future career, the present results are relevant for educational and vocational psychology. That is, the present research indicates that educational identity plays an important role in how university students approach career-related academic tasks.

In conclusion, the present dissertation makes a valuable contribution with respect to identity development in the academic context. First, the findings of the present research bring further evidence on the dynamics by which educational identity is formed and revised over time (i.e., identity formation and identity maintenance cycles). Second, the findings of the present research help us to respond to one of the key questions of identity theory: "Where does identity spring from?" (i.e., academic achievement and personality traits are important precursors of educational identity). Finally, the findings of the present research pointed out that students with different educational identity statuses are differently motivated for career-related academic tasks.

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