



# Associations between the identity domains of future plans and education, and the role of a major curricular internship on identity formation processes

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## ABSTRACT

**Introduction:** Experiences during the last years of college could stimulate identity formation processes within and across the domains of future plans and education. In the present study, the first research question addressed how identity formation dimensions for education and future plans were associated with each other during the last years in education. The second research question addressed whether identity processes (i.e., identity levels, changes herein, and the associations among identity variables between and within domains) would be different for students who were doing an internship versus those who did not.

**Method:** We used a longitudinal design with three measurement occasions. Participants were Dutch psychology college students (N = 287; 83.3% women; M age = 21.8 years, SD = 2.0). We used two different self-report instruments to measure identity processes (i.e., commitment and exploration) in the domains of future plans and education.

**Results:** We found that commitments in the domains of future plans and education were significantly associated. Enrollment in a practical internship was largely unrelated to identity processes, as it did not explain individual differences in identity levels, changes herein and associations between and within domains.

**Conclusions:** Our results suggest integration between educational identity and future plans for commitment processes. At a group level, a practical internship in itself did not explain individual differences in identity processes.

## 1. Introduction

The transition into adulthood (between ages 18 and 25 years) is characterized by exploration of different worldviews and social roles (Arnett, 2000). A core developmental task during this is constructing one's identity (Erikson, 1968). Identity formation is defined as the process of constructing a conscious sense of the self through social interactions (Erikson, 1950). Completing one's education often comes with particular age-graded experiences that could be particularly important for identity formation regarding education and future plans. These experiences include internships, which are designed for students to develop job-related skills and reflect on their learning process. These experiences could affect identity processes (Adams & Fitch, 1983; Erikson, 1968; Kroger, 2007) while

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triggering mutual influences between the identity domains future plans and education. The present study investigated students in their last years in education, part of whom were doing an internship. We examined: 1) how identity dimensions for education and future plans were associated with each other, and 2) whether identity processes (i.e., identity levels and changes herein, and the associations within and the integration between identity domains) were affected by doing an internship.

### 1.1. Identity formation

Much of the contemporary research on identity formation has been inspired by Erikson's (1950) lifespan theory of psychosocial development. Based on Erikson's theorizing, Marcia (1966) conceptualized identity formation as a process guided by processes of exploration (i.e., examining different alternatives in a life domain) and commitment (i.e., identification with and investment in choices within a life domain). Two subsequent theories (i.e., Luyckx et al. (2008) and Crocetti (2008a)) have further refined these two dimensions. Although they specified two different but related dual-cycle models, the basic distinction between exploration and commitment is upheld in both contemporary models. However, the two models differ in the domain in which identity is assessed. The domain of future plans is specified in the model by Luyckx and colleagues, and focuses on how identities are formed with regard to one's future orientation. The domain of education is specified in the model proposed by Crocetti and colleagues, and focuses on one's current identity in the context of education. So far, these domains have been investigated separately, resulting in a missed opportunity to understand how identity development in a specific context (i.e., education) is integrated with development of identity in a more general context (i.e., future orientation). This is unfortunate because processes within these domains are likely intertwined. For example, being highly committed to education might increase the chances that someone will graduate. Knowing that one will graduate soon might stimulate exploration of, and commitment to, future plans. Commitment to these future plans can in return stimulate commitment to education. However, the existing literature on such linkages, which could be informative on identity integration, is limited in quantity and scope (Syed & McLean, 2016).

### 1.2. Identity integration

Identity integration refers to the subjective sense of sameness and continuity, which is a fundamental theoretical concept of Erikson's theory of lifespan development (Erikson, 1968). The form of identity integration that received the most research interest is contextual integration. This form of integration refers to the integration of multiple contextual identity domains resulting in a sense of consistency across domains (van Hoof & Raaijmakers, 2002). Previous studies that included multiple contextual identity domains found a low degree of convergence across domains (Campbell, Zimmer-Gembeck, & Duffy, 2019; Crocetti, Rubini, & Meeus, 2008b; Fadjukoff, Pulkkinen, & Kokko, 2005; Goossens, 2001; Kroger, 2002, 2007; Luyckx, Goossens, & Soenens, 2006a). This suggests that identity development in one contextual domain is not necessarily related to identity development in another domain. Only Crocetti, Scrignaro, Sica, and Magrin (2012) investigated how identity configurations in contextual domains (i.e., education and friendships) correlated with the domain of future orientation. They found that adolescents and young adults with a more mature identity in both the educational domain and the friendship domain had a more mature identity in the future orientation domain of identity compared to individuals who only had a mature identity in the friendship domain. This suggests that educational identity processes may be particularly important for shaping one's future orientation. However, Crocetti et al. (2012) did not employ a longitudinal design and therefore it is unclear how changes in current identities were integrated with changes in one's view of the future self.

A form of identity integration that resembles most closely the theoretical writings of Erikson is ego integration. This describes how individuals make sense of themselves within different contexts over time (Syed & McLean, 2016). This type of integration received less empirical attention than contextual integration. The empirical study of Albarello, Crocetti, and Rubini (2018) resembled ego integration, as they studied the longitudinal interplay between different personal and social identity domains. They showed that the different personal identities became more associated over time and that social identity predicted personal identity more strongly than the other way around. Similarly, Kunnen (2010) demonstrated that commitments of different identity domains became more congruent over time. Moreover, previous research showed that identity structures and formation are moderated by contextual experiences (Kroger, 2007; Syed, 2010). However, longitudinal studies examining contextual influences on identity development during early adulthood are largely lacking (Bosma & Kunnen, 2008).

### 1.3. The role of an internship

An internship provides experiences that could trigger identity formation processes, as internships aim to stimulate students' career exploration. However, an internship is more than a contextual experience, as it also aims to provide a training experience that is designed for students to develop job-related skills and reflect on their learning process. Intervention studies provided indirect evidence for the suggested importance of such experiences. Specifically, interventions that created a context in which participants were encouraged to engage in more exploration were associated with increased identity exploration levels, decreased identity distress, and a more mature identity status (Archer, 2008; Berman, Kennerley, & Kennerley, 2008; Eichas, Meca, Montgomery, & Kurtines, 2015; Meca et al., 2014; Umaña-Taylor, Kornienko, Douglass Bayless, & Updegraff, 2018). Luyckx et al. (2006a) showed that educational experiences might also matter. They showed that students who changed their major or repeated their freshman year demonstrated stronger associations between adaptive exploration processes (i.e., exploration in depth) and identification with those choices (i.e., identification with commitment) than a group of students who continued their studies. This suggests that identity processes may be activated by educational experiences. Overall, the aforementioned research findings suggest that real-life experiences may affect

identity formation processes and their interrelations. Therefore, an internship might also affect identity processes within and between domains.

#### 1.4. The present study

In the present study, we examined 1) how identity dimensions for education and future plans were associated with each other, and 2) whether identity processes (i.e., identity levels, changes herein, and the associations among identity variables between and within domains) were different for students who were doing an internship versus those who did not.

For the first research question, we examined how identity formation in the domains of education and future plans were associated over time. Based on previous research (Albarelo et al., 2018; Kunnen, 2010), we expected the associations between the dimensions of future plan and educational identity to become stronger over time. Based on Crocetti et al. (2012) cross-sectional study, we tentatively expected that the dimensions of educational identity would be longitudinally associated with identity dimensions pertaining to future plans. However, longitudinal research on the directionality of these associations is lacking, which is why we examined this in an exploratory manner.

For the second research question, we examined whether mean-level change and the association within identity domains (i.e., education and future plans), as well as the associations between these domains, would be different for students who were doing an internship versus those who did not. Based on previous research (Berman et al., 2008; Umaña-Taylor et al., 2018), we expected internship students to be more engaged in adaptive exploration processes (i.e., exploration in depth and breadth) and show decreased levels of maladaptive exploration processes (i.e., ruminative exploration) and higher levels of commitment (i.e., commitment making and identification with commitment). Within each domain, in line with Luyckx et al. (2006a) we expected that correlated change between adaptive exploration processes (i.e., exploration in depth and breadth) and commitment (i.e., commitment and identification with commitment) would be stronger for the internship group compared to the non-internship group. Finally, we tentatively expected that the associations between future plans and educational identity would be stronger in the internship group compared to the non-internship group. Experiences in the internship might confirm or disregard the chosen career path and this may predict becoming more or less committed to one's education, respectively. However, how an internship might affect the associations between future plans and education has not been studied previously. Therefore, we examined this part of the research question in an exploratory manner. Our hypotheses were not preregistered.

## 2. Method

**Participants.** Data for the current study were collected as part of the longitudinal research project Change Ahead. The internship group ( $n = 140$ ; 80% participation rate) were graduate students from the one-year master's programs in Clinical Forensic Psychology and Clinical Developmental Psychology. The non-internship group ( $n = 147$ ; 34% participation rate) were undergraduate psychology students in the last year of their psychology bachelor program. Both groups studied at a scientific university in the Netherlands. Undergraduate students at this university typically proceed to a one-year master's program after completion of a bachelor's degree. Psychology master's programs at the university almost always include an internship, making recruitment of a perfect comparison sample (psychology master students without an internship) impossible. Therefore, we compared the internship group to students that were one year behind in their curriculum (i.e., bachelor psychology students). This is similar to a design employed by Bleidorn (2012) to assess the effects of high school exams on personality change.

Internship students were enrolled in an internship, which is an obligatory part of their master curriculum. The internship prepares students to function at the level of a junior professional in clinical psychology. Internship students were 22.7 years old on average ( $SD = 1.9$ ) and 85.7% of them were women. Within this subsample, 53.6% followed the master program Clinical Developmental Psychology. Non-internship students were 20.9 years on average ( $SD = 1.8$ ) and 81.0% of them were women. Preliminary analyses (see supplementary material) suggested that there were no gender differences but age differences between the two groups. Age difference were expected because the non-internship students were one year behind in their curriculum. We accounted for age effects by including age as a covariate in the main analyses.

**Procedure.** Internship students were informed about the study during an internship information session before they started their program. Non-internship students were informed about the study during a lecture of a compulsory course at the beginning of the academic year. The students attended a presentation and received an information letter explaining the research project and its goals. The institutional review board approved the research project. Participants were informed that they could refuse or discontinue participation at any time. Confidentiality of responses was guaranteed and it was emphasized that (non-)participation or dropout would not have any impact on their academic results. Participants signed the informed consent before participating in the study. Questionnaires were sent out online using personalized access codes to prevent multiple registrations by the same individual. Every questionnaire had to be completed within one month. As an incentive, participants could request a feedback profile of their personality development during the study.

Data were collected in the academic years 2014–2018. Preliminary analyses (see supplementary material) suggested no significant cohort differences. There were three measurement occasions. The first measurement was conducted at the start of the internship (94.3% filled out this assessment), the second measurement coincided with the mid-term evaluation (85.0% filled out this assessment), and the third measurement with the final evaluation (88.6% filled out this assessment). Not all students started their internship at the same time and thus not all mid-term and end evaluations took place at the same time for all students. The average time between measurement occasions was 19.2 weeks ( $SD = 3.7$ ) between Time 1 and Time 2 (T1-T2) and 18.9 weeks ( $SD = 4.2$ ) between Time 2 and

Time 3 (T2-T3). Students were present at their internship for 24 h per week. The three measurement occasions for non-internship students were timed during the start of the academic year (95.9% filled out this assessment), the beginning of the second semester (95.9% out this assessment), and the end of the academic year (89.8% filled out this assessment). The average time between measurement occasions was 16.9 weeks (SD = 2.1) between T1-T2 and 18.8 weeks (SD = 1.5) between T2-T3.

Data on educational identity formation and identity formation regarding future plans were available for all time points. Only participants who had complete data on these variables for at least 2 out of 3 time points were included in the analyses. If participants missed one measurement occasion, they could still participate in any of the follow-up measurement occasions. For the included participants, 9.1% of the data were missing. Little' (1988) Missing Completely at Random (MCAR) test suggested that data were missing completely at random ( $p = 1.000$ ).

## 2.1. Measures

**Educational Identity.** Educational identity was measured with the Utrecht Management of Identity Commitments Scale (UMICS), a 13-item self-report (Crogetti et al., 2008b). This instrument assesses three identity dimensions: Commitment (five items; e.g., 'My education gives me certainty in life'), In-depth Exploration (five items; e.g., 'I think a lot about my education'), and Reconsideration (three items; e.g., 'I often think it would be better to try and find different education'). Each item was answered on a 5-point Likert scale, ranging from 1 (completely untrue) to 5 (completely true). In the current study, the internal consistency was good for the Commitment and Reconsideration scales (i.e., Alpha coefficients .839-.918), and acceptable for In-depth Exploration (i.e., Alpha coefficients .671-.714).

**Future Plans.** The identity domain future plans was measured with the Dimensions of Identity Development Scale (DIDS) self-report instrument (Luyckx et al., 2008). Commitment is measured with two dimensions: Commitment Making (e.g., 'I have decided on the direction I want to follow in my life') and Identification with Commitment (e.g., 'I sense that the direction I want to take in life will really suit me'). Exploration is measured with three dimensions: Exploration in Breadth (e.g., 'I regularly think over a number of different plans for the future'), Ruminative Exploration (e.g., 'It is hard for me to stop thinking about the direction I want to follow in my life'), and Exploration in Depth (e.g., 'I regularly talk with other people about the plans for the future I have made for myself'). All dimensions were measured with five items each. Response options ranged from 1 (strongly disagree) to 5 (strongly agree). In the current study, internal consistency was good for Commitment Making, Identification with Commitment, and Ruminative Exploration (Alpha coefficients .845-.938), and acceptable for Exploration in Breadth and Exploration in Depth (Alpha coefficients .749-.771).

## 2.2. Strategy of analysis

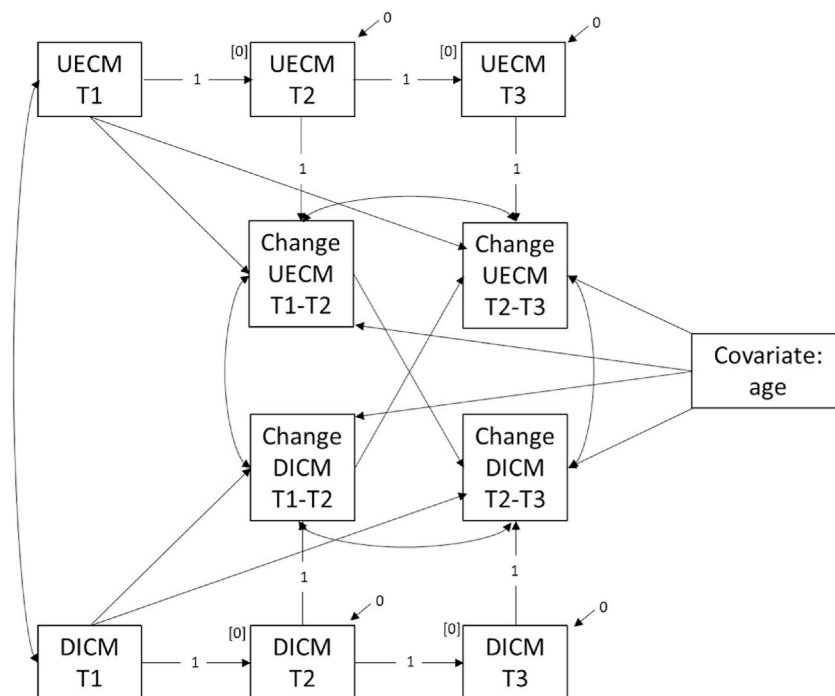
For the first research question, we examined how identity formation processes from the domains education and future plans were associated with each other. Analyses of the growth trajectories for the identity dimensions suggested that these were not linear (see supplementary material). Therefore, we ran piecewise (un)constrained multigroup latent difference score models (MLDSMs) (McArdle, 2001) in Mplus 8 (Muthén & Muthén, 2017)<sup>1</sup> to capture non-linear growth trajectories with three measurement occasions. Every dimension in the model had two slopes: one for changes between Time 1 and Time 2, and another for changes between Time 2 and Time 3. We extended this basic model by including two identity dimensions (i.e., one from the future plans domain and one from the education domain). Therefore, every model had two slopes for changes between T1-T2 and two slopes for changes between T2-T3. To assess correlated change, we correlated the slopes for changes between T1-T2 across dimensions. The same was done for the slopes between T2-T3. The slopes between T1-T2 were also used to predict the slopes between T2-T3 to assess over-time effects between the two identity domains. Fig. 1 shows an example of a bivariate LDSMs for DIDS future plans Commitment Making and UMICS education Commitment. We used a linear transformation (i.e., effect coding (Little, Slegers, & Card, 2006)) for these models to estimate the change parameters in the metric in which they were measured.

Model fit was evaluated by assessing RMSEAs, CFIs, and TLIs. RMSEAs < .08 and CFIs and TLIs > .90, which indicated acceptable model fit (Hu & Bentler, 1999). Measurement invariance tests suggested that most measures had a similar structure over time and between samples. Deviations were taken into account in all follow-up analyses by not constraining the intercepts for these items to be identical over time or between samples (see supplementary material).

For all tests in this study, we applied a Bonferroni correction. As we interpreted up to 60 parameters for each research question, we used a  $p$ -value of < .001 (i.e., the  $p$ -value of .05 divided by 60 paths) for all tests. Robust maximum likelihood estimation was used because preliminary analyses suggested that the distribution of some scale scores was skewed or heavy tailed (i.e., kurtosis). Tables 1 and 2 show the means of and correlations between all identity dimensions.

For the second research question, we examined whether participating in an internship was associated with mean-level changes in identity dimensions, the associations between dimensions within each domain, and the associations between dimensions across domains (future plans and education). For this purpose, we first ran a multigroup LDSM in which the intercept, slope T1-T2, and slope T2-T3 were constrained to be equal between the two samples. These constrained models were compared to unconstrained models using scaled chi-square model comparisons (Satorra & Bentler, 2001). A significant result would indicate that the constrained model had a

<sup>1</sup> Confirmatory factor analyses suggested that the three-factor model for the UMICS was the best solution and that the five-factor model with Exploration in Breadth based on four items was the best solution for the DIDS. The use of a four instead of five-item future plans Exploration in Breadth latent factor did not change any substantive conclusions (see supplementary material).



**Fig. 1.** An example of a bivariate latent difference score model for DIDS future plans Commitment Making (DICM T1 – DICM T3) and UMICS education Commitment (UECM T1 – UECM T3). Change DICM T1-T2 is the slope for the change of future plans Commitment Making between Time 1 and Time 2. Change DICM T2-T3 is the slope for the change of future plans Commitment Making between Time 2 and Time 3. The value of DICM T1 is the intercept for future plans Commitment Making. Change UECM T1-T2 is the slope for the change of education Commitment between Time 1 and Time 2. Change DIIC T2-T3 is the slope for the change of education Commitment making between Time 2 and Time 3. The value of UECM T1 is the intercept for education Commitment. These models are corrected for age differences between the groups.

worse fit than the unconstrained model. This would thus suggest that the internship was associated with mean-level change. Similarly, we examined whether internship status moderated the associations within and across the domains. Data, materials and Mplus output files for all analyses in this study are provided on the Open Science Framework ([https://osf.io/7xbek/?view\\_only=5ca4f0352cf74e4992a4411ef4f40919](https://osf.io/7xbek/?view_only=5ca4f0352cf74e4992a4411ef4f40919)).

### 3. Results

As preliminary analyses, we investigated mean-level change and associations within domains for the overall group (i.e., internship students and non-internship students in a constrained multigroup LDSM). Table 3 shows these results and indicates that there were no significant mean-level changes in any of the identity dimensions (see supplementary material). However, 16 out of 32 of the slope variances of all identity dimensions were significant, suggesting individual differences in identity development. Additional preliminary analyses suggested associations between identity dimensions within domains (see supplementary material).

The first research question of this paper was to investigate how identity formation processes in the domain future plans were associated with those in the educational domain. Models in which longitudinal associations between identity dimensions in the educational domain and future plans domain were constrained to be equal across groups had a good fit to the data when Exploration in Depth dimensions from both of the domains were excluded (i.e., CFIs and TLIs 0.905–0.965, SRMRs 0.073–0.097, and RMSEAs 0.043–0.058). Fit indices for the constrained models that included Exploration in Depth from both domains were unsatisfactory (i.e., CFIs and TLIs 0.796–0.936, SRMRs 0.094–0.107, but RMSEAs 0.052–0.066). Fit indices per dimension for the unconstrained and (partly) constrained models are available in the supplementary material.

Change parameters of the constrained multivariate MLDSMs are presented in Table 4. There was only one significant result, suggesting positive correlated change from T2-T3 between educational Commitment and future plans Identification with Commitment. This indicates that stronger increases in Commitment to education were accompanied with stronger increases in Identification with Commitment regarding future plans.

For the second research question, we investigated whether internship status was related to levels of identity dimensions and changes herein. We also examined whether the associations within and across domains were associated with participation in a practical internship. Tables 5 and 6 indicate that there were no group differences in mean levels and within-domain associations between groups. Table 7 shows that there were group differences in the associations between future plans Ruminative Exploration and educational Reconsideration. Post-hoc analyses indicated significant group differences in both over-time effects and correlated change

**Table 1**  
Descriptive statistics of identity dimensions future plans and education (N = 287).

	T1	T2	T3
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Total sample			
DIDS			
Exploration in Breadth	3.692 (0.581) <sup>a</sup>	3.717 (0.560) <sup>a</sup>	3.706 (0.575) <sup>a</sup>
Exploration in Depth	3.540 (0.622) <sup>a</sup>	3.638 (0.587) <sup>a,b</sup>	3.715 (0.557) <sup>b</sup>
Ruminative Exploration	2.712 (0.863) <sup>a</sup>	2.847(0.913) <sup>a,a</sup>	2.643(0.883) <sup>a,b</sup>
Commitment Making	3.540 (0.828) <sup>a</sup>	3.559 (0.813) <sup>a</sup>	3.741 (0.739) <sup>b</sup>
Identification with Commitment	3.556 (0.656) <sup>a</sup>	3.480 (0.672) <sup>a,a</sup>	3.632 (0.697) <sup>a,b</sup>
UMICS			
Commitment	2.648 (0.668) <sup>a</sup>	2.747 (0.738) <sup>a</sup>	2.693 (0.751) <sup>a</sup>
In-depth Exploration	2.567 (0.554) <sup>a</sup>	2.609 (0.599) <sup>a</sup>	2.629 (0.598) <sup>a</sup>
Reconsideration	4.241 (0.876) <sup>a</sup>	4.108 (1.004) <sup>a</sup>	4.140 (0.943) <sup>a</sup>
Internship			
DIDS			
Exploration in Breadth	3.640 (0.543) <sup>a</sup>	3.735 (0.539) <sup>a</sup>	3.707 (0.566) <sup>a</sup>
Exploration in Depth	3.507 (0.668) <sup>a</sup>	3.614 (0.597) <sup>a,a</sup>	3.731 (0.514) <sup>b,a</sup>
Ruminative Exploration	2.495 (0.729) <sup>a</sup>	2.740 (0.923) <sup>b,a</sup>	2.586 (0.870) <sup>a</sup>
Commitment Making	3.646 (0.771) <sup>a</sup>	3.611 (0.781) <sup>a</sup>	3.770 (0.732) <sup>a</sup>
Identification with Commitment	3.654 (0.584) <sup>a</sup>	3.523 (0.651) <sup>a,b</sup>	3.679 (0.671) <sup>a</sup>
UMICS			
Commitment	2.597 (0.602) <sup>a</sup>	2.773 (0.730) <sup>b,a</sup>	2.699 (0.752) <sup>a,a</sup>
In-depth Exploration	2.576 (0.535) <sup>a</sup>	2.590 (0.578) <sup>a</sup>	2.615 (0.559) <sup>a</sup>
Reconsideration	4.399 (0.726) <sup>a</sup>	4.216 (0.900) <sup>a,a</sup>	4.181 (0.899) <sup>b,a</sup>
Non-internship			
DIDS			
Exploration in Breadth	3.743 (0.612) <sup>a</sup>	3.701 (0.582) <sup>a</sup>	3.706 (0.587) <sup>a</sup>
Exploration in Depth	3.572 (0.575) <sup>a</sup>	3.660 (0.578) <sup>a</sup>	3.699 (0.595) <sup>a</sup>
Ruminative Exploration	2.920 (0.929) <sup>a</sup>	2.950 (0.895) <sup>a</sup>	2.697 (0.895) <sup>b</sup>
Commitment Making	3.440 (0.870) <sup>a</sup>	3.510 (0.843) <sup>a</sup>	3.714 (0.748) <sup>b</sup>
Identification with Commitment	3.463 (0.709) <sup>a</sup>	3.434 (0.691) <sup>a</sup>	3.587 (0.720) <sup>a</sup>
UMICS			
Commitment	2.696 (0.724) <sup>a</sup>	2.723 (0.746) <sup>a</sup>	2.687 (0.753) <sup>a</sup>
In-depth Exploration	2.557 (0.574) <sup>a</sup>	2.627 (0.619) <sup>a</sup>	2.643 (0.635) <sup>a</sup>
Reconsideration	4.090 (0.977) <sup>a</sup>	4.004 (1.083) <sup>a</sup>	4.101 (0.985) <sup>a</sup>

Note. DIDS = Dimensions of Identity Development Scale; UMICS= Utrecht Management of Identity Commitments Scale; DIDS = Dimensions of Identity Development Scale; UMICS= Utrecht Management of Identity Commitments Scale; *M* = mean; *SD* = standard deviation; T1 = Time 1; T2 = Time 2; T3 = Time 3; Comparisons between means (T1-T2, T1-T3, T2-T3) are represented with letters. A different letter indicates that the comparison is significant with  $p < .001$ .

coefficients between T1-T2. However, [Table 8](#) shows that none of these associations differed significantly from zero within either of the groups.

#### 4. Discussion

We employed a longitudinal design to examine the integration between the identity domains education and future plans during the final years of university education. We also investigated whether identity processes were different for internship students compared to non-internship students. With respect to the integration, we found that changes in commitment in the domain of education were positively associated with changes in (identification with) commitment in the domain of future plans. Moreover, our results suggest that enrollment in an internship was not related to changes in levels of identity dimensions, associations within domains, and integration between the domains. We discuss the implications of our findings.

##### 4.1. Identity integration between the domains of future plans and education

Our first research question was to investigate how the identity domains of future plans and education were integrated across time. We found that changes in educational commitment were positively associated with changes in (identification with) commitment regarding future plans between the last two measurement occasions. This is in line with the findings of the cross-sectional study by [Crogetti et al. \(2012\)](#), who found that individuals with a more mature identity in the educational and friendship domains were more likely to have more mature identity in the future orientation domain. This finding is also similar to [Kunnen \(2010\)](#), who demonstrated that commitments between domains became more congruent over time. Our result fits with a model of development of commitments, which suggests constant transactions between existing commitments and one's developmental context ([Bosma & Kunnen, 2001](#)). A fit with the environment (i.e., indicated by educational commitment) confirms the existing identity and might strengthen overall commitments, like those in the future directions domain.

**Table 2**  
Correlations of identity dimensions future plans and education (N = 287).

	CmT1	CmT2	CmT3	EbT1	EbT2	EbT3	ReT1	ReT2	ReT3	IcT1	IcT2	IcT3	EdT1	EdT2	EdT3	CT1	CT2	CT3	IeT1	IeT2	IeT3	RT1	RT2
CmT2	.715*																						
CmT3	.572*	.694*																					
EbT1	.142	.058	.124																				
EbT2	.078	.062	.077	.554*																			
EbT3	.009	-.083	.015	.538*	.532*																		
ReT1	-.627*	-.526*	-.463*	.088	.084	.157*																	
ReT2	-.476*	-.604*	-.504*	.060	.219*	.212*	.688*																
ReT3	-.475*	-.552*	-.657*	.029	.104	.170*	.629*	.722*															
IcT1	.682*	.577*	.523*	.168*	.148	.064	-.625*	-.527*	-.529*														
IcT2	.599*	.727*	.587*	.143	.100	.049	-.553*	-.643*	-.568*	.725*													
IcT3	.489*	.582*	.704*	.127	.042	.056	-.499*	-.579*	-.711*	.626*	.719*												
EdT1	.266*	.275*	.235*	.510*	.429*	.262*	.042	-.016	-.032	.265*	.285*	.198*											
EdT2	.250*	.197*	.277*	.469*	.518*	.342*	-.036	.089	-.106	.244*	.192*	.233*	.553*										
EdT3	.197*	.200*	.348*	.508*	.458*	.450*	-.098	-.047	-.100	.227*	.231*	.271*	.459*	.587*									
CT1	.302*	.275*	.204*	.034	.055	.060	-.361*	-.335*	-.241*	.488*	.374*	.243*	.140	.001	.052								
CT2	.256*	.329*	.229*	.152*	.105	.046	-.250*	-.352*	-.267*	.411*	.511*	.350*	.236*	.063	.125	.610*							
CT3	.240*	.338*	.425*	.078	.072	.013	-.264*	-.405*	-.439*	.291*	.450*	.527*	.165*	.089	.156*	.464*	.522*						
IeT1	.010	.076	.157*	.432*	.394*	.282*	.120	.073	.014	.123	.142	.087	.365*	.286*	.478*	.149	.216*	.188					
IeT2	.074	.084	.183*	.311*	.307*	.283*	.016	.026	-.028	.128	.137	.133	.239*	.362*	.407*	.150	.210*	.154*	.512*				
IeT3	.008	.057	.195*	.280*	.283*	.343*	.061	.080	.015	.098	.085	.140	.181*	.321*	.499*	.138	.091	.179*	.578*	.687*			
RT1	-.362*	-.348*	-.353*	.143	.132*	.155*	.517*	.409*	.340*	-.340*	-.258*	-.271*	.099	.109	-.037	-.387*	-.292*	-.283*	-.053	-.004	-.103		
RT2	-.235*	-.343*	-.284*	.144	.240*	.157*	.367*	.422*	.315*	-.266*	-.275*	-.269*	.076	.130	.058	-.339*	-.350*	-.241*	.040	-.104	-.025	.644*	
RT3	-.237*	-.313*	-.379*	.099	.249*	.229*	.357*	.415*	.401*	-.206*	-.175*	-.308*	.075	.051	-.003	-.134	-.131	-.387*	.007	-.052	-.107	.559*	.552*

Note. Cm = DIDS Commitment Making; Eb = DIDS Exploration in Breadth; Re = DIDS Ruminative Exploration; Ed = DIDS Exploration in Depth; C = UMICS Commitment; Ie = UMICS In-depth Exploration; R = UMICS Reconsideration; T1 = Time 1; T2 = Time 2; T3 = Time3; \* = correlation is significant at the 0.01 level (2-tailed).

**Table 3**  
Growth parameters for multigroup constrained latent difference score models for mean-level change Analysis(N = 287).

Growth parameters														
	Intercept				Slope T1-T2				Slope T2-T3			Slope * Slope		
	M	p	$\sigma^2$	p	M	p	$\sigma^2$	p	M	p	$\sigma^2$	p	$\beta$	p
DIDS														
Internship														
Exploration in Breadth	3.018	<.001	0.092	.001	-0.433	.208	0.097	.001	0.681	.134	0.099	.004	-0.033	.208
Exploration in Depth	3.323	<.001	0.376	<.001	0.426	.482	0.212	<.001	0.091	.840	0.180	.001	-0.070	.177
Ruminative Exploration	2.487	<.001	0.464	<.001	0.700	.269	0.241	.001	0.357	.486	0.332	<.001	-0.056	.358
Commitment Making	3.112	<.001	0.569	<.001	-0.546	.362	0.340	<.001	-0.024	.970	0.232	<.001	-0.047	.243
Identification with Commitment	3.349	<.001	0.275	<.001	0.168	.738	0.153	.003	-0.321	.453	0.191	<.001	-0.069	.087
Non-internship														
Exploration in Breadth	3.018	<.001	0.151	<.001	-0.433	.208	0.053	.008	0.681	.134	0.061	.014	-0.042	.032
Exploration in Depth	3.323	<.001	0.227	<.001	0.426	.482	0.168	.001	0.091	.840	0.135	<.001	-0.017	.629
Ruminative Exploration	2.487	<.001	0.767	<.001	0.700	.269	0.469	<.001	0.357	.486	0.336	<.001	-0.224	.001
Commitment Making	3.112	<.001	0.686	<.001	-0.546	.362	0.301	<.001	-0.024	.970	0.373	<.001	-0.097	.033
Identification with Commitment	3.349	<.001	0.420	<.001	0.168	.738	0.118	<.001	-0.321	.453	0.167	<.001	-0.013	.648
UMICS														
Internship														
Commitment	2.345	<.001	0.297	<.001	0.327	.460	0.174	<.001	0.309	.582	0.327	<.001	-0.098	.007
In-depth Exploration	2.652	<.001	0.203	<.001	-0.312	.344	0.148	.002	0.569	.087	0.088	.003	-0.076	.014
Reconsideration	2.323	<.001	0.170	<.001	0.002	.995	0.144	.016	0.058	.896	0.215	.005	-0.107	.105
Non-internship														
Commitment	2.345	<.001	0.434	<.001	0.327	.460	0.310	<.001	0.309	.582	0.437	.004	-0.152	.053
In-depth Exploration	2.652	<.001	0.179	<.001	-0.312	.344	0.130	.028	0.569	.087	0.063	.064	-0.028	.327
Reconsideration	2.323	<.001	0.309	<.001	0.002	.995	0.244	.001	0.058	.896	0.359	<.001	-0.152	.012

Note. DIDS = Dimensions of Identity Development Scale; UMICS= Utrecht Management of Identity Commitments Scale; T1 = Time 1; T2 = Time 2; T3 = Time 3; M = mean;  $\sigma^2$  = variance; p = p-value; slope\*slope = the correlation between the slopes; The results in this table represents DIDS Exploration in Breadth based on 4 items. Due to correction of possible Type I errors a p-value of < .001 is considered significant.



**Table 4**  
Change parameters for multivariate and multigroup constrained latent difference score models between domain Associations(N = 287).

	Correlated change T1-T2		Correlated change T2-T3		Cross-lagged 1		Cross-lagged 2	
	$\beta$	<i>p</i>	$\beta$	<i>p</i>	$\beta$	<i>p</i>	$\beta$	<i>p</i>
DIDS Commitment Making								
UMICS Commitment	0.019	.423	0.083	.002	0.080	.299	-0.040	.731
UMICS In-depth Exploration	0.007	.724	0.017	.290	0.055	.344	-0.046	.807
UMICS Reconsideration	-0.042	.016	-0.024	.156	0.037	.618	0.211	.028
DIDS Exploration in Breadth								
UMICS Commitment	-0.002	.906	0.010	.506	-0.030	.910	-0.019	.787
UMICS In-depth Exploration	-0.015	.236	0.032	.005	0.180	.396	0.173	.129
UMICS Reconsideration	0.026	.006	0.007	.579	-0.029	.889	-0.112	.063
DIDS Ruminative Exploration								
UMICS Commitment	-0.043	.091	-0.074	.002	-0.099	.294	-0.036	.776
UMICS In-depth Exploration	-0.009	.712	0.156	.004	0.018	.750	0.045	.832
UMICS Reconsideration	0.035	.116	0.049	.031	0.067	.531	-0.102	.285
DIDS Identification with Commitment								
UMICS Commitment	0.045	.047	0.093	<.001	0.321	.153	0.007	.951
UMICS In-depth Exploration	0.005	.750	0.017	.226	0.043	.704	0.051	.710
UMICS Reconsideration	-0.020	.204	-0.043	.004	0.194	.144	0.034	.604
DIDS Exploration in Depth								
UMICS Commitment	-0.008	.673	0.033	.072	0.025	.845	0.118	.189
UMICS In-depth Exploration	0.028	.154	0.023	.080	0.211	.047	-0.229	.153
UMICS Reconsideration	-0.004	.782	-0.012	.392	-0.075	.423	0.100	.167

Note. DIDS = Dimensions of Identity Development Scale; UMICS= Utrecht Management of Identity Commitments Scale; T1 = Time 1; T2 = Time 2; T3 = Time 3;  $\beta$  = Beta; *p* = p-value; Cross-lagged 1 is for example from DIDS Commitment Making to UMICS Commitment; Cross-lagged 2 is the reverse direction; CC T1-T2 = correlated change T1-T2; CC T2-T3 = correlated change T2-T3; CL 1 = cross-lagged path 1; CL2 Cross-lagged path 2; The results in this table represents DIDS Exploration in Breadth based on four items; Due to correction of possible Type I errors a p-value of < .001 is considered significant.

**Table 5**  
Scaled chi-square difference tests for groups comparison mean-level change analysis (N = 287).

	$\Delta X^2$	$\Delta df$	<i>p</i>
DIDS			
Exploration in Breadth	4.394	3	.222
Exploration in Depth	0.433	3	.933
Ruminative Exploration	2.624	3	.453
Commitment Making	5.657	3	.130
Identification with Commitment	14.971	3	.002
UMICS			
Commitment	10.335	3	.016
In-depth Exploration	2.322	3	.508
Reconsideration	3.115	3	.374

Note. DIDS = Dimensions of Identity Development Scale; UMICS= Utrecht Management of Identity Commitments Scale; Constrained models are tested against the unconstrained models;  $\Delta X^2$  = chi-square differences between models;  $\Delta df$  = degrees of freedom difference between models; *p* = p-value; The results in this table represents DIDS Exploration in Breadth based on 4 items. Due to correction of possible Type I errors a p-value of < .001 is considered significant.

Like [Kunnen \(2010\)](#), we did not find associations between the exploration dimensions of these two domains. This is different from the study of [Albarello et al. \(2018\)](#) who showed that identity development between different personal and social identity domains became more intertwined over time. However, they did not investigate the longitudinal associations between a specific context in relation to the development of one’s future orientation, but investigated the longitudinal association between specific multiple identity contexts. Nevertheless, our findings suggest that exploration processes between different identity domains are less intertwined than commitment processes. A possible explanation could come from the cognitive and emotional resources required for exploration processes. For example, exploration processes might be associated with increased emotional distress ([Luyckx, Schwartz, Goossens, Beyers, & Missotten, 2011](#)). As such, it is understandable that one only invests resources in exploration for one domain at a time. Being uncertain about choices in multiple life domains might be too stressful, especially in a year in which students hope to graduate.

Another explanation for the lack of cross-domain exploration associations could be related to the timing of this study. We measured identity processes during a transition period. During a transition it is more difficult to reach sufficient levels of meaning, which is necessary for blending different identity domains ([Azmitia, Syed, & Radmacher, 2008; Erikson, 1968](#)). Deriving sufficient meaning out of exploration processes might be more complex and time consuming, as a conflict or a mismatch between domains will first trigger a process in which one assimilates contextual features in a way that makes it unnecessary to change existing identities. Only if this fails, one may accommodate the existing identity. It is plausible that this process of assimilation and accommodation (i.e., exploration) is

**Table 6**

Scaled chi-square difference tests for groups comparison of within-domain associations (n = 287).

	$\Delta X^2$	$\Delta df$	<i>p</i>
DIDS Commitment Making			
DIDS Exploration in Breadth	4.081	4	.395
DIDS Exploration in Depth	0.174	4	.996
DIDS Identification with Commitment	0.801	4	.938
DIDS Ruminative Exploration	0.125	4	.998
DIDS Exploration in Breadth			
DIDS Exploration in Depth	7.350	4	.119
DIDS Identification with Commitment	10.340	4	.035
DIDS Ruminative Exploration	11.167	4	.025
DIDS Exploration in Depth			
DIDS Identification with Commitment	2.653	4	.618
DIDS Ruminative Exploration	2.689	4	.611
DIDS Identification with Commitment			
DIDS Ruminative Exploration	0.699	4	.952
UMICS Commitment			
UMICS In-depth Exploration	0.462	4	.497
UMICS Reconsideration	1.830	4	.767
UMICS In-depth Exploration			
UMICS Reconsideration	10.050	4	.040

*Note.* DIDS = Dimensions of Identity Development Scale; UMICS= Utrecht Management of Identity Commitments Scale; Constrained models are tested against the unconstrained models;  $\Delta X^2$  = chi-square differences between models;  $\Delta df$  = degrees of freedom difference between models; *p* = *p-value*; The results in this table represents DIDS Exploration in Breadth based on four items. Due to correction of possible Type I errors a *p-value* of < .001 is considered significant.

**Table 7**

Scaled chi-square difference tests for groups comparison between-domain associations (N = 287).

	$\Delta X^2$	$\Delta df$	<i>p</i>
DIDS Commitment Making			
UMICS Commitment	0.428	4	.980
UMICS In-depth Exploration	3.416	4	.491
UMICS Reconsideration	5.977	4	.201
DIDS Exploration in Breadth			
UMICS Commitment	7.222	4	.125
UMICS In-depth Exploration	2.854	4	.583
UMICS Reconsideration	0.252	4	.993
DIDS Ruminative Exploration			
UMICS Commitment	1.976	4	.740
UMICS In-depth Exploration	2.907	4	.574
UMICS Reconsideration	29.416	4	<.001
UMICS Reconsideration CC T1-T2 free	47.280	3	<.001
UMICS Reconsideration CC T2-T3 free	14.623	3	.002
UMICS Reconsideration CL1 free	21.798	3	<.001
UMICS Reconsideration CL2 free	33.102	3	<.001
DIDS Identification with Commitment			
UMICS Commitment	0.160	4	.997
UMICS In-depth Exploration	2.629	4	.622
UMICS Reconsideration	7.795	4	.099
DIDS Exploration in Depth			
UMICS Commitment	0.432	4	.980
UMICS In-depth Exploration	14.478	4	.006
UMICS Reconsideration	16.580	4	.002

*Note.* DIDS = Dimensions of Identity Development Scale; UMICS= Utrecht Management of Identity Commitments Scale; Constrained models are tested against the unconstrained models;  $\Delta X^2$  = chi-square differences between models;  $\Delta df$  = degrees of freedom difference between models; *p* = *p-value*; CC T1-T2 = correlated change T1-T2; CC T2-T3 = correlated change T2-T3; CL 1 = cross-lagged path 1; CL2 Cross-lagged path 2; The results in this table represents DIDS Exploration in Breadth based on 4 items. Due to correction of possible Type I errors a *p-value* of < .001 is considered significant.

first domain specific.

In general, our results show integration between educational identity and future plans for commitment processes. This suggests that integration is easier achieved if there is a fit between one's existing educational identity and one's view of the future self. A misfit likely triggers exploration processes, which might involve a longer time span and might be more likely to occur in one domain at a time, as it requires more cognitive and emotional resources.

**Table 8**

Change parameters for multivariate and multigroup partly constrained latent difference score models between DIDS ruminative exploration and UMICS reconsideration (N = 287).

	Correlated change T1-T2		Correlated change T2-T3		Cross-lagged 1		Cross-lagged 2	
	$\beta$	<i>p</i>	$\beta$	<i>p</i>	$\beta$	<i>p</i>	$\beta$	<i>p</i>
DIDS Ruminative Exploration								
Internship UMICS Reconsideration CC T1-T2 free	0.045	.074	0.050	.028	0.081	.482	-0.065	.553
Non-internship UMICS Reconsideration CC T1-T2 free	0.008	.826	0.050	.028	0.081	.482	-0.065	.553
Internship UMICS Reconsideration CL1 free	0.045	.031	0.052	.021	-0.126	.389	-0.117	.234
Non-internship UMICS Reconsideration slope CL1 free	0.045	.031	0.052	.021	0.131	.202	-0.117	.234
Internship UMICS Reconsideration CL2 free	0.036	.108	0.049	.032	0.065	.539	0.024	.890
Non-internship UMICS Reconsideration slope CL 2 free	0.036	.108	0.049	.032	0.065	.539	-0.148	.146

Note. DIDS = Dimensions of Identity Development Scale; UMICS= Utrecht Management of Identity Commitments Scale; T1 = Time 1; T2 = Time 2; T3 = Time 3;  $\beta$  = Beta; *p* = *p*-value; Cross-lagged 1 is for example from DIDS Ruminative Exploration to UMICS Reconsideration; Cross-lagged 2 is the reverse direction; CC T1-T2 = correlated change T1-T2; CC T2-T3 = correlated change T2-T3; CL 1 = cross-lagged path 1; CL2 Cross-lagged path 2; The results in this table represents DIDS Exploration in Breadth based on four items; Due to correction of possible Type I errors a *p*-value of < .001 is considered significant.

#### 4.2. Identity formation and the role of an internship

Our second research question was to investigate whether doing an internship was associated with 1) mean-level change in identity formation dimensions in the domains of future plans and education, 2) the associations between dimensions within these domains, and 3) the integration across these two domains. Overall, we found that enrollment in an internship was unrelated to identity formation processes. These findings are not in line with the findings of Luyckx et al. (2006a), who showed that failing the freshman year was related to identity formation processes within the domain of future plans. Our findings are also different from those obtained by intervention studies (Archer, 2008; Berman et al., 2008; Eichas et al., 2015; Meca et al., 2014; Umaña-Taylor et al., 2018). Unlike those studies, we found no meaningful association between enrolment in an internship and identity processes.

One caveat is that the non-internship students in our study may have gone through experiences that are somewhat comparable to the experiences of the internship students. If so, individuals in both groups may have been faced with the same question: ‘What kind of career would I find satisfying for the long-term?’. Internship students were formulating an answer to this question based on their experiences during the internship, but also by engaging in activities such as career days, looking up information and discussing their search with others. Non-internship students who were finishing their bachelor’s program might have faced a similar question, with the main difference being that they could not rely on experiences mimicking their future career (i.e., internship). In spite of this difference, identity formation processes might have been triggered in both groups, as they were both in a pre-transition year. Therefore, our findings suggest that unique effects of an internship on identity formation at the group level were absent. However, our results suggest considerable individual differences in identity processes, leaving open the possibility that an internship might influence identity processes in some students.

According to a literature review by Bosma and Kunnen (2001), individual differences in identity processes in relation to person-context transactions can arise from three sources. First, they could arise from individual differences in personality, such as differences in openness to experience, ego resilience, self-esteem, and cognitive capacities. Second, they could arise from environmental differences in support for change, expectations, acceptance, and the number of opportunities offered. Third, they could arise from previous developmental changes and the relationship with parental figures. These different sources also interact with each other in explaining individual differences of person-context transactions in relation to identity development. Therefore, it is likely that individual differences in student’s personality, environment, and previous developmental changes resulted in different developmental trajectories during the internship. Longitudinal research that measures these sources and tracks identity development at the within-person level measured over a longer period is needed to explore these possibilities.

#### 4.3. Limitations

Our study had several limitations. First, we focused only on a part of the broader identity formation process, leaving out how individuals exactly make sense of their self-views and their experiences. Written narratives or interview-based approaches could give more insight into these individual differences and would provide a more complete picture of identity development (Pasupathi, 2014).

Second, our sample was homogeneous: all participants were Dutch psychology college students and our sample had an unbalanced gender distribution (i.e., over 80% of the participants were women). This gender division is typical for healthcare studies like psychology (Eurostat, 2018). Moreover, in line with a large study on a similar age group (Luyckx, Seiffge-Krenke, Schwartz, Crocetti, & Klimstra, 2014), we found few gender differences in identity formation processes. However, the focus on predominantly white Dutch psychology college students makes it uncertain whether our findings are applicable to other cultural contexts, educational levels, and study directions (Goossens & Phinney, 1996). Therefore, it is important to replicate our study in a different samples.

A third limitation concerns the measures of this study, as the two domains were measured with different instruments. The fact that (slightly) different dimensions were measured in the two domains complicates the interpretation. This issue could be solved by adapting the UMICS to also measure identity formation regarding future plans or adapting the DIDS to also measure identity formation

in the educational domain. This is an attainable goal, as both measures have been used previously for domains different from the ones that we used them for (e.g., (Karaš & Cieciuch, 2018; Luyckx et al., 2014)).

## 5. Conclusion

Overall, our results show integrated processes in the domains of educational identity and future plans, as changes in commitment were associated across domains. Changes in exploration were not associated across domains. It is likely that exploration processes take up more time and occur in only one domain because exploration requires more cognitive and emotional resources. At a group level, an internship did not appear to be associated with identity formation processes for students who were both in a pre-transition year.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.adolescence.2021.02.005>.

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