

Personal Identity Processes from Adolescence Through the Late 20s: Age Trends, Functionality, and Depressive Symptoms

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Abstract

Personal identity formation constitutes a crucial developmental task during the teens and 20s. Using a recently developed five-dimensional identity model, this cross-sectional study (N = 5834) investigated age trends from ages 14 to 30 for different commitment and exploration processes. As expected, results indicated that, despite some fluctuations over time, commitment processes tended to increase in a linear fashion. Exploration in breadth and exploration in depth were characterized by quadratic trends, with the highest levels occurring in emerging adulthood. Further, the functionality of these identity processes, and especially of exploration, changed over time. Exploration in breadth and exploration in depth were strongly related to commitment processes especially in adolescence and emerging adulthood, but these exploration processes became increasingly associated with ruminative exploration and depressive symptoms in the late 20s. Theoretical implications and suggestions for future research are outlined.

Keywords: identity; exploration; commitment; emerging adulthood

Introduction

Identity formation is a core developmental challenge for adolescents and emerging adults (Erikson, 1968). Establishing a strong sense of identity provides individuals with a sense of continuity and sameness, and plays favourably into psychosocial functioning. However, identity confusion is associated with a disorganized or haphazard sense of self. Identity-confused individuals seem to be out of touch with their inner needs and lack the energy to invest in identity-related exploration and to commit to life-defining choices (Erikson, 1968). Abundant research to date focused on processes

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and correlates of identity formation in adolescence and the transition to adulthood (Kroger & Marcia, 2011).

The number of studies focusing on identity development has increased considerably during the first decade of this century (Meeus, 2011). However, due to different identity models and measures used and the different developmental periods covered (with most studies focusing on adolescence and emerging adulthood), a detailed picture on age trends in identity processes through the teens and 20s has not yet fully emerged. Further, it remains unclear how adaptive and functional different identity processes are for individuals in different developmental periods. For instance, when individuals grow older, the making of identity commitments becomes increasingly normative (Waterman, 1982). Can it be expected, then, for instance, that with transitioning to emerging adulthood commitments become more important for one's psychosocial functioning and well-being as well? The present study aims at addressing these research questions and examined (1) age trends in identity processes from adolescence through the late 20s and (2) the functionality of identity processes in these different developmental periods.

Contemporary Models of Identity Formation

Marcia's (1966) identity status paradigm has been the most frequently used empirical elaboration of Erikson's (1968) writings on identity. From Erikson's work, Marcia extracted two defining processes of identity formation: exploration and commitment. Exploration refers to actively questioning identity alternatives whereas commitment signifies adhering to and implementing a set of convictions, goals, and values. Based on these dimensions, Marcia (1980) defined four statuses: achievement (commitments enacted after exploring alternatives), foreclosure (commitments enacted without exploration), moratorium (exploring alternatives without current commitments), and diffusion (no current commitments or systematic exploration). Marcia's model has inspired decades of empirical work, much of which has focused on comparing identity statuses on external variables (Kroger & Marcia, 2011). A number of identity theorists, however, have emphasized the need to examine the underlying processes of commitment and exploration (Côté & Levine, 1988; Grotevant, 1987).

Partially as a response to these suggestions, several identity researchers have developed broader process-oriented models of identity, in which they 'unpack' exploration and commitment into a larger set of specific processes. Luyckx et al. (2008a) empirically distinguished among five such identity processes. Four of these five identity processes are subsumed under two consecutive cycles of identity formation (Luyckx, Goossens, & Soenens, 2006). The first cycle captures the processes through which individuals explore different identity alternatives and may arrive at making strong identity commitments. This cycle, therefore, may be described in terms of two processes, that is, *exploration in breadth*, or the pro-active exploration of various identity alternatives, and *commitment making*, or the adherence to a set of convictions and values. Both of these dimensions map onto Marcia's (1980) classical dimensions of exploration and commitment. The second identity cycle captures the process through which individuals re-evaluate their identity choices and assesses the degree to which they feel certain about and identify with these choices. The second cycle, therefore, may also be described in terms of two processes, that is, *exploration in depth*, or the evaluation and exploration of current commitments, and *identification with commitment*, or the degree to which these identity commitments become integrated in their sense of self.

A fifth identity process, referred to as *ruminative exploration*, was later added to the model (Luyckx et al., 2008a). This particular form of exploration is conceptualized as a process that hinders identity development. Individuals with high levels on ruminative exploration experience difficulty settling on satisfying answers to identity questions. Partially troubled by what they perceive as inadequate progress towards personally important identity goals, they keep asking themselves the same questions, resulting in feelings of uncertainty and incompetence. Research on adolescents and emerging adults has demonstrated that ruminative exploration, and not so much the other exploration processes, was associated with lowered well-being (Luyckx et al., 2008a).

Identity Development from Adolescence to Young Adulthood

Identity constitutes a developmental construct which can be expected to change through the life span with the bulk of identity changes occurring in adolescence and the transition to adulthood (Arnett, 2000; Erikson, 1968). Prominent identity scholars such as Waterman (1982; Waterman & Archer, 1990) forwarded the hypothesis that the transition from adolescence to adulthood would be characterized by a progressive strengthening of one's sense of identity. Hence, with respect to commitment, increases are generally to be expected through the teens and 20s as an indication of identity strength accumulation (Koepke & Denissen, 2012; Waterman, 1982). Increasing societal expectations and cognitive maturation processes through adolescence indeed instigate individuals to arrive at balanced self-views and to increasingly commit themselves to social roles. By the time individuals embark on the transition to adulthood, they increasingly rely on their own self standards that govern personal choices and create their own ideals and aspirations (Harter, 1999). The self-confident use of such personally endorsed standards motivates emerging adults to arrive increasingly at an integrated identity.

Further, of specific relevance to identity exploration, social-structural and economic changes in many Western nations have resulted in the delaying of psychosocial maturity until the late teens and the 20s (Arnett, 2000). According to Arnett (2000), emerging adulthood (and especially ages 18–25) is the period of life that offers the most opportunities for identity exploration in different life areas (Waterman & Archer, 1990). Life-course events that were once normatively structured (such as marriage and entry into the labour market) are increasingly left to individuals to decide on their own (Côté, 2002; Schwartz, Côté, & Arnett, 2005). However, due to an expanding set of options, this emphasis on individual free choice can induce confusion in certain young people (Schwartz et al., 2005). Scholars indeed disagree on whether this extended transitional process mainly represents an individual choice and opportunity, or should be considered symptomatic for society's lack of guiding structures (Côté & Bynner, 2008; Hendry & Kloep, 2010).

Hence, exploration processes are expected to increase and peak during emerging adulthood but decrease again thereafter. Previous research demonstrated that emerging adulthood constitutes not only a period in life in which different options and alternatives are explored but also represents a stage in which identity commitments are re-evaluated on a continuous basis (Luyckx et al., 2006). Broad-based identity explorations primarily emerge in adolescence and set the stage for forming strong and self-endorsed commitments. High school students have to figure out what they want to achieve in their lives, such as exploring which educational or vocational pathway would suit them best. Emerging adults also have to rebalance their lives and find their way into adult life. Most of them can no longer fully rely on their existing social network of friends and family and

have to deal with many life changes, which can lead to substantial changes in identity (Montgomery & Côté, 2003). Due to all these changes, the in-depth evaluation and consolidation of identity commitments has been shown to be a prominent task in emerging adults (Klimstra, Hale, Raaijmakers, Branje, & Meeus, 2010).

In most studies, examining identity development has been translated to assessing identity status transitions across shorter or longer periods of time (Berzonsky & Adams, 1999; Meeus, 1996; Meeus, van de Schoot, Keijsers, Schwartz, & Branje, 2010). Although substantial inter-individual differences existed in identity status transitions and stabilities, evidence was found for increased prevalence of the achievement status and decreased prevalence of the diffusion status over time (Meeus et al., 2010), partially supporting Waterman's (1982) reasoning. A recent meta-analysis (Kroger, Martinussen, & Marcia, 2010) corroborated these conclusions and, in line with the emerging adulthood conception, further indicated that the prevalence of the moratorium status tended to increase steadily from mid-adolescence to the late teens but decreased thereafter.

Although this research line has provided invaluable information with respect to identity development, to allow for a more fine-grained view on identity development scholars have pleaded in favour of studying development at the process-level instead of focusing on statuses (e.g., Klimstra et al., 2010; Luyckx et al., 2006; Meeus, 1996). Findings across studies focusing on developmental changes in separate identity processes are not unequivocal, partially due to the different developmental periods examined and the different identity models used (Koepke & Denissen, 2012). With respect to the identity processes assessed in the present study, Luyckx, Schwartz, Goossens, Soenens, and Beyers (2008) found that in emerging adulthood especially commitment making increased linearly whereas identification with commitment tended to decrease initially although these decreases levelled off towards the end of their study. Conversely, exploration in breadth showed initial increases followed by later decreases, which is in line with the findings for the moratorium status. However, this study primarily focused on ages 18 to 21, and needs to be complemented with studies providing a wider temporal window on developmental trends.

Identity Processes and Depressive Symptoms

In the present study, we not only investigated age trends in identity processes but we also assessed how these processes relate to depressive symptoms. With respect to this relationship, a fairly consistent pattern of findings emerged from previous studies (Luyckx, Schwartz, Goossens, Beyers, & Missotten, 2011). Commitment making and especially identification with commitment have been negatively related to depressive symptoms. With respect to exploration, ruminative exploration has been positively and strongly related to depressive symptoms whereas the association of depressive symptoms with exploration in breadth and exploration in depth was less pronounced in adolescents.

No study to date, however, assessed whether associations between the aforementioned five identity processes and depressive symptoms changed significantly from adolescence to the late 20s. As described earlier, such differential associations may be expected to emerge as inspired by developmental theorizing. Meeus, Iedema, Maassen, and Engels (2005) already established that, through adolescence and emerging adulthood, the making of steady identity commitments becomes increasingly important for one's emotional adjustment, indicating that identity processes may relate differently to

depressive symptoms depending on developmental stage. However, in this previous study only two identity dimensions were included in the analyses. Furthermore, this study was mainly limited to assessing individuals in the teens and early 20s, and did not include assessments in the late 20s.

Hence, in line with the dual-cycle model of identity formation (Luyckx et al., 2006), we expected that identity processes that are especially adaptive in a particular developmental period would show more pronounced linkages with depressive symptoms in that particular period (Lerner & Kauffman, 1985). As adolescents grow older and start preparing for adult roles, strong identity commitments and a clear life path sketched out might indeed increase the clarity of the self (Schwartz et al., 2005). Although emerging adulthood may be characterized by a diversity of choices and life options for individuals in Western societies (Arnett, 2000), the consolidation of life-defining and volitional identity commitments constitutes a crucial identity task in the transition to adulthood, providing opportunities for individuals to thrive (Côté & Levine, 2002; Schwartz et al., 2005). Likewise, whereas a broad-based exploration of alternatives might be adaptive in adolescence and emerging adulthood, a prolonged process of exploring in breadth beyond these developmental periods might generally be viewed as less adaptive. In line with social investment theory (Helson, Kwan, John, & Jones, 2002; Roberts, Wood, & Smith, 2005), individuals in their late 20s are expected to come to grips with their lives in order to function as responsible young adults and to negotiate successfully the transition to employment (Luyckx, Duriez, Klimstra, & De Witte, 2010).

The Present Study

The present study had two main research goals. Firstly, we examined age trends in five identity processes (i.e., commitment making, identification with commitment, exploration in breadth, exploration in depth, and ruminative exploration) from adolescence to the late 20s. When using such a wide temporal window, we expected commitment making and identification with commitment to increase over time, despite the fact that substantial fluctuations could occur in the short term (Luyckx et al., 2006). Further, we expected exploration in breadth and exploration in depth to show curvilinear age trends, with the highest levels occurring in emerging adulthood. Further, especially in adolescence we expected higher scores for exploration in breadth as compared to exploration in depth. For ruminative exploration, we tentatively expected that a similar quadratic trend would be observed, albeit at lower levels as compared to the two proactive exploration processes (Luyckx et al., 2008a). Partially due to the many options available and the unstructured nature of this life stage, emerging adults might indeed be especially vulnerable for getting stuck in the identity exploration process and ruminate where their lives would lead to (Luyckx et al., 2008b). In examining these trends, sex was included as a potential moderator. Previous research suggested that adolescent girls tend to be further ahead of boys when it comes to establishing identity commitments, although boys do seem to catch up later on (Meeus et al., 2010). Similar findings have been reported for adolescent personality development (Klimstra, Hale, Raaijmakers, Branje, & Meeus, 2009). Collectively, these findings suggest that earlier physical and cognitive maturational processes (such as an increased capacity for self-reflection) in girls could account for these differences in developmental timing.

Secondly, we examined how adaptive or functional these identity processes were in different developmental phases, that is, adolescence, emerging adulthood, and the late

20s. In doing so, we aimed at answering questions such as the following: Does identity exploration constitute an adaptive or functional process for all individuals, irrespective of the developmental period, or does prolonged exploration become maladaptive when entering emerging adulthood and/or the late 20s? Similarly, is the making of strong identity commitments as beneficial for adolescents as it is for emerging adults? Two different strategies were used to address this second research goal. We examined how the five identity processes were interrelated in the three developmental periods and investigated whether these associations differed across these periods. For instance, if the expected positive association between exploration in breadth and commitment making would significantly decrease with age, we could conclude that, based on the premise that exploration in breadth facilitates commitment making over time (Luyckx et al., 2006), exploration in breadth seems to constitute a less functional identity process beyond adolescence and possibly emerging adulthood. In addition, we examined how the five identity processes were related to depressive symptoms in these developmental periods and investigated whether these associations differed from one period to another. For instance, if the expected negative association between commitment making and depressive symptoms would be significantly stronger in emerging adulthood as compared to adolescence, we could conclude that commitment making seems to constitute a more adaptive identity process in emerging adults in terms of well-being.

Methods

Participants and Procedure

We used 13 cross-sectional samples collected between 2007 and 2011 in Flanders (the Dutch-speaking part of Belgium). Table 1 gives an overview of demographic characteristics for each sample. The total combined sample size was 5834 (66.2 percent female). Mean age of the combined sample was 17.99 ($SD = 3.25$), ranging from 14 to 30 years. Table 2 gives an overview of the different age cohorts and how they are distributed among the different contexts assessed (i.e., high school, college or university, employment, and unemployment). The high school students from samples 6, 8, 10, 12, and 13 were from different regions in Flanders. Participation was voluntary and anonymity was guaranteed. Parents and adolescents provided consent to participate. Questionnaires were administered during a regular class period. A total of 55.3 percent of high school students were from the academic track whereas 44.7 percent followed the technical or vocational track. The college students from samples 1, 2, 3, 4, 5, 7, and 10 were mostly from the KU of Leuven and, although the majority was from the faculty of psychology and educational sciences, students from a wide variety of other majors were also included. Informed consent from the students of the different samples was again obtained. For the employed individuals of samples 3, 4, and 9, questionnaires were distributed in different work settings, such as schools, hospitals, and private companies, or these individuals were contacted through email and social media (e.g., Facebook). Participants again gave their consent to participate. Whereas in samples 4 and 9, approximately 65 percent were working in the social sector, 29 percent of individuals of sample 3 were working in the social sector.

Measures

Identity Processes. All participants completed the dimensions of identity development scale (DIDS), which was originally developed in Dutch and provides highly reliable

Table 1. Demographic Characteristics of the 13 Samples

	N	Measures	% females	M (SD) age	Age range	Sample description
Sample 1	208	DIDS; CESD-12	79.3	18.18 (1.39)	17–26	College students
Sample 2	369	DIDS; CESD-12	77.5	18.25 (1.27)	16–30	College students
Sample 3	371	DIDS; CESD-12	65.0	23.28 (3.21)	17–30	College students (54.2%); employed individuals (45.2%)
Sample 4	345	DIDS; CESD-12	70.1	23.89 (2.85)	18–30	College students (41.4%); employed individuals (58.6%)
Sample 5	353	DIDS; CESD-12	77.9	18.50 (1.02)	17–28	College students
Sample 6	342	DIDS; CESD-12	39.8	18.29 (.60)	17–21	High school students
Sample 7	456	DIDS	83.8	18.36 (1.35)	17–30	College students
Sample 8	600	DIDS; CESD-20	52.0	15.70 (1.30)	14–20	High school students
Sample 9	193	DIDS; CESD-12	81.9	25.73 (2.30)	21–30	Employed individuals
Sample 10	249	DIDS	63.1	16.49 (.68)	15–19	High school students
Sample 11	407	DIDS; CESD-12	83.8	18.35 (1.41)	17–29	College students
Sample 12	567	DIDS	51.0	15.80 (1.02)	14–18	High school students
Sample 13	1388	DIDS; CESD-12	64.1	15.72 (1.19)	14–18	High school students

Table 2. Distribution of Age Cohorts in Different Contexts

Age	Context				Total N
	High school	College/University	Employment	Unemployment	
14	456	0	0	0	456
15	670	0	0	0	670
16	855	1	0	0	856
17	647	159	0	0	806
18	420	1233	1	0	1654
19	80	308	3	0	391
20	15	89	11	0	115
21	3	68	76	0	147
22	0	57	77	0	134
23	0	36	78	2	116
24	0	16	92	5	113
25	0	5	73	4	82
26	0	4	70	0	74
27	0	4	51	1	56
28	0	5	56	2	63
29	0	4	57	0	61
30	0	3	37	0	40
Total N	3146	1992	682	14	5834

scores with a clear factor structure in Belgian high school and college student samples (Luyckx et al., 2008a). The DIDS assesses identity processes with respect to future plans and possible life paths. For more information on the DIDS and how it is related to other identity measures, readers are referred to Luyckx et al. (2011). The identity processes were each measured by five items. Each item was responded to on a 5-point Likert-type rating scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Sample items include 'I have decided on the direction I want to follow in my life' (commitment making), 'I sense that the direction I want to take in my life will really suit me' (identification with commitment), 'I regularly think over a number of different plans for the future' (exploration in breadth), 'I regularly talk with other people about the plans for the future I have made for myself' (exploration in depth), and 'It is hard for me to stop thinking about the direction I want to follow in my life' (ruminative exploration). Across the different samples, Cronbach's alphas ranged between .83 and .93 for commitment making, .79 and .89 for identification with commitment, .76 and .87 for exploration in breadth, .75 and .83 for exploration in depth, and between .80 and .89 for ruminative exploration.

A Confirmatory Factor Analysis (CFA) was used to check the factor structure across all samples. In all estimated models, we used standard model fit indices (Kline, 2006). The chi-square index, which tests the null hypothesis of perfect fit to the data, should be as small as possible; the root mean square error of approximation (RMSEA) should be less than .08; the comparative fit index (CFI) should exceed .90; and the standardized root mean square residual (SRMR) should be less than .10. A CFA indicated that

a five-factor model (including two error covariances between similarly worded items patterning on the same latent factor) fitted the data adequately ($\chi^2(263) = 5082.68$, RMSEA = .06, CFI = .94; SRMR = .07). Additionally, we checked whether pattern coefficients could be set equal for men and women and in adolescence (14–17 year olds), emerging adulthood (18–25 year olds), and the late 20s (26–30 year olds). The null hypothesis of invariant pattern coefficients would be rejected if at least two of the following criteria were satisfied (Vandenberg & Lance, 2000): $\Delta\chi^2$ significant at $p < .05$; $\Delta\text{CFI} \geq .01$; and the change in non-normed fit index (ΔNNFI) $\geq .02$. Although the NNFI was not used to evaluate the fit of a single model, it is extremely sensitive to small deviations or differences in model fit and is a useful tool in invariance testing (Little, 1997). Invariance tests indicated that all pattern coefficients could be set as equal for men and women ($\Delta\chi^2(20) = 46.11$, $p < .001$; but $\Delta\text{CFI} < .01$; $\Delta\text{NNFI} < .01$) and in the different developmental periods ($\Delta\chi^2(40) = 250.02$, $p < .001$; but $\Delta\text{CFI} < .01$; $\Delta\text{NNFI} < .01$).

Depressive Symptoms. As detailed in Table 1, in 10 out of 13 samples, depressive symptoms were measured using the Center for Epidemiologic Studies Depression Scale (CESD; Radloff, 1977). The 20-item version was used in sample 8; the brief 12-item version developed by Roberts and Sobhan (1992) was used in the remaining samples. Items were responded to using a 4-point Likert-type rating scale, ranging from 0 (*Seldom*) to 3 (*Most of the time or always*). Each item asks participants how often they had experienced symptoms of depression during the week prior to assessment. A sample item is ‘During the last week, I felt depressed’. Cronbach’s alpha of CESD-20 in sample 8 was .91; Cronbach’s alphas of CESD-12 ranged between .80 and .88.

Results

Preliminary Mean-level Analyses on Identity Processes

Before we describe the different analyses conducted, readers should note that, due to the large sample size, our analyses attained high power and, therefore, the significance level was set at $p < .01$ for all analyses. A multivariate analysis of variance (MANOVA) was conducted to examine sex differences in identity. Based on Wilks’ Lambda, statistically significant multivariate sex differences were found ($F(5, 5767) = 27.59$, $p < .001$, partial $\eta^2 = .02$). Follow-up univariate analyses, as detailed in Table 3, indicated that women scored higher on all identity processes, except for identification with commitment. However, all partial η^2 -values accompanying these mean differences were very small. Next, a MANOVA was conducted to examine context differences in identity processes. Due to the small group size of the unemployed ($N = 12$), these individuals were combined with employed individuals, yielding three groups (i.e., high school, college or university, and employment or unemployment). Based on Wilks’ Lambda, statistically significant multivariate context differences were found ($F(10, 11\,563) = 18.43$, $p < .001$, partial $\eta^2 = .02$). Follow-up univariate analyses, as detailed in Table 3, indicated that high school students scored lowest on all identity processes, except for ruminative exploration. Again, all the effect sizes accompanying these mean differences were small.

Finally, in an ancillary MANOVA, we explored whether high school students following the academic track vs. those following the technical/vocational track differed on identity. Significant multivariate effects were found ($F(5, 3089) = 13.49$, $p < .001$,

Table 3. Mean-Level Differences in Identity Processes Based on Analysis of Variance

Variable	Total sample			Sex differences			Context differences			
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>F ratio</i>	Partial η^2	High school <i>M (SD)</i>	College/ University <i>M (SD)</i>	(Un)employment <i>M (SD)</i>	<i>F Ratio</i>
Commitment making	3.50 (.86)	3.44 (.90)	3.53 (.84)	14.11**	<.01	3.41 (.91) ^a	3.63 (.80) ^b	3.58 (.74) ^b	44.18**	.02
Identification	3.46 (.76)	3.47 (.79)	3.46 (.74)	.64	.00	3.40 (.81) ^a	3.51 (.70) ^b	3.60 (.65) ^c	27.58**	.01
commitment	3.54 (.75)	3.48 (.80)	3.57 (.72)	21.80**	<.01	3.50 (.76) ^a	3.59 (.71) ^b	3.57 (.77) ^b	8.97**	<.01
Exploration in breadth	3.28 (.75)	3.16 (.78)	3.34 (.73)	74.85**	.01	3.19 (.78) ^a	3.39 (.71) ^b	3.37 (.73) ^b	48.75**	.02
Exploration in depth	2.75 (.85)	2.68 (.88)	2.78 (.83)	17.60**	<.01	2.75 (.86) ^a	2.77 (.81) ^a	2.66 (.92) ^b	4.69*	<.01
Ruminative exploration										

Note: For context differences, means that differ significantly from one another have a different superscript. * $p < .01$. ** $p < .001$.

partial $\eta^2 = .02$). Follow-up univariate analyses indicated that students in the academic track scored lower, as compared to students in the technical and vocational track, on commitment making ($M = 3.33$, $SD = .90$; and $M = 3.50$, $SD = .91$, respectively) and higher on exploration in depth ($M = 3.23$, $SD = .76$; and $M = 3.14$, $SD = .79$, respectively) and ruminative exploration ($M = 2.82$, $SD = .83$; and $M = 2.66$, $SD = .88$, respectively). Again, all partial η^2 -values accompanying these mean differences were $\leq .01$. In sum, although some mean differences were identified depending on sex, context, and track, they should not be overstated due to small effect sizes.

Age Trends in Identity Processes

To ascertain whether age differences could be observed when simultaneously controlling for the effects of sex and context, a multivariate analysis of covariance (MANCOVA) was conducted with sex and context as fixed factors, age as covariate, and the identity processes as dependent variables. The interaction term between age and sex was added to investigate whether age trends would differ between men and women. However, this multivariate interaction effect did not reach significance ($F(5, 5763) = 2.86$, *ns*) and was left out of the model. Significant main effects of age were found ($F(5, 5764) = 15.72$, $p < .001$, partial $\eta^2 = .02$). Follow-up univariate analyses revealed that significant age differences were observed for all identity processes (with F -values significant at $p < .001$ and partial η^2 -values = .01) except for ruminative exploration ($F(1, 5768) = .18$, *ns*).

Figure 1 displays the mean observed scores for the different identity processes in the different age cohorts for the total sample. Whereas the two commitment processes seemed to follow a linear increasing trend, exploration in breadth and in depth seemed to follow a quadratic trend. Ancillary hierarchical regression analyses were performed to investigate whether a linear or a quadratic function would be the best approximation of the trends observed. Hence, in a first step, the centred value of age was entered as predictor of the identity processes to examine linear age trends. In a second step, the squared centred value of age (referred to as age^2) was entered to examine quadratic age trends. Beta-coefficients had to be significant at $p < .01$, and change in R^2 of subsequent steps had to be .01 or greater (Cohen, 1988) to be labelled as a meaningful effect. Following this rule of thumb, age was a predictor for commitment making ($\beta = .11$, $p < .001$; $\Delta R^2 = .012$), identification with commitment ($\beta = .11$, $p < .001$; $\Delta R^2 = .012$), and exploration in depth ($\beta = .12$, $p < .001$; $\Delta R^2 = .014$), but not for exploration in breadth ($\beta = .08$, $p < .001$; but $\Delta R^2 = .006$) and ruminative exploration ($\beta = -.03$, *ns*; $\Delta R^2 = .001$). Age^2 was a predictor for exploration in breadth ($\beta = -.20$, $p < .001$; $\Delta R^2 = .018$) and exploration in depth ($\beta = -.23$, $p < .001$; $\Delta R^2 = .014$), but not for commitment making ($\beta = -.10$, $p < .001$; but $\Delta R^2 = .006$), identification with commitment ($\beta = -.09$, $p < .001$; but $\Delta R^2 = .003$), and ruminative exploration ($\beta = -.09$, $p < .001$; but $\Delta R^2 = .003$). In sum, whereas the commitment processes were found to increase linearly with age, exploration in breadth and exploration in depth demonstrated quadratic changes with age (coupled with small linear increases for exploration in depth).

Associations Among Identity Processes

We examined whether the correlations among the identity dimensions (as displayed in Table 4) would differ in adolescence (14–17 year olds), emerging adulthood (18–25

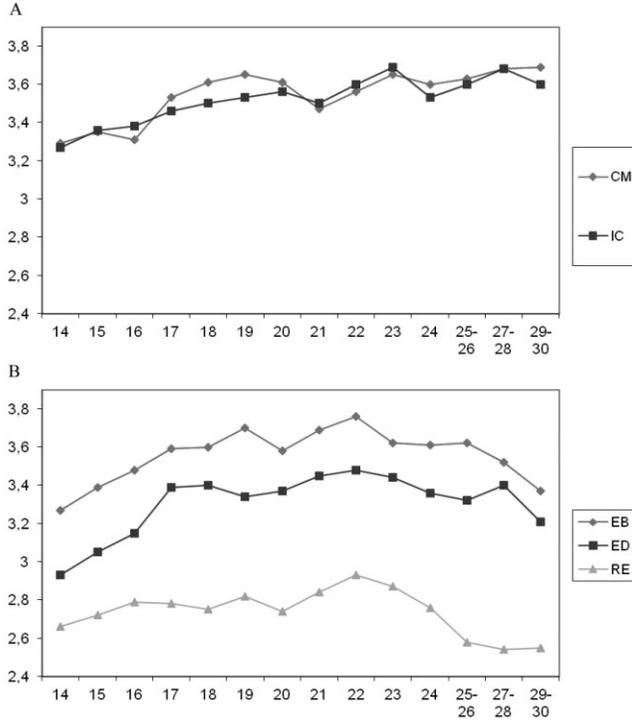


Figure 1. Observed Age Trends for the Total Sample for the Two Commitment Processes (A) and the Three Exploration Processes (B). Due to the Fact That Less Than 100 Individuals Belonged to Each of the Last Six Age Cohorts (i.e., from Age 25 to Age 30), These Age Cohorts were Combined Two by Two (Ages 25–26, Ages 27–28, and Ages 29–30). CM = Commitment Making; IC = Identification with Commitment; EB = Exploration in Breadth; ED = Exploration in Depth; RE = Ruminative Exploration.

year olds), and the late 20s (26–30 year olds). Of specific relevance to our hypotheses, using the *z*-test for independent correlation coefficients (which, again, had to be significant at *p* < .01), the positive association between exploration in breadth and both commitment processes was higher in adolescence as compared to especially the late 20s. Rather similarly, exploration in depth was the most strongly related to the commitment processes in adolescence and the least strongly so in the late 20s. Further, the negative correlations between ruminative exploration and the two commitment processes were significantly higher in emerging adulthood as compared to adolescence. Similarly, the positive association between exploration in depth and ruminative exploration was highest in the late 20s.

Associations between Identity Processes and Depressive Symptoms

In the total sample, as can be seen in Table 5, commitment making and identification with commitment related negatively, and ruminative exploration related positively to depressive symptoms. Again, using the *z*-test for independent correlation coefficients, the negative association between commitment making and depressive symptoms and

Table 4. Correlations Among Identity Processes

Associations	Developmental period			Z-scores group comparisons			
	Total	Adolescence: Age 14–17 (N = 2757) ^a	Emerging adult-hood: Age 18–25 (N = 2801) ^a	Late 20s: Age 26–30 (N = 220) ^a	1–2	1–3	2–3
Commitment making							
With identification commitment	.69**	.69**	.71**	.60**	1.46	2.20	2.60*
With exploration in breadth	.32**	.34**	.29**	.14	2.07	3.02*	2.24
With exploration in depth	.39**	.42**	.36**	.09	2.64*	5.07**	4.07**
With ruminative exploration	-.43**	-.38**	-.49**	-.55**	5.07**	3.10*	1.17
Identification commitment							
With exploration in breadth	.36**	.39**	.32**	.19*	2.99*	3.11*	1.98
With exploration in depth	.47**	.52**	.42**	.20*	4.79**	5.30**	3.48**
With ruminative exploration	-.38**	-.32**	-.45**	-.47**	5.70**	2.53	.36
Exploration in breadth							
With exploration in depth	.57**	.58**	.54**	.69**	2.17	2.63*	3.46**
With ruminative exploration	.19**	.20**	.16**	.29**	1.54	1.36	1.96
Exploration in depth							
With ruminative exploration	.11**	.12**	.09**	.33**	1.13	3.15*	3.58**

^a Sample sizes are based on listwise deletion in the correlational analyses within each developmental period.
* $p < .01$. ** $p < .001$.

Table 5. Correlations between Identity Processes and Depressive Symptoms

Association with depressive symptoms	Developmental period					
	Total	Adolescence: Age 14–17 (N = 2757) ^a	Emerging adult-hood: Age 18–25 (N = 2801) ^a	Late 20s: Age 26–30 (N = 220) ^a	Z-scores group comparisons	
Commitment making	-.18**	-.13**	-.22**	-.35**	3.01*	1.87
Identification	-.26**	-.24**	-.28**	-.30**	1.38	.29
commitment						
Exploration in breadth	.01	-.03	.02	.21*	1.60	2.55
Exploration in depth	-.02	-.05	-.00	.11	1.60	1.46
Ruminative exploration	.35**	.30**	.40**	.43**	3.76**	.48

^a Sample sizes are based on listwise deletion in the correlational analyses within each developmental period.
* $p < .01$. ** $p < .001$.

the positive association between ruminative exploration and depressive symptoms were the weakest in adolescence. Further, the positive association between exploration in breadth and depressive symptoms appeared to be strongest in the late 20s.

Discussion

The present study examined age trends from adolescence through the late 20s and the adaptation or functionality of different identity exploration and commitment processes in a large sample comprising 5834 Belgian 14-to-30-year-olds. We relied on a recently developed model of identity formation in which two commitment processes (i.e., commitment making and identification with commitment), two proactive exploration processes (i.e., exploration in breadth and exploration in depth), and a maladaptive or ruminative exploration process are distinguished (Luyckx et al., 2008a). In so doing, a detailed developmental perspective on core processes of personal identity formation was provided. The present study not only investigated how the quantity or strength of these identity processes changed over time, but also explored if the quality or functionality of these processes changed over time. As such, the present findings can substantially advance our theorizing about identity development from adolescence through the late 20s.

Age Trends, Adaptation, and Functionality of Commitment Processes

Important and theoretically meaningful age trends were uncovered. Further, these trends in identity generally appeared to be very gradual through adolescence, and the transition to adulthood, although some fluctuations did occur for various identity processes (Luyckx et al., 2006). Before going into detail in these trends, readers should note that no authoritative claims with respect to identity development can be made based on the present cross-sectional design. A long-term longitudinal study in which cohorts of individuals are followed through their teens and 20s is needed to reach definite conclusions. However, in the absence of such a large-scale longitudinal study, the present findings might foreshadow how such developmental trends could look like.

The general linear trends for the commitment processes suggest some form of identity maturation (Meeus et al., 2010). As expected, individuals do not only succeed in making stronger identity commitments, they also increasingly identify themselves with these commitments. Hence, a more solid identity structure emerges as individuals make the transition to adult life (Meeus, Iedema, Helsen, & Vollebergh, 1999), which increasingly enables them to attend to societal expectations and roles. As such, through the establishment of firm identity choices which are personally endorsed, individuals increasingly succeed in tackling the challenging quest for an individualized life trajectory (Schwartz et al., 2005).

Our findings not only suggested that identity commitments become increasingly more integrated in the self, these identity commitments also tend to become more important for one's well-being, as evidenced by the increased associations with depressive symptoms from emerging adulthood to the late 20s. Whereas the making of identity commitments was not that strongly negatively related to depressive symptoms in adolescence, this association was significantly stronger in emerging adulthood and beyond. Collectively, these findings suggest that with increasing maturation, identity commitments occupy a more prominent place in one's self-definition (Waterman & Archer, 1990), not only with respect to the strength of the choices made but also with

respect to their centrality towards psychosocial functioning. These findings corroborate the view that the making of identity commitments becomes an increasingly normative process with greater repercussions for daily functioning as adolescents make the transition to adulthood.

Age Trends, Adaptation, and Functionality of Exploration Processes

Age trends for the exploration processes are generally in line with core tenets upheld in identity theorizing and the emerging adulthood conception (Arnett, 2000; Waterman, 1982). Exploration in breadth and exploration in depth but not so much ruminative exploration demonstrated a curvilinear trend with the highest levels generally occurring in emerging adulthood. Apparently, the emerging adult years represent the most volitional years across the age-span studied, as this period allows for continued role experimentations and identity re-evaluations (Arnett, 2000; Erikson, 1968). Previous research indicated that this period in life is also characterized by a high degree of demographic instability and risk behaviours which can be considered symptomatic for extensive identity explorations of some individuals (Arnett, 2005). Further, in line with the tenet that identity formation comes into prominence in adolescence (Erikson, 1968), initial increases in exploration in breadth and exploration in depth were observed through adolescence. Hence, although exploration is at its peak in the emerging adult years, it is not limited to this period in life (Meeus et al., 1999).

With respect to the functionality of these exploration processes, especially in the late 20s, the supposedly proactive identity processes of exploration in breadth and exploration in depth became more and more detached or disconnected from the commitment processes. Indeed, whereas especially in adolescence and somewhat less in emerging adulthood, these two exploration processes were strongly and positively related to commitment, these positive correlations decreased significantly in strength in the late 20s. Furthermore, especially exploration in breadth became increasingly and positively associated with depressive symptoms with increasing age, with the strongest correlation again emerging in the late 20s. These findings could indicate that identity exploration might somewhat lose its functionality and become increasingly less adaptive when sustained through the late 20s. Similarly, the association of exploration in depth with ruminative exploration was stronger in the late 20s as compared to adolescence and emerging adulthood. Ruminative exploration, in turn, also became more strongly related to depressive symptoms in the 20s as compared to the teen years. In sum, whereas exploration processes in adolescence and emerging adulthood seem to serve an important goal, which is arriving at and evaluating identity commitments, these processes seem to become less functional when sustained until the late 20s. This conclusion is in line with Waterman and Archer's (1990, p. 36) theorizing: 'During the early phases of identity exploration, the emotional tone is often one of exhilaration, anticipation, or curiosity. Later, this may give way to anxiety or other forms of subjective discomfort as the person finds that exploration, *per se*, does not necessarily provide clear cut answers.'

Indeed, to the extent that young people are engaged in a perpetual exploration phase, they may experience increased depressive symptoms (Marcia, 2002; Stephen, Fraser, & Marcia, 1992). Côté and Levine (2002) have described a subgroup of individuals in the moratorium status who are driven by excessively high standards and criteria for functioning, which undermine their ability to form a steady set of commitments. These individuals seem to be locked in a vicious cycle of continued exploration, contributing

to feelings of hopelessness and uncontrollability. Hence, future longitudinal research should examine developmental trends across extended periods of time from a person-oriented perspective, that is, with a view on distinct developmental subgroups or classes. Such research would not only allow for examining the degree to which the generic trends described in the present study apply to everyone or, as expected based on previous efforts (e.g., Luyckx et al., 2008b), whether distinct developmental classes would emerge each characterized by different trends over time. Such research could also ascertain whether the associations obtained between identity processes and depressive symptoms would be moderated by membership to such developmental classes. For instance, the increased association between exploration in breadth and depressive symptoms might apply especially to those individuals who do not simultaneously arrive at self-endorsed commitments. In contrast, increased levels of exploration in breadth are probably less associated with depressive symptoms in the late twenties, if these individuals have strong identity commitments at the same time. Such additional analyses could shed further light on the exact meaning of different identity processes and how their functionality changes across these different developmental periods.

Future longitudinal research should also be extended beyond the late 20s well into adulthood. Identity formation has been cast as a lifelong developmental task characterized by continuous changes and re-evaluations over the adult life span (Kroger, 2000). Hence, it remains to be examined if the developmental trends uncovered in the present study would consolidate or continue through adulthood, or if at some point in time distinctive developmental trajectories would emerge for certain individuals (e.g., temporary increases in exploration for those individuals experiencing an important life crisis; Kroger, 2000). Only recently has it been demonstrated that, generally speaking, identity status trajectories obtained in young adulthood (i.e., in the 30s) were quite similar to those obtained in emerging adulthood (Luyckx, Klimstra, Schwartz & Duriez, in press). Nonetheless, research on identity trajectories assessed over extended periods of time (i.e., beyond young adulthood) is needed, as well as a detailed inquiry in the functionality of different identity strategies across the life span.

Limitations and Suggestions for Future Research

The present study was characterized by a number of limitations. Firstly, as noted, the cross-sectional design of the present study limited the validity of the conclusions that could be drawn. Further, the present study remains fairly descriptive and does not provide insights into how the observed age trends came about. Only recently, Koepke and Denissen (2012) provided a compelling overview of how contextual affordances and close interpersonal relationships may play into identity development. Hence, future longitudinal research should not only assess identity development across longer periods of time but should also try to illuminate some of the contextual, interpersonal, and individual mechanisms that potentially cause the observed changes. Additional demographic variables that might be confounded with age or developmental period (e.g., whether individuals are living at home and whether or not they have a partner) need to be included as well. Further, although the present study still had a sufficient amount of males to draw valid conclusions with respect to potential sex differences, a more balanced sex distribution is advisable for future research using smaller samples than the one used in the present study. Finally, the cross-sectional design used also limits the conclusions that can be drawn with respect to directionality of effect.

Inspired by identity developmental theorizing, the present findings are interpreted, for instance, as identity processes having an influence on depressive symptoms. Until longitudinal research actually demonstrates that this is the case, such conclusions need to be drawn cautiously.

Secondly, virtually all of our participants were from European-Caucasian descent, which limits the generalizability of the present findings. It remains to be investigated how the different variables assessed in the present study interrelate in non-Western cultures or in non-Whites living in Western cultures, the latter being a rapidly growing population. Relatedly, it is important to note that, despite the sociocultural changes that have created the emerging adult life stage, Arnett's (2000) approach applies primarily to those individuals who have the economic wherewithal to postpone adult responsibilities. Many youth from less advantaged backgrounds, especially those from developing countries, have much more limited freedom for extended identity exploration (Galambos & Martínez, 2007).

Thirdly, the validity of the conclusions that can be drawn based on the present findings is limited to the identity processes and domain assessed. More specifically, the present study assessed five identity processes with respect to future plans, goals, and lifestyles. Although the transition to adulthood constitutes a period of life in which future-related choices become very salient, it is by no means the only identity challenge these individuals are confronted with (Erikson, 1968). Individuals do not only have to make so-called personal identity choices across a wide variety of domains, they also develop personal and social identities in close interaction with the social world (Schwartz, Luyckx, & Vignoles, 2011). Similarly, an additional limitation of the present study is its sole reliance on self-reported depressive symptoms as an outcome variable. Future research efforts examining similar research questions should broaden their scope and include positive indicators of well-being as well, such as life satisfaction and self-esteem. A recent longitudinal study found that commitment processes appeared to be a stronger predictor of self-esteem over time for college students as compared to high school students (Luyckx, Klimstra, Duriez, Van Petegem, Beyers, Teppers & Goossens, 2013), again indicating that the developmental period under study could partially determine how functional or adaptive certain identity processes may be.

Finally, the present findings seemed to suggest that students in the vocational and technical tracks (which directly prepare adolescents for certain jobs or careers) score higher on commitment making and lower on exploration as compared to students in the academic track (which consists of a general, broad education, preparing students for higher education). These findings do not come as a surprise given that, especially in the vocational track, students already have a rather clear view on their future job whereas this is much less the case for students in the academic track. Hence, future research should continue to sample students from different tracks to allow for authoritative claims on the high school period.

In conclusion, meaningful identity trends were found which were in line with prominent theories on identity development. Commitment processes were mainly characterized by linear increases, exploration processes were mainly characterized by quadratic trends. Secondly, these identity processes did not seem to be equally functional or adaptive in different developmental periods examined. As expected, especially commitment making became more functional and adaptive with age, whereas especially exploration in breadth became less functional in older age cohorts. We hope that the present study will instigate researchers to address similar research questions in long-term longitudinal research.

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