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Unpacking commitment and exploration: Preliminary validation of an integrative model of late adolescent identity formation

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Abstract

A model of identity formation comprising four structural dimensions (Commitment Making, Identification with Commitment, Exploration in Depth, and Exploration in Breadth) was developed through confirmatory factor analysis. In a sample of 565 emerging adults, this model provided a better fit than did alternative two- and three-dimensional models, thereby validating the unpacking of both exploration and commitment. Regression analyses indicated that Commitment Making was significantly related to family context in accordance with hypotheses. Identification with Commitment and both exploration dimensions were significantly related to adjustment and family context, again in accordance with hypotheses. Identification with Commitment was positively related to positive adjustment indicators and negatively to depressive symptoms, whereas Exploration in Breadth was positively related to depressive symptoms and substance use. Exploration in Depth, on the other hand, was positively related to academic adjustment and negatively to substance use. Implications and suggestions for future research are discussed. © 2005 The Association for Professionals in Services for Adolescents. Published by Elsevier Ltd. All rights reserved.

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Introduction

The identity status paradigm (Marcia, 1966) is the most important paradigm for research on late adolescent and emerging adult identity development to date. Marcia uses two dimensions, exploration and commitment, to assign individuals to one of four statuses. Exploration refers to the questioning and weighing up of various identity alternatives. Commitment refers to the choices made in identity relevant areas. In the past two decades, several researchers extended or modified this influential paradigm (see Schwartz, 2001). The present study compared and integrated Marcia's model with one such extension, the process model proposed by Bosma (1985), Meeus (1996), and Meeus, Iedema, and Maassen (2002). Whereas Marcia primarily emphasized the formation of commitments through exploration of alternatives, the latter model focused on the maintenance of commitments through exploration in depth of these commitments.¹ Moreover, Bosma and Meeus primarily focused on how one identifies with a certain commitment rather than on making the choice in itself. Despite the fact that these two models are clearly complementary, our study represents the first empirical attempt to integrate both models into one encompassing model of identity formation through the use of two identity measures, one intended to measure the model of Marcia and the other intended to measure the model of Bosma and Meeus.

The distinction between commitment and identification with commitment

Bosma (1985, 1986) distinguished commitment making and the extent to which one identifies with that commitment by means of exploratory factor analysis on the Groningen Identity Development Scale (GIDS). Presence of commitment and identification with that commitment emerged as separate factors. Apparently, the fact that one has made a commitment does not automatically imply that one identifies with or feels certain about this commitment. A commitment probably contributes to a clear sense of identity and becomes integrated in the self when an late adolescent has identified him- or herself with that commitment (Grotevant, 1987).

This concept of identification with commitment seems somewhat similar to the concept of personal expressiveness (Waterman, 1990, 1993) that, according to Waterman, could serve as a third defining dimension of identity. Personal expressiveness has its roots in eudaimonism and refers to the degree in which a person's sense of identity corresponds to the actual potentialities of the individual. Put differently, these feelings of personal expressiveness can be used as a basis to assess whether identity elements are well-chosen (Waterman, 1992). Identity-related activities consistent with one's potentials would be characterized by feelings of happiness, certainty, and completeness. Several studies (Schwartz, Mullis, Waterman, & Dunham, 2000; Waterman et al., 2003) indeed found support for the hypothesized links between ego identity status and personal expressiveness, with identity achieved adolescents scoring highest and identity diffused scoring lowest on personal expressiveness. Bearing in mind the similarities between personal expressive-

¹Both models are clearly complementary in their focus on exploration. Meeus, Iedema et al. (2002) indicated that the fact that they focus on exploration as a mechanism to deal with current commitments does not mean that they discard the role and function of exploration in the formation of commitments, as viewed by Marcia.

ness and identification with commitment, these latter findings come as no surprise because it could be expected that identification with commitment would be highest in the achievement status and lowest in the diffusion status.

The theoretically relevant distinction between the presence of commitment and identification with commitment, however, was not pursued in further empirical research. Commitment has been treated systematically as one process rather than as two processes. However, a detailed item-inspection of the Utrecht-Groningen Identity Development Scale (U-GIDS; Meeus & Dekovic, 1995), a short self-report revision of the GIDS, indicated that it did measure identification with commitment rather than mere commitment making (Grotevant, 1987) because it focused on the experienced importance of and certainty concerning a commitment.

The distinction between exploration in breadth and exploration in depth

According to Meeus, Iedema et al. (2002), an important drawback in Marcia's paradigm is that the primary role of exploration is in facilitating the formation of commitments. Therefore, Meeus et al. focused on the role of exploration in the maintenance of one's current commitments. Exploration, in their model, represents the extent to which adolescents currently think and gather information about their commitments in an active manner, as opposed to Marcia's definition in which exploration involves weighing up various alternatives before a choice is being made. Exploration is primarily viewed as a way to re-evaluate commitments (Côté & Levine, 1988; Bosma, 1992; Kerpelman, Pittman, & Lamke, 1997), thereby transforming identity formation into a dynamic iterative process of constructing and revising one's identity. A relatively recent process-approach to the status paradigm also emphasized the crucial importance of successive commitment-exploration (MAMA) cycles in an iterative evaluative process (Stephen, Fraser, & Marcia, 1992). However, again, this cyclical approach did not explicitly distinguish between the two different exploration-dimensions (that is, exploration in breadth of different alternatives and exploration in depth of current commitments) and treated exploration as a unitary construct.

Grotevant (1987; Grotevant, Thorbecke, & Meyer, 1982; Grotevant & Cooper, 1985) and Marcia and Archer (1993) spoke of depth of exploration involving the investigation of one identity option by means of several different approaches and breadth of exploration involving the investigation of a number of different options. Both dimensions, however, were systematically lumped together into the broad category of exploration. The career development literature, on the other hand, put greater emphasis on the distinction between rather similar exploration dimensions. Exploration in depth and exploration in breadth were viewed as subsequent steps in the career decision-making process that ultimately lead to a vocational commitment (Harren, 1979; Gati & Asher, 2001). However, research to clearly distinguish both dimensions was not undertaken.

Research objectives and hypotheses of the present study

The present study set out to unpack both commitment and exploration into two complementary processes. This approach would result in a model encompassing Commitment

Making, Identification with Commitment, Exploration in Depth, and Exploration in Breadth. Exploration in Breadth was viewed as the gathering of information about different identity alternatives to guide the formation of commitments. Commitment Making was viewed as the actual making of choices. Exploration in Depth was viewed as the gathering of information about current choices. Identification with Commitment was viewed as the degree of identification with those choices. The present study focused on these dimensions at a global level because it aimed at capturing the structure of identity development across different content domains. By doing this, the general claim of several identity theorists that identity development has to be studied within content domains was not discarded. On the contrary, the present study set out to identify the general identity processes that provide a framework for identity development within different content domains.

First, Confirmatory Factor Analysis (CFA) was used to verify statistically, taking measurement error into account (Long, 1983), whether the four-construct model described earlier or whether alternative two- or three-dimensional models of identity formation provided a better fit to the data. Second, the identity dimensions were related to various relevant concurrent variables, indicating if, and to what extent, these dimensions would evidence distinct patterns of relationships with these variables. The present study focused on family context and youth adjustment to explore possible determinants and consequences of these four dimensions.

Both commitment factors and both exploration factors were expected to be positively interrelated. Exploration in Depth was expected to relate positively to Commitment Making and Identification with Commitment because it serves the strengthening of commitments (Meeus, Iedema et al., 2002). Exploration in Breadth was expected to relate negatively to both commitment dimensions because it is associated with uncertainty and the experience of crisis (Samuolis, Layburn, & Schiaffino, 2001).

Both commitment dimensions were expected to relate positively to adjustment (Marcia, 1980, 1993; Balistreri, Busch-Rossnagel, & Geisinger, 1995), which was measured in terms of internalizing and externalizing problems, self-esteem, and social and academic adjustment at university. Identification with Commitment was expected to be related more strongly to late adolescents' adjustment because commitments which one had identified with would lead to a greater sense of satisfaction with oneself (Grotevant, 1987; Waterman, 1992). Exploration in Breadth was expected to relate negatively and Exploration in Depth to relate positively to adjustment because the former dimension is associated with uncertainty and the experience of crisis, whereas the latter serves the strengthening of one's commitments (Samuolis et al., 2001; Meeus, Iedema et al., 2002). Both commitment dimensions were expected to relate positively to a nurturant parent-child relationship, as measured by means of supportive parenting and absence of conflict between parents and late adolescents (Nelson, Hughes, Handal, Katz, & Searight, 1993). Exploration in Depth was also expected to relate positively to supportive parenting (Meeus, Oosterwegel, & Vollebergh, 2002) because Exploration in Depth serves the strengthening of commitments and hence will be promoted in a supportive parent-child climate. Finally, both commitment dimensions were expected to relate negatively to emotional and functional disengagement from parents (Hoffman, 1984) because late adolescents who report feeling close to their parents will be more likely to move toward commitment (Schultheiss & Blustein, 1994; Lucas, 1997). Exploration in Breadth, however, was expected to relate positively to separation from parents because the ability to explore identity alternatives

would necessitate loosening of ties with parents (Grotevant & Cooper, 1985; Kroger, 1985; Kroger & Haslett, 1988).

Method

Participants and procedure

Our sample consisted of 565 freshmen from the Faculty of Psychology and Educational Sciences from a large university in Belgium (Europe). This university mainly attracts Caucasian students with a middle-class background. A breakdown by gender yielded 482 women (85.3%) and 83 men (14.7%) mirroring the unbalanced distribution of gender in this student population. Mean age was 18 years and 8 months (s.d. = 7.6 months) with a range from 17 years and 2 months to 22 years and 1 month. Scale scores were computed as long as the participants completed 80% of the items. Missing scale scores were imputed using the Expectation Maximization-algorithm.

Measures

All measures were in Dutch, the native language of the participants. All items were answered on a 5-point Likert-type rating scale (ranging from “strongly disagree” to “strongly agree”) unless indicated otherwise.

Commitment Making and Exploration in Breadth. We used the Ego Identity Process Questionnaire (EIPQ; Balistreri et al., 1995) to assess Commitment Making and Exploration in Breadth in the ideological and interpersonal area.² Sample items are “I have definitely decided on the occupation I want to pursue” (Ideological Commitment), “I have considered adopting different kinds of religious beliefs” (Ideological Exploration), “I am very confident about what kinds of friends are best for me” (Interpersonal Commitment), and “I have evaluated many ways in which I fit into my family structure” (Interpersonal Exploration). The EIPQ was translated using a modified parallel blind technique (Behling & Law, 2000). Two independent translators translated the EIPQ into Dutch, the participants’ native language. After agreeing on a common version, the translation was checked by a third independent translator with a Ph.D. in developmental psychology. This version was discussed by a committee of developmental researchers, resulting in the final version.

This Dutch version had a clear factor structure in a large European sample of late adolescents yielding four content factors (Luyckx, Goossens, Beyers, & Soenens, in press)—in accordance with the four factor-structure used in research on late adolescents in the United States (e.g., Schwartz & Montgomery, 2002)—demonstrating its factorial validity. Moreover, both the original English version and the translated Dutch version showed adequate convergent validity with continuous measures of identity styles and identity statuses (Schwartz & Dunham, 2000;

²The subscales from the EIPQ and the U-GIDS were labelled with the terms originally used by the authors who developed these questionnaires, that is, “Commitment” and “Exploration”. The labels “Exploration in Breadth”, “Commitment Making”, “Exploration in Depth”, and “Identification with Commitment” were developed for the present study and hence were used solely for the latent variables, that is, the four structural identity dimensions.

Berman, Schwartz, Kurtines, & Berman, 2001; Luyckx et al., in press). Finally, Balistreri et al. (1995) demonstrated its face validity (that is, there was significant agreement among expert raters concerning the dimensions assessed by the items). In the present study, 3 items were dropped because they had non-significant loadings on their hypothesized content factor in the CFA-analysis ($df = 416$; $SBS-\chi^2 = 761.26$; $RMSEA = .04$; $CFI = .93$; $SRMR = .05$). Cronbach's alpha for Ideological Commitment (7 items), Ideological Exploration (7 items), Interpersonal Commitment (8 items), and Interpersonal Exploration (7 items) were .63, .68, .58, and .61, respectively.

Identification with Commitment and Exploration in Depth. We used the U-GIDS (Meeus & Dekovic, 1995), a questionnaire originally developed for use with Dutch-speaking adolescents. The instrument measures Identification with Commitment and Exploration in Depth in the ideological and the interpersonal area. Sample items are “My education gives me certainty in life” (Ideological Commitment), “I think a lot about my education” (Ideological Exploration), “My best friend gives me self-confidence” (Interpersonal Commitment), and “I try to figure out regularly what other people think about my best friend” (Interpersonal Exploration). Meeus (1996) and Meeus and Dekovic (1995) showed that the U-GIDS had a clear and stable factor-structure in different groups in accordance with hypotheses, demonstrating the strong convergent/divergent validity of the scales of interpersonal and ideological identity. Moreover, Meeus, Oosterwegel et al. (2002) provide an overview of the instrument's concurrent and construct validity. Despite small changes in item wording (intended to make the items less repetitive), this factor structure was confirmed in our sample. Cronbach's alphas for Ideological Commitment (8 items), Ideological Exploration (5 items), Interpersonal Commitment (8 items), and Interpersonal Exploration (5 items) were .81, .62, .80, and .57, respectively.

Self-esteem. General self-esteem was operationalized using the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). A sample item is “I feel that I have a number of good qualities”. This scale contains 10 items scored on a 4-point Likert-type rating scale (ranging from “does not apply to me at all” to “applies to me very well”). Cronbach's alpha was .91.

Depressive symptoms. We used a 12-item shortened version of the Center for Epidemiologic Studies Depression Scale (CESD; Radloff, 1977). Items were scored on a 4-point Likert-type rating scale (ranging from “seldom” to “most of the time or always”) and refer to cognitive, somatic and psychological symptoms of depression. A sample item is “During the last week, I felt depressed”. Participants were asked to indicate how often they experienced these symptoms during the past week. Cronbach's alpha was .88.

Social and academic adjustment at university. Social and academic adjustment at university were assessed with a brief 20-item shortened version (Beyers, 2001; Beyers & Goossens, 2002) of the Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1984). Academic adjustment (10 items) refers to the educational demands of the university experience and social adjustment (10 items) assesses how well students deal with interpersonal experiences at university. Sample items are “Recently I have had trouble concentrating when I try to study” (Academic adjustment) and “I am meeting as many people and making as many friends as I would like at university” (Social adjustment). Cronbach's alphas were .87 and .85, respectively.

Substance use. Participants were asked if they had used soft-drugs (marijuana) or if they had drunk too much (as perceived by the late adolescents themselves) or became drunk during the past 6 months. A sample item is “I drank too much alcohol or became drunk”. These items were

scored on a 5-point Likert-type rating scale (ranging from “does not apply to me at all” to “applies to me very well”). The scores on both questions were added to derive a global score for substance use. The inter item-correlation was .46 ($p < .001$).

Supportive parenting. Three different parenting dimensions were assessed. Responsiveness measures the extent to which the adolescent perceives his or her parents as responsive and involved. Autonomy-support indicates to which extent parents stimulate their children to express their own opinion and to pursue their own goals. Psychological control refers to covert methods of controlling the adolescent’s activities, such as guilt induction and excessive pressure for change. We used 7 items from the Child Report on Parent Behavior for Older Children and Adolescents (CRPBI-30; Schludermann & Schludermann, 1988) to measure responsiveness, and the Parental Psychological Control Scale-Youth Self-Report (PCS-YSR; Barber, 1996) to measure psychological control. Autonomy support was measured using the Perceptions of Parents Scales (POPS; Grolnick, Ryan, & Deci, 1991). Two autonomy support items were dropped due to low item-total correlations. Sample items are “My parents often smile at me” (Responsiveness), “My parents are less friendly with me if I do not see things their way” (Psychological control), and “My parents help me to choose my own direction in life” (Autonomy support). Cronbach’s alphas for responsiveness (7 items), psychological control (8 items), and autonomy support (5 items) were .92, .83, and .78, respectively. Exploratory factor analysis indicated that all three dimensions loaded on a single factor with responsiveness and autonomy-support having high positive loadings and psychological control having a high negative loading. A composite score of supportive parenting was therefore created by computing a weighted factor score for each participant.

Parent–adolescent conflict. In order to assess the amount of conflict between adolescents and their parents, participants were asked to indicate on a 5-point Likert-type rating scale how often they argued with their parents on 12 different topics such as money, friends, and education, ranging from “never” to “always” (Bosma et al., 1996; Dekovic, Noom, & Meeus, 1997). Cronbach’s alpha was .87.

Separation–individuation. Emotional and functional independence from both parents were assessed with a brief 20-item version (Beyers, 2001; Beyers & Goossens, 2003) of the Psychological Separation Inventory (PSI; Hoffmann, 1984). Emotional independence (10 items) refers to the freedom from an excessive need for approval, closeness and relational support in relation to parents. Functional independence (10 items) refers to the ability to manage and direct one’s practical and personal affairs without parental help. Sample items, all reverse coded, are “I feel longing if I am away from my parents for too long” (Emotional independence) and “My parents help me to make my budget” (Functional independence). Cronbach’s alphas were .88 and .85, respectively.

Results

Initial analyses

CFA from the Structural Equation Modelling (SEM) approach was performed using Lisrel 8.53[®] (Jöreskog & Sörbom, 1993). SEM with latent variables requires multiple indicators for all

the constructs that are assessed. We used parcels of items for each construct (in a random fashion) and used these as indicators of the latent variables, resulting in 16 parcels.³ Parcelling has several advantages in the modelling of latent variables, relative to the use of individual items: parcels are likely to have a stronger relationship to the latent variable, are less likely to be affected by method effects, and are more likely to meet assumptions of normality (Marsh, Hau, Balla, & Grayson, 1998). The ratio of four indicators or parcels per latent variable guaranteed that all models being tested in subsequent analyses would be identified, meaning that a unique estimate for every parameter in the model could be obtained. However, in spite of this parcelling procedure, data screening of these parcels indicated partial non-normality of the data. Therefore, Satorra–Bentler scaling (Satorra & Bentler, 1994) was used because it divides the usual normal-theory chi-square statistic by a scaling correction to better approximate chi-square under non-normality.

Measurement model of identity formation

Various indices were used to evaluate model fit (Kline, 1998). The Satorra–Bentler Scaled chi-square statistic (SBS- χ^2) should be as small as possible, preferably non-significant. The Standardized Root Mean Square Residual (SRMR) and the Root Mean Square Error of Approximation (RMSEA) should be less than .09 and .06, respectively (Hu & Bentler, 1999; Quintana & Maxwell, 1999). Finally, the Comparative Fit Index (CFI) should exceed .95. Because models were statistically nested, SBS- χ^2 difference tests were used.

Comparisons were made among four models. No cross-loadings and correlated measurement errors were allowed: every indicator variable loaded on one and only one latent variable and the residual variances of the indicator variables were not allowed to correlate (Kline, 1998). Model 1 consisted of Global Commitment (four parcels from the two commitment subscales of the EIPQ and four parcels from the two commitment subscales of the U-GIDS) and Global Exploration (four parcels from the two exploration subscales of the EIPQ and four parcels from the two exploration subscales of the U-GIDS). Model 2 consisted of Commitment Making (four parcels from the two commitment-subscales of the EIPQ), Identification with Commitment (four parcels from the two commitment-subscales of the U-GIDS) and Global Exploration. Model 3 consisted of Global Commitment, Exploration in Depth (four parcels from the two exploration-subscales of the U-GIDS), and Exploration in Breadth (four parcels from the two exploration-subscales of the EIPQ). Finally, Model 4 consisted of Commitment Making, Identification with Commitment, Exploration in Depth, and Exploration in Breadth. Fit indices for the various models are presented in Table 1.

The SBS- χ^2 difference test (SBS- $\chi^2 \Delta = 91.61$; 2 df less; $p < .0001$) and other fit indices clearly favoured Model 2 over Model 1, indicating that the unpacking of Global Commitment resulted in a better model fit. Again compared to Model 1, Model 3 resulted also in a substantial improvement in fit (SBS- $\chi^2 \Delta = 71.39$; 2 df less; $p < .0001$) indicating that the unpacking of Global Exploration proved fruitful. However, fit indices of Model 4 indicated that the joint unpacking of

³All parcels consisted of 3 or 4 items. Items from the interpersonal and ideological subscales were randomly assigned to parcels enabling us to capture the underlying structural identity dimensions. Moreover, post hoc analyses indicated that content did not moderate the emergence of the four structural identity dimensions. In both the interpersonal and ideological domain, the model with these four dimensions had the best fit to the data, yielding similar fit-indices and intercorrelations among the four latent variables.

Table 1
Fit indices for the various measurement models of identity formation

Model description	Fit indices				
	df	SBS- χ^2	RMSEA	CFI	SRMR
Model 1: Two-factor model (Global Commitment, Global Exploration)	103	203.09	.04	.73	.16
Model 2: Three-factor model (Commitment Making, Identification with Commitment, Global exploration)	101	111.48	.01	.81	.13
Model 3: Three-factor model (Global Commitment, Exploration in Depth, Exploration in Breadth)	101	131.70	.02	.84	.10
Model 4: Four-factor model (Commitment Making, Identification with Commitment, Exploration in Depth, Exploration in Breadth)	98	50.74	<.01	.92	.06

Note: Df = degrees of freedom; SBS- χ^2 = Satorra–Bentler Scaled chi-square; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; CFI = Comparative Fit Index.

Global Commitment and Global Exploration provided the best fit to the data, hence the significant improvement in fit over Model 1 (SBS- $\chi^2 \Delta = 152.35$; 5 df less; $p < .0001$), Model 2 (SBS- $\chi^2 \Delta = 60.74$; 2 df less; $p < .0001$), and Model 3 (SBS- $\chi^2 \Delta = 80.96$; 2 df less; $p < .0001$). The magnitude of the standardized factor loadings indicated that this final solution accounted for a significant proportion of the variance in all indicator variables used, ranging from .21 to .66 (Fig. 1).⁴ Latent factor scores for the four identity dimensions were calculated and used in all subsequent analyses.

The four factors were significantly interrelated in this final model (all at $p < .01$). Only the correlation between Identification with Commitment and Exploration in Breadth proved to be non-significant. As expected, Commitment Making was positively related to Identification with commitment, and Exploration in Depth was positively related to Exploration in Breadth. Whereas Exploration in Depth was positively related to Commitment Making and Identification with Commitment, Exploration in Breadth was negatively related to Commitment Making. This indicated that, as expected, both dimensions tapped different processes in identity formation.

Contextual and individual correlates of the four identity processes

Pearson correlations, as represented in Table 2, indicated that the four identity dimensions each had a differential pattern of associations with adjustment and relationships with parents. As expected, Commitment Making and Identification with Commitment were positively related to adjustment (thus, negatively to depressive symptoms and substance use, and positively to self-esteem, and to social and academic adjustment at university). Moreover, they were positively

⁴These proportions can be easily calculated based upon Fig. 1 because the proportion of explained variance in an indicator variable equals 1—the error term of that respective indicator variable.

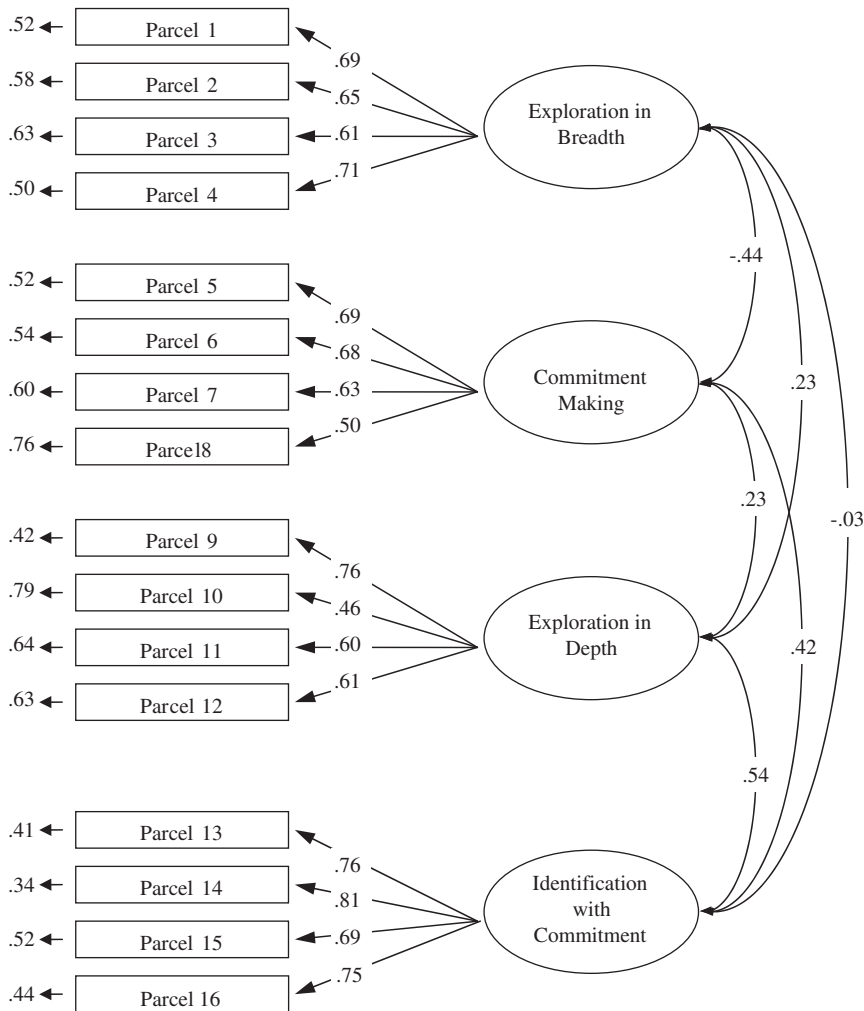


Fig. 1. Standardized solution of the final CFA (Model 5) for the four identity dimensions. *Note:* All factor-loadings and correlations are significant at $p < .01$ (except the correlation between Exploration in Breadth and Identification with Commitment ($p = .49$)).

related to a supportive parent–child relationship, and negatively to independence from parents. Again in line with expectations, Exploration in Depth was positively related to adjustment (positive to academic adjustment and negative to substance use) and Exploration in Breadth was positively related to various indicators of maladjustment (i.e. depressive symptoms and substance use). Moreover, the exploration factors had differential associations with the family context variables with Exploration in Depth being positively related to supportive parenting and negatively to independence from parents, and Exploration in Breadth positively to conflict and negatively to supportive parenting.

Due to the moderately strong interrelations among these four dimensions, multiple regression analyses were performed to control for these interrelations (by assigning the four identity

Table 2
Standardized Betas and Proportion Explained Variance for the Regression Analyses of Adjustment and family Context on Identity

Variable	Depressive symptoms	Self-esteem	Substance use	Academic adjustment	Social adjustment	Conflict	Supportive Parenting	Emotional Independence	Functional Independence
Commitment Making	.03 (-.25**)	.01 (.24**)	.05 (-.12**)	.06 (.33**)	-.08 (.19**)	-.10 (-.24**)	.16* (.36**)	-.17* (-.24**)	-.05 (-.23**)
Identification with Commitment	-.36** (-.34**)	.40** (.39**)	-.02 (-.06)	.31** (.42**)	.40** (.38**)	-.17* (-.23**)	.21** (.34**)	-.04 (-.20**)	-.06 (-.19**)
Exploration in Depth	.04 (-.01)	-.06 (.04)	-.20** (-.12*)	.22** (.31**)	.06 (.15**)	.02 (-.03)	.12* (.19**)	-.19** (-.25**)	-.31** (-.30**)
Exploration in Breadth	.20** (.20**)	-.07 (-.10)	.25** (.16**)	-.10 (-.07)	-.07 (-.03)	.11 (.17**)	-.11 (-.16**)	-.01 (.02)	.14* (.08)
Total R ²	.16**	.16**	.06**	.23**	.15**	.08**	.19**	.10**	.13**

Note. Pearson correlations in parentheses.

* $p < .01$. ** $p < .001$.

processes the role of predictors and inserting them as one block). Standardized betas and the proportion of variance explained in the different adjustment and family context variables are represented in Table 2. All proportions of variance explained in the correlates were significant. When controlling for the other three dimensions, Commitment Making was virtually unrelated to adjustment and family context. Only the positive zero-order correlation with supportive parenting and the negative zero-order correlation with emotional independence from parents remained significant. With similar controls, Identification with Commitment was significantly related to adjustment and family context in accordance with hypotheses (positively related to self-esteem, academic and social adjustment, and supportive parenting and negatively related to depressive symptoms and conflict). Again with similar controls and in accordance with hypotheses, Exploration in Depth was positively related to academic adjustment and supportive parenting and negatively to substance use, and emotional and functional independence. Exploration in Breadth, however, was positively related to depressive symptoms, substance use, and functional independence.

Discussion

Our study focused on commitment and exploration and represents an attempt to integrate two identity formation models, namely Marcia's model and the process model developed by Bosma (1985), Meeus (1996), and Meeus, Iedema et al. (2002). Both models are clearly complementary in their operationalization of both dimensions. Whereas Marcia focused on exploration in breadth of alternatives, Meeus et al. focused on the exploration in depth of current commitments. Moreover, the latter model focused on how one identifies with or evaluates a certain commitment rather than solely on making commitments. Our results demonstrated that both models could be combined into one encompassing model of identity formation, consisting of Commitment Making, Identification with Commitment, Exploration in Depth, and Exploration in Breadth and that these four dimensions were differentially related to adjustment and family context in accordance with hypotheses.

A four-construct measurement model of identity formation

CFA indicated that a four-factor model provided a significantly better fit to the data than did simpler models. This model may serve as a useful tool for research on late adolescent or emerging adult identity development. Both exploration dimensions were positively interrelated indicating that both dimensions had in common the seeking out or exploration of identity relevant information. However, whereas Exploration in Depth was related positively to Commitment Making and Identification with Commitment, emphasizing that it serves the strengthening and evaluation of commitments, Exploration in Breadth was related negatively to Commitment Making and unrelated to Identification with Commitment. Apparently, this latter exploration dimension is associated with a period of crisis and existential doubt about important life-choices, which precedes the actual formation of commitments. Although both commitment dimensions were strongly interrelated, the correlation was not of such a magnitude that it would justify combining them into a single commitment factor, as evidenced in our CFA.

Given these findings, the following model of identity formation was constructed, integrating ideas from Bosma and Kunnen (2001), Grotevant (1987), Kerpelman et al. (1997), and Meeus, Iedema et al. (2002). Exploration in Breadth constitutes an important process before a commitment is being made because it involves the weighing up of various alternatives. As soon as a commitment is made, Exploration in Depth comes into the picture. Therefore, exploration cannot be treated as a unitary construct which functions solely as an adjunct to and preparation for Commitment Making. Exploration not only precedes Commitment Making but also represents the degree to which late adolescents deal with their existing commitments in an active manner by reflecting on them and talking about them with others. The latter process serves Identification with Commitment because an in-depth exploration allows a thorough evaluation of that commitment. Depending on the outcome of that evaluation, Exploration in Depth again can be activated to gather more information about that commitment. If the commitment is found to be unsatisfactory and the standards of comparison are not altered, the process possibly cycles back to Exploration in Breadth for another iteration beginning with a broad exploration of other possible commitments, as already pointed out by Stephen et al. (1992) in their MAMA-cycles. The sequence in the model presented here (Exploration in Breadth–Commitment Making–Exploration in Depth–Identification with Commitment) could serve as a heuristic for future research on the development of identity. Longitudinal studies may be particularly needed to test this developmental sequence.

Possible determinants and consequents of the four identity processes

Commitment Making was significantly related to all adjustment variables but when controlling for the other three dimensions none of these correlations remained significant. For the other three identity dimensions, there were practically no dissimilarities between the zero-order correlation matrix and the regression analyses. Only the positive zero-order correlation between Exploration in Depth and social adjustment to university failed to reach significance in the regression analyses. Apparently, the latter three identity dimensions were more important concurrent determinants of adjustment than was Commitment Making. Previous research concluded that strong commitment was accompanied by superior adjustment (Marcia, 1980, 1993; Cramer, 2000). The present findings call for a refinement of these conclusions, because Identification with Commitment (not the actual commitment making itself) was accompanied by positive adjustment and good relations with parents when the interrelations between the different identity dimensions were taken into account. Only when late adolescents have identified strongly with a certain commitment they evidence a better profile of concurrent adjustment. In accordance with hypotheses, Exploration in Depth was related positively to adjustment whereas Exploration in Breadth was related negatively to adjustment. These differential relationships clearly emphasized the need to distinguish between both exploration dimensions. Exploration in Breadth could give rise to depressive symptoms due to the uncertainty inherent in this process, whereas Exploration in Depth could lead to a positive profile of adjustment because it serves to strengthen or to revise commitments.

The regression analyses indicated that the family context variables were associated with all four identity dimensions in accordance with hypotheses. A supportive, nurturant parent–child climate was associated with Commitment Making, Exploration in Depth, and Identification with Commitment, thereby supporting the commonly found associations between progressive identity

development and a supportive family context. Moreover, Commitment Making was negatively associated with emotional separation from parents and Exploration in Depth negatively with both emotional and functional separation, indicating that late adolescents who reported feeling close to their parents were more likely to have made a choice in identity-relevant areas and to gather information about these choices. The positive association between functional independence and Exploration in Breadth, however, suggests that late adolescents who are close to their parents are likely not to explore in breadth because the latter exploration dimension may necessitate the loosening of ties with parents (Grotevant & Cooper, 1985; Kroger, 1985; Kroger & Haslett, 1988). Again, the differential relationships between both exploration dimensions and the family context clearly emphasized the need to distinguish between both exploration dimensions because they possibly stemmed from different family relationships. Exploration in Breadth could be facilitated by functional independence from parents, whereas Exploration in Depth could be facilitated by supportive parenting and feeling emotionally close to and depending functionally on parents. Apparently, depending on the phase of the developmental sequence mentioned before, one has to find a balance between distancing oneself from his or her parents and becoming close again. A longitudinal study could help to clarify the relationship between both exploration dimensions and their respective family contexts.

Limitations of the present study and suggestions for future research

Important limitations of this study must be mentioned. First, the study conducted is cross-sectional in nature. Therefore, several hypotheses put forward in the present study could be stated otherwise (Stattin & Kerr, 2000; Laird & Pettit, 2002). For instance, the fact that one scored higher on depression could give rise to a strengthening of Exploration in Breadth because one is more uncertain in general, and not vice versa. Or, the fact that one is better adjusted could lead one to focus more on current commitments in order to strengthen these commitments and hence to consolidate the sense of identity in general. Similarly, the fact that one broadly explores the external world and its possibilities could lead to greater functional independence from parents. Future longitudinal research should determine the plausibility of these alternative hypotheses. Second, all measures included in our study were self-report measures. Future research should not rely only on self-report questionnaires, but also on observational measures or multiple informants, to assess youth adjustment and family context. Third, our sample consisted primarily of female late adolescents and thus the question remains if these results could be replicated in a predominantly male sample. It is also unclear whether our findings, obtained on Caucasian European late adolescents, can be generalized to Northern American late adolescents and other ethnic groups (Goossens & Phinney, 1996). Fourth, a weakness of the study is that it includes only university students. Therefore, the results of the present study could not be generalized to the whole population of emerging adults because only a minority of them participates in higher education. Future researchers are therefore encouraged to find a complementary non-college sample. Finally, we focused on the global identity dimensions that transcend specific content domains. The questionnaires used to measure these global identity processes, however, differed in the number and content of the domains included. Whereas the EIPQ focused on four domains in the ideological (politics, religion, occupation, and value-orientation) and four in the interpersonal area (friendship, family, intimate relationships, and sex roles), the U-GIDS focused on one

domain in the ideological (education) and one in the interpersonal area (friendship). Therefore, a questionnaire should be developed measuring these four structural dimensions in the same content domains (Schwartz, 2002).

Future research should investigate how the four identity dimensions interact with one another. This is where the identity status approach enters the picture because this approach is primarily concerned with these interactions. The commonly used median-split procedure to derive these statuses, however, has major disadvantages and only allows a theory-based approach (MacCallum, Zhang, Preacher, & Rucker, 2002). The challenge for future research therefore lies in determining how to investigate the interactions between the four identity dimensions in a data-driven manner. Moreover, the four identity dimensions explicated in the present study should be included in a multi-wave longitudinal design to shed light on several questions. How do these four identity dimensions evolve over time and how do they influence each other? Can different trajectories for the various dimensions be distinguished? And if different trajectories can be distinguished, how do they relate to a number of possible predictors and consequences?

Conclusion

The present study set out to unpack two well-known building blocks of identity formation, that is, commitment and exploration. Through CFA, four structural identity processes at a global level—Exploration in Breadth, Commitment Making, Exploration in Depth, and Identification with Commitment—were identified and were differentially related to various intra-individual and contextual variables. Finally, a developmental model of identity formation was put forward that could serve as a heuristic for future research.

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