



## Capturing ruminative exploration: Extending the four-dimensional model of identity formation in late adolescence

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### Abstract

Identity exploration has been associated with openness and curiosity but also with anxiety and depression. To explain these mixed findings, the four-dimensional identity formation model [Luyckx, K., Goossens, L., Soenens, B., & Beyers, W. (2006b). Unpacking commitment and exploration: Validation of an integrative model of adolescent identity formation. *Journal of Adolescence*, 29, 361–378.] was extended using data from two late adolescent samples (total  $N = 703$ ). A fifth dimension, labeled ruminative (or maladaptive) exploration, was added as a complement to two forms of reflective (or adaptive) exploration already included in the model (i.e., exploration in breadth and exploration in depth). Results indicated that ruminative exploration was positively related to distress and to self-rumination. The two forms of reflective exploration, by contrast, were unrelated to well-being and positively to self-reflection. Ruminative and reflective exploration also helped to distinguish between two types of less adaptive identities (i.e., Ruminative Moratorium and Diffused Diffusion) in a six-cluster solution that also contained adaptive types of identity. Implications for current research on identity formation are discussed.

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## 1. Introduction

Erikson (1968) was among the first theorists to put forth a theory of identity development. Erikson wrote about identity in a clinical and figurative sense, but his theory was somewhat lacking in precision and detail (Côté, 1993). The identity status approach proposed by Marcia (1966) was among the first models to operationalize some of Erikson's ideas on identity formation for empirical research. The main focus of this status approach was on capturing individual differences in the way people approached and resolved identity issues at a certain time in their lives. Marcia's approach was based primarily on the presumably orthogonal dimensions of exploration and commitment, thereby focusing mainly on decision-making processes that are behavioral markers of the identity formation process. By crossing these two dimensions, Marcia derived four identity types or statuses: achievement (a commitment made following exploration), foreclosure (a commitment adopted without much prior exploration), moratorium (ongoing exploration with little commitment), and diffusion (lack of commitment coupled with little systematic exploration). Although achievement is generally considered to be the developmentally most mature status and diffusion the least mature status, many scholars agree that there is no normative developmental pathway indicating how individuals progress (or regress) through the statuses (van Hoof, 1999).

Although the identity status model has been in use for 40 years and has inspired over 500 theoretical and empirical publications, it is not without its critics. Some scholars have criticized this approach as being overly narrow (Côté & Levine, 1988; van Hoof, 1999), and others have attempted to extend Marcia's work by introducing more dynamic views on identity formation (e.g., Bosma & Kunnen, 2001; Meeus, 1996), making it more suitable for process-oriented developmental work.

In one of the most recent extensions of the identity status model, Luyckx, Goossens, and Soenens (2006a) differentiated exploration and commitment each into two separate dimensions. Exploration in breadth and commitment making represent the dimensions proposed by Marcia (1966) and refined by others (Grotevant, 1987). Exploration in depth and identification with commitment represent the dimensions by which existing commitments are re-evaluated and revised on a continuous basis (Meeus, 1996). Exploration in breadth was defined as the degree to which adolescents search for different alternatives with respect to their goals, values, and beliefs before making commitments. Exploration, however, also refers to an in-depth evaluation of one's existing commitments and choices (i.e., exploration in depth) to ascertain the degree to which these commitments resemble the internal standards upheld by the individual (cf. Kerpelman, Pittman, & Lamke, 1997; Meeus, Iedema, & Maassen, 2002).

Commitment making was defined as Marcia's commitment dimension—that is, the degree to which adolescents have made choices about important identity-relevant issues. However, commitment also is multidimensional. Luyckx and colleagues have argued that the degree to which adolescents feel certain about, can identify with, and internalize their choices (i.e., identification with commitment) is also an important component of identity formation (cf. Bosma, 1985; Ryan & Deci, 2000; Waterman, 1990). Consequently,

adolescents are viewed as active agents in their own development (Lerner, Theokas, & Jelicic, 2005). Their emerging sense of identity can guide them on their subsequent life paths (Schwartz, Côté, & Arnett, 2005).

In most identity formation models, exploration generally has been viewed as an adaptive identity dimension. Several studies have indeed demonstrated that identity exploration was associated—both concurrently and longitudinally—with both openness and general curiosity (Clancy & Dollinger, 1993; Luyckx, Soenens, & Goossens, 2006c). However, exploration has also been found to be accompanied by heightened anxiety and depressive symptoms (Kidwell, Dunham, Bacho, Pastorino, & Portes, 1995; Luyckx et al., 2006c). Although this finding may be taken to reflect “two sides of exploration,” it is also possible that different components of exploration are associated with openness and with anxiety. Indeed, it is possible that exploration can be subdivided into reflective versus ruminative components (Burwell & Shirk, 2007; Trapnell & Campbell, 1999; Teynor, Gonzalez, & Nolen-Hoeksema, 2003), and the elevated distress associated with exploration may be indicative of ruminative or otherwise maladaptive exploratory processes. Such a hypothesis has not been examined in previous identity research.

Nonetheless, the association of exploration with both openness and distress has led several authors to question the developmental adequacy of moratorium as a response to the identity issue (e.g., Côté & Schwartz, 2002). Moratorium is assumed to represent the hallmark of the successful transition to adulthood; individuals who attend college or are otherwise able to delay adult commitments often are able to spend a number of years exploring life alternatives without the burden of permanent adult responsibilities (Arnett, 2000). They are relatively free from limitations on their choices and can assume a more active role in their own development (Côté & Schwartz, 2002). As a result, certain individuals thrive in such an extended exploratory stage or identity moratorium and arrive at developing and forming fully endorsed identity commitments.

However, this extended moratorium can induce confusion in young people for whom the seemingly limitless possibilities are intimidating and disequilibrating (Schulenberg, Wadsworth, O'Malley, Bachman, & Johnston, 1996; Schwartz et al., 2005). Late-modern societies appear to be increasingly chaotic and less supportive of young people (Berzonsky, 2003; Côté, 2002). At the same time, societal pressure on individuals to create their own identity—with little or no external help—has increased (Baumeister & Muraven, 1996; Côté, 2002; du Bois-Reymond, 1998). Many Western consumer cultures are rooted in other-directedness, competition, and image building, thereby shifting attention away from the inner self as a foundation for decision making (Kasser & Ryan, 1996; Vansteenkiste, 2005). As such, the potential exists for individuals to become “stuck” in the exploration process, to continue to dwell over the different alternatives at hand, and to experience considerable difficulty arriving at firm or fully endorsed identity commitments (Schwartz et al., 2005).

Consequently, to the extent that young people are engaged in a “perpetual moratorium”, they may experience aggravated identity confusion and dissolution (Berzonsky, 1985; Marcia, 2002; Stephen, Fraser, & Marcia, 1992). For such individuals, moratorium may be more similar to diffusion than to achievement in terms of the quality and firmness of decision-making (Côté & Schwartz, 2002). Côté and Levine (2002), for instance, have described a group of moratoriums 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 ruminative cycle of continued exploration,

characterized by a repetitive and passive focus contributing to a feeling of hopelessness and uncontrollability of the situation at hand (Nolen-Hoeksema, 2000).

The existence of such an underlying dysfunctional or ruminative type of exploration could help to explain some of the mixed findings described earlier. Similar mixed findings in studies of personality led Trapnell and Campbell (1999) to distinguish between (a) ruminative or maladaptive and (b) reflective or adaptive types of private self-attentiveness. Self-rumination is a type of negative, chronic, and persistent self-attentiveness motivated by fear and perceived threats, losses, or injustices to the self, whereas self-reflection is a type of self-attentiveness motivated by curiosity or epistemic interest in the self. Others (e.g., Martin & Tesser, 1996; Teynor et al., 2003) also delineated the need to distinguish between more adaptive types of self-reflection and more maladaptive types of self-rumination—the latter being characterized by brooding which is defined as an unproductive, passive, and repetitive focus on the self. Watkins, Moulds, and Mackintosh (2005) demonstrated that rumination or brooding taps, to some extent, the same cognitive processes as worry. For instance, both rumination and worry target personally important topics, both are difficult to dismiss, and both interfere with everyday functioning.

Previous research has demonstrated that self-reflection is related to higher levels of personal identity, perspective-taking, and openness to experience, whereas self-rumination is related to lower levels of perspective-taking and to higher levels of neuroticism, depressive symptoms, and anxiety symptoms (Joireman, Parrott, & Hammersla, 2002; Nolen-Hoeksema, 2000; Trapnell & Campbell, 1999). Furthermore, Ward, Lyubomirsky, Sousa, and Nolen-Hoeksema (2003) also demonstrated that self-rumination was negatively related to self-generated plans and subsequent commitment to these plans.

We hypothesized that, in line with Trapnell and Campbell (1999), commonly used identity measures may fail to differentiate a ruminative type of exploration from exploration in breadth and/or exploration in depth. Existing measures may capture both ruminative and reflective sources of variance in exploration, which may relate differentially to different psychosocial correlates. The present study was designed to distinguish exploration in breadth and exploration in depth from a more dysfunctional or ruminative type of exploration, with the latter being associated with negative aspects of psychosocial functioning. Segerstrom, Tsao, Alden, and Craske (2000) have underscored the importance of both rumination and worry in understanding interruptions and unresolved issues in identity formation. People scoring high on ruminative exploration may have difficulty settling on satisfying answers to identity questions. Partially initiated by these perceived discrepancies in progress towards personally important identity goals (Watkins, 2004), they continue asking themselves the same identity questions resulting in a profound and intrusive feeling of uncertainty and incompetence. This continued mental attempt at resolving identity issues and the resulting uncertainty and incompetence may contribute to distress and lower well-being (Nolen-Hoeksema, 2000; Watkins, 2004).

In short, we attempted to extend the four-dimensional model introduced by Luyckx et al. (2006a) by including ruminative exploration as an additional identity dimension—separate from the other two types of exploration—in two independent samples (i.e., high school students and university students). The resulting five identity dimensions are not intended to capture normative processes used by all individuals to the same degree. Individual differences exist both in the extent to which individuals resort to these processes and in the extent to which these processes develop and influence each other across time (Luyckx et al., 2006a). For instance, whereas for some individuals exploration in breadth

increased across time without an accompanying increase in commitment making, increases in exploration in breadth were accompanied by simultaneous increases in commitment making for other individuals (Luyckx, Schwartz, Goossens, Soenens, & Beyers, *in press*).

### *1.1. The present study*

The present study was guided by four primary objectives.

#### *1.1.1. Objective 1: Questionnaire development*

No measure of ruminative exploration was available in the literature at the time the present study was conducted. Furthermore, the measures used to assess the other four identity dimensions had several flaws, such as differences in content domains across the different identity dimensions and low internal consistency estimates (Luyckx, 2006). Consequently, the first objective was to develop, based on existing identity questionnaires, a short, valid, and reliable instrument—the Dimensions of Identity Development Scale (DIDS)—to assess the five identity dimensions. The content domain of general future plans was selected as the main domain of interest because late adolescence and emerging adulthood is a time of planning for the future (Nurmi, 1991). By setting future-oriented goals, exploring related options, and making identity commitments, young people can direct their own development in their social world. Further, because some late adolescents and emerging adults are more future-oriented than others (Husman & Lens, 1999), this content domain would be expected to generate scores with meaningful variability for each of the identity dimensions assessed (cf. Nurmi, Poole, & Seginer, 1995).

In addition to investigating the reliability and validity of the DIDS, we focused on possible mean differences in the identity dimensions by gender and life context or age (i.e., university vs. high school). With respect to mean gender differences, recent research in this period of life (e.g., Schwartz et al., 2005) has suggested more similarities than differences in identity processes across gender. Consequently, we expected mean gender differences to be rather limited in both samples. With respect to life context or age differences in the commitment dimensions, we expected that especially commitment making would be substantially stronger in college than in high school due to the progressive strengthening of identity (Luyckx et al., 2006a; Waterman & Archer, 1990). With respect to life context or age differences in the exploration dimensions, we expected that, in general, exploration in breadth would be lower at the onset of university as compared to the end of high school because—with the hypothesized increase in commitment making in the university setting—the motivation to engage in exploration in breadth might decrease temporarily (cf. Grotevant, 1987).

#### *1.1.2. Objective 2: Internal construct validity*

We wanted to establish the internal construct validity of the five-dimensional model by investigating the associations among the different identity dimensions. The patterning of correlations among the dimensions already included in the four-dimensional model was hypothesized to be consistent with the correlations reported in Luyckx et al. (2006a). In this previous research using the Ego Identity Process Questionnaire (EIPQ; Balistreri, Busch-Rossnagel, & Geisinger, 1995), a negative association between exploration in breadth and commitment making has commonly been found (Luyckx, Goossens, Soenens, & Beyers, 2006b). In light of the conceptualization of ruminative exploration as an

additional component of identity formation and, consequently, the disentangling of possible ruminative and reflective types of exploration, we hypothesized that both exploration in breadth and exploration in depth would be positively related to both commitment dimensions. As such, we hypothesized that exploration in breadth and exploration in depth would facilitate both commitment dimensions. The newly added fifth dimension ruminative exploration, on the other hand, would be negatively related to commitment making and identification with commitment because ruminative exploration would hinder any progress in both commitment dimensions. The three exploration dimensions would be positively interrelated, indicative of their common focus on exploration. Finally, both commitment dimensions would be strongly and positively interrelated.

#### *1.1.3. Objective 3: External construct validity*

We examined the external construct validity of the model—and especially of the three exploration dimensions—by investigating the associations with adjustment, on the one hand, and self-reflection and self-rumination (Trapnell & Campbell, 1999), on the other hand. With respect to adjustment, we focused on three correlates: self-esteem, depressive symptoms, and anxiety symptoms. In this way, we could capture both well-being and distress (Wilkinson & Walford, 1998) and concentrate on three key facets of adjustment referred to in the identity literature (Kroger, 2003; Marcia, 1993). Furthermore, previous research demonstrated that these variables were well suited to discriminate between self-reflective and self-ruminative processes (Joireman et al., 2002; Nolen-Hoeksema, 2000; Trapnell & Campbell, 1999).

We expected that differential relationships would emerge when examining the unique predictive power of each exploration dimension—that is, controlling for the variance shared with the other two exploration dimensions. We hypothesized that exploration in breadth and exploration in depth would be unrelated to well-being. Ruminative exploration, on the other hand, would be negatively related to well-being and positively related to distress. Further, we hypothesized that exploration in breadth and exploration in depth would be associated with higher levels of self-reflection as an indication of their proactive nature. Ruminative exploration, on the other hand, was expected to be associated with higher levels of self-rumination (Trapnell & Campbell, 1999).

#### *1.1.4. Objective 4: Identity formation at the typological (or categorical) level*

Objectives 2 and 3 focused on main effects of the separate identity dimensions. The identity status approach, on the other hand, deals with how these identity dimensions interact in multivariate fashion and how these different interactions relate to external variables (Luyckx, Goossens, Soenens, Beyers, & Vansteenkiste, 2005). Consequently, our fourth objective was to investigate whether important new identity types or statuses could be identified using the five-dimensional identity model. Specifically, if ruminative exploration were to represent an additional dimension of identity, then it may interact with other identity dimensions to create types not previously identified in identity research. As such, we explored the feasibility of empirically deriving identity types or statuses based upon the five identity dimensions, checking the replicability of these statuses across two independent samples, and externally validating these statuses by relating them to the adjustment variables, self-reflection, and self-rumination. In short, we wanted to determine how the model might extend previous identity status research.

Identity status classifications using indirect identity measures (i.e., measures assessing commitment and exploration instead of the statuses) have traditionally been generated through median split procedures (e.g., Schwartz & Dunham, 2000). However, there is evidence that these procedures unnecessarily reduce statistical power and create artificial dichotomies (MacCallum, Zhang, Preacher, & Rucker, 2002). Consequently, in line with Luyckx et al. (2005), we used cluster-analytic procedures to derive identity statuses based on patterns empirically observed in the data. In their study, Luyckx and colleagues derived identity clusters based upon the four-dimensional identity formation model (i.e., the model without ruminative exploration) and found five clusters: Achievement, Foreclosure, Moratorium, Diffused Diffusion, and Carefree Diffusion. The Achievement cluster was characterized by high scores on all four dimensions. The Foreclosure cluster was characterized by low scores on exploration in breadth, high scores on commitment making, and moderate to high scores on exploration in depth and identification with commitment. Apparently, Achievement and Foreclosure were not only distinguished on the exploration dimensions; identification with commitment was also substantially higher in Achievement than in Foreclosure, probably as an indication of the integrated and personalized sense of identity characteristic of the Achievement status. The Moratorium cluster scored low on both commitment dimensions, high on exploration in breadth, and moderately high on exploration in depth. The somewhat lower score for exploration in depth (as compared to exploration in breadth) might indicate that current tentative commitments were not as actively explored as different identity alternatives were. Both Carefree Diffusion and Diffused Diffusion scored low on exploration in depth and identification with commitment. Whereas Diffused Diffusion scored moderate on exploration in breadth and low on commitment making, Carefree Diffusion scored moderate on commitment making and low on exploration in breadth. In sum, both diffusion clusters were characterized by low to moderate scores on all four identity dimensions.

We hypothesized that these same five clusters would emerge in the present study, with the addition of a sixth identity status, Ruminative Moratorium. We anticipated that the Ruminative Moratorium status would resemble, to some degree, the passive or characterological moratorium subtypes alluded to in previous literature (Berzonsky, 1985; Côté & Schwartz, 2002). Table 1 presents an overview of the statuses in terms of the hypothesized

Table 1  
Hypothesized patterns of identity statuses in terms of the five identity dimensions

Dimension	Achievement	Foreclosure	Moratorium	Ruminative Moratorium	Carefree Diffusion	Diffused Diffusion
CM	High	High	Low to moderate	Low to moderate	Low	Low
IC	High	High	Low to moderate	Low to moderate	Low	Low
EB	High	Low	High	High	Low to moderate	Low to moderate
ED	High	Low	Moderate to high	Moderate to high	Low to moderate	Low to moderate
RE	Low	Low	Low to moderate	High	Low to moderate	High

*Note.* CM, commitment making; IC, identification with commitment; EB, exploration in breadth; ED, exploration in depth; RE, ruminative exploration.

relations with the five identity dimensions. Achievement would score high on all identity dimensions, except for a low score on ruminative exploration. Foreclosure would score high on both commitment dimensions, and low on all three exploration dimensions (and especially on exploration in breadth and ruminative exploration). Moratorium would score low on both commitment dimensions, high on exploration in breadth (and to a lesser extent on exploration in depth), and low to moderate on ruminative exploration. Ruminative Moratorium, by contrast, would be characterized by an additional high score on ruminative exploration and, consequently, would reflect a less adaptive form of moratorium. This type of ruminative moratorium resembles to some extent the description of moratorium-diffusion vacillations, as described in Côté and Levine (2002) and Côté and Schwartz (2002). So, by including ruminative exploration as an additional identity dimension, we hypothesized that a moratorium-subtype would emerge in which progressive identity development would be hampered by higher levels of rumination and uncertainty.

Finally, we hypothesized that ruminative exploration would differentiate Carefree Diffusion from Diffused Diffusion (cf. Bosma & Gerlsma, 2003; Josselson, 1987). Adolescents assigned to the Diffused Diffusion status in Luyckx et al. (2005) did attempt to explore to a limited degree but they did not really succeed in forming subsequent commitments (Marcia, 1993). Due to the lack of a measure of ruminative exploration in that study, Luyckx and colleagues could not establish whether this limited amount of exploration resembled a reflective or a more ruminative attempt at exploring identity-related issues. By including a measure of ruminative exploration, we hypothesized that Diffused Diffusions would be characterized by, if any, a ruminative type of exploration and not so much a reflective type.

Consequently, we anticipated that Carefree Diffusion would score low to moderate on all five dimensions, whereas Diffused Diffusion would be characterized by an additional high score on ruminative exploration. We hypothesized that individuals in Carefree Diffusion would be unbothered by their current lack of identity-related work. They do not feel the urge to start exploring identity-related issues or to thoroughly commit themselves to a certain option; they seem to rather enjoy their uncommitted status. However, we expected individuals in Diffused Diffusion to resemble somewhat the moratorium-diffusion subtype described by Josselson (1987), experiencing distress regarding their lack of identity-related commitments or of a proactive identity search and, consequently, worrying or ruminating about what they actually want. In contrast to Ruminative Moratorium, however, no pronounced identity work with respect to exploration in breadth and exploration in depth would be expected in Diffused Diffusion.

In sum, we hypothesized that the addition of a fifth identity dimension, ruminative exploration, would not only help to clarify some of the mixed findings described in previous research but would also help to identify additional identity statuses that might be particularly relevant to identity formation in late-modern societies—specifically those characterized by difficulty making commitments and transitioning out of the exploration process.

## 2. Method

### 2.1. Participants and procedure

Sample 1 consisted of 263 Caucasian freshman students (72.6% women) from the department of Psychology at a university in Flanders, the Dutch-speaking part of

Belgium. Mean age was 19.14 years ( $SD = 0.95$ ). Participation in the study was voluntary, anonymity was guaranteed, and participants received course credit for attending the group testing sessions. No students refused to participate. Sample 2 consisted of 440 12th grade students (57.5% women) from 7 high schools in Flanders. Mean age was 17.84 years ( $SD = 0.52$ ), and virtually all participants were Caucasian. A total of 572 students were initially contacted, and of these, 23% refused to participate for reasons unknown to us. Students either took the questionnaires home to complete them, or they were administered during a class period. All measures administered were in Dutch.

## 2.2. Measures

### 2.2.1. Identity dimensions (Objective 1)

To develop the DIDS, items from the EIPQ (Balistreri et al., 1995), the Utrecht-Groningen Identity Development Scale (U-GIDS; Meeus, 1996), the revised Identity Style Inventory (ISI3; Berzonsky, 1992), and the Personally Expressive Activities Questionnaire (PEAQ; Waterman, 1993) were revised to tap the four identity dimensions proposed by Luyckx et al. (2006b) in the domain of general future plans. New items were also generated to assess ruminative exploration in the domain of general future plans, resulting in a measure with 25 items (5 items for each dimension).

We sought to ensure that the ruminative exploration items conveyed a repetitive, procrastinating, and/or passive tone (Nolen-Hoeksema, 2000). To reach this objective, we inserted references to an undesirable duration or frequency of exploration, indicative of brooding and worry, within each ruminative exploration item (Watkins, 2004). As such, we aimed at tapping a pattern of uncontrollable and unproductively repetitive problem scanning and exploration (Trapnell & Campbell, 1999). Table 2 provides an overview of all the items of the DIDS. No items had to be reverse-coded and all items were answered on a 5-point Likert-type rating scale, ranging from 1 (Strongly disagree) to 5 (Strongly agree). Information about the development of this questionnaire appears below, under the heading of “Objective 1.”

### 2.2.2. Adjustment

Self-esteem was assessed using the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). This questionnaire was translated into Dutch by Van der Linden, Dijkman, and Roeders (1983). A sample item reads “I feel that I have a number of good qualities”. This scale contains 10 items scored on a 4-point scale, ranging from 1 (Does not apply to me at all) to 4 (Applies to me very well). Cronbach's alphas were .91 in Sample 1 and .89 in Sample 2, respectively.

Depressive symptoms were assessed using the 12-item version (Roberts & Sobhan, 1992) of the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). This questionnaire was translated into Dutch by Hooge, Decaluwé, and Goossens (2000). Participants were asked to indicate how often they experienced cognitive, somatic, and psychological symptoms of depression during the week prior to assessment. A sample item reads “During the last week, I felt depressed”. Items were scored on a 4-point scale, ranging from 1 (Seldom) to 4 (Most of the time or always). Cronbach's alphas were .86 in Sample 1 and .88 in Sample 2, respectively.

Anxiety symptoms were assessed using the Dutch version of the revised Symptom Checklist (SCL-90-R; Arrindell & Ettema, 1986). Participants only responded to the Anxiety subscale (10 items) and indicated on a 5-point Likert-type scale ranging from 1

Table 2  
Items of the DIDS and corresponding standardized pattern coefficients using CFA in Sample 1 ( $N = 261$ ) and Sample 2 ( $N = 426$ )

Items <sup>a</sup>	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
<i>Commitment making</i>					
Decided on the direction I want to follow in life	0.84/0.81	—	—	—	—
Know what I want to do with my future	0.89/0.88	—	—	—	—
A clear view on my future	0.81/0.80	—	—	—	—
Made a choice concerning some of my plans for the future	0.55/0.60	—	—	—	—
Know what I want to achieve in my life	0.66/0.63	—	—	—	—
<i>Identification with commitment</i>					
Plans for the future offer me a sense of security	—	0.83/0.81	—	—	—
Future plans give me self-confidence	—	0.91/0.89	—	—	—
Because of the path of life I have mapped out, I feel certain about myself	—	0.89/0.84	—	—	—
Sense that the direction I want to take in life will really suit me	—	0.61/0.64	—	—	—
Value my plans for the future very much	—	0.48/0.38	—	—	—
<i>Exploration in breadth</i>					
Think about the direction I want to take in my life	—	—	0.80/0.73	—	—
Think a lot about how I see my future	—	—	0.80/0.83	—	—
Try to figure out regularly which lifestyle would suit me	—	—	0.49/0.71	—	—
Think about what to do with my life	—	—	0.71/0.77	—	—
Try to find out which lifestyle would be good for me	—	—	0.58/0.67	—	—
<i>Exploration in depth</i>					
Think about the future plans I have made	—	—	—	0.67/0.65	—
Talk regularly with other people about the plans for the future I have made	—	—	—	0.57/0.63	—
Work out for myself if the goals I put forward in life really suit me	—	—	—	0.61/0.69	—
Try to find out regularly what other people think about the specific direction I want to take in my life	—	—	—	0.55/0.55	—
Think a lot about the future plans I strive for	—	—	—	0.84/0.83	—
<i>Ruminative exploration</i>					
Keep looking for the direction I want to take in my life	—	—	—	—	0.73/0.68
Doubtful about what I really want to achieve in life	—	—	—	—	0.81/0.79
Keep wondering which direction my life has to take	—	—	—	—	0.76/0.75
Worry about what I want to do with my future	—	—	—	—	0.85/0.79
Hard to stop thinking about the direction I want to follow in life	—	—	—	—	0.56/0.54

Note. The first coefficient is the standardized pattern coefficients from Sample 1, the second coefficient is the standardized pattern coefficients from Sample 2. DIDS, Dimensions of Identity Development Scale.

<sup>a</sup> For the official English version and additional information on administration, please contact the first author at koen.luyckx@psy.kuleuven.be.

(Not at all) to 5 (Extremely) how much each problem (e.g., nervousness and feeling tense) distressed them during the last week. Cronbach's alphas were .90 in Sample 1 and .90 in Sample 2, respectively.

### 2.2.3. Self-reflection and self-rumination

Self-reflection and self-rumination were assessed using the Rumination-Reflection Questionnaire (RRQ; Trapnell & Campbell, 1999). The measure was translated into Dutch using the guidelines of the International Test Commission (Hambleton, 1994). Each scale was assessed using 12 items answered on a 5-point Likert-type rating scale, ranging from 1 (Strongly disagree) to 5 (Strongly agree). Sample items read “I love exploring my inner self” (self-reflection), and “I often find myself re-evaluating something I have done” (self-rumination). Cronbach’s alphas were .88 and .90 in Sample 1, and .90 and .91 in Sample 2, respectively.

## 3. Results

### 3.1. Objective 1: Factorial validity, mean differences, and reliability of the DIDS

#### 3.1.1. Factorial validity

As expected, CFA indicated that the model with five identity dimensions fit the data adequately ( $df = 265$ ,  $SBS-\chi^2 = 658.93$ ,  $RMSEA = .07$ ,  $CFI = .94$  in Sample 1; and  $df = 265$ ,  $SBS-\chi^2 = 835.46$ ,  $RMSEA = .07$ ,  $CFI = .94$  in Sample 2) and provided a significantly better fit than any alternative four-factor model (in which a pair of dimensions was collapsed into a single dimension). Table 3 gives an overview of the fit indices of all models tested. In the five-factor solution, standardized pattern coefficients for the items on their respective factors ranged between .48 and .91 in Sample 1 and between .38 and .89 in Sample 2. Table 2 gives an overview of all standardized pattern coefficients in both samples.

Next, we tested for measurement equivalence of the DIDS across gender in both samples (cf. Bollen, 1989; Schwartz, Adamson, Ferrer-Wreder, Dillon, & Berman, 2006). First, we estimated a multigroup model in which the pattern coefficients linking the observed item scores to their latent factors were free to vary across gender (i.e., the unconstrained model;  $df = 565$ ,  $SBS-\chi^2 = 844.04$ ,  $RMSEA = .06$ ,  $CFI = .92$  in Sample 1, and  $df = 565$ ,

Table 3  
Fit indices of the various confirmatory factor analytic measurement models tested in two samples

Model	$df$	$SBS-\chi^2$	RMSEA	CFI
Sample 1 ( $N = 261$ )				
Five-factor model	265	658.93	.07	.94
Four-factor model: CM and IC	269	903.84	.10	.91
Four-factor model: ED and EB	269	751.66	.09	.93
Four-factor model: EB and RE	269	1274.61	.12	.89
Four-factor model: ED and RE	269	1353.69	.12	.88
Sample 2 ( $N = 426$ )				
Five-factor model	265	835.46	.07	.94
Four-factor model: CM and IC	269	1202.81	.09	.91
Four-factor model: ED and EB	269	1115.06	.09	.92
Four-factor model: EB and RE	269	2088.28	.13	.88
Four-factor model: ED and RE	269	2022.45	.12	.89

Note. CM, commitment making; IC, identification with commitment; EB, exploration in breadth; ED, exploration in depth; RE, ruminative exploration;  $df$ , degrees of freedom;  $SBS-\chi^2$ , Satorra-Bentler scaled chi-square; RMSEA, root mean square error of approximation; CFI, comparative fit index. Four-factor model: CM and IC, for instance, means that CM and IC were collapsed into a single dimension.

SBS- $\chi^2 = 1119.16$ , RMSEA = .07, CFI = .93 in Sample 2). Second, we estimated a model in which these pattern coefficients were constrained to be equal across gender (i.e., the constrained model;  $df = 590$ , SBS- $\chi^2 = 868.71$ , RMSEA = .06, CFI = .92 in Sample 1, and  $df = 590$ , SBS- $\chi^2 = 1158.85$ , RMSEA = .07, CFI = .93 in Sample 2). Because constraining the pattern coefficients to be equal across gender did not significantly worsen model fit ( $\Delta$ SBS- $\chi^2$  (25) = 24.07;  $p = .52$  in Sample 1; and  $\Delta$ SBS- $\chi^2$  (25) = 32.63;  $p = .14$  in Sample 2), measurement equivalence was established.

### 3.1.2. Mean differences

We tested for mean differences in the five identity dimensions by gender in both samples separately. Using Wilks' Lambda, statistically significant multivariate effects of gender were found only in Sample 2 ( $F = 4.74$ ,  $p < .001$ ,  $\eta^2 = .05$ ) and not in Sample 1 ( $F = 1.25$ ,  $p = .29$ ,  $\eta^2 = .02$ ). In Sample 2, follow-up univariate analyses revealed significant gender differences for exploration in depth and ruminative exploration, with women ( $M = 3.36$ ,  $SD = 0.76$ ; and  $M = 2.78$ ,  $SD = 0.83$ , respectively) scoring slightly higher than men ( $M = 3.14$ ,  $SD = 0.73$ ; and  $M = 2.62$ ,  $SD = 0.65$ , respectively) on both dimensions. As expected, mean gender differences in the identity dimensions were modest in both samples.

Finally, we focused on possible mean differences by life context or age (i.e., university vs. high school) in the five identity dimensions. Using Wilks' Lambda, a statistically significant multivariate effect of life context or age was found ( $F = 9.02$ ,  $p < .001$ ,  $\eta^2 = .06$ ). Follow-up univariate analyses revealed significant life context or age differences for commitment making—with the university sample ( $M = 3.52$ ,  $SD = 0.70$ ) scoring slightly higher than the high school sample ( $M = 3.29$ ,  $SD = 0.79$ )—and exploration in breadth—with the high school sample ( $M = 3.49$ ,  $SD = 0.77$ ) scoring slightly higher than the university sample ( $M = 3.32$ ,  $SD = 0.68$ ). Scores on the other three identity dimensions did not differ significantly between samples.

### 3.1.3. Reliability

Cronbach's alphas for commitment making, identification with commitment, exploration in breadth, exploration in depth, and ruminative exploration were .86, .86, .81, .79, and .86 in Sample 1, and .86, .83, .86, .80, and .85 in Sample 2, respectively. Consequently, the DIDS proved to be a reliable instrument for late adolescents.

## 3.2. Objective 2: Internal construct validity of the five-process model

Table 4 presents the correlations among the five identity dimensions. With one exception, all correlations were consistent across both samples and in line with hypotheses. Commitment making and identification with commitment were highly positively interrelated with one another and were both positively related to exploration in depth and negatively related to ruminative exploration. Both commitment dimensions were positively related to exploration in breadth in Sample 2 and unrelated to exploration in breadth in Sample 1. Exploration in breadth, exploration in depth, and ruminative exploration were positively interrelated, indicating, as expected, that they shared some variance (with  $R^2$  estimates ranging from .06 to .31). In short, the five-dimensional model proved to be internally valid, and the exploration dimensions demonstrated adequate internal construct validity.

Table 4  
Correlations among the five identity dimensions in Sample 1 ( $N = 261$ ) and Sample 2 ( $N = 426$ )

Dimension	1	2	3	4	5
1. CM	—	.67***	.06	.19**	-.49***
2. IC	.62***	—	.08	.20***	-.53***
3. EB	.30***	.33***	—	.56***	.36***
4. ED	.28***	.35***	.54***	—	.28***
5. RE	-.38***	-.34***	.24***	.28***	—

Note. CM, commitment making; IC, identification with commitment; EB, exploration in breadth; ED, exploration in depth; RE, ruminative exploration. Sample 1 correlations above the diagonal; Sample 2 correlations below the diagonal.

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

### 3.3. Objective 3: External correlates of the three exploration dimensions

Table 5 provides an overview of the associations of the three exploration dimensions with the adjustment variables, self-reflection, and self-rumination in both samples. Due to the positive correlations among the three exploration dimensions,<sup>2</sup> it was theoretically important to also examine independent or unique associations of each of the exploration dimensions to the external variables. We did this by controlling for the shared variance among these exploration constructs, and examining only the variability unique to each exploration dimension (Kashdan, Rose, & Fincham, 2004). To address this issue of external construct validity in both samples, we treated the exploration dimensions as predictor variables and regressed the adjustment variables, self-reflection, and self-rumination on these three exploration dimensions simultaneously. As a result, Table 5 presents both bivariate correlation and regression coefficients.

As demonstrated in Table 5, the pattern across both samples was remarkably consistent for most variables and generally in line with hypotheses. The regression analyses indicated that ruminative exploration was uniquely associated with higher levels of depressive symptoms and anxiety symptoms and with lower levels of self-esteem. Exploration in depth and exploration in breadth were not associated with self-esteem, depressive symptoms, or anxiety symptoms, except for a small positive association between exploration in depth and anxiety in Sample 2. Further, exploration in breadth and exploration in depth were, as expected, uniquely associated with higher levels of self-reflection, whereas ruminative exploration was uniquely associated with higher levels of self-rumination. In Sample 2 only, we found a small positive association between exploration in depth and self-rumination.

<sup>2</sup> An additional set of regression analyses was conducted, this time regressing the external variables on both commitment dimensions. In line with the results reported in Luyckx et al. (2006b), identification with commitment proved to be the most powerful predictor of well-being whereas the associations between commitment making and well-being were virtually all non-significant. This provides clear evidence for the external construct validity of both commitment dimensions.

Table 5  
Associations between the three exploration dimensions and external variables in Sample 1 ( $N = 261$ ) and Sample 2 ( $N = 426$ )

Variables	Zero-order correlations			Regression coefficients		
	EB	ED	RE	EB	ED	RE
<i>Well-being</i>						
Self-esteem	-.10/-.14**	-.09/-.15**	-.38***/-.37***	.04/-.04	-.01/-.03	-.39***/-.35***
Depressive symptoms	.26***/.09	.20***/.08	.43***/.35***	.10/.02	.03/-.03	.38***/.36***
Anxiety symptoms	.20***/.18***	.22***/.14**	.33***/.32***	.02/.11*	.13/-.01	.29***/.29***
<i>Self-attentiveness</i>						
Self-reflection	.22***/.32***	.27***/.40***	.06/.13**	.13*/.12*	.22**/.27***	-.06/-.08
Self-rumination	.26***/.27***	.21***/.33***	.36***/.41***	.09/.05	.06/.12*	.29***/.34***

Note. EB, exploration in breadth; ED, exploration in depth; RE, ruminative exploration. In each cell, the first coefficient is from Sample 1, and the second coefficient is from Sample 2.

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

### 3.4. Objective 4: Identity from a typological point of view

#### 3.4.1. Cluster analysis

Cluster analysis—which was performed to capture multivariate interactions of the five identity dimensions, or identity statuses—was conducted using a two-step procedure (Gore, 2000; Luyckx et al., 2005) in the two samples separately. We then examined the validity of the cluster-solution by relating the clusters to the adjustment variables, self-reflection, and self-rumination. Generally speaking, we assessed the extent to which the cluster solution would be (a) replicable or internally consistent and (b) externally valid (Aldenderfer & Blashfield, 1984). In the first step, a hierarchical cluster analysis was carried out using Ward's method and based on squared Euclidian distances. Prior to conducting the analysis, we removed 12 univariate (i.e., values more than 3  $SD$  below or above the mean) and multivariate outliers (i.e., individuals with high Mahalanobis distance values) in Sample 1 and 11 outliers in Sample 2 (Garson, 1998). A total of 6 clusters—selected based on substantive theorizing, parsimony, and explanatory power (i.e., the cluster solution had to explain approximately 50% of the variance in each of the constituting dimensions)—were retained in both samples.

In the second step, these initial cluster centers were used as non-random starting points in an iterative  $k$ -means clustering procedure. Figs. 1 and 2 present the final cluster solution for Samples 1 and 2, respectively. The cluster solution accounted for 57% and 63% of the variance in commitment making, 68% and 60% in identification with commitment, 50% and 58% in exploration in breadth, 66% and 59% in ruminative exploration, and 56% and 52% in exploration in depth. The  $Y$ -axis in both figures represents  $z$ -scores; the distances between the cluster means and the total sample standardized mean, in standard deviation units, were interpreted as effect sizes (Scholte, van Lieshout, de Wit, & van Aken, 2005). Analogous to Cohen's (1988)  $d$ , 0.2  $SD$  is a small effect, 0.5  $SD$  is a medium or moderate effect, and 0.8  $SD$  is a large effect. For instance, a score of 0.83 on the  $Y$ -axis

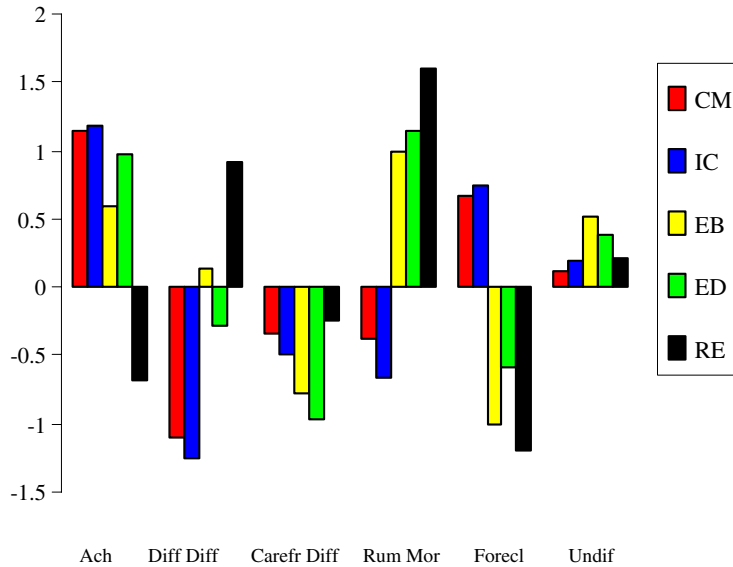


Fig. 1. Z-scores for commitment making (CM), identification with commitment (IC), exploration in breadth (EB), ruminative exploration (RE), and exploration in depth (ED) for six clusters in Sample 1. Ach, achievement cluster; Undif, undifferentiated cluster; Diff Diff, Diffused Diffusion cluster; Rum Mor, Ruminative Moratorium cluster; Carefr Diff, Carefree Diffusion cluster; Forecl, Foreclosure cluster.

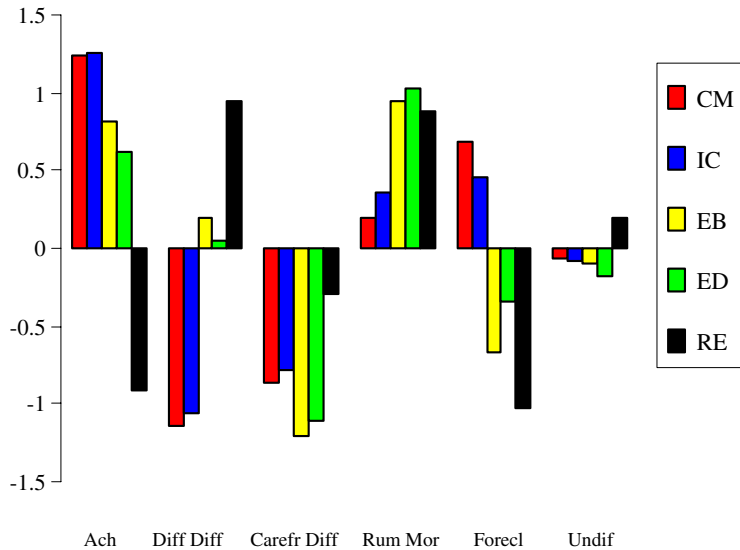


Fig. 2. Z-scores for commitment making (CM), identification with commitment (IC), exploration in breadth (EB), ruminative exploration (RE), and exploration in depth (ED) for six clusters in Sample 2. Ach, achievement cluster; Undif, undifferentiated cluster; Diff Diff, Diffused Diffusion cluster; Rum Mor, Ruminative Moratorium cluster; Carefr Diff, Carefree Diffusion cluster; Forecl, Foreclosure cluster.

for commitment making would indicate that commitment making shows a large positive deviation from the sample mean, whereas a score of  $-0.25$  on the  $Y$ -axis for exploration in breadth would indicate that exploration in breadth shows a small negative deviation from the sample mean.

As expected, the Achievement cluster scored very high on both commitment dimensions, moderately high to high on exploration in breadth and exploration in depth, and low on ruminative exploration in Samples 1 ( $N = 36$ ; 14.3%) and 2 ( $N = 62$ ; 14.4%). The Diffused Diffusion cluster scored very low on both commitment dimensions, intermediate on exploration in depth and exploration in breadth, and high to very high on ruminative exploration in Samples 1 ( $N = 35$ ; 13.9%) and 2 ( $N = 60$ ; 14.0%). The Carefree Diffusion cluster scored moderately low to low on both commitment dimensions, low to very low on exploration in breadth and exploration in depth, and intermediate on ruminative exploration in Samples 1 ( $N = 51$ ; 20.3%) and 2 ( $N = 61$ ; 14.2%). The Ruminative Moratorium cluster scored, as expected, moderately low to intermediate on both commitment dimensions, and high to very high on the three exploration dimensions in Samples 1 ( $N = 19$ ; 7.6%) and 2 ( $N = 79$ ; 18.4%). The Foreclosure cluster scored moderately high to high on both commitment dimensions, moderately low to very low on exploration in breadth and ruminative exploration, and moderately low to intermediate on exploration in depth in Samples 1 ( $N = 37$ ; 14.8%) and 2 ( $N = 58$ ; 13.5%). Finally, no Moratorium cluster emerged. Instead, an Undifferentiated cluster emerged which scored intermediate on all dimensions in Samples 1 ( $N = 73$ ; 29.1%) and 2 ( $N = 96$ ; 22.4%), except for a moderately high score on exploration in breadth in Sample 1. In sum, the cluster solutions in both samples overlapped substantially.

### 3.4.2. *External correlates of the six clusters*

A MANOVA was conducted in each sample with cluster membership as independent or fixed variable and the adjustment variables, self-reflection, and self-rumination as dependent variables. Based upon Wilks' Lambda, statistically significant multivariate cluster differences were found in Samples 1 and 2 ( $F(5, 255) = 5.80$ ,  $p < .001$ ,  $\eta^2 = .19$ ; and  $F(5, 420) = 9.20$ ,  $p < .001$ ,  $\eta^2 = .15$ , respectively). Follow-up univariate  $F$ -values,  $\eta^2$ , and pairwise comparisons (using Tukey's Honestly Significant Difference test) are shown in Table 6.

As expected, on self-esteem, Achievement and Foreclosure scored highest, and Diffused Diffusion and Ruminative Moratorium scored lowest. Both clusters in Sample 1, and Foreclosure in Sample 2, did not differ significantly from Undifferentiated and Carefree Diffusion on self-esteem. Diffused Diffusion in Sample 1, and Ruminative Moratorium in Sample 2, did not differ substantially from Undifferentiated and Carefree Diffusion.

As expected, on depressive symptoms and anxiety symptoms, Achievement, Foreclosure, and Carefree Diffusion scored lowest, and Diffused Diffusion and Ruminative Moratorium scored highest. In Sample 1, Achievement and Carefree Diffusion did not differ significantly from Undifferentiated on either anxiety symptoms or depressive symptoms. However, in both samples, Ruminative Moratorium did not differ significantly from Achievement or Undifferentiated on anxiety symptoms; and in Sample 2, Ruminative Moratorium did not differ significantly from Carefree Diffusion and Undifferentiated on depressive symptoms.

On self-reflection, Achievement and Ruminative Moratorium scored highest and Carefree Diffusion scored lowest. On self-rumination, Ruminative Moratorium and Diffused Diffusion scored highest, with Diffused Diffusion not differing significantly from Undiffer-

Table 6  
Univariate ANOVA's and Post-hoc cluster comparisons based upon tukey HSD tests for the six clusters in Sample 1 ( $N = 261$ ) and Sample 2 ( $N = 426$ )

Variables	Sample	Clusters						F-value	$\eta^2$
		Achievement	Undifferentiated	Diffused Diffusion	Ruminative Moratorium	Carefree Diffusion	Foreclosure		
Self-esteem	1	3.30 <sup>c</sup> (.46)	3.04 <sup>bc</sup> (.52)	2.67 <sup>ab</sup> (.61)	2.52 <sup>a</sup> (.55)	3.04 <sup>bc</sup> (.62)	3.34 <sup>c</sup> (.52)	10.38 <sup>***</sup>	.18
	2	3.35 <sup>d</sup> (.55)	3.06 <sup>abc</sup> (.48)	2.79 <sup>a</sup> (.57)	2.94 <sup>ab</sup> (.64)	3.17 <sup>bcd</sup> (.58)	3.25 <sup>cd</sup> (.54)	8.49 <sup>***</sup>	.09
Depressive symptoms	1	1.78 <sup>ab</sup> (.48)	1.92 <sup>b</sup> (.45)	2.35 <sup>c</sup> (.53)	2.38 <sup>c</sup> (.57)	1.81 <sup>ab</sup> (.42)	1.57 <sup>a</sup> (.41)	15.23 <sup>***</sup>	.24
	2	1.60 <sup>a</sup> (.47)	1.88 <sup>bcd</sup> (.55)	2.07 <sup>d</sup> (.55)	1.93 <sup>cd</sup> (.60)	1.79 <sup>abc</sup> (.58)	1.65 <sup>ab</sup> (.51)	6.47 <sup>***</sup>	.07
Anxiety symptoms	1	2.02 <sup>ab</sup> (.82)	2.10 (.73)	2.52 <sup>c</sup> (.77)	2.50 <sup>bc</sup> (.80)	1.69 <sup>a</sup> (.52)	1.82 <sup>a</sup> (.67)	8.05 <sup>***</sup>	.14
	2	1.67 <sup>ab</sup> (.61)	1.73 (.59)	1.99 <sup>c</sup> (.68)	1.93 <sup>bc</sup> (.77)	1.55 <sup>a</sup> (.53)	1.64 <sup>ab</sup> (.64)	4.69 <sup>***</sup>	.05
Self-reflection	1	3.81 <sup>b</sup> (.64)	3.64 (.52)	3.67 (.47)	3.69 <sup>b</sup> (.57)	3.26 <sup>a</sup> (.75)	3.58 (.67)	4.24 <sup>***</sup>	.08
	2	3.40 <sup>b</sup> (.78)	3.04 <sup>a</sup> (.60)	3.05 <sup>a</sup> (.64)	3.62 <sup>b</sup> (.63)	2.85 <sup>a</sup> (.71)	3.07 <sup>a</sup> (.72)	12.42 <sup>***</sup>	.13
Self-rumination	1	3.37 <sup>ab</sup> (.70)	3.50 <sup>bc</sup> (.55)	3.76 <sup>cd</sup> (.48)	4.02 <sup>d</sup> (.41)	3.30 <sup>ab</sup> (.68)	3.01 <sup>a</sup> (.74)	9.67 <sup>***</sup>	.16
	2	3.17 <sup>a</sup> (.73)	3.12 <sup>a</sup> (.48)	3.52 <sup>b</sup> (.68)	3.59 <sup>b</sup> (.71)	2.97 <sup>a</sup> (.77)	2.86 <sup>a</sup> (.78)	12.32 <sup>***</sup>	.13

Note. A cluster mean is significantly different from another mean if they have different superscripts. A mean without a superscript is not significantly different from any other mean. Standard deviations are in parentheses.

\*\*\*  $p < .001$ .

entiated in Sample 1. Achievement, Carefree Diffusion, and Foreclosure scored lowest on self-rumination in both samples, as expected.

#### 4. Discussion

The present study was designed to investigate whether identity exploration consisted of three distinct dimensions or components—two dimensions (i.e., exploration in breadth and exploration in depth) associated with positive and adaptive effects on identity formation, and the other dimension (i.e., ruminative exploration) characterized by rumination and psychological distress. This distinction between reflective or adaptive and ruminative or maladaptive subtypes of exploration has not been empirically pursued in previous research. This lack of differentiation may have led to the mixed findings reported in the literature, where exploration has been associated both with openness and curiosity and with distress and maladjustment.

In an attempt to extend the four-dimensional identity formation model of Luyckx et al. (2006a) with a fifth ruminative-exploration dimension, we developed a brief and reliable self-report scale measuring commitment making, identification with commitment, exploration in breadth, exploration in depth, and ruminative exploration in the domain of general future plans. The separate but interrelated exploration components not only distinguished between breadth-based and depth-based exploratory strategies (Luyckx et al., 2006b) but also between ruminative and more reflective types of exploration (cf. Trapnell & Campbell, 1999).

##### 4.1. *Nomological network and uniqueness of the three exploration dimensions*

With respect to internal construct validity, exploration in breadth and exploration in depth—both hypothesized to be more reflective types of exploration—were positively related to commitment making and identification with commitment. In contrast, the correlation coefficients suggest that ruminative exploration may hinder the formation of and identification with commitments. With respect to external construct validity, we evaluated a preliminary resolution for the mixed findings that have been reported in the literature on identity exploration. Given that neither exploration in depth nor exploration in breadth was uniquely associated with psychological distress, the association between exploration and psychological distress appeared to be an artifact of variance specific to ruminative exploration. Partialing out ruminative exploration reduced to nonsignificance virtually all of the correlations of exploration in breadth and exploration in depth with measures of psychological distress. Partialing out exploration in breadth and exploration in depth, however, left the correlations between ruminative exploration and distress virtually unchanged.

A picture emerged in which internally-based reflective individuals engage in exploration in breadth and exploration in depth, whereas self-ruminative individuals may be more likely to explore identity-related issues in ruminative fashion. Hence, one of the primary tasks for contemporary young people may involve developing the effective self-direction, introspection, decision-making, and problem-solving necessary to form an adult identity (Schwartz et al., 2005). We emphasize, however, that the cross-sectional design we used does not permit to make authoritative statements regarding directionality. In line with Robins, Fraley, Roberts, and Trzesniewski (2001), the relationships of the exploration

dimensions with these self-attentiveness features is likely to be reciprocal, indicative of the simultaneous development of identity and personality features during adolescence and young adulthood (Luyckx et al., 2006c).

Individuals scoring high on ruminative exploration might struggle—coupled with feeling overloaded by the vast array of available identity alternatives (Schwartz, 2000)—with a motivation crisis or identity deficit (Baumeister, Shapiro, & Tice, 1985), which refers to the problem of an inadequately defined self-concept. Consequently, such individuals engage in protracted self-questioning and struggle to make commitments. Similarly, Fuqua and Hartman (1983) stipulated that identity problems might be related to indecision or indecisiveness. Indecision could be a rather normal developmental phase through which individuals may pass on their way to reaching a decision. Indecisiveness, however, is a debilitating personality trait that generalizes across situations that demand proactive decision-making (Osipow, 1999).

Consequently, people scoring high on ruminative exploration might be characterized either by a situation-specific or developmental stage-specific state of indecision or by a more stable trait of indecisiveness. The fact that most moratorium students identified in the present study scored rather high on ruminative exploration may indicate to a certain extent that scoring high on this ruminative form of exploration probably is an indication of a developmentally rather appropriate state of indecision rather than of a trait of indecisiveness. Nonetheless, longitudinal research is needed to identify which people scoring high on ruminative exploration are characterized by indecision and which are characterized by indecisiveness because this distinction has clear implications for counseling (Heppner & Hendricks, 1995). Chronically indecisive individuals may experience fear when faced with important decisions and may ruminate or procrastinate (Rassin & Muris, 2005), which is likely to produce feelings of loss of control over one's life and, consequently, maladaptive functioning (Milgram & Tenne, 2000).

#### 4.2. *Determining and differentiating identity clusters*

Six clusters emerged in both samples. However, we did not find an “adaptive moratorium” cluster. The only moratorium cluster we found was Ruminative Moratorium, which was indistinguishable from Diffused Diffusion on several variables (cf. Côté & Schwartz, 2002) and, consequently, scored the lowest on well-being. Consequently, the present study raised some questions about the developmental nature of the moratorium cluster. This type of moratorium might denote some type of arrested development for some individuals (as is the case with diffusion), blocking these persons from forming fully endorsed identity commitments. In line with Côté and Schwartz (2002), the possible transition to achievement may require a drastic reconfiguration of personality and attitudes that may be difficult to negotiate. Identity issues may not be explored in a systematic manner but rather in aimlessness and anomie characteristic of a diffuse identity structure (Orlofsky, Marcia, & Lesser, 1973).

We were unable to differentiate a cluster reflecting a more adequate type of moratorium. It may be difficult to be in a state characterized by a lack of strong or definite commitments (Berzonsky, 2003) and, at the same time, to explore identity issues, without some indecision and rumination that may lead to distress (cf. Berman, Montgomery, & Kurtines, 2004). These difficulties probably have their roots at the intersection of person and context. Western cultural contexts often provide many potential alternatives but little

guidance in deciding among these potential choices (Côté, 2002; Côté & Levine, 2002). The vast array of potential identity choices available to the person and the lack of external guidance, coupled with a lack of internal resources, might render the identity formation task difficult to negotiate. For individuals challenged in these ways, intervention programs may be needed to help to achieve successful identity consolidation (Ferrer-Wreder et al., 2002; Schwartz, Montgomery, & Briones, 2006). Note, however, that most moratoriums identified in the present study are probably doing what they—*from a developmental point of view*—ought to be doing, which is launching themselves into the exploration process. Therefore, a thorough exploration of alternatives needs to be valued, rather than discouraged, although it is likely that accompanying excessive distress and indecisiveness may require intervention.

Similar to the Ruminative Moratorium Cluster, the achieved cluster scored high on both reflective types of exploration. However, Achievement was clearly differentiated from the Ruminative Moratorium cluster by low scores on ruminative exploration (in addition to, for instance, high scores on self-esteem and low scores on depressive symptoms). Apparently, individuals can engage in pro-active exploration without the burden of hesitation, rumination, and distress, as long as there are already some commitments that pave the way for or guide the process of exploration. Exploring while relinquishing some commitments may allow the person to maintain a sense of sameness, continuity, and psychological health over time. On the other hand, relinquishing most or all of one's commitments can be destabilizing and distressing. However, it should be noted that, although the Achievement cluster scored somewhat lower on anxiety symptoms than the Ruminative Moratorium cluster, this difference was not significant in either sample. Future research should further investigate the latter counterintuitive finding.

The present findings suggest that commitment is what tends to separate successful from unsuccessful identity development (Schwartz et al., 2005). Both Achievement and Foreclosure also tended to score highest on indices of positive functioning. There were, however, some modest differences between the achieved and foreclosed clusters. As expected, Achievement scored higher than Foreclosure on self-reflection (albeit only in Sample 2). Future research that includes indices of adjustment, self-realization, and personality not employed in the present study (cf. Luyckx et al., 2005), should further investigate the distinctiveness of these clusters.

Finally, the undifferentiated cluster<sup>3</sup> seemed to resemble the “low profile Moratorium” status assigned using some identity measures (Goossens, 2001), reflecting scores that are close to their respective scale midpoints and that cannot be safely classified into one of the other categories. Thus, although these individuals did display some investment in identity work, the Undifferentiated cluster may reflect some sort of “wait and see” approach (Adams, Berzonsky, & Keating, 2006), characterized by a lack of pronounced identity work.

Although individuals in the undifferentiated status resembled Carefree Diffusions to some extent, these clusters were empirically differentiated from one another. First, Carefree Diffusions in both samples scored fairly low, rather than intermediate, on all five identity dimensions. Second, Carefree Diffusions scored substantially lower than undifferentiated

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<sup>3</sup> The undifferentiated cluster in Sample 1, however, scored moderately high on exploration in breadth, indicative of a moratorium-like state.

participants on anxiety symptoms. Nonetheless, the Undifferentiated cluster and the Carefree Diffusion cluster may resemble two subtypes of individuals for whom active identity work is not a priority. These young people continue to be noncommittal and, possibly to some extent, choose to avoid closure on the various identity issues at hand (Côté & Schwartz, 2002). Undifferentiated individuals scored as high as those in the achieved and foreclosed clusters on several indices of adjustment. However, they, like Carefree Diffusions, scored lower on self-reflection. Some psychological resources that are beneficial for identity formation appear less pronounced in undifferentiated individuals than in those classified into the achieved status. Long-term follow-up is necessary to investigate how “undifferentiated” individuals develop their sense of identity across time, and how their psychological adjustment changes as they pass from emerging adulthood into true adulthood. It is not known how an undifferentiated approach to identity might respond to enduring adult responsibilities.

#### *4.3. Limitations and suggestions for future research*

Several limitations warrant attention. First, all of the data were self-reported. Accordingly, some of the covariation among the constructs under study may reflect common method variance. One way to address this issue in future research would be to measure some behavioral and cognitive aspects and adjustment more directly or to rely on multiple informants. For example, decision-making can be assessed using observational tasks, and depression can be measured using biological as well as self-report instruments. Future research would do well to include measures tapping general decision-making processes (and indecision or indecisiveness in particular) to further validate the identity dimensions identified in the present article.

Second, the present cross-sectional design did not allow us to examine directionality in the relationships obtained. Longitudinal research across a broad age range is recommended to investigate how the empirically derived statuses and their component dimensions develop over time. Scoring high on ruminative exploration might reflect (or be the result of) a developmental trajectory characterized by distress (Kashdan et al., 2004). Similarly, these longitudinal studies should extend into adulthood to investigate if the worry and rumination accompanying dysfunctional identity exploration in adolescence and emerging adulthood also occurs later in life. We hypothesize that ruminative exploration may also constitute, for some individuals, a defining dimension of identity formation in adulthood (cf. Watkins et al., 2005), which is, among other things, characterized by the transformation and re-evaluation of the choices one has made earlier on. When identity choices have not worked out well, adults may even undergo a midlife crisis reflecting some sort of disillusionment and a quest for new, more rewarding identity choices (Waterman & Archer, 1990).

Third, the present study did not attend to contextual processes. Recent research (Luyckx, Soenens, Vansteenkiste, Goossens, & Berzonsky, *in press*) has also highlighted the need to include family socialization and parenting—more specifically, the degree to which parents are perceived as psychologically controlling (Barber & Harmon, 2002)—as contextual antecedents of identity dimensions in general and exploratory behavior in particular. It is possible that overly controlling and intrusive parenting is associated with the development of ruminative exploration. It remains for future longitudinal research to explore these possibilities. Similarly, given the increased ethnic heterogeneity characterizing

many Western countries, it may be important to replicate the present findings with non-White individuals. Future research should also focus on socio-economically more diverse samples outside the university context where identity choices might be more limited.

Finally, the distinction between in depth and in breadth exploratory strategies was applied mainly to the reflective side of exploration in the present contribution. Future research might investigate whether a similar distinction is useful for the ruminative side of exploration. For instance, do people in the Ruminative Moratorium Cluster tend to ruminate primarily over different possible identity alternatives or do they tend to ruminate primarily whether their tentative commitments really resemble their inner standards and needs?

In sum, the ideas proposed in the present article might help researchers to re-define some of the core dimensions of identity in late adolescence and young adulthood. Specifically, we encourage researchers to distinguish adaptive from maladaptive exploratory processes and commitment making from subsequent commitment identification processes. In so doing, the present identity model allows for a detailed investigation of identity formation both at the dimensional and the categorical (or status) level. Finally, we hope that the model will inspire future longitudinal attempts to chart identity development from adolescence into adulthood.

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