Development and Psychopathology (2025), **37**, 2111–2125
doi:10.1017/S095457942400169X

CAMBRIDGE UNIVERSITY PRESS

Regular Article

The interplay between identity and personality pathology in emerging adults: A 7-year cross-lagged study

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Abstract

Personality pathology is hypothesized to be an important factor in shaping identity, yet longitudinal evidence linking dimensional measures of identity and personality pathology remains scarce. To address this knowledge gap and shed light on the reciprocal dynamics proposed by the alternative model of personality disorder, we conducted a comprehensive seven-year study involving 372 emerging adults from a community sample ($Mage_{T1} = 21.98$ years, $SD_{T1} = 1.13$; 57% females). Pathological personality traits were assessed using the short form of the Personality Inventory for DSM-5 (PID-5 SF) while identity was assessed with the Dimensions of Identity Development Scale (DIDS). Cross-lagged analyses in Mplus revealed that personality pathology consistently predicts subsequent different levels of identity seven years later, whereas only one significant pathway from identity to personality pathology was found. Notably, negative affectivity and detachment emerge as the most influential pathological personality trait, whereas no significant effects were found for disinhibition and psychoticism. In summary, our study uncovered compelling longitudinal associations that underscore the pivotal role of pathological personality traits in the development of identity. Implications and suggestions for future research are discussed.

Keywords: Alternative Model of Personality Disorders; Dimensions of Identity Development Scale; emerging adulthood; identity; personality pathology; Personality Inventory for DSM-5

(Received 18 March 2024; revised 16 September 2024; accepted 22 September 2024; first published online 13 December 2024)

Introduction

Personality researchers typically define the concept of the "self" as a multi-layered construct comprising two interconnected layers: the "having" side of personality, which encompasses dispositional personality traits such as the Big Five traits, and the "doing" side of personality, the surface layer, which involves the actions individuals undertake to shape their identity (Cantor, 1990; Luyckx et al., 2014; McAdams, 2015). Whereas the "doing" side of personality entails actions such as making plans for one's life, making choices and pursuing certain goals (Cantor, 1990; Luyckx et al., 2014; McAdams, 2015; McAdams & Pals, 2006) the "having" side of personality is related to both "normal" personality in terms of the Big Five and maladaptive pathological personality traits as conceptualized in the Alternative Model of Personality Disorders (AMPD; Al-Dajani et al., 2016; McAdams, 2015; Skodol et al., 2015). These two dimensions are distinct but interrelated; the stable traits of the "having" side influence the actions and goals of the "doing" side, while the experiences and choices made in the "doing" side can reshape and redefine one's traits and self-perception over time. Meta-analyses have reported prevalence rates for personality pathology in the general adult population ranging from 7.8% worldwide (Winsper et al., 2020) to 12% in Western countries (Volkert et al., 2018). Hence, personality pathology constitutes a substantial societal concern in terms of healthcare costs, work-related absenteeism Axis I comorbidity, and morbidity (Volkert et al., 2018; Winsper et al., 2020).

Numerous studies have indicated a dynamic and intertwined relationship between identity development—the doing side of the self—and personality pathology—the having side of the self—in emerging adults (Bastiaens et al., 2022; Beeney et al., 2019; Kaufman & Meddaoui, 2021; Modestin et al., 1998; Tackett et al., 2009). Emerging adulthood, the life period spanning from 18 to 29 years, represents a critical phase for identity formation, characterized by numerous developmental challenges in terms of education, work, and relationships (Arnett et al., 2014). Alongside the instability in work and relationships, a sense of self-focus with fewer obligations, and the feeling of being "in-between" adolescence and adulthood, emerging adulthood exhibits a period of heightened identity exploration, with a richness of possibilities and options for the future (Arnett et al., 2014). However, despite the significance of this life stage, only limited research has focused on the interplay between specific identity processes and dimensions of personality pathology, as well as the concurrent development of both constructs within community samples of emerging adults (Vizgaitis & Lenzenweger, 2022). To address this research gap, our study aims to advance the understanding of the development and interplay between identity and personality pathology through a cross-lagged panel model

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Cite this article: Grossmann, L., Van der Hallen, R., Smeets, G., & Prinzie, P. (2025). The interplay between identity and personality pathology in emerging adults: A 7-year cross-lagged study. *Development and Psychopathology* **37**: 2111–2125, https://doi.org/10.1017/S095457942400169X

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https://doi.org/10.1017/S095457942400169X Published online by Cambridge University Press

covering a 7-year period, adopting a dimensional perspective. By studying these processes over time, we aim to shed light on the dynamic nature of these constructs and their potential reciprocal influence, contributing valuable insights to the field of personality and developmental psychology.

Personality pathology

Personality pathology is typically defined as "*an enduring pattern of inner experience and behavior that deviates markedly from the expectations of the individual's culture, is pervasive and inflexible, has an onset in adolescence or early adulthood, is stable over time, and leads to distress or impairment*" (American Psychiatric Association, 2013, p. 645). Research in the field of personality pathology has mainly focused on establishing clear diagnostic categories for the various personality pathologies (D'Huart et al., 2023). However, critics of the categorical approach have pointed out its limitations, including poor diagnostic efficiency, high comorbidity rates, and substantial heterogeneity within each diagnostic category (Al-Dajani et al., 2016). Moreover, concerns have been raised regarding the reliability of diagnoses within this framework due to the use of arbitrary cutoff scores (Al-Dajani et al., 2016; Bach & Tracy, 2022). There is, however, a growing body of evidence that personality pathology can also be captured in a more dimensional manner. For instance, the AMPD (Skodol et al., 2015; Widiger & Hines, 2022) offers a dimensional perspective on personality disorders (PD), with the advantage of assessing an individual's level of functioning (Criterion A), while providing a comprehensive trait profile that indicates pathological personality traits (Criterion B) (Al-Dajani et al., 2016; Anderson et al., 2018; Bach & Tracy, 2022). Furthermore, longitudinal studies have shown that the level of severity (on a continuum) of PDs is more predictive of functional impairment than its categorical counterpart of PDs (Kaufman & Crowell, 2018). Hence, a dimensional take on personality pathology has proven to be more useful compared to a purely categorical approach, particularly in the realm of clinical practices, treatment planning, psychological assessment, and forensic settings (Bach & Tracy, 2022).

The dimensional AMPD is comprised of two key criteria (American Psychiatric Association, 2013; Widiger & McCabe, 2020). Criterion A assesses the level of personality functioning, focusing on impairment or deficits in the sense of self (identity and self-direction) and interpersonal functioning (empathy and intimacy), on a spectrum ranging from no to extreme impairment. Specifically, identity, as defined by Criterion A of the AMPD refers to "*the experience of oneself as unique, with clear boundaries between self and others; stability of self-esteem and accuracy of self-appraisal; capacity for and ability to regulate, a range of emotional experience*" (American Psychiatric Association, 2013; p. 762). In addition, Criterion B encompasses the five maladaptive extremes of the Big Five personality traits: 1) negative affectivity; the tendency to experience negative emotions, 2) detachment; referring to introversion, social isolation, and anhedonia, 3) antagonism; the tendency for aggression, dominance, and grandiosity, 4) disinhibition; characterized by impulsivity and sensation seeking and 5) psychoticism; a disconnection from reality and a tendency for illogical thought patterns (Pollock et al., 2016; Widiger & McCabe, 2020). Criterion A and B of the AMPD are substantially correlated, with correlations ranging between $r = .33$ (antagonism and identity; identity measured by the level of self-functioning and interpersonal relatedness) and $r = .64$ (disinhibition and identity) (Barkauskienė et al., 2022; Vizgaitis & Lenzenweger, 2022). Whereas both Criterion A and B share substantial conceptual overlap (Bach & Tracy, 2022; Zimmermann et al., 2019), it is important to recognize that they are distinct criteria that interact in a meaningful way. That is, the overlap between Criterion A and B represents two unique perspectives on the same personality pathology phenomenon, with Criterion A capturing the global and changeable aspects of PD dysfunction such as daily negative emotions or cognitive distortions, whereas Criterion B delineates specific and stable expressions of PD dysfunction such as negative affectivity as underlying personality trait (Bach & Tracy, 2022).

The development of the AMPD has marked a significant shift in the paradigm of personality pathology (Al-Dajani et al., 2016; Kaufman & Meddaoui, 2021). Over the past decade, the field has slowly moved away from the traditional, purely categorical approach and has embraced a more dimensional perspective grounded in individual differences (Al-Dajani et al., 2016; Bach & Tracy, 2022). Rather than focusing solely on PD categories, the AMPD adopts a novel approach that emphasizes the common elements shared among PDs, along with fundamental aspects of human nature, while also accounting for individual stylistic characteristics (Bach & Tracy, 2022). This recognition of the unique contributions of identity and pathological personality traits allows for a more comprehensive understanding of personality pathology and paves the way for targeted interventions and treatment approaches (Al-Dajani et al., 2016). In a recent meta-analysis, d'Huart and colleagues (2023) reported that diagnostic stability based on categorical personality scores tends to be less stable than that based on dimensional scores. In practical terms, research implies that individuals may no longer meet the diagnostic criteria for PDs over a two-year period, whereas they may still display considerable stability in both mean-level (Chanen et al., 2004; Durbin & Klein, 2006) and rank-order stability (Ferguson, 2010; Thimm et al., 2016; d'Huart et al., 2023) when assessed dimensionally.

In terms of the lifetime course of personality pathology, research suggests that symptoms of PDs tend to be most prevalent before the age of 20, followed by a decline in most pathological features over time (Gutiérrez et al., 2012; Wright et al., 2011) and more stability in symptom presence from the 30s onwards. Interestingly, this pattern has been observed not only in clinical populations, where a decline could be attributed to treatment effects but also in community samples (d'Huart et al., 2023). However, it is important to acknowledge that the literature on the stability and temporal course of personality pathology is influenced by diverse methodological considerations, and findings suggest that the stability of personality pathology is only moderately high (d'Huart et al., 2023). Given these insights, the need for a shift away from artificial diagnostic categories and a focus on self and interpersonal functioning as core features of PDs becomes more and more evident, aligning with dimensional models of personality pathology like the AMPD.

Identity

In the discourse of the self, recent conceptualizations of identity come into play. Identity, as conceptualized by Luyckx et al. (2014), is a dimensional concept that includes key components of both identity commitment and exploration. Commitment is assessed through (1) commitment making; the degree to which individuals adhere to a set of choices, and (2) identification with commitment; the extent to which these commitments become integrated into the

https://doi.org/10.1017/S095457942400169X Published online by Cambridge University Press

sense of self. Exploration, on the other hand, is distinguished by (3) exploration in breadth; the extent to which individuals explore various alternatives before committing to one option, (4) exploration in depth; the evaluation of the current commitments and (5) ruminative exploration; delaying identity development as individuals are not able to commit among the limitless number of opportunities (Klimstra, 2013; Luyckx et al., 2014; 2023). The notion that identity impairment is a central criterion leading to the development of PDs, is firmly grounded in well-established developmental and clinical theories. These theories emphasize the pivotal role of identity in both typical development, as articulated by Eric Erikson's psychosocial theory (Erikson, 1968), and in personality pathology, as highlighted by Otto Kernberg's work (Kernberg, 1967). Erikson´s psychosocial theory emphasizes the importance of identity synthesis, which involves maintaining self-continuity over time and across different situations while having a clear sense of one´s own goals, plans, and beliefs (Erikson, 1968; Kaufman et al., 2015). Identity confusion, on the other hand, refers to the normative period of exploration and transition, in which individuals may experience uncertainty about their thoughts, beliefs, and roles, leading to vague commitments and feelings of disconnection from the inner self (Beyers & Luyckx, 2016; Bogaerts et al., 2021b; Erikson, 1968*)*. Identity diffusion, a more severe form of identity confusion, is characterized by a profound disruption in self-definition, resulting in feelings of incoherence, fragmentation, and inability to commit to appropriate roles (Bogaerts et al., 2021b; Erikson, 1968). Similarly, Kernberg's work distinguishes between various levels of identity integration in relation to personality pathology, emphasizing the importance of having a stable, flexible, and realistic inner experience of self and others (Bogaerts et al., 2021b; Kernberg, 1967). Identity diffusion, in Kernberg´s framework, describes a poorly integrated, fragmented, and unstable sense of self. Individuals experiencing identity diffusion may struggle with deep confusion about their own identity and may even feel a sense of nonexistence (Bogaerts et al., 2021b; Kernberg & Caligor, 2005; Vizgaitis & Lenzenweger, 2022). Although Erikson`s and Kernberg`s theories are applied to different populations (typically developing samples vs. clinical samples), both underscore the significance of identity dysfunction for individual development and personality pathology (Bogaerts et al., 2021b).

There is large individual heterogeneity of identity development shaped by many different factors ranging from daily micro-processes, life transitions, and events, as well as global and specific domains of identity measurements (Branje et al., 2021). However, a literature review by Branje et al. (2021) suggests that identity development during adolescence and early adulthood demonstrates both systematic maturation (Albarello et al., 2018; van Doeselaar et al., 2018) and substantial stability (Becht et al., 2016; Carlsson et al., 2015; Meeus et al., 2010). From a dimensional perspective, identity maturation is characterized by high levels of commitment domains and exploration domains, with low levels of ruminative exploration (Eriksson et al., 2020; McLean, & Syed, 2015). However, most individuals may not reach a mature identity characterized by an integrated sense of self across multiple identity domains until well into adulthood (Branje et al., 2021).

Identity and personality pathology

The heterogeneity of identity development underscores the significance of investigating the interplay between pathological personality traits and identity dimensions, where evidence from research on "normal" Big Five personality traits and identity offers valuable insights. For instance, studies by Luyckx and colleagues (2012; 2014) have revealed substantial longitudinal associations between specific Big Five traits and dimensions of identity during adolescence. More specifically, extraversion positively predicted commitment dimensions and exploration in depth and negatively predicted ruminative exploration. Agreeableness and openness positively predicted exploration in breadth and depth, and openness also positively predicted ruminative exploration (Caspi et al., 2005; Klimstra, 2013; Luyckx et al., 2006; 2014). Furthermore, conscientiousness was found to have a positive predictive effect on both commitment processes and exploration processes while negatively influencing ruminative exploration (Luyckx et al., 2012; 2014). Finally, emotional stability negatively predicted exploration in depth and ruminative exploration but positively predicted identification with commitment (Klimstra, 2013; Luyckx et al., 2012; 2014). Regarding pathological personality traits, recent cross-sectional research utilizing the AMPD showed that negative affectivity, detachment, antagonism, and psychoticism positively predicted identity pathology (conceptualized as identity diffusion and low self-concept clarity) in young emerging adults of a community sample, with moderate to high effect sizes (Vizgaitis & Lenzenweger, 2022). This finding highlights the relevance of considering personality pathology dimensions as potential predictors of identity disturbance in non-clinical populations. However, thus far the questions regarding the longitudinal relationship between specific identity processes and personality pathology dimensions in a community sample of emerging adults remain unanswered (Vizgaitis & Lenzenweger, 2022). Hence, the first aim of the present study was to investigate how personality pathology predicts subsequent different levels of identity dimensions in emerging adults seven years later (see Figure 1).

Further compelling evidence has been provided for the significant association between identity impairment and various PDs (Beeney et al., 2019; Bogaerts et al., 2021a), including dependent and schizotypal disorders (Meisner et al., 2021; Modestin et al., 1998) as well as borderline and antisocial PD (Wilkinson-Ryan & Westen, 2000). Moreover, by adopting a dimensional conceptualization, Bogaerts and colleagues (2021b) revealed that commitment making and identification with commitment were negatively associated with PDs, whereas ruminative exploration was positively related to PDs. This suggests that individuals who struggle to commit to identity-defining aspects are more likely to present with high levels of personality pathology. Similarly, Modestin and colleagues (1998) suggested that identity diffusion, characterized by a poorly developed self-image, may predispose individuals to a broader risk of developing PDs without specific alignment to any type of PD. In conclusion, a substantial body of research indicates that identity impairment serves as a significant predisposing factor for personality pathology. Therefore, the second aim of the present study was to investigate how dimensions of identity predict different levels of personality pathology dimensions in emerging adults seven years later (see Figure 1).

The current study

Given the reviewed research, this study aims to investigate the influence of personality pathology and identity and vice versa in a community sample of emerging adults, adopting a longitudinal and dimensional perspective (see Figure 1 for our conceptual model). By using a cross-lagged design spanning 7 years, the

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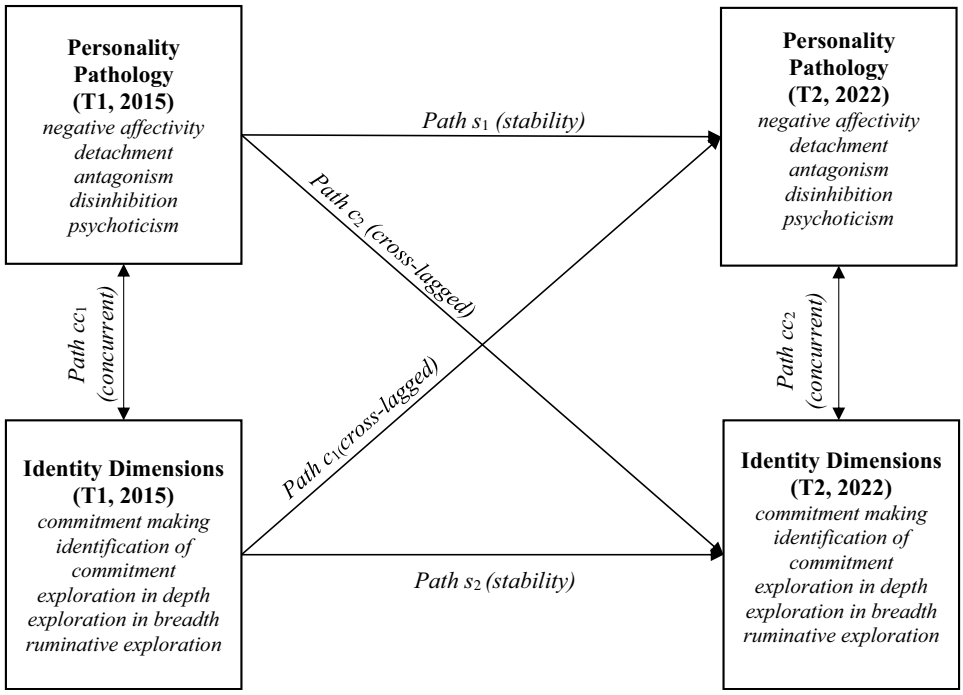


Figure 1. Conceptual cross-lagged model between personality pathology and identity dimensions.

present study aims to answer three questions (1) Are identity dimensions related to personality pathology in emerging adults over a seven-year period? (2) Are personality pathology dimensions related to identity dimensions over seven years? (3) Do the cross-lagged pathways between identity and pathological personality differ in strength? The hypotheses for each research question are as follows:

1. Given that the AMPD dimensions are the extremes of the Big Five dimensions (Widiger & McCabe, 2020), we expect a reversal of the associations reported in research on identity and normal personality (Luyckx et al., 2014). An exception is the trait of psychoticism, which does not reflect an extreme negative but rather an extreme positive in openness to experience. Therefore, we do not expect a reversed association here, as openness is also negatively related to ruminative exploration. In line with Vizgaitis and Lenzenweger (2022), we expect that the personality pathology dimensions of negative affectivity, detachment, antagonism, disinhibition, and psychoticism will positively predict ruminative exploration and negatively predict commitment making, identification with commitment, exploration in breadth, and exploration in depth over a 7-year period (Figure 1, paths c_2)
2. In line with Bogaerts and colleagues (2021b), we expect that ruminative exploration will positively predict negative affectivity, detachment, antagonism, disinhibition, and psychoticism over a 7-year period. Additionally, we hypothesize that commitment making, identification with commitment, exploration in depth, and exploration in breadth will negatively predict negative affectivity, detachment, antagonism, disinhibition, and psychoticism 7 years later (Bogaerts et al., 2021b) (see Figure 1, paths c_1).
3. Research provided evidence for mutual relations between identity and normal personality in emerging adults (Hatano et al., 2017; Luyckx et al., 2014). However, research on the magnitude of the effect between identity and personality pathology in emerging adults is scarce. Therefore, the third research question will be exploratory in nature.

Embracing a dimensional approach holds practical implications, as this approach aligns with the growing movement towards identifying key maladaptive processes and transdiagnostic factors to reduce excessive comorbidity of disorders (Kaufman & Crowell, 2018; Vizgaitis & Lenzenweger, 2022). By investigating personality pathology and identity through a dimensional lens, our research has the potential to contribute to a deeper understanding of the interplay between various maladaptive traits and dimensions.

Methods

Participants and procedure

The study was conducted as part of the Flemish Study on Parenting, Personality, and Development (FSPPD). This ongoing longitudinal study was initiated in 1999 (for a detailed description of the recruitment of participants, see Prinzie et al., 2003). All participants provided written informed consent. This study was preregistered (https://osf.io/xm4vn/?view_only=f732ebf9b35049e4aad4e13d138b0dba). Participants completed self-report questionnaires on personality pathology (PID-5 SF; Maples et al., 2015) and identity (DIDS; Luyckx et al., 2008) at wave 8 (2015) and wave 10 (2022), hereafter referred to as T1 and T2, respectively.

At T1 (2015) $N = 372$ participants (57% females) and at T2 (2022) $N = 355$ participants (56% females) completed the questionnaires. All participants held the Belgian nationality and came from mixed educational backgrounds. At T1 (2015) participants' age ranged from 19.8 to 24.4 years ($M = 21.98$, $SD = 1.13$), whereas at T2 (2022) ages ranged from 26.8 to 31.4 years ($M = 28.98$, $SD = 1.13$). Additional demographic statistics are presented in Table 1. The attrition rate was 4,5% mostly due to dropouts between T1 and T2. Little´s MCAR test (Little, 1988)

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Table 1. Demographics at T1 (2015)

Characteristics	*N*	%
Sex		
Male	161	43
Female	210	57
Employment status		
Student	25	7
Employed	328	91
Unemployed	9	2
Highest educational degree		
Secondary education	155	58
Higher education	61	23
University	49	19
Living situation		
Living with parents	232	62
Living in an own flat/house	126	34
Other	14	4

Note. Missing values excluded.

with the complete dataset indicated that missing values were completely at random ($\chi 2\ (188) = 166.35$, $p = .87$). Multiple imputation with one dataset in SPSS was used to handle missing data (Cleophas & Zwinderman, 2016).

Measures

Personality pathology

Pathological personality traits were assessed with the short form of the Personality Inventory for DSM-5 (PID-5 SF; Maples et al., 2015). The PID-5-SF consists of 100 statements, with four items corresponding to each of the 25 lower-order trait facets. Participants rated each statement on a 4-point Likert scale ranging from 0 (*very false or often false*) to 3 (*very true or often true*). A mean score of the facets was calculated for the five higher-order domains, with a high score indicating a higher level of the pathological personality factor. The domains relate to the DMS-5 and are labeled as: (1) negative affectivity (28 items; $\alpha_{T1} = .90$; $\alpha_{T2} = .91$); (2) detachment (20 items; $\alpha_{T1} = .91$; $\alpha_{T2} = .92$) (3); antagonism (20 items; $\alpha_{T1} = .91$; $\alpha_{T2} = .91$); (4) disinhibition (20 items; $\alpha_{T1} = .80$; $\alpha_{T2} = .81$); (5) psychoticism (12 items; $\alpha_{T1} = .85$; $\alpha_{T2} = .84$). An example item for each dimension is presented in Appendix A.

Identity

Identity was assessed with the Dimensions of Identity Development Scale (DIDS; Luyckx et al., 2008). This scale comprises 25 items, with five items allocated to each of the five identity dimensions. Participants rated each item on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), measuring the following dimensions as: (1) commitment making ($\alpha_{T1} = .95$; $\alpha_{T2} = .95$); (2) identification with commitment ($\alpha_{T1} = .89$; $\alpha_{T2} = .89$); (3) exploration in breadth ($\alpha_{T1} = .85$; $\alpha_{T2} = .83$); (4) exploration in depth ($\alpha_{T1} = .83$; $\alpha_{T2} = .78$); (5) ruminative exploration ($\alpha_{T1} = .88$; $\alpha_{T2} = .91$). Mean scores were computed for each dimension, with high scores indicating higher levels of the identity dimensions. An example item for each dimension is presented in Appendix A.

Statistical analyses

First, descriptive statistics were computed using SPSS 26 (IBM Corp., 2019). To investigate the relationship between identity and personality pathology and vice versa over a span of seven years, we performed a multivariate cross-lagged analysis in Mplus 8.8 (Muthén & Muthén, 2017). In this analysis, we examined cross-lagged paths (see Figure 1, paths c_1 and c_2;) and stability paths (paths s_1 and s_2) and concurrent paths (paths cc_1 and cc_2). Age, sex, and educational level were included as covariates in the model. Model fit was evaluated using the chi-square difference test, as well as, using the comparative fit index (CFI), with CFI > .90 indicating a good fit, and the root-mean-square error of approximation (RMSEA), with RMSEA < .05 indicating a good fit and RMSEA < .10 indicating an acceptable fit (for an overview of model fit statistics, see Hu & Bentler, 1995). As part of an explorative research question aimed to test whether the cross-lagged pathways between identity and pathological personality differ in strength, we tested two models. In the first model, estimates for the cross-over paths were freely estimated. In the second model, cross-over paths from pathological personality traits to identity dimensions were constrained to be equal to the paths from identity dimensions to pathological personality traits. Model fit was compared with the chi-square difference test (Pavlov et al., 2020).

Results

Descriptive statistics

Descriptive statistics are presented in Appendix B. Cross-lagged correlations between personality pathology domains at T1 and identity at T2 ranged from $r = -.10$ (detachment and exploration in depth, and disinhibition and commitment making) to $r = .39$ (detachment and ruminative exploration). Most pairs were statistically significant and negatively correlated. Specifically, negative affectivity at T1 was negatively related to commitment making at T2 ($r = -.29$, $p < .01$), identification to commitment making at T2 ($r = -.34$, $p < .01$), and exploration in depth at T2 ($r = -.11$, $p < .05$). Detachment at T1 was negatively related to commitment making at T2 ($r = -.28$, $p < .01$), identification with commitment at T2 ($r = -.30$, $p < .01$), and exploration in depth at T2 ($r = -.10$, $p < .05$). Antagonism at T1 was negatively related to exploration in breadth at T2 ($r = .11$, $p < .05$). Disinhibition at T1 was negatively related to commitment making at T2 ($r = -.10$, $p < .05$), and identification with commitment at T2 ($r = -.12$, $p < .05$). Finally, psychoticism at T1 was negatively related to commitment making T2 ($r = -.12$, $p < .05$), identification with commitment T2 ($r = -.11$, $p < .05$), exploration in breadth T2 ($r = .14$, $p < .01$). In contrast, positive correlations were found between negative affectivity at T1 ($r = .40$, $p < .01$), detachment at T1 ($r = .39$, $p < .05$), antagonism at T1 ($r = .17$, $p < .01$) and psychoticism at T1 ($r = .23$, $p < .01$) and ruminative exploration at T2, respectively.

Cross-lagged correlations between identity at T1 and personality pathology at T2 ranged from $r = -.11$ (exploration in depth and negative affectivity) and $r = -.34$ (ruminative exploration and negative affectivity). Again, pairs were predominantly negatively correlated. Commitment making at T1 was negatively correlated to negative affectivity at T2 ($r = -.23$, $p < .01$), detachment at T2 ($r = -.25$, $p < .01$), disinhibition at T2 ($r = -.15$, $p < .01$) and psychoticism at T2 ($r = -.18$, $p < .01$). Identification with commitment at T1 was significantly negatively correlated to negative affectivity at T2 ($r = -.27$, $p < .01$), detachment at T2

https://doi.org/10.1017/S095457942400169X Published online by Cambridge University Press

($r = -.33$, $p < .01$), disinhibition at T2 ($r = -.14$, $p < .01$), and psychoticism at T2 ($r = -.19$, $p < .01$). Exploration in breadth at T1 was significantly negatively related to negative affectivity at T2 ($r = -.10$, $p < .05$), detachment at T2 ($r = -.33$, $p < .01$), disinhibition at T2 ($r = -.14$, $p < .01$) and psychoticism at T2 ($r = -.19$, $p < .01$). Exploration in depth at T1 was significantly negatively related to negative affectivity at T2 ($r = -.11$, $p < .05$) and detachment at T2 ($r = -.22$, $p < .01$). Finally, ruminative exploration at T1 was significantly positively correlated to negative affectivity at T2 ($r = .34$, $p < .01$), detachment at T2 ($r = .33$, $p < .01$), antagonism at T2 ($r = .11$, $p < .05$), disinhibition at T2 ($r = .22$, $p < .01$) and psychoticism at T2 ($r = .26$, $p < .01$).

Cross-lagged models

Results from the cross-lagged analysis are presented in Table 2 (cross-lagged paths), Table 3 (stability paths), and Figure 2. Our model had a good model fit ($\chi^2_{32} = 71.22$, $p < .01$, CFI = .99, TLI = .93, RMSEA = 0.05).

Regarding our first aim, which focuses on the cross-lagged paths of personality pathology at T1 on identity at T2, several significant effects emerged (see Figure 2): Negative affectivity negatively predicted commitment making, identification with commitment, exploration in breadth and positively predicted ruminative exploration seven years later. Detachment negatively predicted exploration in breadth and positively predicted ruminative exploration. Finally, antagonism negatively predicted ruminative exploration 7 years later.

Regarding our second aim, which focuses on the cross-lagged paths of identity at T1 on personality pathology at T2, shows that exploration in depth positively predicted disinhibition seven years later.

Regarding stability paths of pathological personality traits, representing the rank-order stability over seven years, all personality dimensions demonstrated significant rank-order stability across seven years (for estimates see Table 3). In addition, also most identity dimensions demonstrated significant rank-order stability across seven years, except for commitment making.

Our third research question aimed at assessing whether the effect of personality pathology on identity is comparable in strength to the effect of identity on personality, both measured at a seven-year interval. A chi-square test comparing both models (i.e., model 1, freely estimated and model 2, cross-lagged effects constrained to be equal) indicated that both models significantly differed ($\chi^2_{25} = 67.12$; $p < .01$). To investigate these differences further, the equality constraints were released one by one, based on the modification indices, starting with the highest modification index (see Table 4). A chi-square test comparing both the final constrained and the non-constrained model was not statistically significant ($\chi^2_{19} = 24.95$, $p = .162$) (i.e., model 1 vs. model 8). This process identified five pathways from personality pathology to identity that were stronger than the reverse paths (identity to personality pathology): Negative affectivity on ruminative exploration, detachment on ruminative exploration, detachment on exploration in breadth, negative affectivity on identification with commitment, antagonism on ruminative exploration. In all the cases, the cross-lagged pathways from personality pathology on identity were significant ($p's < .01$), whereas the equivalent pathways from identity to personality pathology were non-significant ($p's > .05$). Parameter estimates for the partially constrained model can be found in Table 5. This indicates that the effects of pathological personality traits on identity dimensions over time are stronger than the effects of identity dimensions on pathological personality traits.

Discussion

The relationship between personality pathology and identity has been extensively investigated, revealing meaningful connections and dynamics (Beeney et al., 2019; Bogaerts et al., 2021a; Vizgaitis & Lenzenweger, 2022; Wilkinson-Ryan & Westen, 2000). Nevertheless, to the best of our knowledge, no prior research has focused on the interplay of pathological personality and identity spanning a seven-year period in emerging adults. To address this knowledge gap, our study aimed to assess (1) whether identity dimensions can predict pathological personality traits over a seven-year period, and (2) whether personality pathology dimensions can predict identity dimensions over the same time interval. Additionally, we aimed to evaluate (3) the relative strength of both cross-lagged pathways. The results indicate that pathological personality traits predict identity dimensions seven years later, with negative affectivity, detachment, and antagonism holding great significance. Identity has less influence on personality pathology seven years later, with only exploration in depth predicting pathological personality traits. Consequently, one can infer that pathological personality traits, particularly negative affectivity, detachment, and antagonism, can impede identity development, given the adverse predictive influence of pathological personality traits on various dimensions of identity. The relationships uncovered in the current study offer novel insights into how these constructs evolve and interact over time, further enriching our understanding of the intricate nature of emerging adulthood.

The effect of personality pathology on identity

Regarding the effect of personality pathology on identity, negative affectivity (related to neuroticism or emotional instability) exhibited a connection with commitment dimensions, whereas detachment (opposite to extraversion) predicted exploration dimensions of identity seven years later. Negative affectivity refers to a tendency to experience unpleasant feelings such as anger, anxiety, passive interpersonal behavior, and high emotionality (Al-Dajani et al., 2016; Hopwood et al., 2013). These heightened negative emotional states and this tendency to engage in repetitive, negative thoughts (Al-Dajani et al., 2016; Hopwood et al., 2013; Wright et al., 2015) may prompt individuals to approach commitment cautiously (commitment making), to encounter difficulties in forming stable commitments (identification with commitment), avoid new experiences due to anticipated negative emotions (exploration in breadth) and engage in repetitive rumination that obstructs progress (ruminative exploration). Detachment, on the other hand, encompasses depressive affect, interpersonal withdrawal, and mistrust (Al-Dajani et al., 2016; Hopwood et al., 2013). This anticipation of negative emotions may cause individuals to avoid exploring various options and seeking out new experiences (exploration in breadth) and instead, they may become entrenched in mistrust and rumination (ruminative exploration) (Granieri et al., 2017; Wright et al., 2015).

Existing theoretical models that emphasize the continuity between the "normal" Big Five and the "maladaptive" AMPD traits can shed some light on these results (Clark & Watson, 2022; Thimm et al., 2016; Widiger & McCabe, 2020). More specifically, our results are in line with the well-established Big Five model of personality as well as the concept of the "Big Two," which groups

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Table 2. Cross-lagged pathways

	Personality pathology on identity					Identity on personality pathology				
	CM	IC	EB	ED	RE	CM	IC	EB	ED	RE
NA	**−.03 [−.64; −.08]**	**−.46 [−.69; −.24]**	**−.25 [−.57; −.02]**	−.18 [−.39; .03]	**.52 [.22; .83]**	−.00 [−.06; .05]	.02 [−.03; .07]	.04 [−.02; .09]	−.02 [−.07; .03]	.01 [−.04; .05]
DE	−.15 [−.47; .16]	−.06 [−.32; .19]	**−.36 [.11; .61]**	.12 [−.11; .36]	**.42 [.08; .76]**	−.03 [−.09; .04]	−.03 [−.09; .03]	−.05 [−.12; .01]	−.02 [−.08; .04]	−.04 [−.09; .01]
A	.10 [−.14; .33]	.12 [−.07; .31]	.10 [−.09; .29]	.15 [−.02; .33]	**−.34 [−.60; −.08]**	−.04 [−.09; .01]	−.02 [−.07; .03]	−.02 [−.07; .03]	.04 [−.01; .09]	.03 [−.02; .07]
DI	−.01 [−.27; .24]	−.05 [−.26; .16]	.02 [−.18; .23]	−.00 [−.19; .19]	.15 [−.13; .43]	.03 [−.03; .08]	−.04 [−.09; .02]	−.01 [−.07; .04]	**.07 [.01; .09]**	.01 [−.03; .06]
P	.17 [−.09; .44]	.19 [−.02; .41]	.05 [−.16; .26]	.01 [−.19; .20]	−.06 [−.35; .23]	-.01 [−.07; .04]	−.01 [−.06; .04]	−.00 [−.05; .05]	−.05 [−.10; .00]	−.01 [−.05; .03]

Note. Bold = $p < .01$; NA = negative affectivity; DE = detachment; A = antagonism; DI = disinhibition; P = psychoticism. CM = commitment making; IC = identification with commitment; EB = exploration in breadth; ED = exploration in depth; RE = ruminative exploration.

Table 3. Stability pathways

Stability Paths (T1 – T2)	*b [CI]*
Negative affectivity T1 – T2	**.57 [.45; .68]**
Detachment T1 – T2	**.61 [.49; .73]**
Antagonism T1 – T2	**.60 [.51; .69]**
Dsinhibition T1 – T2	**.40 [.30; .50]**
Psychoticism T1 – T2	**.53 [.45; .61]**
Commitment making T1 – T2	−.03 [−.16; .11]
Identification with commitment T1 – T2	**.23 [.10; .37]**
Exploration in breadth T1 – T2	**.41 [.30; .52]**
Exploration in depth T1 – T2	**.21 [.10; .32]**
Ruminative exploration T1 – T2	**.28 [.13; .42]**

Note. $p < .01$ in bold.

the Big Five factors into two higher-order factors representing stability and plasticity (De Young et al., 2002; Digman, 1997; Hatano et al., 2017; Watson et al., 1994). According to the "Big Two," emotional stability, agreeableness, and conscientiousness are thought of as a tendency to set goals and work toward them, reflecting motivational stability. In contrast, the shared variance in extraversion and openness to experience is considered a plasticity factor, associated with embracing novelty, and characterized by flexibility in behavior and cognition (De Young et al., 2002; Hatano et al., 2017). Hence, our findings show that negative affectivity may be a factor hindering stability in identity development while detachment may be a factor hindering plasticity and thus influencing identity development.

In addition to negative affectivity and detachment, our results revealed antagonism to be negatively associated with ruminative exploration 7 years later. Antagonism, akin to low agreeableness (Thimm et al., 2016), encompasses traits such as antisocial tendencies, grandiosity, and attention-seeking behaviors. Individuals characterized by high antagonism are more likely to prioritize their own needs and desires above those of others, displaying a heightened sense of self-importance (Granieri et al., 2017; Hopwood, 2013). This inclination toward self-centeredness can then contribute to a diminished emphasis on interpersonal considerations and a reduced willingness to engage in deep, introspective thinking, as observed in ruminative exploration. Furthermore, the aggressive and confrontational tendencies often associated with antagonism may serve as defense mechanisms against uncertainty and vulnerability (Al-Dajani et al., 2016; Granieri et al., 2017). Hence, individuals high on antagonism may be found to adopt a strategy of overconfidence and reducing internal conflict, which hinders self-reflection and, in turn, hampers ruminative exploration (Rhodewalt & Morf, 1995; Wright et al., 2015).

When looking at these results, we should consider suppression effects (MacKinnon et al., 2000) in certain paths, specifically the link between antagonism at T1 and ruminative exploration at T2 as well as detachment at T1 and exploration in breadth at T2. Suppression effects in cross-lagged models occur when the inclusion of a third variable, known as a suppressor variable, increases the magnitude or strength of a relationship between two other variables, making their relationship stronger or even significant when the suppressor variable is considered

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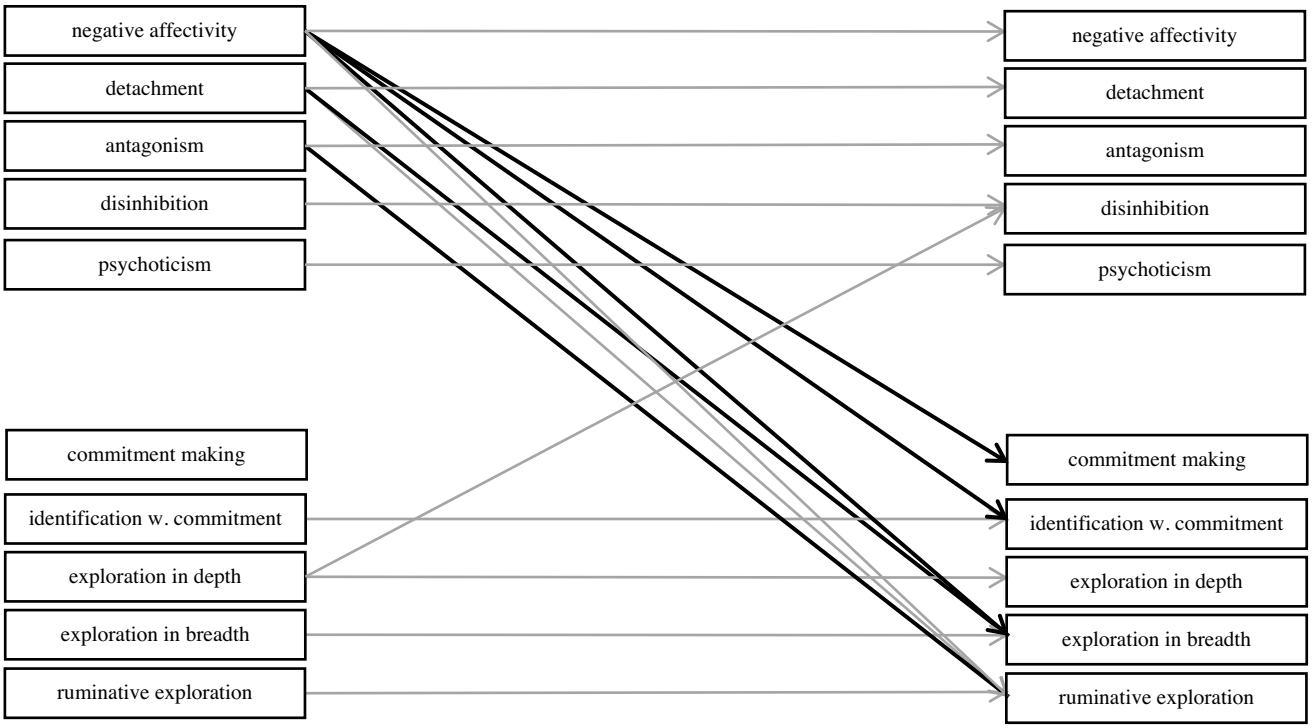


Figure 2. Significant cross-lagged paths and stability paths. Black line = negative significant association, gray line = positive significant association, no line = no significant association.

(MacKinnon et al., 2000). In our study, this means the non-significant correlations between both pathways turned significant in the main analysis. Such potential suppression effects may introduce some degree of uncertainty into the results making future replication needed.

The effect of identity on personality pathology

With regard to the effect of identity on personality pathology, the present study revealed that higher exploration in depth was associated with higher disinhibition 7 years later. Similarly, Luyckx et al. (2014) found only one significant path from identity to the Big Five. Specifically, ruminative exploration was associated with lower conscientiousness in adolescence three years later. This supports the idea that the influence of identity on personality and personality pathology is not as substantial as compared to the reverse (Luyckx et al., 2014). In addition to that, exploration in depth, which relates to contemplating future plans and discussing them with other people, may sometimes lead to confusion akin to an identity crisis (Robinson, 2015). According to some scholars, the quarter-life crisis is thought of as a normative crisis in between emerging adulthood and early adulthood, around the age of 25 – 35 years, characterized by an unstable and stressful period reevaluating past and future commitments of early adult life (Robinson, 2015). To deal with a quarter-life crisis, individuals may adopt a maladaptive coping approach involving irresponsibility and impulsivity, which in turn could manifest in high levels of disinhibition.

In terms of stability, there is recent empirical evidence that both PD diagnoses and PD symptomatology are moderately stable (Chanen et al., 2004; D'Huart et al., 2023; Durbin & Klein, 2006; Vergauwe et al., 2023), whereas identity demonstrates a comparatively lower level of stability (Branje et al., 2021). For instance, based on cross-sectional PID 5 data of a heterogeneous community sample across adulthood only small to moderate changes were found (Vergauwe et al., 2023). Means of AMPD-domains are considered relatively stable during young adulthood in rank-order (Wright et al., 2015), with a slight decline with age, considered a stabilization of personality (Wright et al., 2015). This is in line with the stability of pathological personality traits in our study, however, when looking at the means we can see a slight decline in scores as well (see Appendix B). Regarding identity stability, Branje et al. (2021) delineate various factors impacting identity development over time. Life transitions and events like entering higher education, initiating intimate relationships, joining the workforce, or experiencing stressful life events such as breakups, the death of relatives, or accidents contribute to identity (Barry et al., 2009; Beyers & Seiffge-Krenke, 2010; Branje et al., 2021; Schwartz et al., 2013).

Remarkably, only commitment making does not show significant rank-order stability over the 7-year period. An explanation may be that commitment making, which involves setting and maintaining personal and career-related goals, is particularly susceptible to fluctuations due to life transitions such as completing one's education, starting your career, or forming new relationships (Arnett et al., 2014; Schwartz et al., 2013). External factors like changes in social environment or economic conditions, as well as significant life events (e.g., job loss, relocation), can also impact the stability of such commitments (Schwartz et al., 2013). Additionally, emerging adulthood, inherently involves a continuous reevaluation of goals and values, contributing to variability in commitment making (Arnett et al., 2014; Schwartz et al., 2013).

Nevertheless, it needs to be taken into account that greater stability of personality pathology over the seven-year duration potentially limits the extent of impact of identity on personality

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Table 4. Model fit for the different models

	Models	Fit indexes
1	Freely estimated model	χ^2 (32) = 71.22, $p < .01$, CFI = .99, TLI = .93, RMSEA = 0.05
2	Constrained model	χ^2 (57) = 139.49, $p < .01$, CFI = .98, TLI= .91, RMSEA = 0.06
3	MI1 Negative affectivity to ruminative exploration	χ^2 (56) = 127.15, $p < .01$, CFI = .98, TLI = .92, RMSEA = 0.06
4	MI2 Detachment to exploration in breadth	χ^2 (55) = 121.18, $p < .01$, CFI = .98, TLI = .93, RMSEA = 0.05
5	MI3 Detachment to ruminative exploration	χ^2 (54) = 114.68, $p < .01$, CFI = .98, TLI = .94, RMSEA = 0.05
6	MI4 Antagonism to ruminative exploration	χ^2 (53) = 109.63, $p < .01$, CFI = .98, TLI = .94, RMSEA = 0.05
7	MI5 Negative affectivity to identification with commitment	χ^2 (52) = 103.67, $p < .01$, CFI = .99, TLI = .94, RMSEA = 0.05
8	MI6 Negative affectivity to commitment making	χ^2 (51) = 96.18, $p < .01$, CFI = .99, TLI = .95, RMSEA = 0.05

Note. MI: Model changed based on largest Modification Index.

Table 5. Strength of effects for cross-lagged pathways in the partially constrained model (Model 8)

Pathways (T1 personality pathology on T2 identity)	*b*	Pathways (T1 identity on T2 personality pathology)	*b*
T1 negative affectivity on T2 ruminative exploration	**.36**	T1 ruminative exploration on T2 negative affectivity	−.01
T1 detachment on T2 exploration in breadth	**.27**	T1 exploration in breadth on T2 detachment	−.03
T1 detachment on T2 ruminative exploration	**.32**	T1 ruminative exploration on T2 detachment	−.01
T1 antagonism on T2 ruminative exploration	**−.25**	T1 ruminative exploration on T2 antagonism	.01
T1 negative affectivity on T2 identification with commitment	**−.18**	T1 identification with commitment on T2 negative affectivity	.01

Note. $p < .01$ in bold.

pathology, as there remains less variance within the concept to be explained. However, these findings are in line with literature showing that personality and its pathology are thought of as moderately stable during adolescence and emerging adulthood (Luyckx et al, 2023; Wright et al., 2015), while identity is a multiply determined process (Luyckx et al., 2014).

The moderate rank-order stability of identity and the relatively few significant findings between identity at T1 and personality pathology at T2 could indicate that Criterion A (level of personal functioning) exhibits more short-term variation and is potentially more influenced by daily emotions (Zimmermann et al., 2019). Literature on the AMPD describes Criterion A as vulnerability "from the inside," something within a person´s mental self-representations in relation to others (Bach & Tracy, 2022). In turn, the relatively high number of significant paths from personality to identity 7 years later could be considered evidence for the stable nature of Criterion B (maladaptive personality traits). Criterion B is described in the literature as vulnerability "from the outside," pertaining to individual stylistic expressions. In practical terms, Criterion A, specifically identity, may dynamically track clinical functioning on a daily basis, whereas Criterion B, maladaptive personality traits, remains relatively stable and may describe an individual's inherent nature (Bach & Tracy, 2022). Therefore, while Criterion A's "vulnerability from the inside" suggests a higher potential for change due to its broader, more foundational nature, Criterion B's "vulnerability from the outside" is marked by stable, enduring traits that provide a consistent flavor to the individual's personality pathology.

With regard to the relative strength of the associations revealed between pathological personality traits and identity dimensions, stronger associations were observed going from personality pathology to identity compared to the reverse paths. More specifically, negative affectivity, detachment, and antagonism were stronger predictors of ruminative exploration, and detachment was a stronger predictor of exploration in breadth and negative affectivity was a stronger predictor of commitment making and identification with commitment, compared to the reverse paths. These findings align with previous research focusing on normative personality development and identity during adolescence, which yields compelling evidence regarding the directionality of these effects. For instance, Luyckx and colleagues (2014) assert that personality traits exert a more pronounced influence on identity in adolescence, showing that Big Five traits emerged as consistent predictors of identity dimensions, whereas only one significant path from identity exploration to the Big Five was found. Personality pathology can affect the way individuals process information and regulate emotions, which in turn influences identity processes. For example, individuals with high negative affectivity might have a predisposition to view themselves and their experiences through a more pessimistic lens, leading to difficulties in forming a positive and cohesive identity (Beck & Bredemeier, 2016). Similarly, those with high levels of detachment may struggle to engage in social interactions that are crucial for identity exploration and development (Kernberg, 2016; Widiger, 2018). These cognitive and emotional filters created by personality pathology shape the way individuals interpret their experiences and make identity-related decisions. Because these filters are deeply ingrained and persistent, they have a more profound impact on identity formation than identity processes have on altering these fundamental personality traits (Linehan, 2018).

Strength and limitations

Incorporating all pathological personality traits and identity dimensions into a multivariate model enabled us to empirically

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examine the reciprocal influences of each dimension on one another, aligning our study more closely with real-world scenarios characterized by interconnections between various dimensions (Bou & Satorra, 2018). Further, our study is one of the first to investigate the development of emerging adults over a period of 7 years offering unique and innovative insights into an important developmental phase in life. Claims about causality are always hard to make, however, our study makes clear that personality pathology is related to identity over seven years, and not the other way around.

However, several limitations of this study should be mentioned. Firstly, more recently, cross-lagged models have been at the center of some critics (Hamaker et al., 2015; Lucas, 2023). Instead, scholars tend to advise random intercept cross-lagged path models (RI CLPM) measuring time-invariant individual differences (within-subject level) to be used. However, as RI CLPM requires a minimum of three data waves and cannot assess questions on rank-order stability and between-person effects, we considered a CLPM best suited our analytical objectives (Grimm et al., 2021; Hamaker et al., 2015; Orth et al., 2021). Recent literature comparing different cross-lagged models has countered some of the critics that a CLPM yields the most consistent results (Orth et al., 2022). Future research should aim to replicate these findings and include three or more waves using an RI-CLPM to investigate intraindividual differences in identity and personality pathology. Secondly, the current study relied on self-reported measures, which may give subjective and biased information (Schaffhuser et al., 2014). For identity, self-reports are the only reliable source, as the construct is thought to represent an individual's sense of commitment and exploration (Erikson, 1968). However, as personality-related features are often ego-syntonic (American Psychiatric Association, 2013), future research should apply a multi-informant assessment design that can be more objective and less biased (Bogaerts et al., 2021a; Schaffhuser et al., 2014). In fact, the emergence of tools such as the Self-Concept and Identity Measure has underscored the increasing recognition of identity as a core component in the assessment of personality pathology (Bogaerts et al., 2021b; Kaufman et al., 2015;). These developments suggest that integrating clinical measures of identity disturbance could enrich future research, particularly in understanding how identity issues contribute to the development and maintenance of personality disorders. By incorporating such tools, future studies can better capture the nuanced interplay between identity and personality pathology, providing deeper insights into the mechanisms underlying these complex constructs (Bogaerts et al., 2021b; Kaufman et al., 2015). Furthermore, while the current study utilized the DIDS to quantitatively assess identity processes, this approach does not fully capture the complexity of narrative identity as conceptualized by McAdams (2015). Qualitative methodologies, including personal narrative interviews, would allow researchers to delve into the stories individuals construct about their lives, providing deeper insights into the subjective and evolving nature of identity. Such an approach could illuminate how personal narratives and self-concepts intersect and interact with various identity processes, offering a more comprehensive view of the interplay of the different identity layers (McAdams, 2015; McAdams & McLean, 2013). Future studies should consider integrating qualitative techniques to complement quantitative measures, thereby enhancing the understanding of how narrative identity shapes and is shaped by identity processes.

Lastly, it should be noted that our study was restricted to a Flemish community sample of emerging adults. Research on "WEIRD" (western, educated, industrialized, rich, and democratic) samples shows significant differences in terms of psychological and cognitive processes to more diverse samples (Henrich et al., 2010, Newson et al., 2021). As cultural characteristics may have unique effects on each of our study variables and future research should assess these associations in more "WILD" (worldwide, in situ, local, diverse) samples (Newson et al., 2021). Further, we cannot draw conclusions regarding clinical populations. While even in a non-clinical sample substantial associations between identity disturbance and personality pathology were observed, these conclusions may not extend to clinical populations per se (Vizgaitis & Lenzenweger, 2022). Therefore, the further exploration of these associations further and to determine whether similar patterns hold true within clinical cohorts of emerging adults.

Conclusion

In conclusion, our study contributes valuable new insights to the existing literature by offering a rigorous study of the dynamic longitudinal interplay between personality pathology and identity in emerging adults. To the best of our knowledge, we are the first to investigate the pathological personality traits and identity dimensions in emerging adults with a longitudinal timespan of 7 years. Our findings provide novel evidence that personality pathology, particularly negative affectivity, detachment, and antagonism, can impede identity development, given the adverse predictive influence of pathological personality traits on various dimensions of identity. Hence, these findings underscore the pivotal role of personality pathology in identity development, potentially acting as an impediment to healthy identity formation, supporting the AMPD.

Data availability. The data that support the findings of this study are available from the corresponding author upon reasonable request.

Funding statement. This project (number: G0DCB23N) has received funding within the framework of the Odysseus programme from the Research Foundation – Flanders (FWO).

Competing interests. The authors declare that they have no competing interests.

Ethical standards. All procedures were performed in line with the principles of the Declaration of Helsinki. Approval for the study was granted by the institution's ethics committee (ETH2122-0628).

Preregistration. The preregistration is available via OSF: https://doi.org/10.17605/osf.io/yk4sq.

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Appendix A Example items

Personality pathology (PID-5-SF; Maples et al., 2015)	
Negative affectivity	"I get emotional easily, often for very little reason."
Detachment	"I keep my distance from people."
Antagonism	"I'm good at making people do what I want them to do."
Disinhibition	"I'm often pretty careless with my own and others' things."
Psychoticism	"People have told me that I think about things in a really strange way."
Identity dimensions (DIDS; Luyckx et al., 2008)	
Commitment making	"I decided on the direction I want to follow in life"
Identification with commitment	"Plans for the future offer me a sense of security"
Exploration in depth	"I work out for myself if the goals I put forward in life really suit me"
Exploration in breadth	"I think about the direction I want to take in my life"
Ruminative exploration	"I keep looking for the direction I want to take in my life"

https://doi.org/10.1017/S095457942400169X Published online by Cambridge University Press

https://doi.org/10.1017/S095457942400169X Published online by Cambridge University Press

Appendix B Descriptives of the study variables

	T1													T2									
Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1. T1 Age	–																						
2. Sex	−.05	–																					
3. T1 Education	.44**	.07	–																				
4. T1 CM	.00	.06	.08	–																			
5. T1 IC	−.02	.07	.07	.71**	–																		
6. T1 EB	.01	.09	.07	.31**	.32**	–																	
7. T1 ED	.03	.10*	.17**	.39**	.50**	.50**	–																
8. T1 RE	.06	−.01	−.00	−.61**	−.56**	−.03	−.11*	–															
9. T1 NA	.03	−.12*	−.13*	−.28**	−.31**	−.06	−.11*	.48**	–														
10. T1 DE	.11*	−.21**	−.13*	−.32**	−.37**	−.11*	−.20**	.48**	.74**	–													
11. T1 A	−.04	−.32**	−.08	−.09	.01	−.03	−.02	.17**	.47**	.41**	–												
12. T1 DI	−.04	−.26**	−.14*	−.16**	−.16**	−.02	−.13**	.18**	.40**	.34**	.50**	–											
13. T1 P	.01	−.25**	−.15*	−.21**	−.17**	.08	−.07	.31**	.57**	.63**	.54**	.47**	–										
14. T2 CM	−.01	.06	.12	.29**	.37**	.15**	.25**	−.33**	−.29**	−.28**	−.05	−.10*	−.12*	–									
15. T2 IC	−.02	.00	.07	.25**	.40**	.17**	.28**	−.33**	−.34**	−.30**	−.04	−.12*	−.11*	.77**	–								
16. T2 EB	−.08	.04	−.00	.05	.22**	.40**	.23**	.01	−.00	.06	.11*	.04	.14**	.16**	.22**	–							
17. T2 ED	−.16**	.09	.01	.27**	.38**	.32**	.39**	−.14**	−.11*	−.10*	.08	−.03	.00	.35**	.39**	.54**	–						
18. T2 RE	.01	−.04	−.12	−.21	−.26**	−.03	−.16**	.37**	.40**	.39**	.08	.16**	.23**	−.69**	−.66**	.12*	−.05	–					
19. T2 NA	.03	−.12*	−.14*	−.23**	−.27**	−.10*	−.11*	.34**	.67**	.57**	.29**	.27**	.43**	−.35**	−.39**	−.05	−.11*	.51**	–				
20. T2 DE	.12*	−.17**	−.16*	−.25**	−.33**	−.13**	−.22**	.33**	.53**	.68**	.15**	.19**	.44**	−.45**	−.45**	−.06	−.20**	.55**	.73**	–			
21. T2 A	−.01	−.31**	−.07	−.07	−.06	−.06	−.07	.11*	.31**	.29**	.65**	.34**	.38**	−.12*	−.10*	−.01	−.00	.24**	.47**	.31**	–		
22. T2 DI	.03	−.21**	−.15*	−.15**	−.14**	.08	.01	.22**	.52**	.45**	.42**	.55**	.53**	−.20**	−.21**	.05	−.01	.33**	.68**	.48**	.56**	–	
23. T2 P	.05	−.22**	−.08	−.18**	−.19**	.08	−.06	.26**	.43**	.52**	.31**	.31**	.69**	−.20**	−.17**	.09	−.02	.28**	.55**	.61**	.48**	.60**	
M	21.98	–	–	3.57	3.41	3.70	3.56	2.78	1.98	1.45	1.61	2.03	1.44	3.58	3.42	3.58	3.47	2.70	1.95	1.48	1.55	1.83	1.34
SD	1.13	–	–	.86	.73	.66	.66	.85	.42	.39	.41	.35	.41	.85	.71	.69	.65	.95	.43	.41	.39	.39	.34
Min	19,78	–	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Max	24.39	–	5	5	5	5	5	5	3.29	3.10	3.20	2.95	2.75	5	5	5	5	5	3.04	3.50	3.55	3.20	2.67

Note. *$p < .05$, **$p < .01$. NA, negative affectivity; DE, detachment; A, antagonism; DI, disinhibition; P, psychoticism. CM, commitment making; IC, identification with commitment; EB, exploration in breadth; ED, exploration in depth; RE, ruminative exploration; sex was coded as 1 = men, 2 = women.