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Understanding personality pathology in a clinical sample of youth: study protocol for the longitudinal research project 'APOLO'

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ABSTRACT

Introduction We propose that a dimensional, multilayered perspective is well suited to study maladaptive personality development in youth. Such a perspective can help understand pathways to personality pathology and contribute to its early detection. The research project 'APOLO' (a Dutch language acronym for Adolescents and their Personality Development: a Longitudinal Study) is designed based on McAdams' integrative three-layered model of personality development and assesses the interaction between dispositional traits, characteristic adaptations, the narrative identity and functioning.

Methods and analysis APOLO is a longitudinal research project that takes place in two outpatient mental healthcare centres. Participants are youth between 12 years and 23 years and their parents. Data collection is set up to build a data set for scientific research, as well as to use the data for diagnostic assessment and systematic treatment evaluation of individual patients. Measurements are conducted half-yearly for a period of 3 years and consist of self-report and informant-report questionnaires and a semistructured interview. The included constructs fit the dimensional model of personality development: maladaptive personality traits (dispositional traits), social relations, stressful life events (characteristic adaptations), a turning point (narrative identity) and functioning (eg, achievement of youth specific milestones). Primary research questions will be analysed using structural equation modelling.

Ethics and dissemination The results will contribute to our understanding of (the development of) personality pathology as a complex phenomenon in which both structural personality characteristics as well as unique individual adaptations and experiences play a role. Furthermore, results will give directions for early detection and timely interventions. This study has been approved by the ethical review committee of the Utrecht University Faculty for Social and Behavioural Sciences (FETC17-092). Data distribution will be anonymous and results will be disseminated via communication canals appropriate for diverse audiences. This includes both clinical and scientific conferences, papers published in national and international peer-reviewed journals and (social) media platforms.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This project has a large clinical sample of youth and their parents.
⇒ APOLO (Adolescents and their Personality Development: a Longitudinal Study) has a longitudinal multi-informant, multiconcept and multimethod design.
⇒ Psychometrically sound and age-appropriate measures are used.
⇒ The design allows for between-subject and within-subject comparisons but has no non-clinical control group.
⇒ Attrition is a major challenge that is handled via clinical embedment.

INTRODUCTION

Recent developments in the field of personality psychology (ie, scientific research on personality structure) and clinical personality psychology (ie, assessment and treatment of personality disorders) show a gradual shift towards a dimensional and personalised understanding of personality pathology. Among others, this has resulted in a proposal for the Alternative Model of Personality Disorders (AMPD) in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)[1]. Furthermore, an increased focus on developmental trajectories and precursors of personality pathology and the recognition of an individual's wishes, motivations, social roles and the life story as central to understand and treat personality pathology, as opposed to solely deviating patterns in cognition, affect, interpersonal functioning and impulse control.[1–3] This is a promising perspective in the search for a valid way to understand pathways of (mal-)adaptive personality development and to recognise personality pathology early in its development.[4] Based on these recent developments, we designed and set up 'APOLO' (Dutch

language acronym for Adolescents and their Personality Development: A Longitudinal Study), a longitudinal two-site research project, along a three-layered integrative model of personality development. In this study protocol, we use the term *personality pathology* when referring to pervasive, persistent and pathological personality functioning and high levels of maladaptive personality traits, whereas the term *personality disorder* refers to a categorical DSM-5-II classification.[1]

Personality pathology as a developmental, dimensional and multifaceted construct

Personality as a construct can be described both with respect to how it varies between individuals, as well as how it is unique for one person.[5] A strong body of research has studied personality development with pivotal contributions that point to general and specific person and environmental factors and their continuous interaction that play a role.[4 6–8] Personality *pathology* therefore does not appear overnight but can be thought of as the result of a pathway of maladaptive personality development,[9] best described as a process of person–environment transactions in which precursors may be defined.[10] Specifically, person–characteristics that make one vulnerable, such as maladaptive personality trait levels (eg, negative affectivity and antagonism),[11] regulation problems (eg, emotion regulation)[12] and/or pathology (eg, internalising and/or externalising symptoms),[4] may interact with experiencing environmental characteristics that make one vulnerable, such as negative parent–child relations (eg, insecure attachment and harsh parenting),[13] negative peer relations (eg, bullying)[14] and/or experiencing childhood trauma (eg, neglect and sexual abuse).[15] In early adolescence, these transactions may lead to the onset of more severe problems in self and interpersonal functioning, which generally intensify in mid-adolescence and decline in late adolescence.[4] These functioning problems may fluctuate strongly over time and within individuals; however, individual stylistic features of these problems is much more stable.[6] As such, maladaptive personality development is a unique, complex and multidimensional process for every person that may lead to one outcome for the individual: pervasive, persistent and pathological problems, or personality pathology.[16]

With regard to personality pathology, this means that classification of personality disorders as distinct categories can essentially be thought of as an simplified reflection of reality. Personality pathology can be described by a combination of maladaptive personality traits and strengths or difficulties in one's functioning.[1 17 18] Accordingly, the AMPD conceptualises personality pathology as one's unique combination of maladaptive traits and facets (criterion B) and one's functioning in the self and interpersonal domain (criterion A[1]). This gradual shift towards a dimensional perspective ensures an increasingly better understanding of personality pathology as a complex and multidimensional phenomenon, the development of which can be understood through continuous person–environment transactions.[19]

Personality pathology as a combination of multiple layers

An integrative theoretical framework that is well suited to study (mal)adaptive personality development is proposed by Dan McAdams.[20 21] This framework has development at its core and conceptualises personality as a multidimensional construct by differentiating three interacting layers. The first layer, *dispositional traits*, represents broad dimensions of individual differences, accounting for interindividual consistency and continuity in behaviour, thought and feeling across situations over time. This layer is conceived of personality traits like the five-factor model that are thought of as heritable and relatively stable.[22 23] The second layer, *characteristic adaptations*, represents those aspects of human individuality that concern motivational, social–cognitive and developmental adaptations, contextualised in time, place and/or social role. In other words, the way an individual adapts in a unique way in response to the environment he or she lives in. These adaptations are thought of as less stable.[21 23 24] The third layer, *narrative identity*, constitutes a personal story about one's life that helps shape behaviour and establish identity. Through autobiographical reasoning, a person creates a narrative of how different parts of, and change in, one's past, present and future are related.[25]

APOLO's objectives and relevance

Recently, this model has been used to study personality pathology.[26–29] However, studies are limited, especially in clinical groups, in both number and/or quality and mainly concern adult participants. The complete model has not been tested in longitudinal studies with (clinical samples of) youth, while this could greatly increase our understanding of pathways of maladaptive personality development and how it relates to current functioning. In addition, longitudinal studies particularly could contribute to early detection of personality pathology, which is essential for improving the prognosis for these vulnerable youths.[30–32] This research project builds on existing research providing first evidence for precursors of personality pathology and extends it by studying maladaptive personality development with this integrative model. This provides the possibility to fill important gaps in the literature by integrating and broadening our understanding of maladaptive personality development and personality pathology, specifically, by adding narratives and by conceptualising functioning as both criterion A and achievement of developmental milestones. We herewith hope to contribute to a valid, personal and nuanced perspective on (the development of) personality pathology in youth. This is a perspective that has great clinical utility for both diagnostic assessment as well as timely treatment interventions. With the APOLO project, we aim to enhance our knowledge on personality pathology and its development by examining the interplay between the three layers of personality over time.

We do this by taking a multimethod, multi-informant, multiconcept and longitudinal approach in a sample that ranges from early adolescents to early adults to capture the most vulnerable period for the onset of personality pathology.[33] We use the term *youth* to refer to this sample of both adolescents and early adults.

METHODS AND ANALYSIS

Patient and public involvement

The design of the APOLO research project is co-created by clinicians, experts by experience and researchers. The dimensional and developmentally sensitive design was based on the need for a personal and nuanced approach to personality pathology, a construct that is often clouded by stigma and controversies, especially in youth. The design was discussed with adolescent experts by experience, who were especially positive about this dimensional and personal perspective. This could help reduce the stigma of personality pathology and lay the focus on strengths, vulnerabilities and identity development while at the same time contributing to young people getting the help they need in time. For this reason, the APOLO project was designed with an explicit dual purpose: (1) to be used to conduct scientific research and (2) to inform the patients' individual clinical trajectory. This study is part of the 'Youthlab' programme in which researchers, clinicians and both clinical and non-clinical youth work together to innovate healthcare processes as well as disseminate results in order to reach the appropriate audience (ie, symposia, infographics, vlogs and website).

Setting

APOLO is a longitudinal two-site research project of which the design started in 2017 and data collection started mid-2018. APOLO is planned to run for at least 5 years. The research project is conducted in two mental healthcare institutes in the Netherlands: Reinier van Arkel and Vincent van Gogh. These outpatient facilities provide diagnosis and treatment to individuals with psychological, self-functioning or social functioning problems and specialise in early detection and treatment of severe psychopathology, including personality disorders. The data collection of APOLO is an integral part of the clinical process of diagnostic assessment and systematic treatment evaluation. The project is completely funded by the collaborating institutes, Reinier van Arkel, Vincent van Gogh and Utrecht University.

Participants

The research population of APOLO consists of youths between ages 12 and 24, and their parents, referred for treatment to the participating institutions with varying levels of severity and/or complexity in psychological problems. APOLO is an ongoing research project. Currently (October 2021), our sample (n=431) consists of youths (29% self-identified male) with ages ranging between 12 and 24 (M=19.3, SD=2.3). APOLO does not have strict exclusion criteria; however, data collection is limited to specific treatment programmes where data collection for APOLO is conducted. In these treatment programmes, adolescents and young adults with diverse types of severe psychopathology, including personality pathology, are included and treated. Patients with other primary DSM-5 diagnoses such as intellectual disability, acute psychotic disorder, severe eating disorder or severe substance dependence are referred to other treatment programmes.

All adolescents and young adults that are at the start of their treatment are asked to participate. In the rare case that an adolescent is included but does not fit the research population due to a wrong referral, he or she will be excluded from follow-up assessments and reallocated to another team or institute for suitable treatment.

Procedure

After youth are referred to one of the two specialised mental healthcare institutes and invited for intake in a team in which data collection for APOLO takes place, they—as well as their parents—receive an email with a link to fill out questionnaires online at home. This assessment is used for treatment indication as part of the diagnostic process at intake and therefore 'care as usual'. The assessment at intake consists of a total of 11 self-report questionnaires for youths (duration 45–60 min) and a total of six questionnaires for one of the parents (duration 15 min). Youths and parents have access to the questionnaires 3 weeks prior to and after their intake appointment. Failing to fill out the questionnaires within this period results in the data for that wave being registered as missing.

Along with the invitation for their intake appointments (consisting of one appointment for intake and one for feedback and consultation, with usually 3 weeks in between), youths and their parents receive an invitation to participate in APOLO. The invitation letter contains an information folder, directions to the website[34] and an informed consent form. Youths and parents are asked to give their written informed consent for using their data anonymously for scientific research. They are also informed that they can revoke their participation at any time without any consequences and will continue to receive treatment as usual. They are asked to bring the signed consent form to the intake. All therapists conducting intakes are informed of the background and practicalities of APOLO and are trained in conducting the semistructured interview that is part of the assessment. During the intake, participants are again informed of the research project and given the opportunity to ask questions; informed consent is (signed and) handed in, and a Turning Point Interview (TPI) (approximately 5 min) is conducted and recorded on a tablet. Participants who have not yet filled out the questionnaires are given the opportunity to do so in a computer room at the institute.

Follow-up assessments are conducted every 6 months (counted from the date of intake) over a course of

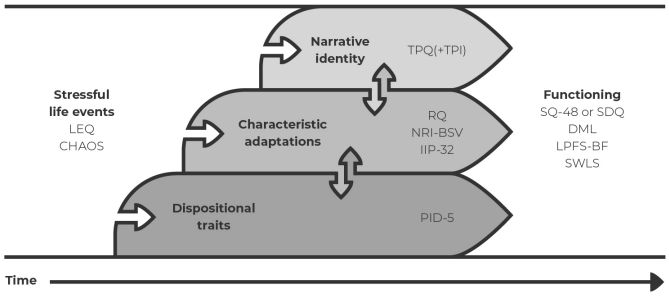

Figure 1 Measures used in the current study embedded into the theoretical model by McAdams and Pals.[20] CHAOS, Confusion, Hubbub and Order Scale; DML, Developmental Milestones List; IIP-32, Inventory of Interpersonal Problems-32; LEQ, Life Events Questionnaire; LPFS-BF, Level of Personality Functioning Scale–Brief Form; NRI-BSV, Network of Relationships Inventory–Behavioural Systems Version; PID-5, Personality Inventory for DSM-5; RQ, Relationship Questionnaire; SDQ, Strengths and Difficulties Questionnaire; SQ-48, Symptom Questionnaire-48; SWLS, Satisfaction With Life Scale; TPI, Turning Point Interview; TPQ, Turning Point Questionnaire.

3 years, resulting in a maximum of six waves. Participants receive the same measures (or a shortened test battery; see online supplemental appendix 1), the questionnaires online and the semistructured interview via a face-to-face or telephone appointment. Participants have access to these questionnaires 2 weeks prior to and after the intended assessment date. Since dropout is a known issue in longitudinal research and even more so in a clinical setting, the research team makes a great effort in monitoring follow-up assessments and notifying participants (first by e-mail, then if needed by phone) when their next assessment is approaching. Furthermore, to ensure participation and prevent drop out, the assessments are consistently used in the clinical process: for treatment indication at intake, as a screening tool for diagnostic assessments and for systematic treatment evaluation. Additionally, after each wave—whether or not they are still in treatment—participants are invited for a free appointment with a therapist involved with the research project in which extensive individual feedback is provided about the outcomes.

Measures

The measured variables are based on the theoretical model of personality development by McAdams and Pals[20] (see figure 1). Assessment differs slightly between settings (see online supplemental appendix 1). Cronbach's alphas were calculated for each measure with data from our current sample, except where not applicable (Relationship Questionnaire (RQ), Turning Point Questionnaire (TPQ)/TPI and Life Events Questionnaire (LEQ)) or insufficient data (Confusion, Hubbub and Order Scale (CHAOS) and Strengths and Difficulties Questionnaire (SDQ)). In the latter case, Cronbach's alphas from studies with a similar sample are reported. Sample sizes that could be used to calculate Cronbach's alpha differed for each measure due to missings, differences in the test battery between waves and attrition.

Dispositional traits: Personality Inventory for DSM-5 (PID-5)

The Personality Inventory for DSM-5—Short Form (PID-5-SF)[35] is a shortened version of the original 220-item PID-5.[36] The PID-5 is a self-report questionnaire that measures five higher order maladaptive trait domains: Negative Affectivity, Detachment, Antagonism, Disinhibition and Psychoticism, along 25 trait facets.[36] The PID-5 has been translated into Dutch according to international standards under supervision by the Dutch association for psychiatry, with backward translation by the original authors to maintain equivalence.[37] The PID-5-SF (of which all the items are contained in the original form) measures the same five trait domains and 25 facets with 100 items on a 5-point Likert scale ranging from 'completely not true' to 'completely true'. This version was validated for use with adults[35 38] and adolescents. An overview of its psychometric properties with adolescents can be found in Koster and colleagues.[39] Every trait domain consists of the three most distinctive facets with 12 items in total, and in our sample (n=416), Cronbach's alphas ranged from 0.82 to 0.90. The 25-item Personality Inventory for DSM-5—Brief Form (PID-5-BF),[40] also used in this study (see online supplemental appendix 1), is again a shortened version of the original questionnaire that measures the five trait domains with 25 items. The PID-5-BF has been shown to reliably and validly assess the DSM-5 traits in European adolescents and adults.[38 41] Every trait domain consists of five items, and in our sample (n=101), Cronbach's alphas ranged from 0.68 to 0.81. Due to differences between the items included in the PID-5-SF and PID-5-BF, participants in some cases (see online supplemental appendix 1) receive the PID-5-SF and an additional nine items of the PID-5-BF (items 1, 4, 5, 6, 7, 8, 16, 18 and 23) in order to cover all items. This is to allow for the possibility to deduct the PID-5-BF items from the PID-5-SF. Parents receive the informant version, the PID-5-IBF. Every trait domain consists of five items, and in our sample (n=187), Cronbach's alphas ranged from 0.65 to 0.82.

Characteristic adaptations: RQ

The RQ[42] is a five-item self-report measure that consists of four paragraphs describing Secure, Preoccupied, Fearful and Dismissing attachment styles. Respondents are asked to first indicate which attachment style best describes them and second to rate the degree to which the four descriptions characterise them using a 7-point Likert scale, ranging from 'not at all like me' to 'very much like me'. The RQ has been shown to have reasonable validity and stability in use with young adults and undergraduates.[43 44] Results correlate moderately with attachment styles determined by interview.[42] The RQ provides a rapid assessment of attachment quality and has been used with adolescents.[45 46] The RQ was translated into Dutch by Lowyck *et al*.[47]

Characteristic adaptations: Inventory of Interpersonal Problems-32 (IIP-32)

The IIP-32[48] is a 32-item self-report questionnaire measuring interpersonal difficulties. All items are rated on a 5-point Likert scale ranging from 'not at all' to 'extremely'. The measure yields a score on two underlying dimensions: Affiliation and Dominance, as well as scores on eight subscales: Domineering/controlling, Vindictive/self-centred, cold/distant, Socially inhibited, Non-assertive, Overly accommodating, Self-sacrificing and Intrusive/needy. As found in previous research, the IIP-32 has satisfactory reliability and validity[49] and has been reliably administered to adolescent populations.[50 51] In this research project, we use the Dutch language version.[52] The subscales each consist of four items, and in our sample (n=426), Cronbach's alphas ranged from 0.63 to 0.81; Cronbach's alpha for the total scale was 0.87.

Characteristic adaptations: Network of Relationships Inventory–Behavioural Systems Version (NRI-BSV)

The NRI-BSV[53] is a 24-item self-report questionnaire that measures how frequently different relationships are used to fulfil the functions of three behavioural systems: attachment, caregiving and affiliation. Items are answered on a 5-point Likert scale ranging from '(almost) never' to '(almost) always'. In previous research, the NRI-BSV has been found to have adequate psychometric properties[53] and excellent reliability.[54] We use an 11-item version of the NRI-BSV with which the two broad domains Support and Negative Interactions can be constructed, in which participants rate their relationship with one parent of choice and a relationship with one other important person.[53] The NRI-BSV was translated into Dutch by Van Aken and Hessels.[55] The Support subscale consists of five items (n=432, α=0.79, for both parent relationship and other relationship), and the Negative Interactions subscale consists of six items (n=432, α=0.93, for parent relationship and α=0.88 for other relationship). Parents receive the informant version, in which they rate the relationship with their child. The support subscale consists of five items (n=176, α=0.61), and the negative interaction subscale consists of six items (n=176, α=0.91).

Narrative identity: TPQ and TPI

The TPQ is a qualitative measure designed as an infographic (see online supplemental appendix 2 for the infographic). The TPQ is constructed as part of the theoretical framework of McAdams'[56] life story model of identity, which posits that one's identity is demonstrated through the construction of a life story. Facets of one's identity may be identified by analysing how individuals narrate significant life experiences like turning points.[57 58] Turning points are specific events that are perceived to alter the normal flow and direction of one's life.[59] The TPQ asks participants if they ever experienced a life event that they might call a turning point or—if not—to pick an event that resembles a turning point. They are asked to shortly describe this event, whether they derived a lesson from this event (on a 7-point Likert scale ranging from 'not at all' to 'very much') and whether they have discussed this event with a parent/caretaker. Parents receive an informant version of the TPQ at the first wave, along with the same infographic describing what a turning point is. In this informant version, they are asked if they think their child has experienced a turning point and to shortly describe this event.

Subsequently, the TPQ is expanded with a short, semi-structured interview that is conducted by trained clinicians and recorded, the TPI. Participants are asked to narrate about this turning point and, with three follow-up questions, are asked specific details about how this event has influenced the participant. These questions are: 'What did you feel, think and want during this event?', 'Why is this an important event in your life story?' and 'Does this event say something about who you are now or how you see yourself in the future?' The narratives are transcribed and coded for theme, valence, meaning making, agency, communion and coherence.[58 60–62]

Stressful life events: CHAOS

CHAOS[63] is a questionnaire that measures the quality of the youths' home environment. The questionnaire is built on the premise that youth are function and develop better/more adaptive in home environments with more order and less confusion and hubbub. In previous research, the CHAOS has been found to have satisfactory internal consistency (α=0.79), test–retest stability, as well as validity.[63] The Dutch adaptation of the CHAOS[64] used in the current research project consists of 17 items that are rated on a 5-point Likert scale ranging from 'not at all true' to 'completely true'. Only participants' parents receive this measure.

Stressful life events: LEQ

The LEQ is a self-report measure constructed out of three existing questionnaires which were combined to fit the purpose of this research project. The Life Experiences Survey[65] was used for its structure, in which both the occurrence and the impact of specific life events is assessed. Within this structure, questions of the Childhood Trauma Questionnaire[66 67] and the *Levensgebeurtenissen Vragenlijst* (a Dutch life events survey)[68] were combined. The LEQ we used in this research project consists of 12 items that cover stressful life events in the family, personal experiences and bullying, and one open item that asks the participant for any stressful event not covered by the items before. The 12 questions consist of two parts: first, the adolescent is asked to indicate whether (yes or no) he/she has experienced the event during his/her lifetime and, second, to indicate how much (on a 4-point Likert scale ranging from +1, 'positively', to −3, 'very negatively') this event impacted his/her life. In all follow-up waves, participants are asked whether they have experienced the events since the last wave.

Functioning and symptoms: Symptom Questionnaire-48 (SQ-48) and SDQ

Within the domain of functioning, two questionnaires are used to assess symptoms (see online supplemental

appendix 1 for details). The SQ-48[69] is a self-report questionnaire measuring psychological distress with nine subdomains: depression (six items), anxiety (six items), somatisation (seven items), agoraphobia (four items), aggression (four items), cognitive problems (five items), social phobia (five items), work functioning (five items) and vitality (six items). All items are rated on a 5-point Likert scale ranging from 'never' to 'very often'. The SQ-48 has good internal consistency as well as good convergent and divergent validity.[69] An additional study showed that the SQ-48 has excellent test–retest reliability and good responsiveness to therapeutic change.[70] In our sample (n=389), Cronbach's alphas ranged from 0.74 to 0.92 for the subscales and was 0.94 for the total scale.

The SDQ[71 72] is a 25-item questionnaire that measures psychopathological symptoms in children and adolescents with five subdomains, containing five items each: emotional symptoms, conduct problems, hyperactivity–inattention, peer relationship problems and prosocial behaviours. All items are rated on a 3-point Likert scale ranging from 'not true' to 'certainly true'. In APOLO, the Dutch translation of the SDQ is used, which has been found to have good concurrent validity.[73 74] For the self-report version, Cronbach's alphas in a study using a similar sample ranged from 0.45 to 0.72 for the subscales and were 0.78 for the total scale. For the parent version, Cronbach's alphas ranged from 0.55 to 0.78 for the subscales and was 0.80 for the total scale.[73]

Functioning: Developmental Milestones List (DML)

Achievement of youth-specific milestones was assessed using a newly developed measure: the DML.[75] The DML is a 28-item questionnaire including tasks and activities reflective of youth-specific developmental milestones. The first 21 items of this list ask, on a 7-point Likert scale, to what extent the participant experiences trouble in the achievement of youth-specific milestones. These items combine to a total scale. The specific milestones may be divided in three broader domains based on previous work on youth-specific milestones[76]: social (eg, relationships with peers), personal (eg, autonomy) and professional (eg, school/work). The last seven items of this list were included specifically for (our) clinical populations, providing an indication, on a 4-point Likert scale, of clinical severity that may hamper the achievement of milestones (eg, problems in accepting help, auto mutilation and drug abuse). In our sample (n=426), Cronbach's alpha for the total scale was 0.78. Parents receive an informant version of the DML. In our sample (n=179), Cronbach's alpha for all items was 0.88.

Functioning: Level of Personality Functioning Scale–Brief Form (LPFS-BF)

The LPFS-BF[77] was developed as an easy-to-use tool to self-assess whether particular problems were likely related to personality dysfunction. It is a measure of self-functioning and interpersonal functioning, as an operationalisation of global personality functioning.[78] The LPFS-BF consists of 12 questions which are clustered into four subscales (identity, self-direction, empathy and intimacy). These subscales are clustered into two higher domains, self-functioning and interpersonal functioning. Participants respond to these questions on a 4-point Likert scale ranging from 'not at all true or often untrue' to 'often true or completely true'. In our sample (n=421), Cronbach's alpha was 0.74 for the self-functioning subscale, 0.71 for the interpersonal functioning subscale and 0.79 for the total scale.

Functioning: Satisfaction With Life Scale (SWLS)

The SWLS[79] contains five items to measure global judgments of satisfaction with one's life. We use the Dutch translation of the SWLS.[80] Items are scored on a 7-point Likert scale (1=strongly disagree, 7=strongly agree). The five items are summed. In our sample (n=424), Cronbach's alpha for the total scale was 0.80.

Research questions, power calculation and data handling

This project has the overarching aim to examine the interplay between the three layers of personality development, as proposed by McAdams and colleagues, in an clinical sample of youth and how this interplay is related to (personality) functioning. Specifically, the two primary research questions are as follows: (1) is there evidence for unique or distinctive (group) patterns in which characteristics from McAdams' layered model of personality development are related in a clinical sample of youth? and (2) how are distinctive patterns related to trajectories of change in functioning? Characteristics of McAdams model are operationalised as maladaptive personality traits (dispositional traits, layer 1), attachment, interpersonal style, social network, experienced life events (characteristic adaptations, layer 2) and turning point narratives (narrative identity, layer 3). Functioning is operationalised as the achievement of developmental milestones, self- and interpersonal functioning, satisfaction with life and psychopathological symptoms. Characteristics in the first two layers of McAdams' model have often been identified as precursors of personality pathology in previous studies. Distinctive group patterns in how these characteristics transact as a symphonic structure will be explored cross-sectionally using Latent Class Modelling in Latent Gold.[81] Testing across level and longitudinal associations in the three layers and functioning will be done using structural equation modelling (SEM) in MPlus. Due to the large number of constructs in the complete model, specific associations between different layers will be tested separately to ensure adequate power and avoid the problem of multiple testing.[82] For example, one study will focus on whether and how the predictive association between maladaptive personality traits (layer 1) and agency and communion in narratives (layer 3) is moderated or mediated by interpersonal style (layer 2). Power was considered for these primary research questions, and based on both simulations and rules of thumb of the power needed to analyse complex SEM

models with multiple variables and missing data, a sample size of >300 complete cases should be adequate.[83 84] To analyse latent classes, considering the assumed class separation, effect size and complexity of the data, a sample size of >500 is suggested.[85 86] In the case of data difficulties like measurement non-invariance or differential item functioning, which may be likely in a clinical data set with multiple variables, this technique is also suitable.[87] For our primary research questions, we hypothesise that there will be distinctive group patterns that may point to individuals with more or less pronounced vulnerability profiles. We expect that a more vulnerable profile will be associated with a less adaptive developmental course in terms of personality functioning. However, meaning making (reflected by narrative identity, layer 3) may play a moderating or mediating role.

Secondary research questions will address concurrent and longitudinal associations in McAdams' model piece by piece: between precursors, the social network, the narrative identity and specifically criteria A and B of the AMPD. For example, one study will focus on the association between self-event connections (layer 3) and personality functioning over time, controlling for negative affectivity (layer 1) in a regression model. Another study will focus on transactions between maladaptive personality traits (layer 1) and the social network (layer 2) using a random intercept cross lagged panel model. A cooperation was set up with the data laboratory of Utrecht University to store the data that were collected at all locations.[88] This ensures reliable and secure data management while data collection is ongoing.

ETHICS AND DISSEMINATION

APOLO combines a longitudinal scientific study and clinical implementation of a multilayered dimensional model of maladaptive personality development in an outpatient clinical adolescent sample. APOLO measures several constructs according to three-layered model of personality development, taking a multimethod, multiconcept and multi-informant approach. The data collection and handling are set up in such a way that it (1) provides the opportunity to study important scientific questions concerning pathways of maladaptive personality development and (2) informs the individual clinical process, providing patients with a direct benefit of completing the measures. As such, this project is inevitably faced with challenges, of which attrition and the balance between ensuring an anonymous and scientifically sound longitudinal data set while also making appropriate use of the data for individual clinical trajectories are the most prominent. The embedding of this project in the clinical structure is therefore an essential but also unique feature on which a lot of effort and time are spent. Cooperation between the different clinical sites is a challenge that is approached flexibly to ensure clinical embedment and to prevent attrition, resulting in slight differences between the number and type of instruments included. Furthermore, recruitment of all youths referred to the involved institutes reduces the occurrence of selection bias of participants as well as increases the generalisability of findings to the clinical adolescent population. In addition, the inclusion of narrative identity allows for a unique and in-depth understanding of how (mal)adaptive personality development 'colours' one's subjective experience and meaning making.

The planned dissemination is twofold: first, for the scientific field, the output of this research project will enhance our understanding of maladaptive personality development as a complex phenomenon in which both structural personal characteristics as well as unique individual experiences play an important role. These results will be presented at congresses and published in international peer-reviewed journals, along with proposed directions for future studies. Second, for the clinical field, the results will be made available to clinicians in newsletters and national journals, used to inform workshops and trainings and—for both clinicians, other professionals and youth—integrated in infographics, fact sheets and social media posts to provide information about maladaptive personality development and inform early detection and timely interventions.

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