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The Relationship between Maladaptive Schema Modes, Experiential Avoidance, and Personality Functioning in Personality Disorder Patients

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Abstract

Introduction: Personality disorders (PDs) are prevalent, chronic, and present a high burden for both individuals and the health care system. Personality disorder patients' personality functioning is severely impaired. Maladaptive schema modes are theorized to underlie personality pathology, but empirical evidence on this relationship is scarce. Schema modes are rigid patterns of coping, and changing them through therapy is difficult. A lack of psychological flexibility (experiential avoidance; EA) seems typical for personality disorder patients, and a combination of techniques targeting maladaptive schema modes and EA has been proposed to improve treatment for treatment-resistant personality disorder patients. The relationships between these constructs have not been investigated. This study examined the relationships between maladaptive schema modes, experiential avoidance, and personality functioning in treatment-resistant patients with personality disorders. The role of experiential avoidance as a mediator was examined.

Method: This is a cross-sectional study based on a sample of 104 Dutch patients with varied personality disorders. Maladaptive schema modes, EA, and personality functioning were measured through the self-report questionnaires Schema Mode Inventory (SMI), Acceptance and Commitment Questionnaire – II (AAQ-II), and Severity Indices of Personality Problems – Short Form (SIPP-SF) respectively. Analysis was done in SPSS Statistics 23 using the PROCESS v.2.16 macro to test for mediation.

Results: The results showed that maladaptive schema modes were significantly associated with personality functioning, and that EA was significantly associated with personality functioning. However, EA did not mediate the relationship between maladaptive schema modes and personality functioning. The association between experiential avoidance and personality functioning became insignificant when maladaptive schema modes were added to the model.

Discussion: The results suggest that maladaptive schema modes overshadow the relationship between EA and personality functioning. The mediation hypothesis was not confirmed. Instead, it seems the data might well fit a hypothesis where maladaptive schema modes mediate the relationship between EA and personality functioning. It is recommended to investigate this hypothesis in the future.

Samenvatting

Introductie: Persoonlijkheidsstoornissen zijn veelvoorkomend, chronisch, en een grote last voor individuën en het zorgsysteem. Het persoonlijkheidsfunctioneren van patiënten met persoonlijkheidsstoornissen is ernstig beperkt. Het wordt aangenomen dat maladaptieve schemamodi ten grond liggen aan persoonlijkheidspathologie, maar daar is weinig empirisch bewijs voor. Schemamodi zijn rigide patronen van emotie en copingstrategieën, en deze zijn moeilijk te veranderen. Een gebrek aan psychologische flexibiliteit (experiëntiele vermijding) blijkt typisch te zijn voor patienten met persoonlijkheidsstoornissen. Het werd eerder voorgesteld om technieken die maladaptieve schemamodi en experiëntiele vermijding veranderen te gaan combineren. Deze combinatie zou de behandeling van behandelingsresistente patiënten met persoonlijkheidsstoornissen kunnen verbeteren. De relaties tussen deze constructen zijn niet eerder onderzocht. Dit onderzoek heeft het doel om relaties tussen maladaptieve schemamodi, experiëntiele vermijding, en persoonlijkheidsfunctioneren bij behandelingsresistente patiënten met persoonlijkheidsstoornissen te onderzoeken. Er werd nadruk gelegd op de mogelijke rol van experiëntiele vermijding als mediator.

Methode: Dit onderzoek is cross-sectioneel en gebaseerd op een steekproef van 104 Nederlandse patiënten met verschillende persoonlijkheidsstoornissen. Maladaptieve schemamodi, experiëntiele vermijding, en persoonlijkheidsfunctioneren zijn gemeten door de zelfevaluatie vragenlijsten Schema Mode Inventory (SMI), Acceptance and Commitment Questionnaire – II (AAQ-II), and Severity Indices of Personality Problems – Short Form (SIPP-SF). Analyses werden in SPSS Statistics 23 gedaan. Voor de mediatieanalyse werd gebruik gemaakt van het PROCESS v.2.16 macro.

Resultaten: De resultaten tonen aan dat maladaptieve schemamodi significant gerelateerd waren aan persoonlijkheidsfunctioneren, en dat experiëntiele vermijding significant gerelateerd was aan persoonlijkheidsfunctioneren. Experiëntiele vermijding mediëerde echter niet de relatie tussen maladaptieve schemamodi and persoonlijkheidsfunctioneren. De relatie tussen experiëntiele vermijding en persoonlijkheidsfunctioneren verdween toen maladaptieve schemamodi werden toegevoegd aan het model.

Discussie: De resultaten suggereren dat maladaptieve schemamodi de relatie tussen

experiëntele vermijding en persoonlijkheidsfunctioneren overschaduwen. De mediatiehypothese werd niet bevestigd. Het lijkt echter dat de data beter zou kunnen passen bij een model waar het effect van experiëntiele vermijding op persoonlijkheidsfunctioneren mediëert. Het wordt aangeraden om deze hypothese in toekomstig onderzoek te gaan onderzoeken.

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The Relationship between Maladaptive Schema Modes, Experiential Avoidance, and Personality Functioning in Personality Disorder Patients

1 Introduction

Personality disorders (PDs) are common, with total prevalence rates between 5.9% to 22.5% being reported across various communities from the United States, Germany, and Sweden (Torgersen, Kringlen, & Cramer, 2001). PDs are associated with increased health care utilization (Quirk et al., 2016; Ten Have et al., 2016). People with PDs tend to utilize more intensive health care services like emergency hospitalization (Cailhol, Thalamas, Birmes, & Lapeye-Mestre, 2014; Bender et al., 2001; MacLean, Xu, French, & Ettner, 2014). The resulting costs, both personal and financial, highlight the importance of further investigating the issue of PDs and possible treatments.

The development of schema therapy, an intervention specifically aimed at the treatment of personality disorders and other characterological problems, has significantly improved treatment success for many PD patients who were thought to be difficult-to-treat (Young, Klosko, & Weishaar, 2003). However, the treatment of PDs is still a lengthy process, and many patients experience only small to moderate improvement. In a population of Dutch borderline PD outpatients receiving two sessions of schema therapy per week, Giesen-Bloo et al. (2006) report full recovery rates of 45% after two years of treatment, and 52% after three years of treatment. After three years of treatment, 70% of the borderline PD patients reported clinically significant and relevant improvement. In the same study, Giesen-Bloo et al. report full recovery rates of 24% after two years and 29% after three years for a control group receiving the same amount of sessions in transference-focused psychotherapy. While the success of schema therapy is impressive, almost half of the patients in their study did not recover fully after three years, and 30% of patients didn't even achieve clinically significant improvement. Given this context, it becomes clear that improving understanding and treatment of PDs is important and would help reduce suffering on the individual and societal level.

Young et al. (2003) describe a major hurdle in the treatment of personality pathology and characterological problems as such: “Many of these patients engage in cognitive and affective avoidance […] Because characterological patients usually lack psychological flexibility, they are much less responsive to cognitive-behavioral techniques [...] Rather they

are psychologically rigid" (p. 3-4). A lack of psychological flexibility and tendency to avoid aversive internal experiences has received increasing attention during the last decade under the term of experiential avoidance (EA), and has been discussed as a possible core process in many forms psychopathology, including borderline PD (e.g. Chawla & Ostafin, 2007). Targeting EA through an acceptance-based approach (Acceptance and commitment therapy; Hayes, Strosahl, & Wilson, 1999) has proven effective in the treatment of treatment-resistant personality disorder patients at a 6-month follow-up when compared with classical cognitive-behavioral therapy (Clarke, Kingston, James, Bolderston,& Remington, 2014). Several authors have proposed that a combination of techniques from schema therapy and acceptance-based techniques might prove useful in the treatment of personality problems and characterological problems in general (Fischer, Smout, & Delfabbro, 2016). The relations between the constructs supposedly underlying this combined approach have received very little investigation. To the knowledge of the author, only Fischer et al. investigated the relationship between EA and schemas, and their effect on psychological distress. They concluded that schema therapy and acceptance and commitment therapy might "share a common set of target processes that account for the majority of variance in psychopathology" (p. 175). With the possibility of improving treatment for patients with personality disorders, and deepening the understanding of personality problems, schema therapy, and EA, it seems appropriate to investigate the relationships between those constructs in a population of PD patients. This will be the goal of this study.

Tyrer, Reed, & Crawford (2015) describe the core features of PDs as "a pervasive pattern of maladaptive traits and behaviors beginning in early adult life, leading to substantial personal distress or social dysfunction, or both, and disruption to others" (p.718). The Diagnostic and Statistical Manual 5 (DSM-5; American Psychiatric Association, 2013) describes essential features of personality disorder as impairments in personality functioning and the presence of pathological personality traits. It discriminates between ten different kinds of specific PDs, with distinct diagnostic criteria. However, this approach fails to accurately classify many PD patients. There is significant overlap between different PDs, and patients tend to exhibit symptoms of multiple PDs. PD not otherwise specified is the third most commonly diagnosed PD (Wilberg, Hummelen, Pedersen, & Karterud, 2008). Because of the shortcomings of the categorical approach to PDs, a functional, dimensional approach has been proposed to better capture the features of PDs (Thylstrup et al., 2016).

The dimensional approach views PDs as severe, maladaptive manifestations of personality traits, and characterizes PDs by their level of personality functioning (Trull &

Durett, 2005). Verheul et al. (2008) developed a framework of personality functioning with five general factors (self-control; identity integration; relational capabilities; responsibility; social concordance). Each individual is thought to function on these factors to varying degrees. Good functioning across all factors characterizes an adaptive, well-functioning individual. Less personality functioning would indicate a more severe PD. Different types of PDs typically show deficits in different factors of personality functioning. While people with obsessive-compulsive or avoidant PDs tend to have more difficulties in establishing and maintaining relationships, people with schizotypal and borderline PDs tend to show more problems in working with other people (Skodol et al., 2005). In conclusion, personality functioning appears to capture personality pathology quite accurately. Stahl (2017) found a significant relationship between worse personality functioning and increased psychological distress in a population of PD patients, further arguing for the validity of personality function as a thorough measure of mental health in PD patients.

This raises the question if personality functioning can be improved through psychotherapy, and which processes attribute to increase or decrease of personality functioning in PD patients.

1.1 Experiential Avoidance and Personality Disorder

Experiential avoidance (EA) is described as consisting of two related parts: a) the unwillingness to remain in contact with aversive private experience (including bodily sensations, emotions, thoughts, memories, and behavioral predispositions), and b) action taken to alter the aversive experiences that elicit them (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Typical examples of such avoidance strategies would be excessive drinking, drug use, or high-risk sexual behavior, but also more mundane forms of avoidance, such as avoiding situations or people that cause aversive internal experiences. The term EA applies to any kind of avoidance or escape behavior, as long as its purpose is to alter the form and frequency of aversive experiences. EA has been described as a putative psychological process recognized in some form or another, implicitly or explicitly, by a multitude of theoretical orientations (Blackledge & Hayes, 2001). Sigmund Freud (1914) emphasize the importance of repression in the development of mental disorders. More contemporary conceptualizations of avoidance are thought suppression (Wenzlaff & Wegner, 2000), emotional suppression (Gross & Levenson, 1993), avoidance coping (Penley, Tomaka & Wiebe, 2002), or reappraisal (Lazarus, 1991). Strategies such as thought suppression and thought control, while intended to

reduce one's aversive experiences, have been shown to paradoxically increase the frequency with which these thoughts occur (Gold & Wegner, 1995). Hayes et al. (1996) similarly note that avoidance strategies are rarely successful, as attempts at avoidance might actually make the avoided item more accessible and therefore more influencing towards cognition and behavior.

EA has been suggested as a transdiagnostic factor in psychopathology based on evidence that EA is related to mental health outcome variables across a variety of mental disorders (Malicki & Ostazewski, 2014). To their understanding, EA has a paradoxical effect, as it does provide the desired relief from unwanted internal experiences on the short-term, but on the long-term enhances the significance, intensity, and frequency of the aversive experience. The problem would be that people apply avoidance strategies that work well for actual, real-world threats (e.g. avoid the tiger and you won't get eaten) to internal threats. They explain a possible way in which EA might lead to the development and continuation of psychopathology through a narrowing down of the behavioral repertoire, as all behaviors that might give rise to aversive internal experiences become extinct. The remaining behavior would become inflexible and maladaptive, aimed at the regulation of internal experiences, while not answering the requirements of external situations.

EA has shown to be related to emotion regulation and coping styles (Kashdan, Barrios, Forsyth, & Steger, 2006). In two studies they investigated EA as a core mechanism in the development and maintenance of psychological distress, particularly investigating whether EA accounted for relationships between coping and emotion regulation strategies and anxiety related pathology (study 1), and psychological distress and hedonic functioning over a 21-day period. In the first study, EA mediated the effects of maladaptive coping and emotional response styles on anxiety-related distress (e.g. anxiety sensitivity, trait anxiety, body sensation fears). In the second study, EA completely mediated the effects of the emotion regulation strategies suppression and reappraisal on daily negative and positive experiences. Fledderus, Bohlmeijer, and Pieterse (2010) found that, in a study involving adults with mild to moderate psychological distress, EA mediated the relationship of passive coping on increased anxiety and depression, and decreased emotional and psychological well-being. EA did not mediate the effect of palliative and avoidance coping on the same outcome variables. Costa and Pinto-Gouveia (2011) found that EA mediated the effects of rational coping and detached/emotional coping on depression and stress in a study involving chronic pain patients, but did not mediate the effect of rational coping.

Chawla and Ostafin (2007) conducted a meta-review of 28 studies on EA and different

kinds of psychopathology. The review showed consistent relations between EA and several dimensions of psychopathology across different pathological populations. Among other findings, EA mediated the relationship between anxiety sensitivity and coping through alcohol, and, together with negative life events, distinguished relapsers from non-relapsers. In people who experienced one or more traumatic events, EA mediated the relationship between the experience of interpersonal trauma and the increased development of posttraumatic stress disorder and accounted for variance in psychological distress and posttraumatic stress disorder symptom severity, and was related to emotional numbing. In populations of people who experienced child sexual abuse, EA mediated the influence of victimization on increased depression and distress, and predicted decrease in psychological distress over a 12-week period. They concluded from their review that unwillingness to experience aversive internal states and altering these experiences does indeed appear to influence psychopathology in a negative way. Chawla and Ostafin suggest that EA "mediates the relationship between maladaptive coping and self-regulatory strategies, and psychological distress" (p.885). Schramm, Venta, and Sharp (2013) found that EA mediated the relationship between difficulties in emotion regulation and borderline PD symptoms. Another study (Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2009) found a mediating role of EA on the relationship between anxiety sensitivity and borderline PD features. In conclusion, there is a substantial body of evidence that EA is not only related to mental health outcomes across various clinical and non-clinical populations, but there is also evidence that EA exerts its influence specifically by mediating the negative effects of maladaptive coping, experience of negative emotions, and emotion regulation strategies.

There is less literature on the role EA plays in PDs. Multiple studies have demonstrated that increased EA was associated with more severe borderline PD symptomatology (e.g. Cheavens & Heiy, 2011; Iverson, Follette, Pistorello, & Fruzzetti, 2012; Schramm et al., 2013; Sharp, Kalpakci, Mellick, Venta, & Temple, 2015). Cavicchioli, Rugi, and Maffei (2015) showed that a general inability to withstand aversive experiences is a characteristic feature of borderline PD. Furthermore, EA has been found to mediate the relation between borderline PD features and difficulties in emotion regulation (Schramm et al., 2013). Gratz, et al. (2009) found that EA mediated the effects of anxiety sensitivity and borderline PD features.

In conclusion, EA appears to play a role in borderline PDs. The way it exerts influence on mental health outcomes is not well investigated. To get a better idea of how EA might relate to PDs specifically, in the following section it will be compared to an established model

of the development of personality pathology.

1.2 Schemas, Schema Modes, and Rigid Coping Styles

Schema modes have been proposed by Young et al. (2003) to explain how maladaptive behavior (often suddenly) emerges. Schema modes are moment-to-moment states of emotion and coping responses, triggered by events and situations that we are oversensitive to. The way in which schema modes are activated and manifested is described as rigid, psychologically inflexible, and avoidant of emotions and cognitions. This description of schema modes appears similar to the definition of EA and justifies a closer investigation of the relations between schema modes and experiential avoidance.

In schema therapy, such oversensitivities are called early maladaptive schemas (Young et al., 2003). Schemas are deeply internalized assumptions about the world and oneself, formed in early childhood through interactions of the child with primary caretakers, other influential people, such as peers, and the environment. If the child's basic needs (e.g. bonding, safety, exploration) are met sufficiently, the child will internalize that the world and the people that live in it are generally safe and trustworthy, and that they themselves have control over themselves and their surroundings. Schemas that enable an individual to engage with the world fruitfully and deal with the different facets of life are called adaptive. If a child has one or multiple of its basic needs not met, the child may internalize the assumptions that the world and people living within it will generally not be safe or trustworthy, and that they themselves have insufficient control over their lives and surroundings. Later in life, these (often unconscious) expectations of repeating the deficit experienced in childhood can hinder individuals in recognizing and engaging with the world as it is. Schemas that hinder an individual in recognizing the world as it is, and in realizing their own control over their environment, are called maladaptive. These early maladaptive schemas form the basis of schema therapy. For example, a person who has suffered loss of a parent in childhood might develop the schema Abandonment, an internalized expectation that people can and will abandon them throughout their lives. Early maladaptive schemas are not always active, but rather they are activated through events or situations that resemble the deficit experienced in childhood. For example, in the individual with the Abandonment schema, the schema might be inactive most of the time, but might become active when the person enters or considers an intimate relationship, or when a (normal) conflict in the relationship occurs. When an early maladaptive schema is triggered in an adult, automated emotional and behavioral reactions

occur very quickly. The negative emotions caused by the childhood deficit are felt strongly, and are coped with in a fashion similar to the coping strategies that were available as a child. These quick, automated emotional and behavioral reactions are called maladaptive schema modes. These reactions are rigid, inflexible, and not suited to react to the environment in an adaptive way.

Young et al. (2003) describe three general coping styles employed by their patients to deal with the expectations and emotions caused by a triggered early maladaptive schema: avoidance, overcompensation, and surrender. Coping through avoidance means that people avoid situations that they experience as threatening or harmful. Subsequently, this individual might avoid forming close relationships in order to not be abandoned. Coping through overcompensation means that people invest considerable effort in proving their maladaptive schemas invalid. For example, another person with an Abandonment schema might do their very best to satisfy their partner in order to ensure they would not be abandoned, while internally the fear of being abandoned would linger on. Coping through surrender means that people accept their apparent lot in life and don't attempt to change it. For example, a person with an Abandonment schema might form relationships and, through re-enacting their childhood experiences, experience abandonment again and again, like a self-fulfilling prophecy. The similarity of those coping strategies with the concept of EA is most obvious for the avoidance strategy. Potentially threatening situations are directly avoided in order to not experience the negative emotions and expected consequences. For overcompensation, the potentially threatening situations are not themselves avoided. Instead, people unsuccessfully try to avoid the negative emotions and to prevent the expected consequences. The surrender strategy bears the least resemblance to an attempt at avoiding. After all, the people who surrender to their early maladaptive schemas seem to be experiencing their painful thoughts and emotions. The case might be made, though, that those people are avoiding confrontation with their schema content, and are avoiding confrontation with the reality of changing their ways.

While every person experiences such modes, maladaptive schema modes can lead to overreaction, inadequate emotions, and inappropriate behavior. In psychologically healthy people, schema modes are flexible and can be coped with through the adaptive parts of their personality. In healthy people, such a schema mode can equal a mood shift. In peoples with PDs, schema modes are stronger, inflexible, and may appear split off or out of touch with the rest of their personality, even dissociated. Young et al. (2007) have identified a total of 14 schema modes of which 12 considered maladaptive, and two are considered adaptive and

healthy. For example, the maladaptive schema mode Vulnerable Child is characterized by such feelings as loneliness, isolation, victimization, fright or pessimism, feelings experienced by the child when the schema was initially formed. The maladaptive schema mode Punitive Parent is characterized by the feeling that oneself or other deserve to be punished, criticized, or blamed, similarly to the way they experienced their parents' way of enforcing rules.

Maladaptive schema modes have been shown to correlate with PD diagnoses and to differentiate between different PD disorders. Arntz, Klokman, and Sieswerda (2005) found increased maladaptive schema mode scores after watching a negative emotional movie segment in a group of cluster-C PD patients, and borderline PD patients, compared to a non-clinical control group. Bach and Farrell (2018) found that patterns in schema modes could distinguish a borderline PD group from an other-PD group, and from a healthy control group. Johnston, Dorahy, Courtey, Bayles, and O'Kane (2009) found that schema modes were a better predictor of dissociative symptoms in a group of 30 borderline PD patients compared to childhood trauma. Lobbestael, Arntz, and Sieswarda (2005) found that schema mode intensity and patterns could distinguish a borderline PD group and an antisocial PD from another, and from a healthy control group. Lobbestael, van Vreeswijk, and Arntz (2008) found that in a mixed sample of 489 axis-I patients, axis-II patients, and non-patient controls, each of the 10 types of PDs was associated with a unique pattern of schema modes, though they found considerable overlap between some PDs.

While maladaptive schema modes are understood to be causal for the formation of PDs (Young et al., 2003), there is little research to back up this claim. In a meta-review on the effectiveness of schema therapy, Taylor, Bee, and Haddock (2017) found only four studies that included measures of maladaptive schema modes. Two studies featured participants with mixed PDs, one featured borderline PD patients exclusively, and one featured patients with PD features and mood disorders. In all four studies, a post-treatment reduction in maladaptive schema modes was observed alongside a reduction of symptomatic distress and PD severity.

The description of PD patients given by Young et al. (2003) as psychologically inflexible and avoiding cognitions and emotions seem to closely match the description of EA (Hayes et al., 1996) as behavior aimed at the inflexible attempt at avoiding aversive emotions and cognitions. The relations between EA and borderline PD discussed above seem to agree that EA plays a role in borderline PD symptomatology. Maladaptive schema modes are defined to include the experience of negative emotions and maladaptive coping. Furthermore, maladaptive schema modes are described as consisting of automated emotional responses and inflexible coping behavior. As EA has been shown to mediate the effects of emotion

regulation and coping behavior on several mental health outcomes across clinical and non-clinical populations, it could be proposed that EA exerts its influence in PDs, too, by mediating the effects of schema mode-related negative emotions and maladaptive coping on mental health outcomes.

To the knowledge of the author, no publication to date has investigated the relationships between EA, maladaptive schema modes, and a measure of mental health. Only one publication has investigated the relationship between early maladaptive schemas, EA, and psychopathology. Fischer et al. (2016) investigated the relationship between early maladaptive schemas, psychological distress in terms of depression, anxiety, and stress, and EA in a non-clinical sample of 117 predominantly young (M = 20.0, SD = 4.11, range 18-42) female (72%) university students. They have found that a model where EA fully mediated the influence of early maladaptive schemas on psychopathology fitted their data best, though a moderation model was also supported. It is their conclusion that perhaps "early maladaptive schemas exert their effect on psychopathology through increasing experiential avoidance, fusion (presumably with schema content), and reducing or inhibiting mindfulness and value-consistent behavior" (p.175). In other words, more early maladaptive schemas would lead to increased EA, which would then increase psychopathological symptoms. This conclusion is to be considered with care as the research was cross-sectional and all results are therefore purely correlational. The population was non-clinical and the outcome measure was general psychological distress, leaving it unclear whether the results of this cross-sectional study can be generalized to PD patients. Fischer et al. postulate that early maladaptive schemas exert their influence on mental health through EA. The schema therapy model (Young et al., 2003) implies that early maladaptive schemas exert their influence on mental health through the activation of maladaptive schema modes. If both assumptions were true, it raises the question of how these two processes, EA and maladaptive schema modes, relate to each other, if they are separately influencing mental health, or if they interrelate.

1.3 Present Study

The aim of this study is to examine the role EA plays in the relationship between maladaptive schema modes and personality functioning. The results might have implications for the understanding of the processes underlying PDs and might aid in the development of new approaches for the treatment of PDs. The results might further add to the body of evidence for EA as a transdiagnostic factor in psychopathology. To the knowledge of the

author, the relationships between maladaptive schema modes, EA, and personality functioning have not been investigated before. The goal of this study is to test for relations between these constructs, and to test in particular the hypothesis that higher maladaptive schema modes lead to more impaired personality functioning through increasing EA. The following hypotheses will be tested:

As discussed above, maladaptive schema modes are thought to limit the individual's emotional and coping responses, which would then impact mental health. If this assumption holds true, it would be expected that people who experience more/stronger maladaptive schema modes would also report lower levels of personality functioning.

EA has been shown to be related to borderline PD symptomatology. PD symptomatology is thought to be captured best functionally through personality functioning. If this was the case, people who are more prone to use EA would be expected to report lower levels of personality functioning.

EA has been shown to mediate the effects of emotion regulation and coping strategies on mental health outcomes in clinical and non-clinical populations, and maladaptive schema modes are understood to incorporate inflexible emotional and coping responses. It is therefore hypothesized that the effect of maladaptive schema modes on personality functioning is mediated by EA.

The vast majority of literature on the relationship between EA and PDs focusses on borderline PD. As the processes behind maladaptive schema modes and EA are not assumed to be specific to borderline PD, it would be expected to find the same relations for borderline PD and other PD patients alike.

2 Method

2.1 Design

This is a cross-sectional study using data that was collected between 2013 and 2015. A mediation model was tested with maladaptive schema modes as independent variable, personality functioning as dependent variable, and EA as mediator.

2.2 Participants and Procedure

A total of 104 participants are included in this study. Participants mean age was 26.1 years (SD = 7.4; range 17 – 49). A total of 92 (88.5%) were female and 12 (11.5%) were male. All participants met the criteria for at least one personality disorder according to the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV; American Psychiatric Association, 2000). 52 (50%) participants met the criteria for borderline PD, 17 (16%) for avoidant PD, 4 (3%) for dependent PD, and 31 (30%) for PD not otherwise specified. 18% of participants reported no further Axis I diagnoses, 30% reported one co-morbid diagnosis, and 56% reported two or more co-morbid diagnoses. For an overview of participant characteristics and co-morbidity see Table 1.

Participants were recruited between 2013 and 2015 from consecutive admissions at a specialist hospital for patients with personality disorders in the Netherlands. Informed consent was obtained in all cases. All patient data were coded to ensure anonymity. The study was approved by an ethics committee. Due to the vulnerable nature of the participant group, recruitment was handled by mental health professionals and research assistants with expertise in handling this group of patients. Inclusion criteria were at least one personality disorder diagnosis according to DSM-IV, as well as treatment resistance. That is they had previously received outpatient psychological treatment, had been discharged, and subsequently re-referred by an experienced clinician (Clarke, Kingston, Wilson, Bolderston, & Remington, 2012). Potential participants were excluded from the study if they fulfilled DSM-IV criteria for borderline intellectual functioning, a disorder belonging to the categories schizophrenia and other psychotic disorders, or pervasive developmental disorders. DSM-IV Axis-I and Axis-II pathology were assessed through the SCID-I and SCID-II (First & Gibbon, 2004) structured interviews administered by master-level psychology students. Participants received no compensation for participating in the study.

In the first step, DSM-IV Axis-I and Axis-II pathology was assessed using the SCID-I and SCID-II (First & Gibbon, 2004). This assessment was conducted by master-level psychology students who were trained and supervised by experienced raters (certified clinical psychologists). In the second step, participants were presented individually with a test battery containing three self-report measures for maladaptive schema modes, EA, and personality functioning (see 2.3), as well as a number of self-report measures unrelated to this study (OQ-45, WHOQOL-BREF).

Table 1

Participant characteristics of the present study

	BPD n = 52		Other PD n = 52		Total n = 104	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
Age	26.7	(8.5)	25.9	(6.3)	26.1	(7.4)
Gender	n	(%)	n	(%)	n	(%)
female	50	(96.2)	42	(80.8)	92	(88.5)
male	2	(3.8)	10	(19.2)	12	(11.5)
Axis-I co-morbidity						
mood disorder	27	(51.9)	24	(46.2)	51	(49)
anxiety	18	(34.6)	20	(38.5)	38	(36.5)
substance abuse	6	(11.5)	2	(3.8)	8	(7.7)
other	17	(32.7)	17	(32.7)	34	(32.7)

2.3 Measures

Experiential avoidance. The Acceptance and Action Questionnaire, second version (AAQ-II; Bond et al., 2011) is a self-report measure designed to assess psychological flexibility, the inverse of experiential avoidance. It consists of 10 items, rated on a 7-point scale ranging from 1 (never true) to 7 (always true). Lower scores on the AAQ-II indicate higher levels of general acceptance and thus lower levels of experiential avoidance. The Dutch version of the AAQ-II has shown adequate reliability and validity (Fledderus, Oude Voshaar, ten Klooster, & Bohlmeijer, 2012). In the current sample the internal consistency was found to be excellent ($\alpha = .91$).

Personality functioning. The Severity Indices of Personality Problems – Short Form (derived from the SIPP-118; Verheul et al., 2008) has been used in this study to assess the severity of personality pathology. The SIPP was designed to assess five core domains of (mal)adaptive personality functioning. Higher scores imply more adaptive functioning. It contains 60 items rated on a 4-point Likert scale: I fully agree, I partly agree, I partly disagree and I fully disagree. These statements refer to the last 3 months. Facet scores are expressed as average item levels, ranging from 1 (least adaptive) to 4 (most adaptive). Rossi, Debast, and van Alphen (2016) found good internal consistency for each subscale of the SIPP-SF ($\alpha = .81$ - .88) and good external validity in a Belgian community sample of university student. In the current sample the internal consistency of the total scale was found to be excellent ($\alpha = .96$).

Maladaptive schema modes. The Schema Mode Inventory (SMI; Young, Arntz, Atkinson, Lobbestael, Weishaar, van Vreeswijk, & Klokman, 2007) is a self-report questionnaire designed to measure schema modes. It consists of 270 items which are scored on a 6-point scale (1=never or almost never, 6=always), e.g. "When I am angry, I often lose control and threaten other people". The SMI features 14 subscales, of which 12 are considered maladaptive schema modes, and 2 are considered adaptive schema modes. The Dutch short version of the SMI (Lobbestael, van Vreeswijk, Spinhoven, Schouten, & Arntz, 2010) used in this study consists of 118 items and has shown adequate internal consistency per subscale (Cronbach's α ranging from 0.76 to 0.96). In the current study, only the maladaptive sub-scales were used. The mean of the maladaptive subscales was used as a single measure. The internal consistency was found to be excellent (α = .94).

2.4 Statistical Analysis

All data analysis was done in SPSS Statistics 23. Descriptive statistics were computed for all measures. The bivariate relationships between maladaptive schema modes and personality functioning, and EA and personality functioning were tested using simple linear regression analysis. Hypotheses were accepted for $p < 0.05$ (2-tailed). The mediation models were tested with 10.000 bootstraps using the PROCESS v.2.16 macro, written and released by Hayes (Darlington & Hayes, 2016). All analyses have been done for a borderline PD subgroup (n=52), an other PD subgroup (n=52; for details refer to 2.2), and the total group (n=104).

2.4.1 Mediation model.

The mediation model attempts to explain the mechanism by which an independent variable exerts an effect on a dependent variable. A third hypothetical variable, the mediator variable, is introduced and hypothesized to intermediate the relationship between the former. Instead of a direct causal effect of the independent variable on the dependent variable, it is proposed that the independent variable influences the mediator variable, and the mediator variable influences the dependent variable. The relations, or paths, between the variables are indicated by the coefficients a, b, c, and c' (Figure 1), The direct effect c' indicates the remaining relation between the independent variable and the dependent variable after the mediator has been accounted for. The indirect effect a x b indicates the relation accounted for by the mediating effect.

The path coefficients were determined in this study by use of the statistics software PROCESS. PROCESS is an add-on for the popular statistics packages SPSS and SAS. It uses bootstrapping techniques to expand the package's repertoire with options for mediation, moderation, and conditional process analysis. When used for mediation analysis as in this study, PROCESS generates estimates for the path coefficients a, b, c, and c', as well as a 95% CI for the indirect effect a x b. If zero is not within this CI, mediation is indicated.

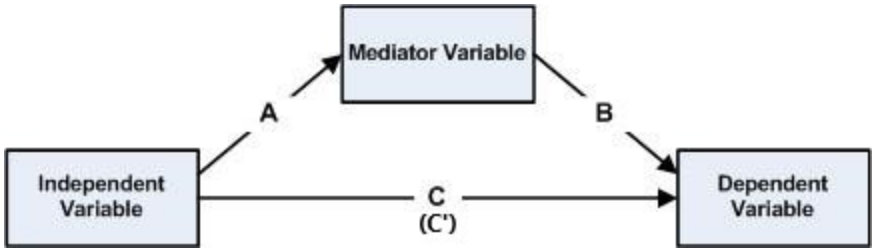

Figure 1. The mediation model

3 Results

3.1 Descriptive Statistics

For means and standard deviations of all measures refer to Table 2.

Table 2

Means and standard deviation of the dependent, independent, and mediator variables.

	BPD (n=52)		Other PD (n=52)		Total (n=104)	
	M	(SD)	M	(SD)	M	(SD)
Maladaptive schema modes	26.08	(6.18)	25.26	(4.6)	25.67	(5.44)
Experiential avoidance	31.23	(11.31)	31.69	(9.72)	31.46	(10.5)
Personality functioning	158.63	(30.75)	160.96	(24.65)	159.8	(27.76)

3.2 Relationship between Maladaptive Schema Modes and Personality Functioning

In a simple linear regression analysis maladaptive schema modes have shown to be negatively associated with personality functioning for the total group ($F(1,102) = 373.91$, $p < .001$; $r = .89$; $R^2 = .79$) as well as both the borderline PD group ($F(1,50) = 271.93$, $p < .001$; $r = .92$; $R^2 = .85$) and the other PDs group ($F(1,50) = 113.72$, $p < .001$; $r = .83$; $R^2 = .7$).

3.3 Relationship between EA and Personality Functioning

In a simple linear regression analysis EA has been shown to be negatively associated with personality functioning for the total group ($F(1,102) = 111.9$, $p < .001$; $r = .72$; $R^2 = .52$) as well as both the borderline PD group ($F(1,50) = 92.32$, $p < .001$; $r = .81$; $R^2 = .64$) and the other PDs group ($F(1,50) = 28.86$, $p < .001$; $r = .61$; $R^2 = .37$).

3.4 Mediation Analysis

Table 3 shows the unstandardized regression coefficients for the mediation model and the indirect effect ab. The a-path, c-path, and c'-path were statistically significant for all groups. The b-path coefficients were statistically insignificant for all groups. The bias-corrected 95% confidence interval for the indirect effect did contain zero for all groups. These results indicate that EA does not account for the effect of maladaptive schema modes on personality functioning.

Table 3

Regression coefficients and indirect effect 95% CI

Group	a	b	Total effect c	Direct effect c'	Indirect effect a x b (95% CI)
borderline PD	-1.57***	.19	-4.57***	-4.28***	–.29 (-1.43; .68)
other PD	-1.33***	.34	-4.47***	-4.02***	–.45 (-1.1; .18)
total	-1.48***	.29	-4.52***	-4.1***	–.43 (–.98; .14)

Note. ***p < 0.001

4 Conclusions and Discussion

The purpose of this study was to explore the relationships between maladaptive schema modes, EA, and personality functioning. The role of EA as a mediator in the relationship between maladaptive schema modes and personality functioning was of specific interest. Data were analyzed separately for a borderline PD group, other PD group, and the combined total group. The results showed that maladaptive schema modes were significantly associated with less personality functioning in all groups. EA was significantly associated with less personality functioning in all groups. EA was no longer significantly associated with personality functioning when coupled with maladaptive schema modes. EA did not mediate the relationship between maladaptive schema modes and personality functioning, for all groups.

4.1 Relations between Maladaptive Schema Modes, EA, and Personality Functioning

In line with the first hypothesis, higher maladaptive schema modes were significantly associated with lower personality functioning. This would suggest that participants whose maladaptive schema modes are activated more often are less likely to function adaptively in their lives and more likely to function in rigid and maladaptive ways. These results were significant for the borderline PD group, the other PD group, and the total group. This result lends support to the assumption that maladaptive schema modes are a factor in personality psychology. It falls in line with previous studies that have shown reductions in maladaptive schema modes alongside reductions in borderline PD symptomatology after schema therapy.

In line with the second hypothesis, higher EA was significantly associated with lower personality functioning. This would suggest that participants who have a higher tendency to avoid aversive internal experiences are less likely to function adaptively in their lives and more likely to function in rigid and maladaptive ways. This result was significant for the borderline PD group, the other PD group, and the total group. This result suggests that PD patients characterized by low personality function might benefit from interventions that target EA processes and aim to increase psychological flexibility. All results were significant for all groups, indicating no difference in the relationships between maladaptive schema modes, EA, and personality functioning across borderline PD patients and other PD patients.

4.2 The Mediating Role of EA in the Relationship between Maladaptive Schema Modes and Personality Functioning

It was hypothesized that EA would mediate the relationship between maladaptive schema modes and personality functioning. This was expected because EA had been shown previously to mediate the relationships between emotion regulation and coping styles in clinical and non-clinical populations. The current results do not support the mediation hypothesis for either the total group, the borderline PD group, or other PD group. EA did not mediate the relationship between maladaptive schema modes and personality functioning. Participants' level of EA by itself was significantly associated with personality functioning, but this effect disappeared when maladaptive schema modes were added to the equations. This seems to contradict previous studies mentioned above. It is remarkable that both EA and maladaptive schema modes show significant relations with personality functioning when analyzed separately, but only maladaptive schema modes remain a significant relationship when both are analyzed together. One approach of explaining this result is by assuming that maladaptive schema modes account for the variance explained by EA, and more. According to this interpretation, the constructs of maladaptive schema modes and EA would overlap significantly, with the former containing the latter, and more factors that are relevant to personality functioning, such as the specific emotion regulation and coping strategies that apply to the specific maladaptive schema modes. This interpretation is supported by the conceptual similarities of maladaptive schema modes. Both are concerned with behavior that is caused by the experience of unpleasant cognitions and emotions, specified as early maladaptive schemas in schema therapy. Both include the tendency to alter these cognitions and emotions. Both result in behavior that is rigid, does not properly address real-world problems, and thereby prevents individuals from developing more appropriate solutions.

Another argument that maladaptive schema modes and EA are not (entirely) distinct constructs lies in the way both are learned in early childhood. Malicki and Ostazewski (2014) point out how EA is a socially learned process that in turn inhibits an individual's ability to further grow and adapt to their environment. In early stages of development, children would receive positive reinforcement for not expressing negative emotions. Due to the bidirectional nature of language (Hayes, Barnes-Holmes, & Roche, 2002), these properties of "good/bad" and "wanted/unwanted" would be transferred to the emotion itself. Experiencing or not experiencing certain emotions would become a goal in itself. Emotions would thereby lose their biological and evolutionary purpose of regulating behavior. Later on, children would be rewarded when they are able to causally explain their behavior. If emotions are established as

the internal cause of the child's negative behavior, and by extension the cause of the negative consequences of the behavior, the child would learn to avoid the emotion itself (e.g. suppressing anger to prevent being punished for aggression). This would lead to automated avoidance of “dangerous” emotions. Furthermore, it would prevent the child from learning appropriate emotion regulation and expression, e.g. expressing their anger in a constructive and situationally appropriate way. These deficits in emotion regulation and appropriate coping would then distort adaptive functioning and hinder individuals from achieving important goals. This process might happen parallel to, and intertwined with, the development of maladaptive schema modes. Maladaptive schema modes, too, are formed in early childhood in accordance with the parents’ and other important peoples’ behavior. For example, when a child is physically abused, the child might initially experience the appropriate emotion, e.g. fear or anger, and might attempt to actively change the situation, e.g. through flight from the abuser or by fighting back. In case of continued abuse, the physically superior abuser would a) stop the child’s attempts of flight or fighting back, and b) follow up on these attempts with more abuse. In any case, the child would be unable to change the abusive situation and would have to cope with the resulting emotions and thoughts internally. The child would learn to avoid the thoughts and emotions that (seemingly) are the cause of the abuse. This might be interpreted as an extreme example of the development process outlined by Malicki and Ostazewski. They also outline how the resulting impaired abilities of would emotion regulation and expression would continue to prevent the individual from developing appropriate functioning. Similarly, Young et al. (2003) describe the phenomenon of schema perpetuation, i.e. thoughts, emotions, and behavior that help continue the schema and prevent the individual from making healing experiences. In their words “an individual may block the emotions connected to a schema. When affect is blocked, the schema does not reach the level of conscious awareness, so the individual cannot take steps to change or heal the schema. Behaviorally, the individual engages in self-defeating patterns, unconsciously selecting and remaining in situations and relationships that trigger and perpetuate the schema” (p.30). The emotional blocking would classify as an attempt at avoiding an aversive experience internally. The unconscious selection and selection might be explained through the inability of the individual to cope with the external situation. This is even more speculative. But if EA and maladaptive schema modes are related like this, it might imply that they cannot be interpreted as independent constructs, but rather as constructs intertwined in such a way that they mutually strengthen one another.

Another way of looking at the results is by inverting the order of independent variable

and mediator. In post-hoc analysis, maladaptive schema modes appeared to mediate the effects of EA on personality functioning. A fitting hypothesis might be that those with higher EA might be more likely to activate maladaptive schema modes when confronted with schema-triggering experiences. Possibly people with higher EA would be more prone to the activation of maladaptive schema modes and therefore have poorer personality functioning. In this interpretation, the pre-existing early maladaptive schemas would, when triggered, present the aversive internal experience. The thoughts and emotions experienced when confronted with schema content are by definition unpleasant representations of past hurtful experiences (Young et al., 2003) that might seem intolerable to the individual, thereby creating the desire to alter these internal experiences, as is the definition of EA (Hayes et al., 1996). In order to escape the aversive experience caused by the activated schema, the individual would then apply the rigid, automated responses known as maladaptive schema modes. In other words, EA might mediate the effect of early maladaptive schemas on the increased frequency maladaptive schema modes. This interpretation would not contradict the results found by Fischer et al. (2016), who found that EA mediated the effect of early maladaptive schemas on psychological distress. If EA was to mediate the effect of early maladaptive schemas on the increased frequency of maladaptive schema modes, and maladaptive schema modes affected personality functioning/psychological distress. This interpretation would agree with both the results found by Fischer et al. and the present study. This interpretation is, of course, highly speculative.

4.3 Implications for Treatment

According to the current results, EA has no relationship with personality functioning when maladaptive schema modes, too, are considered. In practical terms, there is no evidence that improving EA improve personality functioning. Weakening the extent to which maladaptive schema modes are present in the individual would suffice to improve personality functioning. However, the significant relationship between EA alone and personality functioning seems to imply that EA is relevant to personality functioning in a less direct way, possibly related to maladaptive schema modes. It has been speculated above that EA is an ingredient in the formation of maladaptive schema modes. Another speculation is that EA becomes relevant when an early maladaptive schema is triggered, representing the automatic, rigid way in which maladaptive schema modes are activated. In these cases, acceptance-based approaches might prove valuable in combination with schema-based approaches, as improved

psychological flexibility might weaken the automatic activation of maladaptive schema modes, and might enable patients to easier to confront early maladaptive schemas. Fischer et al. (2016) had encouraged both schools of therapy to search for interventions that best improve EA. The current study would rather indicate, in the context of treatment-resistant PD patients, to search for ways to weaken maladaptive schema modes. Decreasing EA might be one way of achieving this.

4.4 Strengths and Limitations

This study had a number of strengths. First, all questionnaires used in the study had excellent reliability, indicating reliable results. Second, the study featured PD patients, a population highly relevant to mental health care. PD diagnoses were reliably assessed by the researchers. Third, this study is the first to investigate the relationship between maladaptive schema modes and personality functioning, as well as the mediating role of EA in this relationship. This study is among the first to investigate the relationship between EA and personality functioning (Stahl, 2017).

This study also had a number of weaknesses. The number of participants was, while being acceptable for the analyses used, not the greatest, at 104 participants total, 52 participants with borderline PD, and 52 participants with other PDs. Some PDs were very underrepresented.

While the AAQ-II is a reliable and established measure for EA, more recently critique has come up. According to Rochefort, Baldwin, and Chmielewski (2017) the AAQ-II is better described as a measure of “proneness to experience negative internal events” (p.3) and therefore more of a measure of neuroticism and negative affect, whereas “experiential avoidance refers specifically to the unwillingness to experience negative internal events” (p.3). The operationalization of EA in this study (and an abundance of other studies) is therefore questionable.

Another limitation of this study is that maladaptive schema modes were interpreted as a total score. However, different maladaptive schema modes correspond to different emotions and coping styles (Young et al., 2003), and different patterns of schema modes are typical for different kinds of PDs (e.g. Bach and Farrell, 2018). Personality functioning, too, was interpreted as a total score, while the construct is composed of several dimensions of functioning. It might be that some relations are present only for specific combinations of maladaptive schema modes and domains of personality functioning. Also, Young et al.

identified two adaptive schema modes, the Contended Child mode, which is characterized by feeling loved, fulfilled, protected, and resilient, and the Healthy Adult mode, which combats or heals the maladaptive schema modes and enables adaptive functioning. These modes were not considered in this study.

4.5 Recommendations for Future Research

As mentioned above, post-hoc analysis seemed to support a model where maladaptive schema modes mediated the effect of EA on personality functioning. One possible interpretation of the absence of the current results is that EA conceptually overlaps with maladaptive schema modes. Or perhaps EA might be indicative of the tendency to form and activate maladaptive schema modes as an avoiding response to the aversive experience of a triggered early maladaptive schema. According to these interpretations, in an experimental design where EA is manipulated, it would be expected to find a decrease in EA, no change in early maladaptive schemas, and a decrease in maladaptive schema modes.

As mentioned above, the validity of the AAQ-II has received criticism (Rochefort, Baldwin, & Chmielewski, 2017). The Multidimensional Experiential Avoidance Questionnaire (MEAQ; Gamez, Chmielewski, Kotov, Ruggero, & Watson, 2011) is an alternative questionnaire constructed to better capture the nature of EA. It is recommended to include both the AAQ-II and the MEAQ as measures for experiential avoidance.

5 Concluding Remark

This study found that higher maladaptive schema modes were significantly associated with less personality functioning, as was higher EA. EA did not mediate the relationship between maladaptive schema modes and personality functioning. These results were consistent for all PDs included in this study. The significant relationship between EA by itself and personality functioning suggest that treatment-resistant PD patients might indeed benefit from acceptance-based approaches, but the precise role of EA is still unclear. Speculations about the interactions between EA and maladaptive schema modes were discussed above, one being that EA conceptually overlaps with maladaptive schema modes. Or perhaps EA might be indicative of the tendency to form and activate maladaptive schema modes as an avoiding response to the aversive experience of a triggered early maladaptive schema. According to these interpretations, in an experimental design where EA is manipulated, it would be expected to find a decrease in EA, no change in early maladaptive schemas, and a decrease in

maladaptive schema modes.

While this study adds to the evidence for the benefit of incorporating acceptance-based approaches in the treatment of treatment-resistant PD patients, many questions remain. Further research into the topic is advised, as improved treatment methods for this patient group would help alleviate the chronic, often life-long suffering of these patients, and would help them lead a better life for themselves and for society as a whole.

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