Psychometric Properties of the German Version of the Young Positive Schema Questionnaire
(YPSQ) in the General Population and Psychiatric Patients

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Abstract

Early Adaptive Schemas (EAS) are resilience-oriented counterparts to Early Maladaptive Schemas (EMS), which are central in Schema Therapy. The Young Positive Schema Questionnaire (YPSQ) was developed as a measure of EAS but has neither been evaluated in relation to a clinical population nor in a German-speaking sample. Objectives of the present study were therefore the psychometric validation of a German YPSQ in a community sample and the comparison of EAS to psychiatric patients. Participants were 1,418 individuals from a community sample and 182 psychiatric patients with a main diagnosis of Major Depressive Disorder. A factor-structure of 10 EAS, instead of the original 14, demonstrated satisfactory factorial validity and internal consistency in both samples. EAS exhibited divergent validity to EMS, childhood trauma, and psychopathology. Convergent validity was evident with resilience, self-efficacy, and satisfaction with life. Support for incremental validity beyond EMS was especially shown for resilience, self-efficacy, satisfaction with life, and also evident for several dimensions of psychopathology. Individuals in the community sample exhibited more pronounced EAS compared to psychiatric patients with the exception of *Empathic Consideration*. Especially for concepts associated with mental health, the YPSQ has the potential to be a highly valuable addition to current research and practice.

Keywords: Early Adaptive Schemas, positive schemas, resilience, psychopathology, depression

Introduction

Schema Therapy, the role of EMS and the need for a concept of EAS

With its roots in cognitive therapy and attachment theory, the foundation of Schema Therapy (ST) lies in unmet core emotional needs that lead to the development of pervasive dysfunctional belief patterns regarding oneself and relationships with others (Edwards & Arntz, 2012; Young, Klosko, & Weishaar, 2003). These negative themes are referred to as Early Maladaptive Schemas (EMS) and are thought to predominantly develop during childhood with further refinements occurring throughout life (Young et al., 2003). EMS develop when universal, core emotional needs are not met that are present during early development. Four core emotional needs were identified in the most recent empirical study: (1) Realistic standards and reciprocity; (2) Connection and acceptance; (3) Healthy autonomy and performance; and (4) Reasonable Limits (Louis, Davidson, Lockwood, & Wood, 2020). Contrary to a classical cognitive approach defining negative self-perceptions that are present across different contexts as core beliefs (Beck & Alford, 2009), Young describes EMS as integrative cognitive-emotional structures that are stable over-time (Young et al., 2003).

Since the development of the Young Schema Questionnaire (YSQ) as a measure of EMS (Schmidt, Joiner, Young, Telch, 1995), a growing number of studies have demonstrated their relevance for a range of clinical disorders with a great emphasis on chronic mental disorders (Lobbestael & Arntz, 2012; Taylor, Bee, & Haddock, 2017). For instance, associations have been found between changes in EMS during treatment and changes in symptom severity (Taylor et al., 2017). EMS were also found to predict relevant treatment outcomes (Nordahl, Holthe, & Haugum, 2005; Renner, Lobbestael, Peeters, Arntz, & Huibers, 2012), and constitute risk factors for depression (Halvorsen, Wang, Eisemann, & Waterloo, 2010), bipolar disorder (Hawke,

Provencher, & Arntz, 2011), and post-traumatic stress disorder (Cockram, Drummond, & Lee, 2010). This clinical relevance of schemas could potentially be advanced by balancing the pathological constructs of EMS with concrete strength-focussed concepts emphasizing the fulfilment of needs (Lockwood & Perris, 2012; Louis, Wood, Lockwood, Ho, & Ferguson, 2018).

The value of considering positive (alongside negative) concepts for relevant clinical outcomes has been repeatedly demonstrated (Wood & Tarrier, 2010). For instance, the absence of positive characteristics was an independent risk factor for reduced well-being and distress when controlling for negative characteristics (Wood, Joseph, & Maltby, 2008; Wood, Joseph, & Maltby, 2009). Demonstrating clinical relevance, Craske et al. (2019) conducted a randomized controlled trial for affective disorders comparing a treatment aimed at increasing reward sensitivity to a treatment aimed at diminishing threat sensitivity; results showed that the positive intervention was superior on a variety of outcome measures (i.e. positive affect, depression, anxiety, stress, and suicidal ideation) at 6-months follow-up. In line with this, Cheavens, Strunk, Lazarus, and Goldstein (2012) found that for adults with depression, personalization of a treatment according to strengths (capitalization approach) was related to a better treatment outcome relative to a treatment matched to individuals' deficits (compensation approach). Concerning ST in particular, Hoffart (2018) demonstrated the potential added value of targeting optimism beyond EMS for depression, sadness and negative schema beliefs in patients with panic disorder and/or agoraphobia and Cluster C personality traits. Lumley and McArthur (2016) used a questionnaire designed to assess five positive schematic beliefs in adolescents – the Positive Schema Questionnaire (PSQ; Keyfitz, Lumley, Hennig, & Dozois, 2012) - and employed it in addition to the YSQ to evaluate the role of positive schemas as protective factors in the development of depression. The authors found that positive schemas moderated the relationship between emotional maltreatment in

childhood and depressive symptoms in young adulthood and that they explained variance beyond EMS. Taken together, insights from research in positive clinical psychology signify the importance of adding positive schemas to a ST framework.

Recently, efforts have led to the conceptualization of Early Adaptive Schemas (EAS) and the introduction of the Young Positive Schema Questionnaire (YPSQ) to explicitly define schemas that develop when core emotional needs have been met during development (Lockwood & Perris, 2012; Louis et al., 2018). As an adaptive functioning counterpart to EMS, EAS are comprised of beliefs, bodily sensations, cognitions, memories, and neurobiological reactions of individuals with themselves and others (Louis et al., 2018). Since schemas are considered to be defined by distinct themes, EAS and EMS are theorized to be separate (but related) constructs that are activated by distinct kinds of experiences (Lockwood & Perris, 2012; Louis et al., 2018). Although an inverse relationship is expected, EAS are therefore not merely conceptualized as polar opposites to existing EMS but as distinct dimensions. Hence, both positive and negative schemas may be active in one person at the same time. The activation and strength of a positive schema would, however, be expected to negatively predict the activation of a negative schema and vice versa. Referring to the theorized origin of schemas within ST, a moderate negative relationship between negative/traumatic childhood experiences and EAS as well as between positive childhood experiences and EMS would thus be anticipated in concordance with this notion. The advantage of this distinct conceptualization of EAS and EMS is that it acknowledges that a single individual can hold multiple, seemingly contradictory, beliefs concerning the world and oneself, which can be activated in a dynamic manner depending on the circumstances. For example, if somebody did not generally perceive themselves as a failure, this would not necessarily mean they viewed

themselves as successful. Likewise, perceiving oneself as a failure or success might vary for certain contexts of one's life such as personal relations or profession.

Since one of the key aims of ST is to meet core emotional needs, the conceptualisation of EAS is essential to accurately evaluate whether and which needs are actually met. This would allow the assessment of changes over the course of therapy and the formulation of specific goals towards their attainment during treatment. Additionally, introducing EAS would prevent sending the unintended message that the sole focus of ST should be the reduction of EMS, when it is crucial to also focus on the fulfilment of emotional needs (Louis et al., 2018).

The YPSQ: Validation and shortcomings

Although a measure of positive schematic beliefs tailored to adolescents had been developed by Keyfitz et al. (2012), the YPSQ is the first tool to assess positive schemas in adults and as explicitly defined within the ST framework (Lockwood & Perris, 2012). In the initial validation study by Louis et al. (2018), the YPSQ exhibited satisfactory psychometric properties. EAS were listed with their closest theoretical EMS counterparts and are briefly described in Table A1 of the supplementary material. The 14-factor EAS structure exhibited excellent fit indices in samples from different cultural contexts. With the exception of two EAS in an Eastern sample (*Healthy Boundaries*, $\alpha = .62$; *Healthy Self-Interest*, $\alpha = .68$), Cronbach's alpha was above .70 in two Eastern and one Western sample. Convergent validity of EAS was established with personality dimensions (International Personality Item Pool, IPIP; agreeableness, conscientiousness, and extraversion; Donnellan, Oswald, Baird, & Lucas, 2006), satisfaction with life (Satisfaction with Life Scale, SWLS; Pavot & Diener, 2008), gratitude (Gratitude Questionnaire-6, GQ-6; McCullough, Emmons, & Tsang, 2002), and self-enhancing and affiliative styles of humour (Humor Styles Questionnaire, HSQ; Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003). Divergent validity was

shown concerning negative schemas (YSQ-S3; Young & Brown, 2005), neuroticism (IPIP), aggressive and self-defeating styles of humour (HSQ), and depression, anxiety and stress (Depression, Anxiety, and Stress Subscales, DASS-21; Henry & Crawford, 2005). Incremental validity of EAS beyond EMS was found for all personality dimensions (IPIP), gratitude, satisfaction with life, depression, anxiety and stress, and all humour styles except for the self-defeating style. However, several structural aspects and psychometric properties of EAS remain unexplored. First, the YPSQ has not yet been investigated in relation to a clinical population. This bears great relevance, since this is the questionnaire's main target population. Second, analyses regarding construct and incremental validity were solely conducted in a sample from Singapore, so cross-cultural validation of these results needs further investigation. Finally, EAS stability over time, association with positive childhood experiences, and an expected inverse relationship to childhood traumas are unclear.

The Present Study

In a cross-sectional study, we investigated the psychometric properties of a German translation of the YPSQ. The main aim of the present study was a validation of the German YPSQ in a community sample, which included an investigation of its factorial validity, internal reliability, construct validity, and incremental validity beyond negative schemas. Moreover, the known-groups validity of the YPSQ was evaluated by comparing EAS between the community sample and psychiatric patients with Major Depressive Disorder (MDD).

Method

Participants

Community sample.

A sample of 1,418 individuals was recruited online from the general population in Germany. The inclusion criteria were age 18-75 years and fluency in German. An overview of demographic information (age, gender, and education) can be found in Table 1. Of the 1,418 participants, 597 (42%) were university students, 260 (18%) currently received some form of psychotherapy, and 661 (47%) received psychotherapy at some point in the past.

To ensure high data quality, instructed response items (i.e. “Please answer ‘Mostly true of me’ for this item”) were included approximately every 75 items in the online data collection to verify participants’ diligence in reading and answering the questions. A self-report item indicating whether data should be excluded due to insufficient attention or diligence was also included (Meade & Craig, 2012). From 2,268 individuals who started the questionnaire, a total of 850 participants were excluded because they did not meet inclusion criteria ($n = 37$), indicated that their data should not be further considered due to insufficient attention or diligence ($n = 24$), did not complete at least three out of four instructed response items (corresponding to 85% of included questionnaires; $n = 740$), or made at least one mistake in the instructed response items ($n = 49$).

Psychiatric patient sample.

A total sample of 182 psychiatric patients was obtained from in- and outpatient facilities as part of the OPTIMA-RCT (Kopf-Beck et al., 2020). An overview of demographic information (age, gender, and education) can be found in Table 1. The patient sample was recruited at the Max Planck Institute of Psychiatry (MPI-P) and München Klinik Schwabing. Patients were screened for inclusion and exclusion criteria during an obligatory clinical admission interview by a physician. All patients that were situated in wards and day-clinics participating in the OPTIMA-

RCT underwent this procedure and were able to participate if all criteria were being met. Participation was voluntary, subjects were thoroughly informed about the study and written informed consent was provided. The major inclusion criteria for participation were (i) age 18-75 years, (ii) psychiatric patient status, and (iii) fluency in German. The sample was additionally defined by a diagnosis of a moderate-to-severe form of depression by a trained clinician according to the ICD-10 and further exclusion criteria: (i) current MDD with psychotic symptoms, (ii) lifetime history of any bipolar or psychotic disorder, (iii) severe neurological or internal concomitant or past diseases, (iv) severe mutism or stupor, (v) present alcohol or illicit drug withdrawal syndrome, (vi) IQ below 80, (vii) a severe learning disability, (viii) brain damage or pervasive developmental disorder, (ix) acute suicidality, (x) mental disorders secondary to medical conditions, (xi) substance use disorders, (xii) or pregnancy and lactation period. For more detailed information regarding the recruitment of the psychiatric patient sample see Kopf-Beck et al. (2020).

The patient sample differed from the community sample in age (Welch Two Sample T-Test, $t = -12.94$, $df = 219.74$, $p < .001$, $d = 1.11$), gender ($\chi^2 = 51.75$, $df = 2$, $p < .001$, $d = .37$) and education ($\chi^2 = 46.85$, $df = 5$, $p < .001$, $d = .35$). A declaration of non-objection for the data collection via the online survey and ethical approval for patient recruitment was obtained from the ethics committee of the Ludwig Maximilians University Munich.

Insert Table 1 here

Instruments

Young Positive Schema Questionnaire (YPSQ).

A German translation of the original YPSQ (see Material A1 of the supplemental material) was created by the first two authors in cooperation with the MPI-P via a back-translation technique

(Brislin, 1980). Identical to the original version (Louis et al., 2018), the German YPSQ is a 56-item self-report measure of 14 EAS. Items (e.g. “I know I can depend on the people closest to me to always be there for me” (*Emotional Fulfillment*) or “I respect others wishes even when they are different from mine” (*Empathic Consideration*) are rated on a 6-point scale ranging from “*Completely untrue of me*” to “*Describes me perfectly*”. As outlined in the introduction, the original YPSQ has demonstrated satisfactory internal reliability, factorial, construct, and incremental validity in its introductory article by Louis et al. (2018).

Young Schema Questionnaire (YSQ-S3).

The YSQ-S3 (Young & Brown, 2005) is a self-report questionnaire that assesses the presence of 18 EMS (see Table A1 of the supplementary material) in the community sample and is scored on the same 6-point scale as the YPSQ. Examples of items are “No man/woman I desire could love me once he/she saw my defects” (*Defectiveness*) or “I feel that people will take advantage of me” (*Mistrust*). A German version of the YSQ-S3 has proven factorial validity in a German community sample and demonstrated positive associations to measures of psychopathology (a short-form of the Symptom Checklist 90-R and the Standardized Assessment of Personality - Abbreviated Scale; Kriston, Schäfer, Jacob, Härter, & Hölzel, 2013). In the present study, the mean internal reliability of EMS was high at $\alpha = .87$ (from .77 for *Punitiveness* to .94 for *Emotional Deprivation*) and $\omega_T = .87$ (from .77 for *Punitiveness* to .94 for *Emotional Deprivation*).

Brief Symptom Inventory (BSI).

To assess psychopathology in the community sample, the BSI was used (Derogatis & Melisaratos, 1983; Franke & Derogatis, 2000). The BSI consists of the nine subscales *somatization*, *obsessive-compulsive*, *interpersonal sensitivity*, *depression*, *anxiety*, *hostility*, *phobic anxiety*, *paranoid ideation*, and *psychoticism* with items such as “Feeling no interest in things” (*depression*) that are

rated on a 5-point scale from 0 “*not at all*” to 4 “*very strongly*” concerning the past seven days including today. The BSI is a widely used self-report measure and its German version has demonstrated high correlations with established clinical rating scales such as the Symptom Checklist 90-R (Geisheim et al., 2002). Average internal reliability of the nine subscales was $\alpha = .82$ (from .77 for *hostility* and *psychoticism* to .90 for *depression*) and $\omega_T = .82$ (from .78 for *hostility* to .90 for *depression*).

Brief Resilience Scale (BRS).

The Brief Resilience Scale (BRS; Smith et al., 2008) was employed to measure the resilience of participants in the community sample. It is included as a measure for convergent validity of EAS and as a clinically relevant outcome variable regarding the incremental validity of EAS beyond EMS. The German translation of the BRS has shown factorial validity and convergent validity to social support, optimism, and well-being, and adaptive coping strategies and divergent validity to psychopathology and maladaptive types of coping strategies (Chmitorz et al., 2018). Internal reliability was adequate in the current study ($\alpha = .86$; $\omega_T = .87$).

Short Scale for Measuring General Self-Efficacy Beliefs (ASKU).

As a measure of self-efficacy, the Short Scale for Measuring General Self-Efficacy Beliefs (*Allgemeine Selbstwirksamkeitskurzskala*; ASKU; Beierlein, Kovaleva, Kemper, & Rammstedt, 2014) was used in the community sample. Self-efficacy will be used for incremental and convergent validity of the YPSQ as a measure of EAS. The ASKU has demonstrated test re-test reliability and convergent validity to other measures of self-efficacy and, among others, measures of self-esteem and having an internal locus of control, optimism and satisfaction with life (Beierlein et al., 2014). Internal reliability in the current study was very high ($\alpha = .88$; $\omega_T = .88$).

Satisfaction with Life Scale (SWLS).

As self-report measure of life satisfaction, the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985; Glaesmer, Grande, Braehler, & Roth, 2011) was used to evaluate the convergent and incremental validity of the YPSQ. The German version of the SWLS has demonstrated its factorial validity and convergent validity to social support as well as divergent validity to depressiveness in the German general population (Glaesmer et al., 2011). Internal reliability was very high in the present study ($\alpha = .91$; $\omega_T = .91$).

Childhood Trauma Questionnaire (CTQ).

The Childhood Trauma Questionnaire (CTQ; Bernstein et al., 2003), was employed as a retrospective self-report assessment of traumatic childhood experiences to evaluate the divergent validity of the YPSQ. It was completed by 1415 participants of the community sample. A 28 item version was used for the analyses with German item translations taken from Gast, Rodewald, Benecke, & Driessen (2001). The CTQ has demonstrated satisfactory convergent validity to anxiousness and depressiveness as well as divergent validity to satisfaction with life when employed in a representative sample from the general population in Germany (Klinitzke, Romppel, Häuser, Brähler, & Glaesmer, 2012). The used CTQ sum-score had a very high internal reliability in the present study ($\alpha = .94$; $\omega_T = .95$).

Procedure

Data from the community was collected by distributing an online survey via social media, university websites, MPI-P websites, personal communication, and the Bachelor programme in Psychology of the Ludwig Maximilians University Munich. The survey took an average of 35-40 minutes to complete. The online survey was created via the platform *EFS survey* (Questback GmbH, 2018). Beside the assessment of demographic information, this battery included the

relevant self-report instruments for the present study. As an incentive, participants were given the chance to take part in a lottery and win one of five 50€ vouchers. The patient sample was referred by clinicians and, subsequently, screened for inclusion and exclusion criteria by trained research assistants at the MPI-P. Afterwards, participants received a tablet on which they were asked to fill in, among others, the YPSQ. These patients would start psychotherapy after having filled in the tablet-based self-report questionnaires.

Statistical Approach

Analyses were performed using *R* software (R Core Team, 2019). To investigate the factorial validity of the German version of the YPSQ, an Exploratory Factor Analysis (EFA) was conducted in one half of the community sample, followed by a Confirmatory Factor Analysis (CFA) in the second half of the community sample and the psychiatric patient sample.

First, the community sample was randomly split into two samples of $N = 709$ participants each (*R* package *caTools*; Tuszynski, 2021). Next, the appropriate number of factors to extract from the first half of the sample for EFA was determined via parallel analysis using principal axis factoring. The subsequent EFA was conducted in this sample with promax rotation and weighted least squares estimation (*R* package *psych*; Revelle, 2018). Factor selection was based on two criteria akin to Louis et al. (2018): (a) At least three loadings above .40 per factor and (b) no more than two loadings above .40 per item. In case more than five items were allocated to one schema a “Jackknife” approach was employed to reduce the number of items (Larwin & Harvey, 2012). In this procedure, a full model is estimated first and then one item is iteratively removed starting with the item with smallest regression weights. Theoretical considerations, in line with item allocation to meaningful constructs by Louis et al. (2018), were also taken into account during scale reduction and could lead to removal of an item. Items were only removed to the extent that

that the model correlated with the original model at $r \geq .95$ (Newcomb, Chou, Bentler, & Huba, 1988) and that each original factor continued to explain at least three observed variables.

Finally, two CFAs with the robust ordinal WLSMV estimator were conducted in the second half of the community sample and in the psychiatric patient sample to confirm the factorial validity of the EAS structure established in the previous step (*R* package *lavaan*; Rosseel, 2012). A model without adjustments or higher order factors was tested and the metric of each latent variable was determined by fixing their residual variances to 1. Model fit was evaluated according to the root mean squared error of approximation (RMSEA; $\leq .05$ = good fit; $\leq .08$ = acceptable fit), the standardized root mean squared residual (SRMR; $\leq .05$ = good fit; $\leq .08$ = acceptable fit), the comparative fit index (CFI; $\geq .95$ = good fit; $\geq .90$ = acceptable fit), and the Tucker-Lewis index (TLI; $\geq .95$ = good fit; $\geq .90$ = acceptable fit; Hu & Bentler, 1999; Schermelleh-Engel, Moosbrugger, & Müller, 2003). Regarding reliability of the YPSQ, Cronbach's alpha, omega total (ω_T ; index of the ratio of construct score variance to the total amount of variance; Sellbom & Tellegen, 2019) and corrected item-total correlations were reported for both samples (*R* packages *psych* and *MBESS*; Kelley, 2019; Revelle, 2018). Corrected item-total correlations were evaluated according to a recommended threshold of $r \geq .40$ (Kriston et al., 2013).

Divergent validity of the YPSQ in the community sample was assessed via Pearson correlations with EMS, childhood trauma, and psychopathology. Generally, correlations between EAS and EMS as separate but related constructs were expected to be negative and small to large depending on their thematic similarity, but should never exceed $|r| \geq .85$, since this would be more in line with EAS and EMS being polar opposites of one another (Awang, 2012; Clark & Watson, 1995). To test this more formally, Steiger's Z-tests were employed akin to Louis et al. (2018) to show that thematic EMS-EAS counterparts correlate significantly higher than EMS-EAS non-

counterparts (Steiger, 1980; *R* package *cocor*; Diedenhofen & Musch, 2015). A Bonferroni correction was applied due to the number of comparisons ($\alpha = .05/10 = .005$). Moreover, correlations between EAS and childhood trauma were expected to be negative and small to large. Convergent validity was assessed via correlations with satisfaction with life, self-efficacy, and resilience.

To evaluate the incremental validity of the YPSQ, a hierarchical multiple regression analysis was conducted with BSI subscales, the SWLS, the ASKU, and the BRS as outcome variables in the community sample. Predictor variables were entered in the following order: (1) age and gender, (2) all 18 subscales of the YSQ-S3, and (3) all subscales of the YPSQ. Significant differences and minimum increases of 2.25% (Hunsley & Meyer, 2003) between R^2_{adj} values of model 2 and 3 were used to evaluate the incremental validity.

Finally, to investigate the known-groups validity, EAS in individuals of the community sample were compared to those of psychiatric patients using Analysis of Covariance (ANCOVA) with age and gender as covariates. A Bonferroni correction was applied due to the number of comparisons ($\alpha = .05/10 = .005$).

Results

Factorial Validity

The number of factors determined to be extracted by Parallel Analysis was 12 in the first half of the community sample. Inspecting the EFA in this sample with 12 factors ($\chi^2 = 23297.30$, $df = 934$; RMSEA = .04; TLI = .918) resulted in the rejection of two factors, since less than three items loaded on them, and the removal of eight items that did not load on any factor ($> .40$; see Table B1 of the supplementary material). After this procedure one factor emerged to which 13 items were allocated. The Jackknife approach was employed and six items were removed in separate

steps due to having the lowest regression coefficient (items 21, 56, 19, 54, 14, 26, respectively; see Material A1 of the supplementary material). Deletion of the next item determined via regression coefficient led to a correlation below .95 with the original scale, which would be unacceptable. One item (item 27) was, however deleted in addition due to theoretical reasons (i.e. better alignment with original constructs), when inspecting the remaining items (correlation with original scale $r = .95$). The resulting factor contained 6 items thematically combining Self-Compassion and Realistic Expectations after this procedure. Thus, in the resulting questionnaire, 10 EAS were identified with 3 to 6 items each and 41 items in total (see Material A2 of the supplemental material): (1) *Emotional Openness* (EO), (2) *Emotional Fulfillment* (EF), (3) *Social Belonging* (SB), (4) *Stable Attachment* (SA), (5) *Success* (SU), (6) *Optimism* (OP), (7) *Healthy Self-Control* (HSC), (8) *Developed Self* (DS), (9) *Empathic Consideration* (EC), (10) *Self-Compassion and Realistic Expectations* (SC).

In the second half of the community sample, this YPSQ-structure exhibited an overall adequate model-fit ($\chi^2 = 1345.72$, $df = 734$, $p < .01$). RMSEA (= .034) and SRMR (= .038) indicated a good model-fit and the indices CFI (= .933) and TLI (= .925) were acceptable. Factor correlations between *Social Belonging* and *Emotional Fulfillment* ($r = .74$) as well as *Self-Compassion and Realistic Expectations* ($r = .73$), and between *Optimism* and *Emotional Fulfillment* ($r = .72$), *Developed Self* ($r = .71$) as well as *Self-Compassion and Realistic Expectations* ($r = .83$) were above .70, calling into question the distinctiveness of these factors. Specific factor loadings and factor correlations can be found in Tables B2 and B3 of the supplementary material.

In the psychiatric patient sample the model-fit was adequate ($\chi^2 = 856.91$, $df = 734$, $p < .01$). RMSEA (= .030) and CFI (= .952) indicated a good model-fit, while SRMR (= .057) and TLI

(= .946) were acceptable. Factor correlations between *Social Belonging* and *Emotional Openness* ($r = .75$) as well as *Emotional Fulfillment* ($r = .71$) were above .70. Specific factor loadings and factor correlations can be found in Tables B4 and B5 of the supplementary material.

Reliability

In the community sample, the average Cronbach's alpha of the 10 EAS was .83 and ranged between .70 for *Empathic Consideration* to .90 for *Social Belonging*. The average omega total was .83 with a range from .71 (*Empathic Consideration*) to .90 (*Social Belonging*). All corrected item-total correlations (item discriminations) were above the recommended threshold of .40. Results of the reliability analysis of the community sample can be found in Table B6 of the supplementary material.

In the Psychiatric Patient sample, the average Cronbach's alpha of the 10 EAS was .81 and ranged between .74 for *Developed Self* to .91 for *Success*. The average omega total was .82 with a range from .76 (*Emotional Fulfillment*) to .91 (*Success* and *Social Belonging*). All corrected item-total correlations (item discriminations) were above the recommended threshold of .40. Results of the reliability analysis can be found in Table B7 of the supplementary material.

Construct Validity

As expected, most EAS exhibited small to large negative correlations with respective EMS ranging from $r = .51$ for *Empathic Consideration* to $r = .75$ for *Emotional Openness*, *Success*, and *Healthy Self-Control* with their theorized counterpart. None of the correlations exceeded $|r| \geq .85$ (see Tables C1 and C2 of the supplementary material). Employing Steiger's Z-tests, construct validity was convincingly supported for all EAS except for *Self-Compassion and Realistic Expectation*, for which construct validity could not be established in relation to its originally proposed counterpart EMS *Punitiveness* (see Tables C3 to C12 of the supplementary material). As expected,

all correlations between the 10 EAS and childhood trauma as well as psychopathology (subscales and global severity) were negative and significant (ranging between $r = -.17$ to $r = -.61$ and $r = -.19$ to $r = -.69$, respectively; see Tables C13 and C14 of the supplementary material).

With regard to convergent validity, correlations were all positive and consistently significant. For resilience correlations ranged from .23 for *Emotional Openness* and *Empathic Consideration* to .59 for *Optimism*. For self-efficacy, associations ranged from .23 for *Empathic Consideration* to .60 for *Success*. For satisfaction with life, correlations ranged from .26 for *Empathic Consideration* to .67 for *Optimism*. Detailed results regarding convergent validity of the 10 EAS to positive constructs (resilience, self-efficacy, and satisfaction with life) can be found in supplementary Table C15.

Incremental Validity

Adding EAS to a model containing gender, age and all EMS increased explained variance above the criterion of 2.25% for all positive constructs (satisfaction with life, 5.3%; resilience, 4.1%; self-efficacy, 4.6%; see Table 2) and for the symptomatology-subscale Hostility (2.4%). Although adding a significant proportion of explained variance, the rate fell below the threshold for global severity of psychopathology and all remaining subscales (Global Severity Index, 1.5%; Somatization, 2.1%; Obsessive-Compulsive, 0.6%; Interpersonal Sensitivity, 1.9%; Depression, 1.8%; Anxiety, 2.0%; Phobic Anxiety, 0.8%; Paranoid Ideation, 0.8%; and Psychoticism, 0.8%; see Table 2).

Insert Table 2 here

Known-Groups Validity

Individuals in the community sample exhibited significantly higher scores compared to the psychiatric patients on all EAS, except for the EAS *Empathic Consideration* (see Table 3). The greatest differences were observed for the schemas *Success*, *Optimism*, and *Healthy Self-Control*.

Insert Table 3 here

Discussion

The German translation of the YPSQ as an assessment instrument for positive schemas has demonstrated satisfactory psychometric properties with regard to most aspects of reliability and validity. However, only 10 EAS instead of the original 14 were identified in the present study. All of these EAS except for *Empathic Consideration* were found to be weaker in psychiatric patients, demonstrating known-groups validity and clinical relevance. However, elements of construct validity and incremental validity did not fully concur with expectations. Nevertheless, complementary to the YSQ, the YPSQ was shown to improve the ability to explain factors of clinical relevance such as resilience, satisfaction with life, and self-efficacy. Taken together with findings of Louis et al. (2018), it can be concluded that the YPSQ has the potential to be a valuable assessment instrument in clinical settings as an addition to the YSQ or on its own. Just as the YSQ is routinely implemented for dysfunctional schemas, the YPSQ can be used for a targeted development of adaptive schemas by enabling their systematic assessment before and during the course of treatment. Additionally, the YPSQ can be utilized as a source for potential strengths of a patient, on which the treatment strategy within ST could be based comparable to the promising capitalization approach in Cognitive Behavioral Therapy (Cheavens et al., 2012). EAS could also

be valuable in predicting treatment outcome, as has been investigated for EMS (Haaland et al., 2011), and in a second step as a factor for personalized treatment selection (DeRubeis et al., 2014).

The aim of the present study was the psychometric evaluation of a German translation of the YPSQ. Instead of the 14 EAS of the original YPSQ, 10 EAS exhibited factorial validity for this German version and the YPSQ was consequently shortened from 56 to 41 items. Eight EAS were conceptually fully retained: *Emotional Openness*, *Emotional Fulfillment* (-1 item), *Social Belonging* (-1 item), *Stable Attachment* (-1 item), *Success*, *Optimism* (-1 item), *Healthy Self-Control*, and *Empathic Consideration*. One EAS consisting of two items from the original-EAS *Healthy Boundaries/Developed Self* and one item from the original-EAS *Healthy Self-Reliance/Competence* was labelled *Developed Self*. Finally, one EAS consisted mainly of items from the original-EAS *Self-Compassion* and *Realistic Expectations* (with one additional item from *Healthy Self-Interest*) and was therefore labelled *Self-Compassion and Realistic Expectations*. No element of the original-EAS *Self-Directedness* was retained. The 10 EAS exhibited satisfactory internal consistencies and acceptable to good factorial validity in the community sample and in the psychiatric patient sample on all evaluated model-fit indices. Across both samples solely the EAS *Social Belonging* and *Emotional Fulfillment* exhibited correlations that high that their distinctness could be questioned. Future adaptation to the questionnaire could, therefore, aim to strengthen the distinguishability of these factors.

Expectations regarding the construct validity of the YPSQ were largely met. Divergent validity to EMS, childhood trauma and psychopathology mainly complied with expectations. Only the EAS *Self-Compassion and Realistic Expectations* did not demonstrate construct validity as a counterpart to the EMS *Punitiveness* and was instead considerably related to multiple EMS. This is not surprising since the EAS *Self-Compassion and Realistic Expectations* encompasses multiple

facets mirrored by EMS such as *Unrelenting Standards* or *Self-Sacrifice*. Moreover, no difference was found between patients and the community sample on the EAS *Empathic Consideration*. Nevertheless, its utility could unfold in samples characterized by specific types of disorders or settings (e.g. forensic), considering for example the association between *Empathic Consideration* and hostility. Convergent validity of EAS was convincingly demonstrated to measures of resilience, self-efficacy and satisfaction with life.

The YPSQ exhibited incremental validity above what is explained by EMS, gender and age for resilience, self-efficacy, satisfaction with life, and psychopathology. While the added value to explaining positive outcomes was striking, it was less convincing with regards to facets of psychopathology. The additional explained variance fell below the set threshold for all types of psychopathology except for hostility and was comparably low for phobic anxiety, paranoid ideation, psychoticism, and obsessive-compulsive, while it was higher for somatization, anxiety, interpersonal sensitivity, and depression. Louis et al. (2018), found more convincing support for the added explained variance through EAS for depression, anxiety and stress. Thus, the incremental validity of the YPSQ requires further evaluation, especially with regards to measures of psychopathology. It is also crucial that future studies evaluate the added contribution of the YPSQ beyond the YSQ in relation to clinician/informant rated measures and with regard to relevant outcomes within treatment (e.g. symptom reduction and increases in quality of life).

In a clinical context, the YPSQ showed potential utility for balancing the focus on reducing the negative (EMS) with increasing positive constructs (EAS). EAS could prove to be valuable in clinical practice for the determination of treatment goals and for systematically evaluating whether they have been met. Its unique relation to desirable outcomes such as resilience and satisfaction with life underscore its relevance for practical use. The different single EAS were also shown to

be related to psychopathology in varying degrees depending on the type of pathology. Therefore, in the future, the profile of EAS for patients might give an indication on possible symptomatology and useful targets for treatment.

Limitations

This study has multiple important limitations. Particularly relevant in the context of incremental and construct validity is the differing reference timeframe between the YPSQ and the YSQ-S3. While items of the YPSQ concern the past year, items of the YSQ-S3 concern the past month. Although schemas are considered to be relatively stable constructs (Riso et al., 2006; Young et al., 2003), it cannot be ruled out that incrementally explained variance by EAS simply reflects a difference between the timeframes in question. This varying timeframe might also have distorted the correlations between EAS and EMS, which were important for an inference of construct validity. Therefore, the timeframe of the YPSQ could be adjusted in future studies in order to match that of the YSQ-S3.

The patient sample of the present study consisted of psychiatric inpatients with a primary diagnosis of depression. Since a number of negative schemas are relevant in specific personality disorders (Lobbestael & Arntz, 2012), it can be speculated that results might differ in a sample focused on personality pathology. Features of the Psychiatric Patient sample might, thus, limit the generalizability of results to other patient populations.

Lastly, concurrent measures were exclusively based on self-report ratings, potentially involving a risk for artificially high correlations among measures due to mono-method bias (Campbell & Fiske, 1959). Therefore, the YPSQ needs to be evaluated in relation to clinician/informant rated assessments.

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Declaration of Interest

No potential competing interest was reported by the authors.

Data Availability Statement

Data available on request from the authors

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Table 1. Sample demographics.

	CO	PP
<i>N</i>	1418	182
Mean Age (<i>SD</i> ; Range)	30.08 (11.51; 18-75)	43.04 (12.87; 19-73)
Female	1118 (79 %)	102 (56 %)
Male	288 (20 %)	80 (44 %)
<u>Schooling Qualification</u>		
High	1077 (80 %)	84 (46 %)
Medium	227 (16 %)	32 (18 %)
Low	75 (5 %)	23 (13 %)
None	11 (1 %)	6 (3 %)

Note. CO = Community; PP = Psychiatric Patients. Schooling Qualification Low = ‚Hauptschulabschluss‘; Medium = ‚Realschulabschluss‘; High = ‚Fachhochschulabschluss‘ or ‚Abitur‘

Table 2. Hierarchical regression in the community sample

Regression Model	R^2	ΔR^2	$\Delta F (df)$
SWLS - Satisfaction with Life			
Step 1: Gender, Age	<.001	-.001	0.347 (2,1415)
Step 2: All EMS	.548	.547***	105.910 (18,1397)
Step 3: All EAS	.601	.053***	18.473 (10,1387)
BRS – Resilience			
Step 1: Gender, Age	.026	.025***	18.930 (2,1415)
Step 2: All EMS	.454	.428***	65.219 (18,1397)
Step 3: All EAS	.495	.041***	11.316 (10,1387)
ASKU – Self-Efficacy			
Step 1: Gender, Age	.019	.018***	13.810 (2,1415)
Step 2: All EMS	.529	.510***	92.537 (18,1397)
Step 3: All EAS	.575	.046***	15.131 (10,1387)
BSI – Global Severity Index			
Step 1: Gender, Age	.014	.012***	9.963 (2,1415)
Step 2: All EMS	.686	.672***	173.229 (18,1397)
Step 3: All EAS	.701	.015***	7.246 (10,1387)
BSI – Somatization			
Step 1: Gender, Age	.012	.010***	8.268 (2,1415)
Step 2: All EMS	.354	.342***	42.288 (18,1397)
Step 3: All EAS	.375	.021***	4.635 (10,1387)
BSI – Obsessive-Compulsive			
Step 1: Gender, Age	.021	.020***	15.400 (2,1415)
Step 2: All EMS	.529	.508***	84.094 (18,1397)
Step 3: All EAS	.535	.006*	1.975 (10,1387)
BSI – Interpersonal Sensitivity			
Step 1: Gender, Age	.031	.029***	22.270 (2,1415)
Step 2: All EMS	.602	.571***	116.097 (18,1397)
Step 3: All EAS	.621	.019***	7.105 (10,1387)
BSI – Depression			
Step 1: Gender, Age	.010	.008**	6.914 (2,1415)
Step 2: All EMS	.639	.629***	141.336 (18,1397)
Step 3: All EAS	.657	.018***	7.482 (10,1387)
BSI – Anxiety			
Step 1: Gender, Age	.014	.013***	10.100 (2,1415)
Step 2: All EMS	.419	.405***	55.657 (18,1397)
Step 3: All EAS	.439	.020***	4.915 (10,1387)
BSI – Hostility			
Step 1: Gender, Age	.006	.005*	4.293 (2,1415)
Step 2: All EMS	.418	.412***	56.925 (18,1397)
Step 3: All EAS	.442	.024***	6.030 (10,1387)
BSI – Phobic Anxiety			
Step 1: Gender, Age	.006	.005*	4.256 (2,1415)
Step 2: All EMS	.426	.420***	57.117 (18,1397)
Step 3: All EAS	.434	.008*	1.893 (10,1387)
BSI – Paranoid Ideation			
Step 1: Gender, Age	.001	<-.001	0.768 (2,1415)
Step 2: All EMS	.610	.609***	122.693 (18,1397)
Step 3: All EAS	.618	.008**	2.655 (10,1387)
BSI – Psychoticism			
Step 1: Gender, Age	.013	.012***	9.577 (2,1415)
Step 2: All EMS	.641	.628***	137.665 (18,1397)
Step 3: All EAS	.649	.008***	3.170 (10,1387)

Note. * $p \leq .05$; ** $p < .01$; *** $p < .001$. Adjusted R^2 of Step 1 is compared to baseline model, while those of Steps 2 & 3 are compared to the preceding model, respectively. SWLS = Satisfaction with Life Scale; BRS = Brief Resilience Scale; ASKU = Allgemeine Selbstwirksamkeitskurzskala; BSI = Brief Symptom Inventory

Table 3. EAS Comparison between the community sample and psychiatric patients

Positive Schema	CO mean (SD)	PP mean (SD)	<i>F</i>	<i>df</i>	<i>p</i>	η^2
Emotional Openness	4.23 (1.23)	4.07 (1.29)	6.79	1596	<.001*	.004
Emotional Fulfillment	4.32 (1.26)	3.90 (1.15)	12.83	1596	<.001*	.008
Social Belonging	4.04 (1.24)	3.59 (1.28)	29.02	1596	<.001*	.018
Stable Attachment	3.89 (1.30)	3.59 (1.29)	23.61	1596	<.001*	.015
Success	4.65 (1.02)	3.77 (1.29)	107.60	1596	<.001*	.063
Optimism	4.04 (1.27)	3.27 (1.19)	68.08	1596	<.001*	.041
Healthy Self-Control	4.15 (1.03)	3.62 (1.16)	67.31	1596	<.001*	.040
Developed Self	4.71 (1.16)	4.10 (1.33)	54.57	1596	<.001*	.033
Empathic Consideration	4.39 (0.88)	4.36 (1.00)	0.53	1596	.47	<.001
Self-Compassion and Realistic Expectations	4.18 (1.14)	3.67 (1.04)	54.35	1596	<.001*	.033

Note. ANCOVA controlled for age and gender. CO = Community; PP = Psychiatric Patients. * $p < .005$ (Bonferroni correction)