Ingo Jacobs | Anna Wollny | Juliana Seidler | Germar Wochatz

A trait emotional intelligence perspective on schema modes

Suggested citation referring to the original publication:
Scandinavian Journal of Psychology 62 (2020) 2, pp. 227 - 236
DOI: https://doi.org/10.1111/sjop.12670
ISSN: 0036-5564, 1467-9450

Journal article | Version of record

Secondary publication archived on the Publication Server of the University of Potsdam:
Zweitveröffentlichungen der Universität Potsdam : Humanwissenschaftliche Reihe 858
ISSN: 1866-8364
URN: https://nbn-resolving.org/urn:nbn:de:kobv:517-opus4-541857
DOI: https://doi.org/10.25932/publishup-54185

Scandinavian Journal of Psychology, 2021, 62, 227–236 DOI: 10.1111/sjop.12670

Personality and Social Psychology

A trait emotional intelligence perspective on schema modes

INGO JACOBS,[1,2] ANNA WOLLNY[3] JULIANA SEIDLER[4] and GERMAR WOCHATZ[5]

[1]*Medical School Berlin, Germany*
[2]*Sigmund Freud University, Berlin, Germany*
[3]*University of Potsdam, Germany*
[4]*Gesellschaft fuer berufliche Aus- und Weiterbildung, Potsdam, Germany*
[5]*Heinrich-Heine-Klinik Potsdam, Germany*

Jacobs, I., Wollny, A., Seidler, J. & Wochatz, G. (2021). A trait emotional intelligence perspective on schema modes. *Scandinavian Journal of Psychology, 62,* 227–236.

Schema modes (or *modes*) are a key concept in the theory underlying schema therapy. Modes have rarely been related to established models of personality traits. The present study thus investigates the associations between trait emotional intelligence (*TEI*) and 14 modes, and tests a global TEI–mode factors–general psychological distress mediation model. The study draws on self-report data from 173 inpatients from a German clinic for psychosomatic medicine. Global TEI correlated positively with both healthy modes (happy child and healthy adult) and negatively with 10 maladaptive modes. When modes were regressed on the four TEI factors, six (emotionality), five (well-being), four (sociability), and four (self-control) significant partial effects on 10 modes emerged. In the parallel mediation model, the mode factors internalization and compulsivity fully mediated the global TEI–general psychological distress link. Implications of the results for the integration of modes with traits in general and with TEI in particular as well as implications of low TEI as a transdiagnostic feature of personality malfunctioning are discussed.

Key words: Externalization, internalization, level of personality functioning, mentalization, psychological distress, schema modes, trait emotional intelligence.

Anna Wollny, University of Potsdam, Germany. E-mail: awollny@uni-potsdam.de

INTRODUCTION

Schema therapy (*ST*) is an effective treatment for patients with personality disorders (*PD*s) and other chronic emotional disorders (e.g., Jacob & Arntz, 2013; Taylor, Bee & Haddock, 2017). The theory underlying ST rests on three core concepts: early maladaptive schemas, schema coping, and schema modes. Early maladaptive schemas (here simply referred to as *schemas*) comprise dysfunctional beliefs regarding oneself, other people, and the world, and emotional and behavioral-procedural information (Young, Klosko & Weishaar, 2003). When a schema is triggered, associated negative emotions ensue. To handle schema-induced distress, an individual may utilize schema coping (i.e., surrendering to the schema, avoiding schema activation, or acting contrary to what the schema evokes), which ultimately reinforces the schema (Young *et al*., 2003). Activated schemas, associated affect, and the schema coping response give rise to emotional, behavioral, and cognitive self-states called maladaptive schema modes (or *modes;* Young *et al*., 2003). Maladaptive modes reflect state-like features of personality pathology, which mediate between schemas and psychopathological problems (van Wijk-Herbrink, Bernstein, Broers, Roelofs, Rijkeboer & Arntz, 2018). The mode model is compatible with recently suggested alternative models of PDs (Bach & Bernstein, 2019). However, modes have rarely been linked to established personality traits, which hampers the integration of the mode model with the literature on individual differences. The present study thus aims to investigate the relationships between modes and a well-known personality trait, trait emotional intelligence (*TEI*; Petrides, 2009), and to test a global TEI–mode factors–general psychological distress mediation model.

The present study draws on a set of 14 accepted modes (descriptions in Roediger, Stevens & Brockman, 2018): The five *maladaptive child modes* (vulnerable, undisciplined, impulsive, enraged, and angry child) are characterized by momentary regressions to childlike affective or behavioral states that occur in response to patients' unmet psychological needs and emotionally threatening experiences. In the vulnerable child mode, for example, patients feel worthless, abandoned, empty, unloved, and they believe that nobody will fulfill their needs. When basic psychological needs are met in an adequate way, patients likely feel satisfied, loved, safe, validated, and competent, and they may behave with curiosity and playfulness. This healthy mode is called the *happy child mode*. The two *maladaptive parent modes* reflect internalized adverse behaviors and toxic messages from significant others (e.g., parents, authorities, and peers) toward the patient as a child. When in a parent mode, patients either act auto-aggressively, overly self-critical and unforgiving (punitive parent), or they adhere to unrelenting standards, comply rigidly with norms, and take too much responsibility for others (demanding parent). The five *maladaptive coping modes* comprise the compliant surrender mode, avoidant modes (detached protector and detached self-soother), and overcompensation modes (self-aggrandizer, bully, and attack). For example, the detached self-soother mode disconnects patients from their emotions by engaging in self-soothing, distracting, or stimulating activities such as sleeping, overeating, substance abuse, workaholism, or gambling. Finally, the integrative *healthy adult mode* nurtures, validates, and regulates child modes, reappraises dysfunctional

beliefs of parent modes, and modulates maladaptive coping modes (Young *et al*., 2003). It comprises adequate thoughts and feelings about oneself, which facilitate adaptive problem solving, self-control, adequate emotional expression, self-assertion, self-care, healthy activities, positive relationships, and a good sense of identity (Roediger *et al*., 2018). The healthy adult mode can thus be seen as a core feature of healthy personality functioning (Bach & Bernstein, 2019).

The Schema Mode Inventory (SMI; Lobbestael, van Vreeswijk, Spinhoven, Schouten & Arntz, 2010) provides a reliable and valid assessment of these 14 modes. Given that respondents are usually in a neutral state when they complete self-reports, asking for modes present during measurement may fail to capture their relevant modes. The SMI therefore asks for the general manifestation frequency of modes, which provides a more adequate and informative reflection of respondents' personality pathology but also alters the state-like into a more trait-like mode concept (Lobbestael, 2012). In this study, we adhere to this trait-like perspective on modes.

In adults, modes fall on three higher-order factors (Jacobs, Lenz, Wollny & Horsch, 2020): *internalization* (marker: e.g., low healthy adult, vulnerable child, and compliant surrender), *externalization* (marker: e.g., bully and attack, impulsive, and enraged child), and *compulsivity* (marker: e.g., demanding parent and detached self-soother). These three factors resemble, at least in part, the higher-order dimensions of maladaptive traits (cf. Krueger & Markon, 2014).

When modes are measured with the SMI, modes separate non-clinical from clinical subjects (e.g., Lobbestael *et al*., 2010; Reiss, Dominiak, Harris, Knörnschild, Schouten & Jacob, 2012; Reiss, Krampen, Christoffersen & Bach, 2016). They are related to maladaptive traits (e.g., Bach, Lee, Mortensen & Simonsen, 2016), PD symptoms (e.g., Bamelis, Renner, Heidkamp & Arntz, 2011; Jacobs, Lenz, Dörner & Wegener, 2019; Lobbestael, van Vreeswijk & Arntz, 2008), personality dysfunction (e.g., Bach & Anderson, 2020; Bach & Hutsebaut, 2018), and psychological distress (e.g., Reiss *et al*., 2016) in conceptually coherent ways. To date, relatively few studies have examined the relations between modes and widely accepted personality traits (e.g., Jacobs *et al*., 2020; Lobbestael *et al*., 2010).

Trait emotional intelligence (*TEI*) refers to a constellation of emotion-related dispositions, that forms a distinct factor in personality space, which is partially determined by basic trait factors, and is located at lower levels of trait hierarchies (Petrides, Pita & Kokkinaki, 2007). TEI covers people's trait emotional self-efficacies of how they experience and utilize affect-laden information of an intra- and interpersonal nature. These self-efficacies reflect, at least in part, people's actual socio-emotional effectiveness (e.g., Peña-Sarrionandia, Mikolajczak & Gross, 2015). TEI is distinct from ability EI, which concerns cognitive-emotional abilities related to perceiving, utilizing, understanding, and managing emotions that are operationalized through maximum-performance tests and are only weakly related to self-report measures of TEI (Petrides, 2009).

The TEI sampling domain comprises 15 TEI facets, of which 13 TEI facets fall under four TEI factors (Petrides, 2009): *self-control* (facets: emotion regulation, low impulsiveness, and stress management); *emotionality* (facets: trait empathy, emotion perception, emotion expression, and relationships); *sociability* (facets: assertiveness, emotion management, and social awareness); and *well-being* (facets: optimism, self-esteem, and trait happiness). These four factors and the TEI facets adaptability and self-motivation are, in turn, located under a global TEI factor (e.g., Jacobs, Sim & Zimmermann, 2015; Petrides, 2009).

TEI relates positively to adaptive emotion regulation (e.g., Peña-Sarrionandia *et al*., 2015), socio-emotional adjustment (e.g., Frederickson, Petrides & Simmonds, 2012; Malouff, Schutte & Thorsteinsson, 2014), subjective well-being (e.g., Sánchez-Álvarez, Extremera & Fernández-Berrocal, 2016), and various health outcomes (e.g., Martins, Ramalho & Morin, 2010). Low TEI is also a common feature of maladaptive personality styles: TEI is negatively related to almost all PDs described in the DSM-5 Section II (APA, 2013; e.g., Krajniak, Pievsky, Eisen & McGrath, 2018; Martskvishvili & Mestvirishvili, 2014; Petrides, Pérez-González & Furnham, 2007; Sinclair & Feigenbaum, 2012) and to narcissistic vulnerability (Vonk, Zeigler-Hill, Mayhew & Mercer, 2013). These findings imply that global TEI might be relevant for the general manifestation frequency of modes as well. This assumption can be bolstered by two lines of reasoning.

First, schemas and schema coping give rise to maladaptive modes (van Wijk-Herbrink *et al*., 2018). In the formation of schemas, the child's temperament interacts with adverse experiences with significant others (Young *et al*., 2003). Temperamental factors are, in turn, akin to personality factors (Rothbart, 2007), which are fairly stable over time (Roberts & DelVecchio, 2000). Schemas can thus be regarded as characteristic adaptations to personality traits (cf. McAdams & Pals, 2006), which is consistent with conceptually coherent correlations between TEI and schema scores (Ke & Barlas, 2020) and irrational emotional beliefs (Petrides, Gómez & Pérez-González, 2017). The general manifestation frequency of modes may thus reflect characteristic adaptations to traits as well. In fact, modes correlate in theoretically meaningful ways with temperamental traits (Lobbestael *et al*., 2010), the Big-Five trait factors (Jacobs *et al*., 2020), and maladaptive traits (Bach *et al*., 2016). It therefore seems warranted to assume that global TEI will relate negatively to maladaptive modes and positively to healthy modes.

Second, criterion A of DSM-5's Alternative Model for PDs (AMPD; APA, 2013) regards moderate or more severe impairments in the level of personality functioning (LPF) as a prerequisite for all PDs. Criterion A is operationalized via the LPF scale (LPFS; Bender, Morey & Skodol, 2011), which refers to disturbances in self-functioning (domains: self-direction and identity) and interpersonal functioning (domains: intimacy and empathy). The LPFS builds, among others, on mentalization as a hallmark of personality functioning. Mentalization has been defined as the capacity to understand ourselves and others in terms of mental states such as needs, feelings, beliefs, and intentions (e.g., Fonagy, Luyten, Allison & Campbell, 2017). The shared mental representations of self and others, and the self-reflective and interpersonal aspects give rise to substantial associations between mentalization and all LPFS domains (Zettl, Volkert, Vögele, Herpertz, Kubera & Taubner, 2020). Mentalization is also akin to emotional intelligence (Allen, 2006).

Its overlap with the TEI domain is obvious for, but not limited to, TEI facets falling under emotionality and self-control. Dimitrijević, Hanak, Dimitrijević and Marjanović (2018) accordingly found moderate to strong correlations between self-perceived mentalization and all TEI factors (*r*s = 0.45 to 0.67). This implies a closes nexus between the LPF domains and the TEI domain, too. For example, identity (facets: experience of oneself as unique and with clear boundaries, emotions, and self-esteem) overlaps, in part, with the TEI facets of emotion regulation, self-esteem, and stress management, whereas empathy (facets: understanding others, perspectives, and impact) overlaps partially with the TEI facets of emotion perception and trait empathy. Low global TEI then reflects more compromised self-efficacies related to the way one perceives and regulates oneself and relates to others (Malouff *et al*., 2014; Peña-Sarrionandia *et al*., 2015), and hence more severe personality pathology.

Empirically, the general factor of personality (GFP) converges with global TEI ($r = 0.85$; van der Linden, Pekaar, Bakker, Schermer, Vernon & Petrides, 2017) and with the general factor of personality disorders (g-PD; $r = -0.82$ to -0.90; Oltmanns et al., 2018). The g-PD captures the common variance of maladaptive traits or PD symptoms and reflects PD severity (Hopwood, Malone, Ansell *et al*., 2011). Global TEI and the GFP are thus close neighbors on a continuum opposite to the g-PD, and reversed global TEI thus indicates PD severity. Recently, Fonagy *et al*. (2017) suggested that deficient mentalizing disrupts epistemic trust (i.e., trust in the authenticity and personal relevance of interpersonally transmitted knowledge) and impair appraisal mechanisms. This gives rise to a vulnerability to psychopathology (or absence of resilience), which underlies all PDs and is reflected in higher scores on the g-PD factor. Being more vulnerable to the impact of others becomes evident in mode flipping (i.e., more rapid and more frequent shifts of maladaptive modes), which is experienced as a less coherent self (e.g., Roediger *et al*., 2018). In line with this reasoning, indices for personality malfunctioning, PD severity, and the g-PD correlate positively with maladaptive modes and negatively with healthy modes (Bach & Anderson, 2020; Bach & Hutsebaut, 2018). Taken together, the first hypothesis states that global TEI will correlate negatively with maladaptive modes and positively with healthy modes (Hypothesis 1).

Moreover, it has been suggested that the TEI factors of emotionality and sociability rarely predict incremental variance in construct-relevant criteria beyond well-being and self-control (e.g., Andrei, Siegling, Aloe, Baldaro & Petrides, 2016; Siegling, Vesely, Petrides & Saklofske, 2015). Sociability and emotionality might thus impair the incremental validity of global TEI. To further examine the incremental validity of the TEI factors, the partial effects of TEI factors on modes will be investigated on an exploratory basis (explorative research question).

Global TEI relates positively to health outcomes (e.g., Hansen, Lloyd & Stough, 2009; Martins *et al*., 2010), and various mechanisms have been identified that may mediate this association (e.g., Sarrionandia & Mikolajczak, 2019). To date, modes have not been considered as mediators in this context. More frequent manifestations of maladaptive modes and rarer manifestations of healthy modes are related to greater psychological distress (e.g., Reiss *et al*., 2016) and to chronic emotional disorders (e.g., Jacob & Arntz, 2013). To the extent that global TEI relates negatively to maladaptive modes and positively to healthy modes, which are in turn linked to mental health, the global TEI–general psychological distress association is hypothesized to be mediated via modes (Hypothesis 2). To test for mediation more parsimoniously, we will test parallel mediation via the mode factor scores of internalization, externalization, and compulsivity (see Fig. 1). To prevent artificial results due to potential content overlap between child modes and general psychological distress, the mediation analysis will be recalculated with all child modes discarded from the mode factor model.

METHOD

Participants and procedure

The sample was recruited at an inpatient unit of a German clinic for psychosomatic medicine. During the first week of hospitalization, patients were invited by the staff to voluntarily participate in a study on personality and mental health, and they received an information sheet. After written informed consent was obtained, participants completed a series of paper-and-pencil questionnaires including, among other items, the assessment of TEI and modes. Psychological distress was measured separately during the clinic's standard computer-based assessment at admission. Patients received no compensation for participation. This study was approved by the institutional review board of the University of Potsdam, Germany.

In total, 173 inpatients voluntarily participated ($n = 130$ females, 75.1%, and $n = 43$ males, 24.9%; age: $M = 49.14$ years, $SD = 8.54$). According to the ICD-10 diagnoses documented in the clinicians' case records, 97 patients received one, 57 patients received two, and 18 patients received three or four diagnoses from ICD-10 chapter V (one patient received only two diagnoses from chapter VII). The F-diagnoses were affective disorders (F31−F34, $n = 136$, 78.6%), somatoform disorders (F45; $n = 46$, 26.6%), reaction to severe stress and adjustment disorders (F43; $n = 24$, 13.9%), anxiety disorders (F40−F41; $n = 20$, 11.6%), mental and behavioral disorders due to psychoactive substance abuse (F10−F17; $n = 14$, 8.1%), disorders of adult personality and behavior (F60−F64, $n = 13$, 7.5%), and other disorders ($n = 13$, 7.5%). Given that PD diagnoses are less frequent in unstructured clinical evaluations (Zimmerman, Rothschild & Chelminski, 2005), the low prevalence rate of PD diagnoses observed in the current sample likely underestimates the actual prevalence rate of PDs.

Materials

Trait Emotional Intelligence Questionnaire-Short Form (TEIQue-SF; Petrides, 2009). The TEIQue-SF provides an assessment of global TEI and a rough assessment of the four TEI factors of emotionality, sociability, self-control, and well-being. Each of the 30 items was rated on a seven-point scale (1 = *completely disagree* to 7 = *completely agree*). Prior research demonstrated the reliability and validity of the German TEIQue-SF (e.g., Jacobs *et al*., 2015; Jacobs, Wollny, Sim & Horsch, 2016). However, in the present sample, the item-total correlation of item 23 ("I often pause and think about my feelings") was negative for emotionality, $r = -0.29$, $p < 0.001$, and global TEI, $r = -0.30$, $p < 0.001$, suggesting that this item might reflect ruminative thinking about one's feelings. Poor psychometric properties of item 23 were also found in an analysis using item response theory (Cooper & Petrides, 2010). Item 23 was therefore omitted, leaving 29 items for the global TEI score and seven items for the emotionality score. Except for self-control, $\alpha = 0.41$, all TEI variables reached acceptable levels of Cronbach's α (see Table 1). However, coefficient omega total suggested a just acceptable proportion of the total common variance in the self-

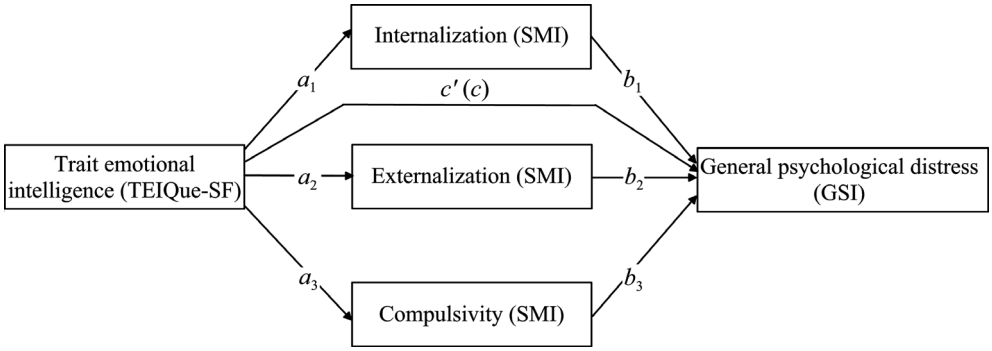

Fig. 1. Schematic depiction of the global TEI–mode factor scores–general psychological distress mediation model.

Table 1. *Descriptive statistics, Cronbach's alpha, and item-level missing data rates*

	M	*SD*	α	Missing responses
Trait Emotional Intelligence Questionnaire – Short Form (TEIQue-SF)				
Global TEI[a]	4.53	0.80	0.88	27 (0.54%)
Well-being	4.64	1.25	0.83	7 (0.67%)
Self-control	4.29	0.88	0.41	6 (0.58%)
Sociability	4.18	0.96	0.62	4 (0.39%)
Emotionality[a]	4.84	0.98	0.64	8 (0.66%)
Schema Mode Inventory (SMI)				
Vulnerable child	2.63	1.04	0.93	5 (0.29%)
Angry child	2.68	0.79	0.80	52 (3.01%)
Enraged child	1.31	0.54	0.88	5 (0.32%)
Impulsive child	2.40	0.73	0.75	49 (3.54%)
Undisciplined child[b]	2.48	0.84	0.60	7 (1.01%)
Punitive parent	1.98	0.75	0.85	29 (1.68%)
Demanding parent	3.64	0.98	0.82	7 (0.58%)
Compliant surrender	3.16	0.84	0.79	2 (0.17%)
Detached protector	2.39	0.81	0.84	54 (3.47%)
Detached self-soother	3.29	0.95	0.62	4 (0.58%)
Self-aggrandizer	2.46	0.65	0.72	53 (3.06%)
Bully and attack	1.78	0.52	0.68	13 (0.83%)
Happy child	3.58	0.85	0.86	10 (0.58%)
Healthy adult	4.20	0.74	0.79	55 (3.18%)
General psychological distress (GSI, SCL-90R)	1.08	0.58	0.97	0 (0.00%)

Note: [a]TEIQue-SF item 23 removed.
[b]SMI item 21 removed. Estimates for *M*, *SD*, and α are calculated with available item analysis (Parent, 2013).

control subscale, $\varpi_{total} = 0.57$. The self-control score was therefore retained.

Schema Mode Inventory (*SMI*; Lobbestael *et al*., 2010). The SMI is an established self-report inventory designed to assess the manifestation frequency of 14 modes. Using a six-point scale (1 = *never or hardly never* to 6 = *always*), respondents indicated on 118 items how often mode-specific cognitions, feelings, behaviors, and impulsions applied to them in general. The psychometric properties of the German SMI have been shown in Reiss *et al*. (2012) and, for a subset of 13 subscales, in Jacobs *et al*. (2020). In the present sample, α ranged from α = 0.47 (undisciplined child) to α = 0.93 (vulnerable child; see Table 1). The undisciplined child subscale included one malperforming item (item 21: "I don't discipline myself to complete routine or boring tasks."; item-total correlation: $r = -0.05$), which performed poorly in Jacobs *et al*. (2020) as well. We followed Jacobs *et al*. (2020) and discarded item 21, which improved the internal consistency of the undisciplined child subscale, α = 0.60.

Mode factor scores were derived from submitting the SMI subscale scores to principal axis factoring (*PAF*), and factor scores were saved via regression (the enraged child, bully and attack, and punitive parent scores were $\log_{10}$-transformed prior to the PAF; for a rationale see below). The correlation matrix was adequate, KMO = 0.83, and three eigenvalues > 1.00 (5.47, 2.23, and 1.27) suggested three factors to retain, which explained 54.7% of the common variance. Consistent with Jacobs *et al*. (2020), the promax rotated factors were interpretable as *internalization* (marker: low happy child, low healthy adult, vulnerable child, and detached protector), *externalization* (marker: self-aggrandizer, impulsive child, $\log_{10}$ bully and attack, and $\log_{10}$ enraged child), and *compulsivity* (marker: demanding parent, detached self-soother). The compulsivity factor was less-than-ideally defined by only two marker variables. This may be due to the omission of the perfectionistic overcontroller mode in the SMI (Lobbestael *et al*., 2010), which would be expected to be a strong marker of the compulsivity factor. The PAF was repeated with a subset of eight modes (all child modes omitted). The resultant factor structure reflected *reduced internalization* (marker: low healthy adult, $\log_{10}$ punitive parent, detached protector), *reduced externalization* (marker: self-aggrandizer, $\log_{10}$ bully and attack), and *compulsivity* (marker: demanding parent, detached self-soother).

Revised Symptom Check-List 90 (*SCL-90-R*; Derogatis, 1992). The SCL-90-R is a widely used instrument that measures 90 psychiatric symptoms. Participants indicated on a 5-point scale (0 = *not at all* to 4 = *most intensive*) the extent to which they had been bothered by each symptom during the last week. The Global Severity Index (*GSI*) is the SCL-90-R total score that reflects general psychological distress. The reliability and validity of the German SCL-90-R and the validity of the GSI have been repeatedly shown (e.g., Franke, 1995; Schmitz, Hartkamp, Kiuse, Franke, Reister & Tress, 2000). In the current study, the Cronbach's α of the total score was α = 0.97.

Data preparation and data analysis

Data screening revealed 27 missing data points for the TEIQue-SF (0.54% item-level missing data rate), 345 missing data points for the SMI (1.70% item-level missing data rate), and no missing data for the SCL-90R (for missing data per subscale see Table 1). Due to a technical problem, 205 responses on five SMI items were lost (i.e., 41 lost responses per item; all five items belonged to different subscales). Two subjects skipped one questionnaire page, leading to a further 32 and eight missing SMI data points, respectively. We conducted a missing completely at random (MCAR) test (Little, 1988) with all SMI items, TEIQue-SF items, the GSI score, and additional variables. The result suggested that MCAR might hold, χ^2 (10964) = 10284.98, $p > 0.99$. Given the low missing data rates and that our focus was on construct-level analysis (i.e., associations between subscales), we followed established practical guidelines and employed available item analysis (AIA; Newman, 2014; Parent, 2013). At low levels of missing data, Parent (2013) showed that AIA (i.e., using the mean across available items) is an effective method for handling item-level missing data, which performs comparable to more complex methods

such as multiple imputations. The AIA approach also allows for scale-level PAF under item-level missingness, which is still not properly solved for multiple imputation.

First, associations between TEI variables and modes were tested with zero-order correlations. Second, specific associations between the TEI factors and modes were examined with a series of 14 multiple regression analyses (i.e., each mode was regressed simultaneously on the four TEI factors). Coefficients were tested using heteroskedasticity-consistent standard error estimators (HC4) obtained from Hayes and Cai's (2007) HCSE procedure. Third, a global TEI–mode factor scores–general psychological distress mediation model was tested in PROCESS version 3.2 (Hayes, 2018) with robust standard errors (HC4 estimator) for total and direct effects and with 95% percentile bootstrap confidence intervals for indirect effects, based on 5,000 resamples. The mediation analysis was repeated with the reduced versions of the mode factor scores (i.e., all child modes omitted in the factor model).

Data screening revealed substantial skew for the enraged child, bully and attack, and punitive parent scores (skew = 3.35, 1.14, and 1.25, respectively). These subscale scores were $\log_{10}$-transformed, which improved their distributional properties. The transformed subscale scores were used in the formation of mode factor scores and in all subsequent analyses. All analyses were carried out in IBM SPSS version 24. In the mediation analyses, an a priori alpha level of 5% was used. To lower the Type I error rate, the correlation and regression analyses involving the 14 modes adopted a more stringent α level of 1%. In this study, the power for detecting a medium sized correlation (i.e., $|\rho| = 0.30$) at $\alpha_{\text{two-sided}} = 0.01$ was high, power = 0.93.

RESULTS

Relationships between TEI and schema modes

Global TEI correlated significantly with 12 schema modes (see Table 2). According to Cohen (1992), seven out of 12 significant correlations can be considered a large effect size, with the largest effects found for the happy child, vulnerable child, and healthy adult modes. As expected, global TEI was positively related to both healthy modes (happy child: $r = 0.81$, $p < 0.001$, $r_{\text{disattenuated}} = 0.93$; healthy adult: $r = 0.70$, $p < 0.001$, $r_{\text{disattenuated}} = 0.84$) and negatively related to 10 maladaptive modes with coefficients ranging from $r = -0.21$, $p = 0.007$ ($\log_{10}$ bully and attack) to $r = -0.71$, $p < 0.001$ (vulnerable child). Contrary to our expectations, global TEI was not related to the self-aggrandizer mode, $r = 0.02$, n.s. The correlation between the demanding parent mode and global TEI showed the expected negative trend, but remained non-significant, $r = -.16$, $p = 0.037$. The four TEI factors correlated significantly with eight modes (sociability), nine modes (well-being and self-control, respectively), and 12 modes (emotionality; see Table 2). Of these 38 significant correlations, 15 were considered as medium effect sizes and 14 were considered as large effect sizes. The general pattern of associations was that TEI factors correlated negatively with maladaptive modes and positively with healthy modes. The only exception emerged for the self-aggrandizer mode and sociability, $r = 0.20$, $p = 0.008$.

In the series of 14 regression analyses, the four TEI factors accounted, on average, for 27.4% of the variance in modes, ranging from 3.1% (demanding parent) to 69.6% (happy child; see Table 2). For 10 modes, six (emotionality), five (well-being), and four (sociability and self-control, respectively) significant partial effects were found. The overall pattern of significant negative relations to maladaptive modes and significant positive relations to healthy modes was retained for nine modes. Sociability, $\beta = 0.39$, $p < 0.001$, and emotionality, $\beta = -0.30$, $p = 0.001$, showed significant but contrasting effects on the self-aggrandizer mode.

Testing the TEI–mode factors–general psychological distress mediation models

The tested mediation model included global TEI as predictor, general psychological distress (GSI) as outcome, and the three

Table 2. *Zero-order associations and specific associations between trait emotional intelligence variables and schema mode scores*

	Global TEI[a]	Well-being		Self-control		Emotionality[a]		Sociability		
Mode variables	*r*	*r*	β	*r*	β	*r*	β	*r*	β	R^2
Vulnerable child	**−0.71****	**−0.72****	−0.59**	**−0.38****	−0.03	**−0.43****	−0.02	**−0.54****	−0.23**	0.57**
Angry child	−0.29**	−0.23*	−0.12	−0.24*	−0.15	−0.25**	−0.18	−0.14	0.08	0.10*
$\log_{10}$ Enraged child	−0.23*	−0.19	−0.12	−0.18	−0.12	−0.22*	−0.22	−0.04	0.19	0.09
Impulsive child	−0.29**	−0.16	0.03	**−0.35****	−0.32*	**−0.32****	−0.32**	−0.10	0.19	0.19**
Undisciplined child[b]	**−0.52****	**−0.39****	−0.17	**−0.42****	−0.26**	**−0.38****	−0.17	**−0.34****	−0.06	0.26**
$\log_{10}$ Punitive parent	**−0.58****	**−0.55****	−0.40**	−0.29**	0.02	**−0.46****	−0.22*	**−0.43****	−0.12	0.37**
Demanding parent	−0.16	−0.14	−0.09	−0.08	0.01	−0.16	−0.11	−0.11	−0.02	0.03
Compliant surrender	**−0.52****	**−0.38****	−0.14	−0.22*	0.07	**−0.45****	−0.20*	**−0.53****	−0.39**	0.33**
Detached protector	**−0.66****	**−0.58****	−0.38**	**−0.31****	0.02	**−0.54****	−0.27*	**−0.49****	−0.17	0.44**
Detached self-soother	−0.28**	−0.28**	−0.21	−0.17	−0.04	−0.26**	−0.19	−0.14	0.08	0.10*
Self-aggrandizer	0.02	0.06	0.08	−0.08	−0.16	−0.10	−0.30*	0.20*	0.39**	0.13**
$\log_{10}$ Bully and attack	−0.21*	−0.07	0.09	−0.12	−0.05	**−0.34****	−0.45**	−0.07	0.16	0.14**
Happy child	**0.81****	**0.77****	0.55**	**0.50****	0.13*	**0.54****	0.09	**0.62****	0.26**	0.70**
Healthy adult	**0.70****	**0.57****	0.30**	**0.50****	0.23**	**0.51****	0.19	**0.52****	0.17	0.47**

Notes: TEI = trait emotional intelligence; *r* = Pearson's correlation; β = standardized coefficient from regressing schema mode scores on TEI factor scores (tested with robust HC4 standard error estimates); R^2 = variance explained.

[a]item 23 removed.

[b]item 21 removed. Correlations printed in boldface can be considered either a medium or a large effect size (Cohen, 1992). A priori alpha level, $\alpha = 0.01$.

*$p < 0.01$, ** $p < 0.001$.

Table 3. *Standardized path coefficients, indirect effects and the respective 95% confidence intervals for the global TEI–mode factor scores–general psychological distress mediation model shown in Fig. 1*

	Int (path a_1)	Ext (path a_2)	Com (path a_3)	Total (path c)	Direct (paths c', b_1-b_3)	Indirect	
						ab	[95% *CI*]
Model 1: Mode factor scores as parallel mediators							
Global TEI	−0.84***	−0.28**	−0.25**	−0.51***	0.13	−0.64	[−0.81, −0.46]
Internalization					0.68***	−0.57	[−0.76, −0.39]
Externalization					−0.01	0.002	[−0.05, 0.05]
Compulsivity					0.26**	−0.07	[−0.13, −0.02]
R^2	0.71***	0.08**	0.06*	0.26***	0.52***		
Model 2: Reduced mode factor scores as parallel mediators							
Global TEI	−0.78***	−0.17	−0.23*	−0.51***	−0.11	−0.40	[−0.54, −0.25]
Internalization					0.45***	−0.35	[−0.50, −0.20]
Externalization					−0.001	0.0001	[−0.03, 0.03]
Compulsivity					0.22**	−0.05	[−0.10, −0.01]
R^2	0.61***	0.03	0.05*	0.26***	0.42***		

Notes: Int = internalization; Ext = externalization; Com = compulsivity; Total = total effect; Direct = direct effect; Indirect = indirect effect; *ab* = overall or specific indirect effect; 95% *CI* = 95% percentile bootstrap confidence intervals based on B = 5,000 resamples; TEI = trait emotional intelligence; Reduced mode factor scores = all child mode scores omitted from the factor analysis; R^2 = variance explained; coefficients were tested with robust HC4 standard error estimators. A priori alpha level, $\alpha = 0.05$.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

mode factor scores as parallel mediators (see Fig. 1; for standardized path coefficients, indirect effects, and the respective 95% CIs see Table 3, Model 1). Global TEI was negatively related to the GSI score, $\beta = -0.51$, $p < 0.001$ (total effect) and to all three mediator variables (internalization: $\beta = -0.84$, $p < 0.001$; externalization: $\beta = -0.28$, $p = 0.002$; and compulsivity: $\beta = -0.25$, $p = 0.005$). When effects of the mediator variables on the GSI were taken into account (internalization: $\beta = 0.68$, $p < 0.001$; externalization: $\beta = -0.01$, n.s.; compulsivity: $\beta = 0.26$, $p = 0.003$), global TEI did not contribute significantly to general psychological distress, $\beta = 0.13$, n.s. (direct effect). The 95% CIs of the overall indirect effect and of the specific indirect effects obtained for internalization and compulsivity precluded zero, suggesting significance of the respective indirect effects (see Table 3, Model 1). Thus, global TEI's total effect on general psychological distress was fully mediated via the mode factor scores, and this was driven by internalization and, to a lesser extent, by compulsivity.

Finally, we tested an alternative mediation model with mode factor scores derived from the PAF with all child mode scores discarded. Effects that included the reduced mode factor scores were slightly weaker than in the corresponding Model 1, but global TEI's total effect on general psychological distress was still fully mediated via reduced internalization and compulsivity (see Table 3, Model 2). Thus, potential content overlap between the mediator variables and the outcome variable is unlikely to account for the observed full mediation.

DISCUSSION

The current study investigated the associations between modes, a key concept in schema therapy (Young *et al*., 2003), and trait emotional intelligence, a clinically relevant construct of trait theory (Hansen *et al*., 2009; Petrides, 2009). We adopted a trait-like conceptualization of modes (Lobbestael, 2012) by asking for their general manifestation frequency. Global TEI correlated negatively with 10 maladaptive modes and positively with both healthy modes (Hypothesis 1 supported). The four TEI factors explained, on average, 27.4% of the variance in modes. A total of six (emotionality), five (well-being), and four (sociability and self-control, respectively) significant partial effects on 10 modes emerged (explorative research question). Global TEI was negatively related to general psychological distress, and this effect was fully mediated via the mode factors of internalization and compulsivity (Hypothesis 2 supported). Full mediation was retained even when all child modes were discarded from the formation of the mode factor scores. These findings bear implications for the meaning of global TEI and modes, the incremental validity of the TEI factors, and treatment planning.

Global TEI, modes, and personality malfunctioning

Global TEI correlated positively with both healthy modes and, except for the self-aggrandizer and demanding parent modes, negatively with all maladaptive modes. These findings are consistent with the assumption that modes reflect characteristic adaptations to personality traits. They extend previously found relations between modes and temperamental traits (Lobbestael *et al*., 2010) and Big-Five trait factors (Jacobs *et al*., 2020). They also add to prior evidence that low global TEI is a common feature of personality pathology (e.g., Ke & Barlas, 2020; Krajniak *et al*., 2018; Martskvishvili & Mestvirishvili, 2014; Petrides, Pérez-González, et al., 2007; Sinclair & Feigenbaum, 2012). Criterion A of DSM-5's AMPD (APA, 2013) defines personality malfunction in terms of impaired self-functioning and interpersonal functioning. The LPF domains converge, at least in part, with the TEI sampling domain (cf. Petrides, 2009). The observed pattern of correlations between modes and global TEI should therefore converge with the pattern of correlations between modes and the level of personality functioning according to the AMPD (APA, 2013), PD severity

according to the ICD-11 model of PDs (WHO, 2018), and the general factor of PDs (e.g., Hopwood *et al*., 2011).

We tested this assumption post hoc by comparing the correlation pattern in Table 2 with recently reported correlation profiles for modes with self-reported LPF and PD severity (Bach & Hutsebaut, 2018, p. 666) and with self-reported LPF and g-PD (Bach & Anderson, 2020, p. 241). Profile similarities of (Fisher-*z* transformed) correlations were calculated via double-entry intraclass correlation (*ICC*s): TEI vs. LPF, $ICC = -0.97$ and -0.97, TEI vs. PD severity, $ICC = -0.88$, and TEI vs. g-PD, $r_{ICC} = -0.94$. Compared to the LPF, ICD-11 PD severity places a greater emphasis on the risk of harm to self and others, which falls outside the TEI domain. The profile similarity with ICD-11 PD severity was thus slightly lower than the similarity obtained with LPF for DSM-5. However, although content overlap of global TEI with LPF and PD severity is incomplete, their convergent, yet mirror-inverted pattern of correlations with modes provide further support for the notion that low global TEI can be regarded as a rough approximation for self-perceived LPF and PD severity. The literature on global TEI might thus inform research on LPF or PD severity and vice versa. However, more research is needed to link TEI more firmly to the AMPD and the ICD-11 PD model and to determine cutoff values for global TEI that help to differentiate between patients with and without a PD.

If global TEI approximates LPF or PD severity, then modes with the strongest negative association with global TEI (i.e., vulnerable child, detached protector, and punitive parent) can be regarded as the most dysfunctional modes, whereas their positive relations with global TEI classifies the happy child and healthy adult modes as functional, which is consistent with theory and recent evidence (e.g., Bach & Bernstein, 2019). In fact, the positive correlations between global TEI and both healthy modes were so strong that they can be regarded as trait emotional intelligent modes or as "TEI in action." The healthy adult is especially interesting in this regard: It integrates and regulates maladaptive modes (Roediger *et al*., 2018), and it fluctuates less often than all other modes during therapy sessions (Bach & Bernstein, 2019), which points to its more enduring nature. Hence, healthy adult functioning necessitates a more stable capacity for adaptive emotion regulation, which might be better understood from a TEI theory perspective (e.g., Peña-Sarrionandia *et al*., 2015; Petrides, 2009) than from a schema perspective (Young *et al*., 2003). By drawing on confirmatory factor analysis, future research might help to further integrate both healthy modes with the TEI domain.

Given the close nexus between mentalization and emotional intelligence (e.g., Allen, 2006; Dimitrijević *et al*., 2018), the results indirectly suggest that mentalization is highly relevant for healthy adult functioning. Fonagy *et al*. (2017) assume that the absence of psychological resilience arises from poor mentalizing and disrupted epistemic trust, which subsequently impair appraisal processes. The finding that global TEI related negatively to 10 maladaptive modes and most strongly to the vulnerable child mode is consistent with these ideas. Mentalization develops within secure attachment relationships (Fonagy *et al*., 2017). Shaping the therapeutic relationship during schema therapy as a need-focused, secure attachment relationship (e.g., limited reparenting; Young *et al*., 2003) thus likely promotes the development of mentalization. Moreover, interventions that aim to improve schema and mode recognition, to better understand the developmental origins and functionality of one's own schemas and modes (including benefits and costs), and to integrate and regulate modes from a healthy adult perspective may also facilitate mentalization (e.g., Roediger *et al*., 2018). More research is needed to test the associations between mentalization and modes more directly, and to clarify the role of mentalization as a mechanism of change in schema therapy.

Modes and TEI factors

Considering the associations of TEI factors with modes was also instructive: It has been suggested that the TEI factors of emotionality and sociability have poor incremental validity in the presence of well-being and self-control (Andrei *et al*., 2016; Siegling *et al*., 2015). In the present study, emotionality and well-being performed best. Martskvishvili and Mestvirishvili (2014) also found that almost all PD scores were negatively related to two facets organized under emotionality. It thus seems warranted to assume that the utility of the TEI factors varies with the criteria and the population under investigation. At least in the context of personality pathology, sociability and emotionality contribute to the validity of global TEI. More research, including clinical and normative samples and a broader range of criteria, is needed to draw valid conclusions on the differential incremental validity of the TEI factors.

Although global TEI and the self-aggrandizer mode were unrelated, significant partial effects were observed for emotionality (negative) and sociability (positive). Both effects are in line with the way this mode has been defined: It includes agentic features (e.g., behaving in status-seeking, domineering, entitled, and grandiose ways) and a block of genuine emotion, which renders their users rather insensitive (e.g., Roediger *et al*., 2018). The positive effect of sociability also adds to prior evidence that individuals scoring high on sociability tend to exhibit grandiose narcissistic, hubristic tendencies (e.g., Petrides, Vernon, Schermer & Veselka, 2011; Vonk *et al*., 2013). Petrides *et al*. (2011), for example, found moderately sized positive correlations between narcissism and sociability, which resemble the observed association between the self-aggrandizer mode and sociability. Thus, this line of evidence confirms the tenet of TEI theory that TEI may exhibit undesirable effects in specific contexts (Petrides, 2009).

The opposed effects of emotionality and sociability on the self-aggrandizer mode are also consistent with prior findings that global TEI cannot capture the entire variation in TEI factors positioned underneath (e.g., Petrides *et al*., 2011). When one restricts to global TEI, one might draw wrong conclusions (e.g., TEI is irrelevant for the self-aggrandizer mode) or miss complexity at the level of TEI factors. Complexity became apparent in different configurations of significant associations of the TEI factors with modes. For example, self-control contributed specifically and negatively to the impulsive and undisciplined child modes, which is consistent with theory that the insufficient self-control schema underlies both modes (e.g., Bach & Bernstein, 2019). However, emotionality was also negatively and specifically related to the impulsive child mode, which reflects problems in

this mode with recognizing and expressing one's own emotional states adequately. The differentiated associations of TEI factors with modes therefore support subtle yet important emotion-related differences between modes (Lobbestael *et al*., 2010).

Modes as intervening mechanisms

A side result of the current study is the replication of the mode factors internalization, externalization, and compulsivity previously shown by Jacobs *et al*. (2020). This lends further credence to the assumption that three factors account for the covariation among modes in adults. Psychotherapists and researchers, who wish to form composite mode scores, are encouraged to form their composites along the lines of these three higher-order factors.

Low global TEI puts individuals at risk of developing psychological distress, clinical disorders, and other health problems (e.g., Hansen *et al*., 2009; Martins *et al*., 2010; Petrides *et al*., 2017). Various variables such as adaptive and maladaptive coping and health behaviors (e.g., Peña-Sarrionandia *et al*., 2015; Sarrionandia & Mikolajczak, 2019) have been identified that may mediate the TEI–health link. The present study adds to the literature by showing that the global TEI–general psychological distress link was fully mediated via internalization and compulsivity. Sensitivity analysis revealed that this mediation is not an artifact due to content overlap between child modes and psychological distress. Although the current cross-sectional nature of the data prevents firm causal claims, the evidence for full mediation is at least consistent with the assumption that modes organized under internalization and compulsivity are important yet overlooked intervening mechanisms in the interplay of global TEI with health outcomes (i.e., low-TEI individuals are more often in internalizing and compulsive states, which, in turn, may contribute to psychological distress). The absence of a significant indirect effect via externalization might be due to a dearth of externalizing pathology in the sample or to a dearth of externalizing problems in the outcome variable. The conclusion that externalization is irrelevant for the global TEI–distress link seems therefore premature. More research, including prospective and intervention designs with more diverse criteria, is needed to further investigate the role of global TEI and modes in the trajectory of mental health.

Practical implications

From an applied point of view, the inclusion of TEI in the standard assessment at intake yields detailed information about the patient's self-perceived level of socio-emotional functioning. This may help the therapist to pinpoint the strengths and weaknesses of a patient, to identify the targets of intervention, and to provide feedback on how patients are improving (Hansen *et al*., 2009). Adaptive personality features are narrowly defined in the mode model and mainly allocated to the healthy adult and happy child modes (Young *et al*., 2003). A global TEI assessment may be informative regarding the overall impairment in personality functioning, and a more detailed TEI assessment may help the therapist to orient toward a comprehensive set of socio-emotional self-efficacies that can be targeted during therapy in order to boost healthy adult functioning in their patients (Bach & Bernstein, 2019). Previous evidence suggests that TEI is amenable to change via EI trainings (Mattingly & Kraiger, 2019). Improving TEI in patients might in turn reduce the manifestation frequency of maladaptive modes and increase mental health. Finally, numerous effective ST interventions have been developed to integrate and regulate modes (e.g., Roediger *et al*., 2018; Young *et al*., 2003). Future research might explore whether ST interventions have a positive impact on TEI. Emotional intelligence trainings might benefit from integrating effective ST interventions such as imaginary re-scripting, chair-work dialogues, schema dialogues, or flash cards. Conversely, given the close nexus between global TEI and the healthy adult mode, ST might benefit from incorporating effective EI interventions to strengthen healthy adult functioning.

Limitations and conclusion

Several limitations need to be mentioned. First, the sample was gender-imbalanced, which limits the generalizability of the results. More gender-balanced samples are needed to test for gender-invariance of the observed effects. Second, the exclusive reliance on self-reports might have biased the results. The inclusion of informant or clinician reports would be beneficial for later studies. Third, the mediocre reliability of the self-control score may have attenuated its associations. Moreover, some of the more nuanced interpretations would have benefited from analyses at the level of TEI facets, which are not permissible with the TEIQue-SF. Applying the full TEIQue in future research would also help to circumvent the reliability issues with the self-control factor. Fourth, in the current sample, externalizing pathology was underrepresented. Variance in externalizing mode features was accordingly restricted, which might have attenuated the associations with externalizing modes. Finally, we argued that modes can be regarded as characteristic adaptations to traits. Hence, global TEI was treated as an explanatory variable. However, the cross-sectional nature of the data prevents causal claims and alternative accounts for the observed mediation effects cannot be ruled out.

A persistent limitation in the TEI literature is the dearth of clinical samples (Hansen *et al*., 2009; Petrides *et al*., 2017). Investigating the relationships among TEI, modes, and general psychological distress in a clinical sample therefore represents a major strength of the current study. The present study revealed important, theoretically meaningful associations between TEI and modes. It provided further support for the interpretation of the healthy adult mode as an indicator of personality functioning (Bach & Bernstein, 2019), but also of global TEI as a rough approximation of self-perceived personality functioning. It also showed the hitherto overlooked utility of mode factors as intervening mechanisms in the global TEI–mental health association. Although TEI, (healthy) schema modes, mentalization, and level of personality functioning are rooted in different traditions (i.e., trait theory, schema therapy, psychodynamic therapy, and maladaptive trait psychology), the results and prior evidence imply that they are overlapping. The literature on TEI, LPF, mentalization, and schema modes might therefore benefit from a more thorough integration of these lines of research.

FUNDING INFORMATION

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

DECLARATION OF INTERESTS

The authors state that there are no known conflict of interest associated with this publication.

DATA AVAILABILITY STATEMENT

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

REFERENCES

Allen, J. G. (2006). Mentalizing in practice. In J. G. Allen, & P. Fonagy (Eds.), *Handbook of mentalization-based treatment* (pp. 3–30). Chichester: Wiley.

American Psychiatric Association (APA) (2013). *Diagnostic and statistical manual of mental disorders* (5th edn). Arlington, VA: American Psychiatric Publishing.

Andrei, F., Siegling, A. B., Aloe, A. M., Baldaro, B. & Petrides, K. V. (2016). The incremental validity of the Trait Emotional Intelligence Questionnaire (TEIQue): A systematic review and meta-analysis. *Journal of Personality Assessment*, *98*, 261–276.

Bach, B. & Anderson, J. L. (2020). Patient-reported ICD-11 personality disorder severity and DSM-5 Level of Personality Functioning. *Journal of Personality Disorders*, *34*, 231–249.

Bach, B. & Bernstein, D. P. (2019). Schema therapy conceptualization of personality functioning and traits in ICD-11 and DSM-5. *Current Opinion in Psychiatry*, *32*, 38–49.

Bach, B. & Hutsebaut, J. (2018). Level of Personality Functioning Scale-Brief Form 2.0: Utility in capturing personality problems in psychiatric outpatients and incarcerated addicts. *Journal of Personality Assessment*, *100*, 660–670.

Bach, B., Lee, C., Mortensen, E. L. & Simonsen, E. (2016). How do DSM-5 personality traits align with schema therapy constructs? *Journal of Personality Disorders*, *30*, 502–529.

Bamelis, L. L. M., Renner, F., Heidkamp, D. & Arntz, A. (2011). Extended schema mode conceptualizations for specific personality disorders: An empirical study. *Journal of Personality Disorders*, *25*, 41–58.

Bender, D. S., Morey, L. C. & Skodol, A. E. (2011). Toward a model for assessing level of personality functioning in *DSM–5,* part I: A review of theory and methods. *Journal of Personality Assessment*, *93*, 332–346.

Cooper, A. & Petrides, K.V. (2010). A psychometric analysis of the Trait Emotional Intelligence Questionnaire–Short Form (TEIQue–SF) using item response theory. *Journal of Personality Assessment*, *92*, 449–457.

Derogatis, L. R. (1992). *The Symptom Checklist-90-revised.* Minneapolis, MN: NCS Assessments.

Dimitrijević, A., Hanak, N., Dimitrijević, A. A. & Marjanović, Z. J. (2018). The Mentalization Scale (MentS): A self-report measure for the assessment of mentalizing capacity. *Journal of Personality Assessment*, *100*, 268–280.

Fonagy, P., Luyten, P., Allison, E. & Campbell, C. (2017). What we have changed our minds about: Part 1. Borderline personality disorder as a limitation of resilience. *Borderline Personality Disorder and Emotion Dysregulation*, *4*. https://doi.org/10.1186/s40479-017-0061-9.

Franke, G. (1995). *Die Symptom-Checkliste von Derogatis - Deutsche Version (SCL-90-R)*. Göttingen: Beltz Test GmbH.

Frederickson, N., Petrides, K. V. & Simmonds, E. (2012). Trait emotional intelligence as a predictor of socioemotional outcomes in early adolescence. *Personality and Individual Differences*, *52*, 323–328.

Hansen, K., Lloyd, J. & Stough, C. (2009). Emotional intelligence and clinical disorders. In C. Stough, D. H. Saklofske, & J. D. A. Parker (Eds.), *Assessing emotional intelligence: Theory, research, and applications* (pp. 219–237). Boston, MA: Springer.

Hayes, A.F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd edn). New York, NY: Guilford Press.

Hayes, A. F. & Cai, L. (2007). Using heteroskedasticity-consistent standard error estimators in OLS regression: An introduction and software implementation. *Behavior Research Methods*, *39*, 709–722.

Hopwood, C. J., Malone, J. C., Ansell, E. B., Sanislow, C. A., Grilo, C. M., McGlashan, T.H. … Morey, L. C. (2011). Personality assessment in DSM-V: Empirical support for rating severity, style, and traits. *Journal of Personality Disorders*, *25*, 305–320.

Jacob, G. A. & Arntz, A. (2013). Schema therapy for personality disorders – a review. *International Journal of Cognitive Therapy*, *6*, 171–185.

Jacobs, I., Lenz, L., Dörner, S. & Wegener, B. (2019). How do schema modes and mode factors align with defense styles and personality disorder symptoms? *Personality Disorders: Theory, Research, and Treatment*, *10*, 427–437.

Jacobs, I., Lenz, L., Wollny, A. & Horsch, A. (2020). The higher-order structure of schema modes. *Journal of Personality Disorders*, *34*, 348–376.

Jacobs, I., Sim, C.-W. & Zimmermann, J. (2015). The German TEIQue-SF: Factorial structure and relations to agentic and communal traits and mental health. *Personality and Individual Differences*, *72*, 189–194.

Jacobs, I., Wollny, A., Sim, C.-W. & Horsch, A. (2016). Mindfulness facets, trait emotional intelligence, emotional distress, and multiple health behaviors: A serial two-mediator model. *Scandinavian Journal of Psychology*, *57*, 207–214.

Ke, T. & Barlas, J. (2020). Thinking about feeling: Using trait emotional intelligence in understanding the associations between early maladaptive schemas and coping styles. *Psychology and Psychotherapy: Theory, Research and Practice*, *93*, 1–20.

Krajniak, M. I., Pievsky, M., Eisen, A. R. & McGrath, R. E. (2018). The relationship between personality disorder traits, emotional intelligence, and college adjustment. *Journal of Clinical Psychology*, *74*, 1160–1173.

Krueger, R. F. & Markon, K. E. (2014). The role of the DSM-5 personality trait model in moving toward a quantitative and empirically based approach to classifying personality and psychopathology. *Annual Review of Clinical Psychology*, *10*, 477–501.

Little, R. J. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, *83*, 1198–1202.

Lobbestael, J. (2012). Validation of the schema mode inventory. In M. van Vreeswijk, J. Broersen, & M. Nadort (Eds.), *The Wiley-Blackwell handbook of schema therapy: Theory, research, and practice* (pp. 541–551). Malden, MA: Wiley.

Lobbestael, J., van Vreeswijk, M. & Arntz, A. (2008). An empirical test of schema mode conceptualizations in personality disorders. *Behaviour Research and Therapy*, *46*, 854–860.

Lobbestael, J., van Vreeswijk, M., Spinhoven, P., Schouten, E. & Arntz, A. (2010). Reliability and validity of the short Schema Mode Inventory (SMI). *Behavioural and Cognitive Psychotherapy*, *38*, 437–458.

Malouff, J. M., Schutte, N. S. & Thorsteinsson, E. B. (2014). Trait emotional intelligence and romantic relationship satisfaction: A meta-analysis. *The American Journal of Family Therapy*, *42*, 53–66.

Martins, A., Ramalho, N. & Morin, E. (2010). A comprehensive meta-analysis of the relationship between emotional intelligence and health. *Personality and Individual Differences*, *49*, 554–564.

Martskvishvili, K. & Mestvirishvili, M. (2014). The relationship between emotional intelligence and personality disorder symptomatology. *Problems of Psychology in the 21st Century*, *8*, 143–151.

Mattingly, V. & Kraiger, K. (2019). Can emotional intelligence be trained? A meta-analytical investigation. *Human Resource Management Review*, *29*, 140–155.

McAdams, D. P. & Pals, J. L. (2006). A new big five: Fundamental principles for an integrative science of personality. *The American Psychologist*, *61*, 204–217.

Newman, D.A. (2014). Missing data: Five practical guidelines. *Organizational Research Methods*, *17*, 372–411.

Oltmanns, J. R., Smith, G. T., Oltmanns, T. F. & Widiger, T. A. (2018). General factors of psychopathology, personality, and personality disorder: Across domain comparisons. *Clinical Psychological Science*, *6*, 581–589.

Parent, M. C. (2013). Handling item-level missing data: Simpler is just as good. *The Counseling Psychologist*, *41*, 568–600.

Peña-Sarrionandia, A., Mikolajczak, M. & Gross, J. J. (2015). Integrating emotion regulation and emotional intelligence traditions: a meta-analysis. *Frontiers in Psychology*, *6*. https://doi.org/10.3389/fpsyg.2015.00160.

Petrides, K. V. (2009). Psychometric properties of the Trait Emotional Intelligence Questionnaire (TEIQue). In C. Stough, D. H. Saklofske, & J. D. A. Parker (Eds.), *Assessing emotional intelligence: Theory, research, and applications* (pp. 85–101). London: Springer.

Petrides, K. V., Gómez, M. G. & Pérez-González, J. C. (2017). Pathways into psychopathology: Modeling the effects of trait emotional intelligence, mindfulness, and irrational beliefs in a clinical sample. *Clinical Psychology & Psychotherapy*, *24*, 1130–1141.

Petrides, K.V., Pérez-González, J.C. & Furnham, A. (2007). On the criterion and incremental validity of trait emotional intelligence. *Cognition and Emotion*, *21*, 26–55.

Petrides, K.V., Pita, R. & Kokkinaki, F. (2007). The location of trait emotional intelligence in personality factor space. *British Journal of Psychology*, *98*, 273–289.

Petrides, K. V., Vernon, P. A., Schermer, J. A. & Veselka, L. (2011). Trait emotional intelligence and the dark triad traits of personality. *Twin Research and Human Genetics*, *14*, 35–41.

Reiss, N., Dominiak, P., Harris, D., Knörnschild, C., Schouten, E. & Jacob, G. A. (2012). Reliability and validity of the German version of the Schema Mode Inventory. *European Journal of Psychological Assessment*, *28*, 297–304.

Reiss, N., Krampen, D., Christoffersen, P. & Bach, B. (2016). Reliability and validity of the Danish version of the Schema Mode Inventory (SMI). *Psychological Assessment*, *28*, 19–26.

Roberts, B.W. & DelVecchio, W.F. (2000). The rank-order consistency of personality traits from childhood to old age: a quantitative review of longitudinal studies. *Psychological Bulletin*, *126*, 3–25.

Roediger, E., Stevens, B. A. & Brockman, R. (2018). *Contextual schema therapy: An integrative approach to personality disorders, emotional dysregulation, and interpersonal functioning*. Oakland, CA: New Harbinger Publications.

Rothbart, M. K. (2007). Temperament, development, and personality. *Current Directions in Psychological Science*, *16*, 207–212.

Sánchez-Álvarez, N., Extremera, N. & Fernández-Berrocal, P. (2016). The relation between emotional intelligence and subjective well-being: A meta-analytic investigation. *The Journal of Positive Psychology*, *11*, 276–285.

Sarrionandia, A. & Mikolajczak, M. (2019). A meta-analysis of the possible behavioural and biological variables linking trait emotional intelligence to health. *Health Psychology Review*, *14*, 220–244.

Schmitz, N., Hartkamp, N., Kiuse, J., Franke, G. H., Reister, G. & Tress, W. (2000). The Symptom Check-List-90-R (SCL-90-R): A German validation study. *Quality of Life Research*, *9*, 185–193.

Siegling, A. B., Vesely, A. K., Petrides, K. V. & Saklofske, D. H. (2015). Incremental validity of the Trait Emotional Intelligence Questionnaire-Short Form (TEIQue–SF). *Journal of Personality Assessment*, *97*, 525–535.

Sinclair, H. & Feigenbaum, J. (2012). Trait emotional intelligence and borderline personality disorder. *Personality and Individual Differences*, *52*, 674–679.

Taylor, C. D., Bee, P. & Haddock, G. (2017). Does schema therapy change schemas and symptoms? A systematic review across mental health disorders. *Psychology and Psychotherapy: Theory, Research and Practice*, *90*, 456–479.

Van der Linden, D., Pekaar, K., Bakker, A. B., Schermer, J. A., Vernon, P. A. & Petrides, K. V. (2017). Overlap between the general factor of personality and emotional intelligence: A meta-analysis. *Psychological Bulletin*, *143*, 36–52.

Van Wijk-Herbrink, M. F., Bernstein, D. P., Broers, N. J., Roelofs, J., Rijkeboer, M. M. & Arntz, A. (2018). Internalizing and externalizing behaviors share a common predictor: the effects of early maladaptive schemas are mediated by coping responses and schema modes. *Journal of Abnormal Child Psychology*, *46*, 907–920.

Vonk, J., Zeigler-Hill, V., Mayhew, P. & Mercer, S. (2013). Mirror, mirror on the wall, which form of narcissist knows self and best of all? *Personality and Individual Differences*, *54*, 396–401.

World Health Organization [WHO] (2018). *International classification of diseases, 11th Revision (ICD-11)*. Retrieved 6 February 2020, from www.who.int/classifications/icd/en/.

Young, J. E., Klosko, J. S. & Weishaar, M. E. (2003). *Schema therapy: A practitioner's guide*. New York, NY: Guilford Press.

Zettl, M., Volkert, J., Vögele, C., Herpertz, S. C., Kubera, K. M. & Taubner, S. (2020). Mentalization and criterion A of the alternative model for personality disorders: Results from a clinical and nonclinical sample. *Personality Disorders: Theory, Research, and Treatment*, *11*, 191–201.

Zimmerman, M., Rothschild, L. & Chelminski, I. (2005). The prevalence of DSM-IV personality disorders in psychiatric outpatients. *American Journal of Psychiatry*, *162*, 1911–1918.

Received 16 March 2020, accepted 15 June 2020