

ORIGINAL ARTICLE

A network analysis of burnout subtypes, early maladaptive schemas and schema modes

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Abstract

OBJECTIVES: The aim of the research was to explore the relationship between different clinical subtypes of burnout and Early Maladaptive Schemas (EMSs) and Schema Modes (SMs) using network analysis.

METHODS: The sample of this cross-sectional study consisted of 562 participants. Three questionnaires were used: the Burnout Clinical Subtype Questionnaire (BCSQ-36), the Young Schema Questionnaire – Short Form 3 (YSQ-S3) and the Schema Mode Inventory 1.1 (SMI).

RESULTS: Network analysis for all YSQ-S3, SMI and BCSQ-36 scales was performed. Centrality measures and bridge nodes analysis show several schemas and modes which could have a considerable role in the activation of the burnout pathology: Punitiveness, Unrelenting Standards, Subjugation, and Dependence & Incompetence schemas, as well as Demanding Parent, Detached Protector, Angry Child, and Self-Aggrandizer modes. The role of the Healthy Adult mode in the network is controversial.

CONCLUSION: The results of the network analysis give ideas about the unmet emotional needs of individuals with higher burnout. Self-compassion, realistic standards, assertiveness, and healthy self-reliance could be important foci for burned-out employees. Strengthening the Healthy Adult mode by providing a self-compassion dimension seems to be crucial for resolving burnout issues.

INTRODUCTION

The phenomenon of occupational burnout has been in the spotlight for psychologists and psychotherapists since the seventies of the last century (Freudenberger 1974). Today, in the face of global changes in working life during the COVID-19 pandemic and the challenges of teleworking, the burnout problematic is re-emerging with renewed vigour. The direction of this study was determined by the need to improve practical psychological assistance, thinking about individual

vulnerability factors regarding occupational burnout and how to work with it.

The main focus and the novelty of this study are in the exploration of the relationships among Early Maladaptive Schemas (Young *et al.* 2003), different Schema Modes (Young *et al.* 2003) and burnout subtypes (Montero-Marín & García-Campayo 2010) using network analysis (Borsboom 2017). This is the first empirical work to help identify interven-

tion needs for different burnout subtypes, which goes a step further than the theoretical intervention offerings (Montero-Marin *et al.* 2016a).

A network analysis was chosen as a promising theoretical and methodological approach in the study of psychopathology and other psychological phenomena such as personality (Borsboom & Cramer 2013; Borsboom 2017; Fonseca-Pedrero 2017). Unlike the classic approach, when studying the latent variables behind the symptoms and signs of a particular phenomenon, network analysis provides an opportunity to look at the (inter)relationships in a united structure. It assumes that symptoms group together due to mutual influence instead of a latent cause (Castro *et al.* 2019). This is a new way to reconceptualize psychopathological disorders as a complex dynamic system of symptoms and signs (Cramer *et al.* 2016). Moreover, mental health could be observed in networks with low connectivity between symptoms or signs, while mental disorder would correspond to strongly interconnected networks (Borsboom 2017; Fonseca-Pedrero 2017).

Burnout and Factors Contributing to It

Classically, burnout is defined as a syndrome that includes three dimensions of symptoms: exhaustion, cynicism or a negative attitude, and reduced professional efficacy as a response to chronic work stress (Maslach *et al.* 1996). In general, this approach sees burnout as a phenomenon of homogeneous origin. But there is also an alternative conceptualization that highlights the heterogeneous nature of burnout (Montero-Marin *et al.* 2009). In this study, burnout is studied through the prism of different subtypes (Montero-Marin & García-Campayo 2010) in the sense of different styles or ways of burning out. This choice was based on the results of previous investigations which expanded the range of burned-out individuals, allowing those employees who are still engaged in work but who are burned out to be noticed (Abeltina *et al.* 2020; Montero-Marin *et al.* 2016b). This approach distinguishes three burnout subtypes: Frenetic, Underchallenged and Worn-out (Montero-Marin & García-Campayo 2010).

The subtypes are based on criteria relating to one's involvement in work. The Frenetic subtype is characterized by over-involvement, disregard for one's health and other needs, experiencing congestion and an inability to give up ambition. The Worn-out subtype, on the other hand, demonstrates neglect of work dedication along with feelings of a lack of acknowledgement and a lack of control. The Underchallenged subtype shows indifference to involvement and suffers from boredom and a lack of meaningful challenges (Montero-Marin *et al.* 2009; Montero-Marin & García-Campayo 2010).

This study focuses on the individual level factors contributing to burnout, which have been studied less frequently than the organizational level or work-specific factors (Swider & Zimmerman 2010). It could be particularly useful when thinking about tertiary interventions

– psychological therapy for already stressed employees (Bamber & McMahon 2008).

Schema Therapy

Nowadays, the Schema Therapy approach is a promising theoretical and applied frame for personality phenomena with a growing body of effectiveness research (Jacob & Arntz 2013; De Klerk *et al.* 2016). Schema Therapy emerged in the 1990s in response to the demand for more effective therapies for personality disorders (Young *et al.* 2003; Arntz & Jacob 2012), but it has also proven itself in working with a wide range of clinical problems and disorders (Bamber & McMahon 2008).

Its central concept is Early Maladaptive Schemas (EMSs). EMSs could explain the persistence of different problematic symptoms and the development of psychopathology (Young 1999). EMSs are stable trait-like internal constructs or mental representations of the dysfunctional beliefs about oneself and one's relationship with others, including cognitions, memories, body sensations, as well as affective states (Young *et al.* 2003; Arntz *et al.* 2021). According to Young's ideas, EMSs develop in interaction between temperament and adverse experiences when our emotional needs are not satisfied in childhood and we face inadequate responses from important adults to these needs (criticism, aggression, neglect, overprotection, etc.) (Young *et al.* 2003). An EMS is usually revived in a stressful situation. The emotional states connected to EMSs are not appropriate to the current situation but mirror childhood experiences (Young 1999; Arntz & Jacob 2012). There are currently 18 EMSs in the SCHEMA THERAPY approach (Young 2012).

Another important construct of Schema Therapy is Schema Modes (SMs). SMs are state-like, moment-to-moment representations of EMSs that are shifty but pervasive at the same time (Arntz & Jacob 2012). Modes could represent emotional, cognitive and behavioural components (Arntz *et al.* 2021). When an EMS is activated or there is the threat of its activation, certain inner responses take place – agreement with the EMS, avoiding the EMS or fighting with the EMS; after that, different SMs could emerge and switch between each other (Arntz *et al.* 2021). There are four categories of SMs: Inner Child modes (mostly representing pure emotional states, connected to unmet emotional needs), Dysfunctional Parent modes (inner response with demands or criticisms, internalized dysfunctional messages from significant others), Maladaptive Coping Modes (behavioural responses to inner tension, which are developed as survival mechanisms in childhood) and Healthy Modes (which include adaptive responses to inner needs and the sense of satisfaction) (Young *et al.* 2003; Arntz & Jacob 2012). The number of SMs is still being discussed. The SMs reflected in the Schema Mode Inventory 1.1 (SMI; Young *et al.* 2014) will be considered here.

Schema Therapy Constructs and Burnout

A schema model of burnout emphasizes that burnout is an unsuccessful solution of the EMSs (Bamber 2006; Bamber & McMahon 2008). Individuals with EMSs subconsciously choose a work environment that is similar in its dynamics and structure to the early emotionally toxic environment and relationships that created these EMSs. There is an unintentional recurrence of EMSs and coping mechanisms in the workplace. Most often, work experience differs from early experience and a process of healing EMSs takes place, but there are cases when this does not happen, and such individuals are most prone to burnout (Bamber & McMahon 2008). There are few empirical investigations that use the schema approach towards occupational burnout. These studies indicated the presence of some EMSs as predictors of burnout. The Emotional Deprivation schema predicted Emotional Exhaustion, the Subjugation and Entitlement & Grandiosity schemas predicted Depersonalization, and the Emotional Inhibition schema was a predictor of reduced Personal Accomplishment – three dimensions of burnout according to the Maslach Burnout Inventory (Maslach & Jackson 1981; Bamber & McMahon 2008). Defectiveness & Shame, Abandonment & Instability and Mistrust & Abuse schemas, as well as Emotional Inhibition schema in the reverse way, were significant predictors of Emotional Exhaustion in the Simpson *et al.* study (2018). Also, Maladaptive Coping

Modes were tested via hierarchical linear regression, and Detached Protector showed up as a significant predictor of Emotional Exhaustion (Simpson *et al.* 2018).

The mentioned studies were done with samples of health workers and counselling psychologists, and the classic conceptualization of burnout was used (Maslach *et al.* 1996). This study analyzes the contribution of individual factors to burnout further using the schema approach, looking not only at EMSs and Maladaptive Coping Modes but also at other basic Schema Modes in a multi-occupational sample.

This research is the first where the relationship between different subtypes of burnout (Montero-Marin & García-Campayo 2010) is observed together with Schema Therapy constructs (Young *et al.* 2003; Arntz & Jacob 2012). In addition, the novelty of this work is that it focuses on the study of the phenomenon of burnout through network analysis (Borsboom 2017). With this in mind, the primary question this study aims to answer is what the relationships are between Early Maladaptive Schemas, Schema Modes and burnout subtypes using network analysis.

METHODS

Participants

This correlational and multivariate study had 562 participants. The average age of the respondents

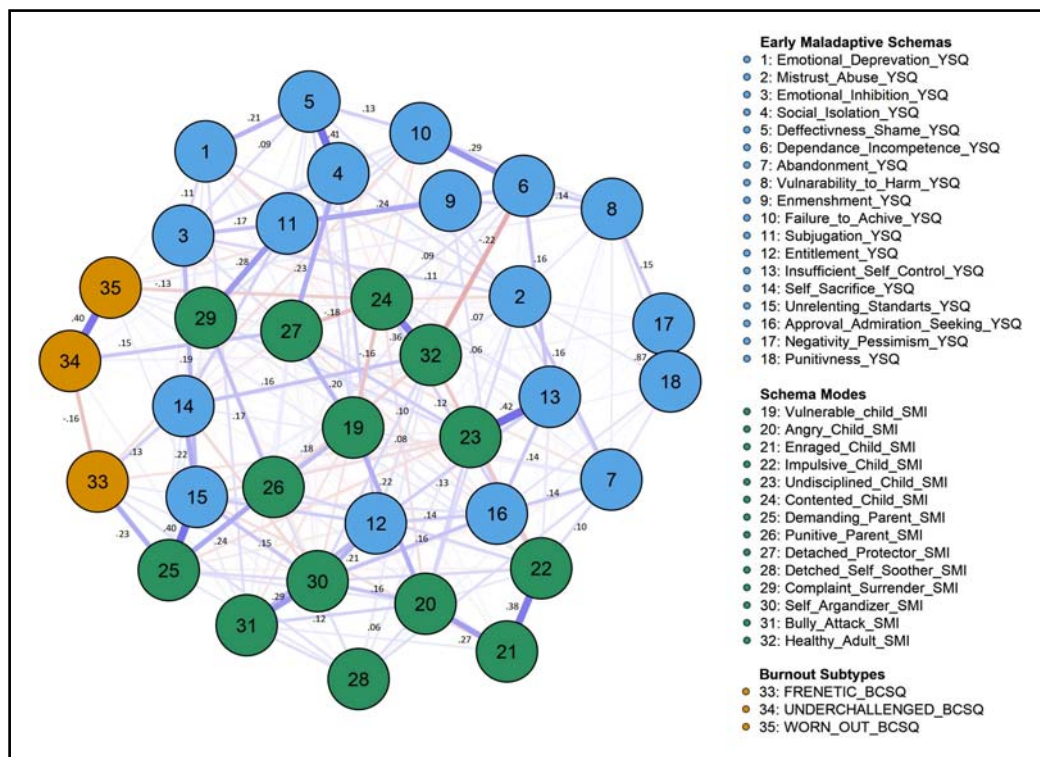


Fig. 1. Network of the 18 YSQ-S3, 14 SMI and 3 BCSQ-36 scales
 Note. A blue edge between two nodes indicates a positive partial correlation between two specific variables and red edges – negative partial correlations. A missing edge means that two variables are independent after conditioning on the set of remaining variables. A wider and more saturated edge means a stronger correlation.

Table 1. Descriptive statistics and internal consistency for BCSQ-36, YSQ-S3, SMI scales

Scale	<i>M</i>	<i>Md</i> ^a	<i>SD</i>	Cronbach's α
BCSQ-36				
Frenetic	4.54	4.75	0.90	.88
Underchallenged	2.78	1.00	1.21	.94
Worn-Out	3.03	2.92	0.97	.88
YSQ-S3				
Abandonment / Instability (AB)	2.64	1.80	1.11	.82
Mistrust / Abuse (MA)	2.45	2.00	0.99	.79
Emotional Deprivation (ED)	2.12	1.00	1.08	.85
Defectiveness / Shame (DE)	1.85	1.00	0.91	.86
Social Isolation / Alienation (SI)	2.29	2.00	1.15	.90
Dependence / Incompetence (DI)	1.79	1.00	0.77	.79
Vulnerability to Harm or Illness (VH)	2.17	2.00	0.94	.77
Enmeshment / Undeveloped Self (EM)	1.83	1.00	0.86	.77
Failure to Achieve (FA)	2.23	2.00	1.03	.88
Entitlement / Grandiosity (ET)	2.62	2.20	0.76	.59
Insufficient Self-Control / Self-Discipline (IS)	2.37	2.00	0.85	.78
Subjugation (SB)	2.10	2.00	0.83	.79
Self-Sacrifice (SS)	3.32	3.20	0.97	.77
Approval Seeking / Recognition Seeking (AS)	2.80	2.40	1.01	.82
Negativity / Pessimism (NP)	2.69	2.00	1.06	.82
Emotional Inhibition (EI)	2.64	2.20	0.92	.71
Unrelenting Standards / Hypercriticalness (US)	3.07	2.60	0.92	.69
Punitiveness (PU)	2.38	2.00	0.78	.70
SMI				
Vulnerable Child Mode (VC)	2.17	1.70	0.86	.93
Angry Child (AC)	2.38	2.00	0.72	.83
Enraged Child (EC)	1.41	1.00	0.50	.87
Impulsive Child (IC)	2.16	2.13	0.64	.84
Undisciplined Child (UC)	2.61	2.40	0.73	.72
Demanding Parent (DP)	3.30	2.71	0.89	.79
Punitive Parent (PP)	1.88	1.50	0.61	.82
Complaint Surrender (CS)	2.79	3.00	0.73	.76
Detached Protector (DPR)	2.24	1.89	0.79	.88
Detached Self-Soother (DSS)	3.13	3.25	0.95	.69
Bully and Attack (BA)	2.19	2.33	0.60	.67
Self-Aggrandizer (SA)	2.74	2.40	0.67	.76
Healthy Adult (HA)	4.54	4.90	0.63	.80
Contented Child (CC)	3.88	3.90	0.74	.85

^a More than one mode exists, only the first is reported; N = 562

was 41.00 (SD = 11.82), with a range from 18 to 71 years, and 82% of participants were women.

At the beginning of the survey, all study participants indicated their age and gender. The next part was about

burnout, followed by surveys about Schema Modes and Early Maladaptive Schemas. The extended part of the sociodemographic questions was at the very end of the survey, but only 74% of the basic sample filled in this

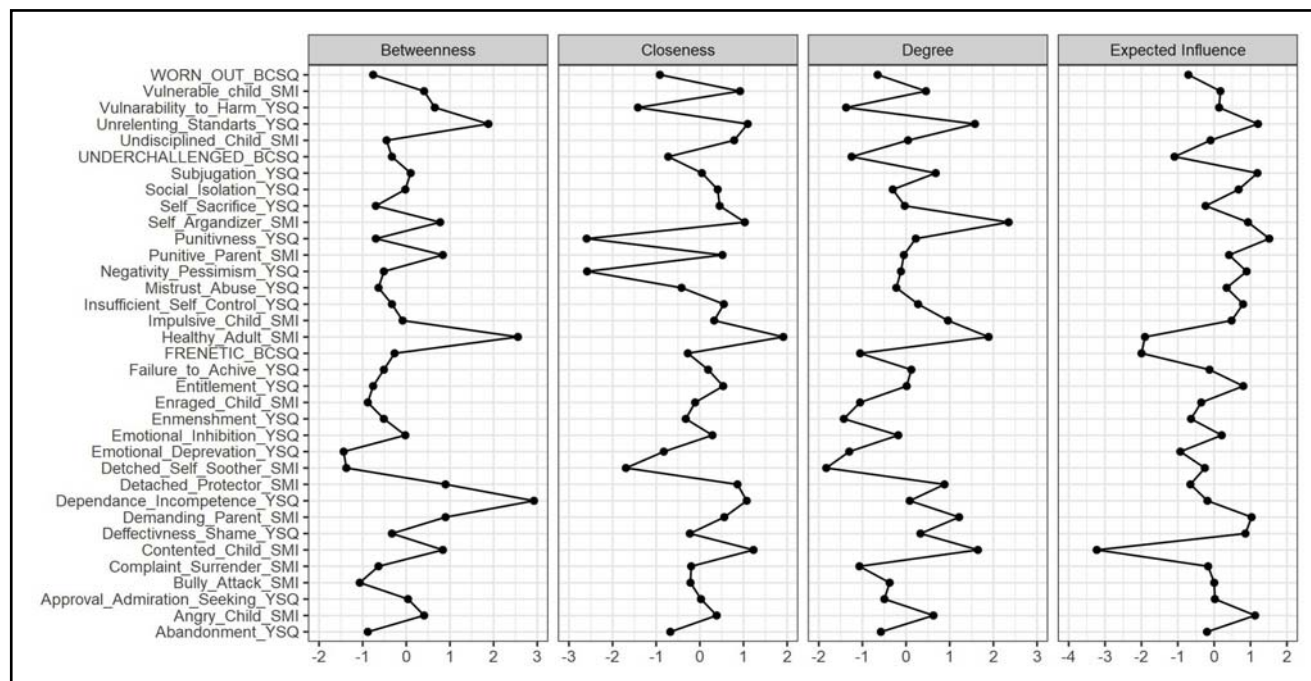


Fig. 2. Centrality plot of the network of the 18 YSQ-S3, 14 SMI and 3 BCSQ-36 scales

extended part. Overall, the survey completion rate was around 50%, which can be connected to the large number of questions (304).

From the extended sociodemographic information, it can be ascertained that 75% of participants were in relationships, 83% had been in higher education, and 21% were current students who were working at the same time. Around 84% of participants represented the state and local government sector, which can be explained by the study procedure. The average number of working hours per week was 39.00 (SD = 11.28), with a variation from 1 to 100 working hours per week. At the time of the survey, 69% of respondents worked from their offices. At this time, the first wave of the COVID-19 pandemic in Latvia had ended and the state of emergency and severe restrictions had been lifted. Around 57% of respondents did not report a significant increase in their workload due to the first wave of the pandemic. Their work experience varied from a few months to 46 years, and 73% noted that they work as specialists. Their average length of service was 9.21 years (SD = 9.63), and 83% had a permanent contract. The most frequently noted spheres of activity were public administration (40%) and the field of medicine and social care (19%). The study participants also noted other areas of activity such as IT, tourism, law, services and sales, human resources, culture, and sports.

Instruments

All instruments used in this study are self-report questionnaires with Likert-type scales.

The Burnout Clinical Subtype Questionnaire (BCSQ-36; Montero-Marin & García-Campayo 2010)

consists of 36 items and assesses three burnout subtypes with twelve items per scale. The degree of agreement with each of the statements is rated using a scale with 7 response options. Answers are scored from 1 (totally disagree) to 7 (totally agree). The Latvian version of the BCSQ-36 was used, which showed high internal consistency and good factorial validity (Abeltina et al. 2020). The Cronbach's alpha coefficients for the Frenetic, Underchallenged and Worn-out subtypes in the Latvian adaptation study were .89, .94, and .89, respectively (Abeltina et al. 2020).

The Young Schema Questionnaire – Short Form 3 (YSQ-S3; Young 2014) is 90 items long and assesses all 18 EMSs with 5 items per EMS (Young 2005). Individuals describe themselves by rating statements on a 6-point scale from 1 (completely untrue of me) to 6 (describes me perfectly). Higher values mean a greater presence of a particular schema. There is a series of studies that confirm this tool's reliability, factorial validity, test-retest stability and construct validity (e.g., Bach et al. 2015; Calvete et al. 2013; Kriston et al. 2013). In a pilot study with the purpose of adaptation to the Latvian language, internal reliability was satisfactory for almost all scales: Cronbach's alpha coefficients for 17 scales ranged from .71 to .88; however, for the Entitlement & Grandiosity scale, $\alpha = .58$ (Jaškova et al. 2016).

Schema Mode Inventory 1.1 (SMI; Young et al. 2014) is a questionnaire that covers 14 Schema Modes with 118 statements. The modes are assessed with different numbers of items, ranging from 4 to 10 (Lobbstaal et al. 2010). Individuals rate their emotions, cognitions and behaviours on a 6-point scale from 1 (never

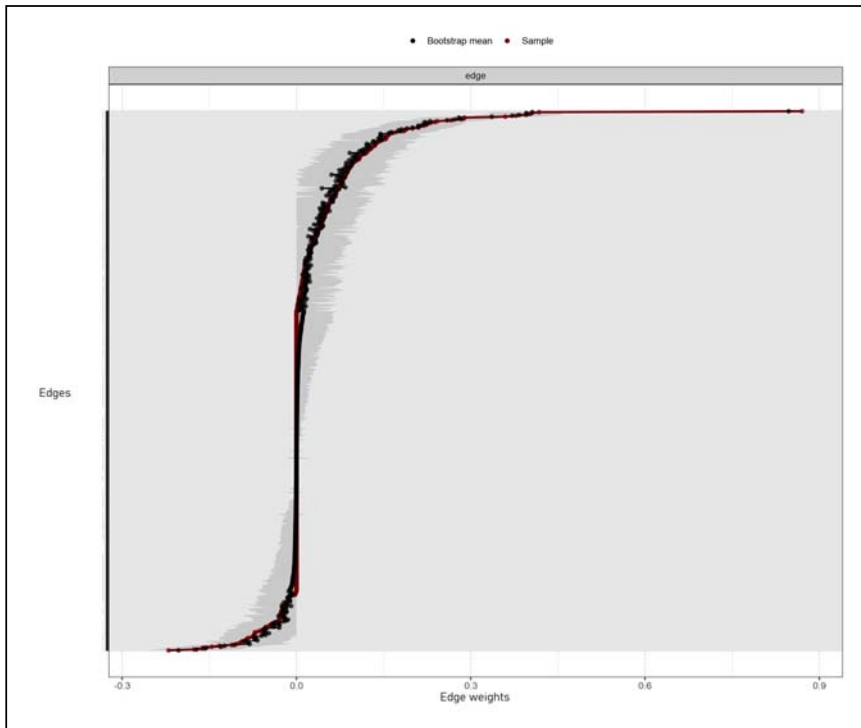


Fig. 3. Bootstrapped confidence intervals of estimated edge-weights for the estimated network of the 18 YSQ-S3, 14 SMI and 3 BCSQ-36 scales. Note. The red line means sample edge strength, the black line indicates the mean of the bootstrapped edge strengths, the grey area – a 95% confidence interval obtained from the bootstraps (2,500 times), and each horizontal line represents one edge of the network, ordered from the highest edge on the top to the lowest edge on the bottom. The y-axis labels have been removed to avoid cluttering.

or almost never) to 6 (all of the time). Higher scores mean a more frequent presence of the modes. The internal consistency of the scales and their factorial and convergent validity have been successfully tested in various countries (e.g., Reiss *et al.* 2016; Lobbstaël *et al.* 2010; Panzeri *et al.* 2016). An SMI reliability analysis in a Latvian sample shows that Cronbach's alpha coefficients ranged from .69 to .91 (Jaškova *et al.* 2016).

An extended sociodemographic section at the end of this survey obtained information about the participants' demographic (age, gender, number of children, relationship status, educational level and whether they were currently a student) and occupation (length of service in years, position at work (specialist, manager, top manager), working hours per week, presentism and absenteeism in days during last year, etc.).

Procedure

In this study, all measurements were obtained via the medium of an online survey. Data were collected on July 8-29, 2020 through the platform Exploro.lv. This platform was created for Latvian professionals, and specialists are provided with the opportunity to perform psychological assessments of clients using various computer-based research methods. The invitation to participate in the survey was initially distributed through social media. However, the response was minimal due to the large number of questions. Consequently, it was decided to disseminate information through the Network of Human Resource Managers of the Public Administration and other channels. The survey was also available to psychology students at the

University of Latvia. Data were collected following the principles of anonymity and confidentiality, which were explained to the study participants in a cover letter at the beginning of the survey. There was also information about the purpose of the study, the authors, their affiliation and their contact information.

Data Analysis

Descriptive statistics (M and SD) and Cronbach's alpha coefficients were computed for each scale.

A weighted undirected and non-symptom network was constructed for all variables as "nodes" using JASP Version 0.14.1 (JASP Team 2020). An undirected network was built, where edges between nodes are undirected and indicate some mutual relationship but with no indication for the direction of effect (Hevey 2018). The nonparanormal correlation method was used, where firstly the nonparanormal transformation was applied to make all data normally distributed and then Pearson correlations were used.

Overall, the constructed network can be observed as an interconnected partial correlation structure among a set of items (Rhemtulla *et al.* 2016). The regularized partial correlation network was estimated using graphical LASSO regularization (Friedman *et al.* 2008) with EBIC model selection (Chen & Chen 2008; Foygel & Drton 2010; Epskamp & Fried 2018). The Fruchterman-Reingold algorithm was used for visualization, where nodes with stronger and/or more connections are placed closer together.

Network analyses were performed by assessing several centrality measures: strength or degree, expected influence, closeness, and betweenness of the

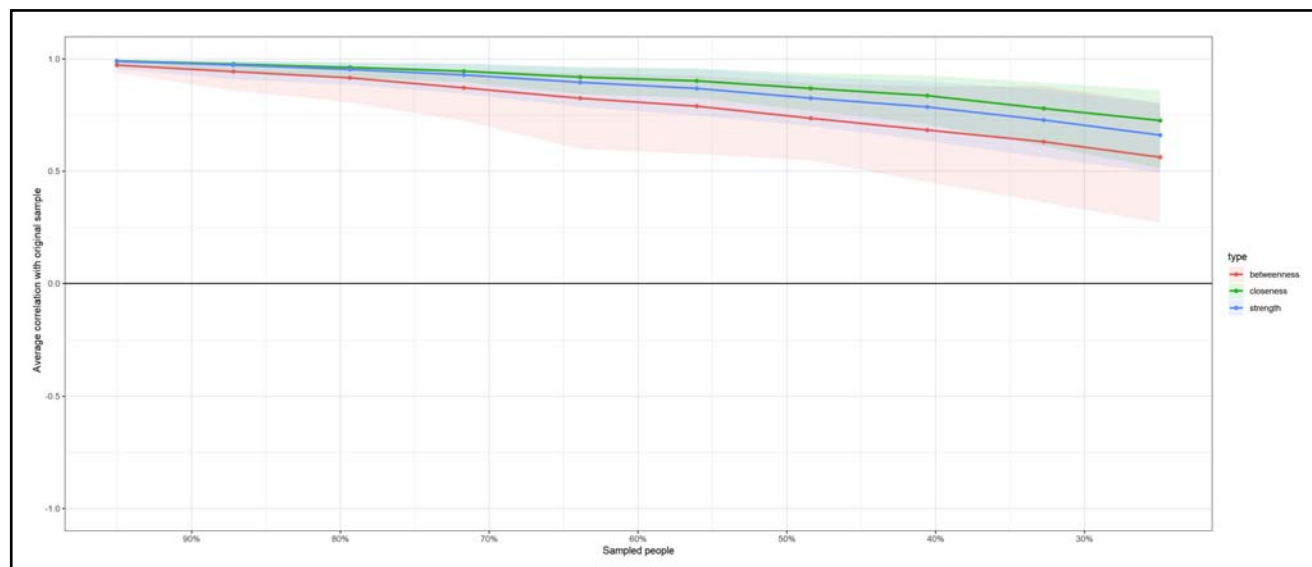


Fig. 4. The stability of centrality indices for the estimated network of the 18 YSQ-S3, 14 SMI and 3 BCSQ-36 scales
 Note. Figure 4 shows the average correlations between centrality indices of the original sample and networks sampled with case-dropping. Lines indicate the means and areas indicate the range from the 2.5th quantile to the 97.5th quantile.

nodes (Isvoranu *et al.* 2016; Robinaugh *et al.* 2016). Strength is a measure of the number and strength of direct connections, expected influence accounts for the presence of negative edges, closeness measures how strongly a node is indirectly connected with another, and betweenness measures how well one node connects to other nodes or the shortest path length between two other nodes (Robinaugh *et al.* 2016). Also, “bridge” nodes were analyzed in the sense of those that serve as a connection between two sets of network (Fonseca-Pedrero 2017).

The accuracy and stability of the network were examined by bootstrap analysis. The accuracy of the edge weights was examined through bootstrapped (2,500 iterations) 95% confidence intervals (CIs), while the stability of centrality measures indices or node order stability by case-dropping subset bootstrap (proportion of data that could be dropped with 95% probability and still retain a correlation of .70 or higher between the original centrality indices and the centrality of networks based on subsets) (Epskamp *et al.* 2018).

RESULTS

Descriptive Analysis and Reliability

The descriptive statistics (M and SD) for all variables are provided in Table 1. The sample of this study shows that mean answers are in diapason from “mostly untrue of me” to “slightly more true than untrue” for 13 of 18 EMSs. But the answers for Self-Sacrifice (M = 3.32; SD = .97) and Unrelenting Standards & Hypercriticalness (M = 3.07; SD = .92) range from “slightly more true than untrue” to “moderately true of me”. SMI’s means ranged from “rarely” to “occasionally” in 8 of 12 dysfunctional modes, but in two dysfunctional

modes – Demanding Parent (M = 3.30, SD = .89) and Detached Self-Soother (M = 3.13, SD = .95) – the answers ranged from “occasionally” to “frequently”. Respondents’ answers averaged “frequently” to “most of the time” only in the Healthy Adult mode (M = 4.54, SD = .63).

Normality was checked using the Shapiro-Wilk test. The null hypotheses of normal population distributions were rejected (in the majority of cases $p < .001$, but for Self-Sacrifice and Healthy Adult, $p = .001$) for all variables, except Frenetic Subtype ($p = .55$).

The internal consistency of all the scales was examined by computing a Cronbach’s alpha coefficient (Table 1). In the present study, the internal reliability alpha coefficient of the BCSQ-36 was almost the same as in the Latvian adaptation study (Abeltina *et al.* 2020) and considered as satisfactory (Tabachnik & Fidell 2013) – Cronbach’s alpha was .88 for Frenetic and Worn-out and .94 for Underchallenged. YSQ-S3 Cronbach’s alphas were satisfactory for almost all scales (median $\alpha = .78$; range .59–.90); however, the reliability results in the Unrelenting Standards scale were questionable ($\alpha = .69$) and poor in the Entitlement & Grandiosity scale ($\alpha = .59$). The Entitlement & Grandiosity scale also showed low internal consistency coefficients in the Latvian pilot study (.58) and in several other studies, for example in Canadian studies using the French (.57) and Polish versions (.62) (Jaškova *et al.* 2016; Hawke & Provencher 2012; Oettingen *et al.* 2018).

SMI Cronbach’s alphas were satisfactory for all the scales (median $\alpha = .80$; range .67–.93); the reliability results were questionable in the Detached Self-Soother scale, with an internal consistency coefficient of .69, and the Bully & Attack mode ($\alpha = .67$).

Network Analysis for Burnout Subtypes and Schema

Constructs

Due to the high theoretical connectivity of EMSs and SMs, the network approach was chosen as an appropriate way to look at the relationships between these constructs and ways of burnout. The network illustrates the relationship between burnout subtypes and different schemas and schema modes, representing 35 nodes all together and 288 non-zero edges from the 595 edges in total (Figure 1).

There are several noteworthy partial correlations. The strength of the correlations was interpreted based on Evans' (1996) proposal. The Frenetic subtype (Node 33) is directly positively associated with the Demanding Parent mode (Node 25) ($sr = .23$) and negatively associated with the Underchallenged subtype (Node 34) ($sr = -.16$). The Frenetic subtype node also has a direct partial correlation with the Self-Sacrifice schema node ($sr = .13$), but it is weaker than the partial correlation with the Demanding Parent node, which could mean that this mode would rather activate the Frenetic burnout subtype.

The Underchallenged subtype (Node 34) has a direct positive association ($sr = .15$) with the Detached Protector mode (Node 27) and a positive association with the Worn-out subtype (Node 35) ($sr = .40$). In turn, the Worn-out subtype (Node 35) is negatively associated with the Contented Child mode (Node 24) ($sr = -.13$).

Node 25 (Demanding Parent mode), Node 24 (Contented Child mode) and Node 27 (Detached Protector mode) work as bridge nodes between EMSs and burnout subtypes.

To detect the most influential nodes within the network, centrality measures of the network were calculated (Figure 2). The nodes representing the Punitiveness schema had the highest strength or expected influence measure (strongest direct connections with other nodes, accounting for the presence of negative edges). Several other nodes also scored very highly in this measure: the Unrelenting Standards and Subjugation schemas and the Angry Child and Demanding Parent modes. A number of other nodes were not far behind the already mentioned ones (Social Isolation, Negativity & Pessimism, Insufficient Self-Control, Failure to Achieve schemas as well as the Self-Aggrandizer and Detached Self-Soother modes). The Healthy Adult node showed the highest closeness measure. This node is more easily connected to other nodes and could be a good mediator for other nodes in the network (Fonseca-Pedrero, 2017). The Dependence & Incompetence, Unrelenting Standards and Healthy Adult nodes were the ones with the highest betweenness measures (the most transitional nodes) and are well-connected to others. The degree measure showed the number and strength of direct connections without accounting for the presence of negative edges (Self-Aggrandizer, Healthy Adult and Contented Child modes as well as

the Unrelenting Standards schema were high in this centrality measure).

The network accuracy examination showed that the edge weights for most of the nodes in the network are close to the estimated bootstrap mean, but the CIs of many edges overlap, which means that these edges are not meaningfully different from each other (Figure 3).

The analysis of the stability of centrality estimates shows that the correlation between the order of strength centrality in the full dataset with a dataset in which half of the participants are sampled 2,500 times is above .70 (Figure 4). Using 30% of the original sample, the closeness estimate correlates at .75 with the full sample estimate, strengths at around .70, but betweenness at around .60. The range from the 2.5th quantile to the 97.5th quantile of all estimates does not drop below 0.25; for closeness and strengths, it is above .50 as recommended (Epskamp *et al.* 2018).

DISCUSSION

Following the aim of the study, the relationships between burnout subtypes, EMSs and SMs were investigated. The pattern of CIs for the edge weights shows that the network should be interpreted with caution, but most of the centrality indices look to be relatively stable. As can be seen from the network analysis and its visualization, EMSs are mostly indirectly connected to the different burnout subtypes through the SMs. The moderate positive partial correlation between the Underchallenged and Worn-out subtypes warns about moving in a fast way from one subtype to another.

The Demanding Parent mode was a bridge node to the Frenetic burnout subtype, which has direct connections to the Punitive Parent mode and Unrelenting Standards schema. Work with Dysfunctional Parent modes could be very important for Frenetic employees, which corresponds to the idea of the need to train self-compassion for the Frenetic subtype discussed in previous studies (Montero-Marin *et al.* 2016a; Montero-Marin *et al.* 2016b). Work with the Punitive Parent mode could also be essential for the Underchallenged subtype. The Punitive Parent mode had a direct connection to the Vulnerable Child mode, but this node to the Detached Protector node, which was mentioned as a bridge node to the Underchallenged subtype node. The Detachment coping strategy could be experienced as boredom (one of the main characteristics of this subtype; see Montero-Marin & García-Campayo 2010), and the network analysis shows a possible pathway to this from the Punitive Parent mode. The Dysfunctional Parent modes could affect not only to the Underchallenged subtype but also the Worn-out subtype as these two are connected. The Worn-out subtype is directly connected to the feelings of unmet needs. This is in line with the theoretical proposal for more supportive interventions

and work with depressive symptoms due to the nature of this profile (Montero-Marín *et al.* 2009; Montero-Marín 2016a). Work with needs awareness and fulfilment could be beneficial again for both Worn-out and Underchallenged burnout subtypes.

The expected influence centrality measure shows that there is a pleiad of nodes in this network that could have a considerable role in the activation of the burnout pathology. The Unrelenting Standards & Hypercriticalness, Punitiveness and Subjugation schemas and the Demanding Parent and Angry Child modes could be mentioned as highly influential nodes. The measures of the number and strength of direct connections showed that the Self-Aggrandizer mode could also be an important node in the network.

All highly influential schemas in this network are connected to the beliefs that one's own needs and feelings are not significant, that standards should be met in spite of everything, and that no mistakes are allowed. These EMSs are embodied in Dysfunctional Parent modes as internalized and endless strict rules, criticisms and possible punishments for normal emotional needs. And three maladaptive coping strategies emerged as the most influential ones – avoidance by depersonalization, numbness, emptiness, boredom (Detached Protector), expressing unmet emotional needs through anger (Angry Child) and arrogance (Self-Aggrandizer).

The results of the study allow us to assume that these combinations of mentioned EMSs and SMs are more likely to activate all the other maladaptive schemas and modes, leading to professional burnout in different ways. That is why these variables are promising targets for intervention and therapeutic strategies (Fried *et al.* 2017). The deactivation of these schemas and modes could lead to a reduction in other associated dysfunctional symptoms. Usually used individual-oriented burnout interventions aimed to train employees in relaxation techniques and stress management strategies (Dreison *et al.* 2018) could be ineffective for some employees. A person with a very active Unrelenting Standards, Subjugation or Punitiveness schema and a Demanding Parent or Punitive Parent mode could turn, for example, relaxation techniques into new demands without reducing the rest of their emotional burden. Consequently, this study shows that it is important to address the way in which an individual perceives themselves rather than make them learn new techniques. The possibilities of working in a schema approach framework with experiential techniques during burnout interventions with the aims of fulfilling the emotional needs of a person (Young *et al.* 2003), learning to stop the continuous flow of demands and finding healthy ways to overcome the inner pressure are promising.

The Unrelenting Standards schema, together with the Dependence & Incompetence schema and Healthy Adult mode, were highly ranked in the betweenness

measure. The Healthy Adult mode also showed the highest result in the closeness centrality indicator. Therapeutic work with the mentioned schemas could also lead to the deactivation of all pathological networks with different EMSs and SMs, together with burnout subtypes. However, the impact of these indicators on the whole network needs to be assessed with considerable care due to the contradictory results of their role in psychological networks (Bringmann *et al.* 2019), especially with regard to the Healthy Adult mode.

Healthy Adult and Contented Child were important modes in this study network. These modes could be observed as protective variables regarding their functional nature. But the network analysis showed mixed results. The Healthy Adult mode had a lot of negative, very weak partial correlations, but there were different very weak positive associations, such as with the Self-Sacrifice schema, Demanding Parent mode, Self-Aggrandizer mode and Detached Self-Soother mode, among others. Alongside many very weak negative correlations, the Contented Child mode also had positive ones, for example, with the Dependence & Incompetence schema, Insufficient Self-Control schema, and Complaint Surrender mode. The activation of these nodes does not always appear to imply a reduction in all maladaptive schemas and dysfunctional modes. Further research is needed to explore the observed relationships.

It should be added that mixed results in the Healthy Adult role could be connected to the items in YSQ-S3, which cover self-compassion, understood as a combination of self-kindness, common humanity and balanced awareness (Barnard & Curry 2011; Neff & Germer 2013), in a very minor way. In general, therefore, this means forgiveness, sensitivity, sincerity, patience toward one's actions, feelings, thoughts and impulses (Gilbert & Irons 2005) and acceptance of oneself as a human being with its limitations and imperfections (Neff 2003) are not taken into great consideration. All ten items are mostly about problem-solving, the management of emotions, and assertive self-protection against others.

Limitations

This study has some distinct limitations. Unfortunately, there have been no validation studies of YSQ-S3 and SMI in the Latvian population until this moment, and future studies are recommended in this direction. Other limitations are connected to the self-reporting tools per se and the problem of social desirability in answers, as well as the Schema Therapy concepts themselves. EMSs are assumed to be partly unconscious, especially those such as the Emotional Deprivation schema (Young *et al.* 2003). That means that YSQ-S3 could only measure the EMSs an individual is aware of (Thimm 2010). Perhaps future research should consider the idea of combining self-report questionnaires with other research methods. Also, this was a cross-sectional study, therefore longi-

tudinal work should be done in the future. This could improve accuracy of centrality measures and will allow the dynamics of a network to be studied, leading to a better understanding of burnout psychopathology and to uncovering which reciprocal associations or clusters of psychological variables should be addressed in more individually tailored interventions (Bringmann et al. 2019). With 35 nodes, it would possibly also have been preferable to have had a bigger original sample than 562 participants, as the results of the network accuracy analysis showed.

CONCLUSIONS

According to Borsboom (2017), network analysis could bring ideas for interventions, and central and bridge symptoms in particular represent promising treatment targets. Based on this, all subtypes will benefit from work with the Demanding Parent mode, reducing the Punitiveness, Unrelenting Standards, Subjugation, and Dependence & Incompetence schemas, as well as learning healthier coping strategies than the Detached Protector and Angry Child modes.

The network analysis suggests that Frenetic employees could primarily benefit from work with the Demanding Parent mode and Unrelenting Standards schema. The Underchallenged subtype requires work with the Detached Protector, Vulnerable Child and Punitive Parent modes, while the Worn-out subtype could get an advantage from increasing the Contented Child mode. The Underchallenged and Worn-out subtypes are positively interconnected, and work with the mentioned modes could be helpful for both burnout subtypes.

The results of this network analysis give some important ideas about unmet emotional needs of burned-out individuals corresponding to the particular EMSs and adaptive schemas, which are expected to develop when core emotional needs are met (Lockwood & Perris 2012; Bach et al. 2017). Self-compassion, self-forgiveness, realistic standards and expectations, assertiveness and self-expression, together with healthy self-reliance (Bach et al. 2017), could be important foci for burned-out employees.

Strengthening the Healthy Adult mode by providing a self-compassion dimension seems to be crucial for resolving burnout issues.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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