SCHEMAS, MODES AND COPING STRATEGIES IN OBSESSIVE-COMPULSIVE LIKE SYMPTOMS

Katia Tenore, Francesco Mancini and Barbara Basile

Abstract

Objective: Schema Therapy (ST) integrates cognitive-behavior therapy with emotion-focused, gestalt and object relations approaches. ST postulates that unmet emotional core needs in childhood play a role in the development of Early Maladaptive Schemas, that are maintained by dysfunctional coping strategies, and reveal themselves through specific modes. Ad hoc ST conceptualizations for personality disorders or for specific psychological conditions, have been proposed in the last years. The purpose of this study was to investigate the role of schemas, modes and coping styles in non-clinical subjects, exploring the association with Obsessive-Compulsive Disorder (OCD) symptoms severity. Moreover, we explored schemas, modes and coping styles constructs in two sub-groups, characterized by higher and lower obsessive symptoms. Finally, those constructs have been investigated in specific OC subtypes.

Method: Selected from a sample of two-hundred, fifty-one subjects with high OCD symptoms (assessed through the Obsessive Compulsive Inventory–R) and fifty-nine healthy controls were recruited. Measures of schemas, modes and coping styles were collected. Additional indexes of depression were collected. Descriptive, between-group and correlation analyses were performed. Participants were selected from a normal population, thus, the study should be replicated involving a clinical population.

Results: Specific schemas (i.e., mistrust/abuse, vulnerability to harm and high standards), modes (i.e., demanding parent) and coping styles (i.e., intra-psychic avoidance) were identified in the high OCD symptoms group, with precise peculiarities for OCD characteristics (i.e., washing, checking and obsessions). Further, OC symptoms severity was positively associated with specific schemas and dysfunctional modes.

Conclusions: Our results confirm previous findings investigating schemas and modes in OCD populations.

Key words: early maladaptive schemas, modes, coping, schema therapy, OCD

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Introduction

Obsessive compulsive disorder (OCD) is a clinical condition characterized by recurrent, intrusive, unwanted ideas, thoughts or impulses (obsessions) and by the attempts to reduce or neutralize anxiety or prevent a feared outcome associated with the obsessions through executing repetitive ritualistic behavioral or mental actions (compulsions) (APA 2000). Practice guidelines (APA 2007) assert that effective first-line treatments for OCD include behavior therapy involving Exposure and Response Prevention (ERP) and pharmacological therapy (mainly, selective serotonin reuptake inhibitors, SSRIs). ERP demonstrated to be efficacious and specific in OCD treatment (Ponniah et al. 2013), and at least as effective as medication, and might even be considered superior, if risks, costs, and enduring benefits are considered (Foa et al. 2005, Nakatani et al. 2005). Nevertheless, research indicates that 50% of patients do not respond satisfactorily to this form of treatment (Stanley and Turner 1996, Baer and Minichiello 1998).

Further, OCD patients with comorbid personality disorders or severe interpersonal difficulties, receive less benefits from traditional cognitive-behavioral therapy (CBT, Beck and Freeman 1990, Fals-Stewart and Lucente 1993, Sookman and Steekete 2010). This may rely on the difficulties such patients display in accessing their emotions and underneath cognitive beliefs, and in overall therapy compliance obsessive related to dysfunctional personality traits.

Schema Therapy (ST, Young et al. 2003) is an integrated approach, which combines CBT strategies to experiential, attachment, transitional, gestalt and object relations models. ST has been developed to treat personality disorders, as well as long standing emotional difficulties, that have their roots in childhood and adolescence. According to Young's theorization Early Maladaptive Schemas are defined as "pervasive themes, or patterns, of memories, bodily sensations, emotions and cognitions about oneself and relationships, developed during childhood/adolescence, when specific childhood needs are not met (i.e., safety,

acceptance, love, rules and limits, etc)". After a first conceptualization, including fifteen schemas, Young (2003) recognized eighteen schemas, determined by the interaction of child's temperamental features and specific experiences of unmet needs. For a detailed description of all schemas, see **table 1**.

In a previous study (Atalay et al 2008), obsessive symptoms have been associated to the frustration of

To manage distress arising from schemas activation, individuals develop specific coping styles that represent "early childhood survival strategies". Such coping styles (CS) include Surrending (i.e., submission toward for instance abusive or neglecting relationships), Avoidance (i.e., dissociation, behavioral avoidance, using drugs or other strategies to avoid contact with needs and emotions, etc.) and Overcompensation (i.e.,

Table 1. *List and description of the 18 Early maladaptive Schemas (adapted from Young et al. 2003)*

Early maladaptive schemas	Description
Disconnection and rejection Domain	
Emotional deprivation	The belief that others will never met the needs of emotional support
Abandonment	The belief that others will be unavailable or unpredictable in their support and connection.
Mistrust/abuse	The belief that others will hurt, take advantage, abuse, and manipulate.
Social isolation	A feeling that one is isolated from the rest of the world and other people.
Defectiveness	A feeling that one is defective, inferior or invalid
Impaired autonomy and performance Domain	
Failure	The belief that one has, or will fail in important life areas of achievement.
Dependence	The belief that one cannot afford everyday responsibilities without the help of others.
Vulnerability	Fear that catastrophic events, not preventable, will occur.
Enmeshment	Being excessively emotionally involved/connected with important people, at the expense of full individuation or normal social development.
Impaired limits Domain	
Entitlement	The belief of being superior to other people and deserves special privileges.
Insufficient self-control	Difficulty in self-control and distress tolerance or in restraining excessive emotional expression or impulses.
Other directedness Domain	
Subjugation	Always surrendering control to others due to the belief that one is coerced.
Self-sacrifice	The belief that one have to meet the needs of other people at the expense of oneself.
Approval seeking	An intense interest on achieving the attention, approval, and recognition of other people.
Overvigilance and inhibition Domain	
Emotional inhibition	An excessive inhibition of important emotions, thoughts, and communications.
Unrelenting standards	The belief that one must attain excessively high internalized standards of behavior, usually to avoid criticism.
Negativity/pessimism	A excessive focus on the negative aspects of life.
Punitiveness	The belief that one should be punished harshly for her/his mistakes.

1) safe attachment, acceptance and care, 2) autonomy, competence sense of identity, 3) realistic limits and self-control, 4) free expression of needs and emotions and 5) spontaneity and playfulness core needs. This in turn could lead to the development of early maladaptive schemas such as 1) emotional deprivation, defectiveness/shame, social isolation, 2) enmeshment/ undeveloped self, vulnerability to harm, failure, 3) entitlement, 4) subjugation, approval-seeking, and 5) negativism/pessimism, unrelenting standards.

being controlling towards others or situations, attacking others, seeking for approval, etc.), strategies.

In a later conceptualization of the ST model, modes' concept has been introduced. Modes are defined as "intense emotional states that result when schemas are triggered" and include negative coping strategies, child and parental instances. Four main categories of modes have been identified, namely the Dysfunctional Child Modes (i.e., Lonely/Abandoned/Abused, Angry, and Impulsive/Undisciplined), the Dysfunctional

Copying Modes (i.e., Surrender, Avoidant, and Overcompensation), the Dysfunctional Parent Modes (i.e., Critical/Punitive and Demanding parents) and the Healthy Modes (i.e., Happy Child and Healthy Adult).

ST has been proposed to treat durable emotional problems, originated in childhood and adolescence, and it might be particularly useful for patients with Axis I disorders with additional interpersonal difficulties, trauma history and for comorbid personality disorders (PD). Specific schema or mode models have been proposed for several disorders and Gross et al. (2012) have proposed a specific ST mode formulation for OCD. According to the Authors the model might be particularly appropriate for severe or chronic OCD, for non-responders to traditional CBT and in case of a severe trauma history or comorbid PD. A more recent formulation for OCD has been developed starting from a study including an Italian sample of OCD patients (Basile et al. 2017), with detailed clinical intervention and treatment implications have being proposed in recent pubblications (Luppino et al. 2018, Tenore et al. 2018, Basile et al. 2018).

In support to previous evidences, this study has several aims. First we wanted to explore the association between OC symptoms' severity and schemas, coping styles and modes pervasiveness, in a non-clinical sample. The second goal was to explore ST related constructs in a smaller sub-group of participants with high OC symptoms, comparing their characteristics with those from a low OC symptoms sub-group. Finally, the third aim was to highlight whether particular ST features might be specific to different OCD subtypes, including the washing, checking and obsessive thinking categories.

Materials and methods

Participants

Two-hundred US volunteers were recruited online. All the participants from 18 to 65 years old were included in the sample. After providing instructions and informed consent, participants fulfilled several self-report measures in one single session, lasting around 45 minutes. Measures were administered in a random order. All participants reported information about age, gender, level of formal education, employment, marital status. Additional information about eventual active psychotherapy or drug treatment and relatives' mental illness were collected. The study was conducted according to the Declaration and of Helsinki guidelines.

Measures

The following measures were administered, with Cronbach's alpha coefficient being calculated for each test on the total sample. According to the second and the third aims of our study, we selected participants with low and high OC symptoms, according to the Obsessive – Compulsive Inventory score.

The Obsessive – Compulsive Inventory - Revised (OCI-R; Foa et al. 2002) is an 18-item self-report measure that assesses the level of distress associated with obsessions and compulsions. Participants rate the degree of distressed caused by OC symptoms in the past month on a five-point scale from 0 (not at all) to 4 (extremely). OCI-R assesses OCD symptoms across six subscales: (a) washing, (b) checking, (c) obsessions, (d) mental neutralizing, (e) ordering, and (f) hoarding. Cronbach's alpha reliability coefficient was α = .92.

Centre for Epidemiological Studies - Depression Scale (CES-D; Radloff 1977) is a 20-item self-report measure designed to assess depressive symptoms during the past week, in the general population. Standard cut-offs are >16 for mild depression and >23 for clinical depression. Cronbach's alpha reliability coefficient was α =.80, which implies acceptable internal consistency.

The Young Schema Questionnaire - Short form (YSQ-SF, Young and Brown 1994) is a 75-items test assessing fifteen schemas. Each scale consists of five items, and participants are asked to rate the items using a 6-point Likert scale (from 1 = completely untrue of me, to 6 = describes me perfectly). The fifteen schemas included in the questionnaire are: 1): Abandonment/Instability 2) Mistrust 3) Emotional Deprivation 4) Defectiveness / shame 5) Social Isolation 6) Dependence 7) Vulnerability to Harm or Illness 8) Enmeshment / undeveloped self 9) Failure describes the 10) Entitlement 11) Insufficient Self- Control 12) Subjugation 13) Self-Sacrifice 14) Emotional inhibition and 15) Unrelenting Standards. The YSQ-SF showed a high internal consistency, with a Cronbach's alpha coefficient (α) of .97.

The Young - Rygh Avoidance Inventory (YRAI, Young and Rygh 1994) contains 40 items that assess schema avoidance. Each item is rated on a 6 point Likert scale from 1 ("completely untrue of me") to 6 ("describes me perfectly"). The high rated items of this inventory represent the ways that patients used to avoid feeling the emotions which schemas engender (Young 2003). Usually, for research purposes, Young and other therapists divided YRAI items into 14 subscales, based on what they believe to be different avoidant strategies or symptoms, however, according to our aims and considering the weak reliability of this test, we extracted only three types of scores within the questionnaire, namely: 1) intra-psychic (i.e., Denial of memories, Excessive rationality and control, etc.), 2) behavioral (i.e., Substance abuse, Distraction through activity, Avoidance of upsetting situations, etc.), and 3) dissociative (i.e., Passive blocking of upsetting emotions, passive distraction through fantasy, day-dreaming or television) avoidance coping strategies. The internal consistency of the YRAI was quite acceptable, with α = .84.

The Young Compensation Inventory (YCI, Young 1995) contains 48 items assessing strategies used for schema compensation. Each item is rated on a 6 point Likert scale from 1 ("completely untrue of me") to 6 ("describes me perfectly"). Young observed that the same form of overcompensation could be used to cope with different schemas. The YCI lists some of the most common schemas being associated with each of the items on the test. Higher scores at YCI are indicative of greater employ of compensation strategies. These high scores indicate that patient overcompensates for emotions connected with his or her schemas. Cronbach's alpha reliability coefficient was very good, with α = .93.

The Schema Mode Inventory (SMI; Young et al. 2007) is a 124 self-descriptive statements that covers 14 modes (i.e., Vulnerable child, Angry child, Enraged child, Impulsive child, Undisciplined child, Happy child, Compliant child, Detached protector, Detached self-soother, Self-aggrandizer/Bully and attack mode, Punishing parent, Demanding parent, Healthy adult), where subjects have to rate the frequency on a 6-point scale ranging from "never or hardly ever" to "always"). The higher the score, the more frequent were the manifestations of the modes. Items of the SMI reflected emotions, cognitions or behaviors. Internal consistency coefficient was α = .96, showing an excellent reliability.

Statistical analysis

Data were analyzed using SPSS version 20.0 software (SPSS Inc., Chicago, IL). In a first correlation analysis we detected for the association between schemas, modes and coping styles pervasiveness and OCD-like related symptoms in the total sample. Further, we selected participants with a low (< 25th percentile) and high (>75th percentile) score on the OCI-R scale, considering the total score, and its specific sub-scales. In this second comparison analysis subjects scoring between the 25th and the 75th percentile in the OCI-R were excluded from statistics. More in detail, first, in this second analysis, the total sample was splitted into two sub-groups according to participants' distribution in the OCI-R. For each subscale of the OCI-R (considering the washing, checking, and obsessions sub-scales, as being the most representative of OC symptomatology), again participants scoring < 25th percentile and >75th percentile were selected and two sub-groups were obtained. In this way, in order to get a better insight on schemas, coping and modes within each specific OCD-subtype, we obtained three different sub-groups with low- and high- scores on the, respectively, checking, washing, and obsessive thinking subscales of the OCI-R. Mental neutralizing and hoarding OCI-R sub-scales were excluded from the analyses, as these factors are less characteristic of OCD condition and because of the low variability within the two sub-samples.

For the total sample and for each group descriptive statistics were performed. Afterwards, Pearson correlation analyses on the total sample, and one-way Anova tests on the two sub-groups (low- and high-OC symptoms D) were performed. Finally, correlation analyses testing for the association between OC symptoms' severity and schemas, coping styles and modes pervasiveness within each group in isolation (low/high OC symptoms, low/high checking, low/high washing, low/high obsessive thinking) were calculated.

Results

Descriptive statistics

The total sample and the low- and high OC symptoms sub-groups characteristics are reported in **table 2**. The two sub-groups did not differ in terms of age, gender, level of formal education, marital status and depression index (See last column in **table 2**, for statistical significances). When considering subjects'

eventual ongoing psychotherapy or drug treatment, no differences were detected between the two sub-groups, safe for maternal mental impairment which was significantly more frequent in the high- (vs. low-) OC symptoms group (30% vs 7%, respectively; Chi-Square, X2(1)=10.13, p=.001).

Total sample correlation analyses

The first aim of this study was to investigate the correlation between OC symptoms severity and ST constructs. Overall, Pearson correlation analyses showed that OC symptoms' gravity across the whole sample was moderately, but significantly, associated with the Abandonment, Mistrust/abuse, Social isolation, Vulnerability to harm, Subjugation, Emotional inhibition and Unrelenting standards schemas, with the strength of the association ranging between .14 and .23 (p<0.05). To some extent, OC symptoms severity was also positively associated with avoidant coping (i.e., intra-psychic, behavioral and dissociative strategies; significance ranging between .16 and .20, p<0.05), and with several over-compensation strategies (related to the Subjugation, Defectiveness/shame, Mistrust/abuse, Failure, Social isolation, Entitlement and Unrelenting standards schemas; significance range .14-.16, p<0.05). Finally, OC scores in the OCI-R were correlated to the bully attack, compliant surrender and self-aggrandizer coping modes, to both the demanding and punitive parent modes, and to the vulnerable, impulsive, angry and undisciplined child modes pervasiveness (significance range .14 - .25, p<0.05).

Schemas, coping and modes in low- and high OC symptoms

One sample Anova tests were performed to detect for eventual differences in schemas, coping and modes across the different sub-groups: a) low/ high OC symptoms (total OCI-R score), b) low/high checking, c) low/high washing, d) low/high obsessive thinking).

a) Differences between low/high general OC symptoms

The low- vs high OC symptoms group reported significantly lower scores in schemas, dysfunctional modes, avoidance coping, and overcompensation strategies related to specific schemas. Results are reported in **table 3**.

Table 2. *Demographic data of the total sample, low- and high-OC symptom groups are reported. One way Anova tests were performed to detect between groups' differences in levels of OC symptoms (OCI-R=Obsessive–Compulsive Inventory-Revised) and depression (CES-D=Centre for Epidemiological Studies — Depression Scale). P value of significance according to Chi-Squares and sub-groups comparison analyses are reported. Ns= not significant*

	Total Sample N=200	Low-OC Symptoms N=59	High-OC Symptoms N=51	P value
Mean age [SD] years	36.9[13.6]	36.0[13.5]	33.9[12.1]	ns
Gender M/F	67/136	25/34	17/33	ns
Level of formal education %	31%bachelor	35%bachelor	33%bachelor	ns
Marital status (single vs married) %	41%single	52%single	39%single	ns
OCI-R total score Mean [SD]	13.6[15.3]	0.7[1.1]	35.3[3.6]	.00
CES-D total Mean score [SD]	19.9[8.5]	20.8[9.2]	23.0[9.7]	ns

Table 3. *One way Anovas were performed with statistically significant differences being reported in the last column. Abbreviations: YSQ= Young Schema Questionnaire; SMI= Schema Mode Inventory; YCI=Young Compensation Inventory; YRAI= The Young-Rygh Avoidance Inventory; SD= Standard deviation*

Means [SD]	Low-OC Symptoms N=59	High-OC Symptoms N=51	P value
YSQ Mistrust/abuse	2.55[1.29]	3.12[1.52]	.03
YSQ Vulnerability to harm	2.49[0.91]	2.98[1.10]	.03
YSQ Unrelenting standards	3.07[0.92]	3.67[1.13]	.003
SMI Demanding parent	2.78[0.79]	3.08[0.58]	.03
YRAI Dissociative avoidance	2.82[0.92]	3.20[0.92]	.03
YCI Subjugation	0.87[0.24]	0.97[0.24]	.02
YCI Defectiveness/shame compensation	1.56[0.48]	1.86[0.53]	.003
YCI Mistrust/abuse compensation	1.40[0.43]	1.62[0.47]	.01
YCI Failure compensation	1.00[0.32]	1.20[0.31]	.002
YCI Negativism/pessimism compensation	1.73[0.47]	1.95[0.46]	.01
YCI Abandonment/instability compensation	1.01[0.24]	1.13[0.27]	.01
YCI Unrelenting standards compensation	1.19[0.40]	1.42[0.43]	.004
YCI Vulnerability to harm compensation	0.86[0.24]	1.13[0.27]	.02
YCI Dependence/incompetency compensation	1.66[0.51]	1.96[0.62]	.008

b) Differences between low/high Checking symptoms

We then considered the OCI-R Checking sub-scale, selecting participants scoring < 25th percentile (n=108) and >75th percentile (n=63) on the OCI-R Checking score. No significant differences were observed on demographic variables, or on levels of depression. Significantly higher scores in the high- compared against the low-check group were detected in the Mistrust/abuse, Vulnerability to harm, Unrelenting standards schemas, and in the Demanding parent mode and in the Failure-compensation coping mode. See **table 4** for statistical details.

c) Differences between low/high Washing symptoms

When comparing participants with a low- (n=116) vs high-Washing (n=57) score on the OCI-R Washing sub-scale, no significant differences were observed on the demographic data, safe for age, with low-washers being significantly older than high-washers (Mean=37.91[SD=13.6], Mean= 32.88[11.52] years old; t(171)=2.399, p=0.01). Statistically significant differences between low- and high-washer groups were detected in several schemas, modes and coping were detected and are reported in **table 5**.

d) Differences between low/high Obsessive Thinking symptoms

In this last analysis, we compared low- (n=89) vs high- obsessive thinking groups (n=59). The highly obsessing subjects were significantly younger (Mean age=38.02[SD=14.11] years-old, Mean age=32.81[11.40] years-old; t(146)=2.368, p=0.01) and more depressed (Mean=18.42[SD=8.64], Mean= 23.86[9.22] CES-D score; t(171)=-3.654, p=0.000), than the low-obsessive thinking group. See **table 6** for statistical details about significant differences.

Correlation analyses within sub-groups

In a last analysis we investigated the association between OC symptoms' severity and schemas, CS and modes' pervasiveness within the low- and high OC symptoms groups (considering OCI-R total score) in isolation, controlling for levels of depression.

Within the low- OC symptoms group significant inverse correlations were observed between symptoms' severity and all schemas, excluding the Unrelenting standards and the Self-sacrifice schemas, several dysfunctional modes and avoidant coping (safe for dissociation) (p<.05). No significant association was observed between OCI-R total score and YCI. Conversely, within the high OC symptoms group

Table 4. *Differences in mean scores in Schemas, Modes, and Compensation coping strategies between low- and high-Checkers. One way Anovas were performed with statistically significant differences being reported in the last column. Abbreviations: YSQ= Young Schema Questionnaire; SMI= Schema Mode Inventory; YCI= Young Compensation Inventory; SD= Standard deviation*

Means [SD]	Low-checking N=108	High-checking N=63	P value
YSQ Mistrust/abuse	2.45[1.35]	2.52 [1.18]	.03
YSQ Vulnerability to harm	2.27[1.14]	2.66[1.15]	.03
YSQ Unrelenting standards	3.15[0.93]	3.47[1.19]	.05
SMI Demanding parent	2.75[0.67]	2.95[0.63]	.05
YCI Failure compensation	1.03[0.33]	1.14[0.33]	.04

Table 5. *Differences in mean scores in Schemas, Modes, and Avoidance and Compensation CS between low- and high-Washers. One way Anovas were performed with statistically significant differences being reported in the last column. Abbreviations: YSQ= Young Schema Questionnaire; SMI= Schema Mode Inventory; YCI= Young Compensation Inventory; YRAI= The Young-Rygh Avoidance Inventory; DS= Standard deviation*

Means [SD]	Low-washing N=116	High-washing N=57	P value
YSQ Mistrust/abuse	2.35[1.24]	2.94[1.46]	.007
YSQ Social isolation	2.52[1.26]	2.97[1.43]	.03
YSQ Vulnerability to harm	2.28[1.14]	2.63[1.10]	.05
YSQ Self-sacrifice	3.02[0.99]	3.40[1.19]	.02
YSQ Unrelenting standards	3.06[0.92]	3.41[1.16]	.03
SMI Bully attack	1.94[0.83]	2.20[0.90]	.05
SMI Compliant Surrender	2.80[0.84]	3.10[0.91]	.03
SMI Demanding parent	2.69[0.67]	2.94[0.60]	.01
SMI Vulnerable child	2.35[1.03]	2.79[1.12]	.01
YRAI Behavioral avoidance	2.84[1.07]	3.22[1.05]	.02
YRAI Dissociative avoidance	2.70[0.83]	2.96[0.92]	.05
YCI Failure compensation	0.88[0.18]	0.95[0.21]	.008
YCI Social isolation	0.83[0.46]	1.00[0.52]	.04
YCI Entitlement	0.83[0.46]	1.00[0.52]	.04

Table 6. *Differences in Schemas, Modes, and Avoidance and Compensation CS between low- and high- OCD Obsessing thinking groups. Two-independent sample t-test with statistically significant differences are reported. Abbreviations: YSQ= Young Schema Questionnaire; SMI=Schema Mode Inventory; YCI=Young Compensation Inventory; YRAI= The Young-Rygh Avoidance Inventory; SD=Standard deviation*

Means [SD]	Low-obsessions N=89	High-obsessions N=59	P value
YSQ Emotional deprivation	2.28[1.33]	2.80[1.18]	.01
YSQ Abandonment	2.14[1.28]	2.79[1.37]	.004
YSQ Mistrust/abuse	2.28[1.28]	3.11[1.46]	.000
YSQ Social isolation	2.26[1.19]	3.27[1.43]	.000
YSQ Shame/Defectiveness	2.03[1.27]	2.61[1.32]	.009
YSQ Vulnerability to harm	2.22[1.18]	2.89[1.13]	.001
YSQ Subjugation	2.13[1.05]	2.55[1.17]	.02
YSQ Emotional inhibition	2.24[1.15]	2.85[1.16]	.002
YSQ Unrelenting standards	3.06[0.92]	3.41[1.22]	.05
YSQ Entitlement	2.35[0.99]	2.72[1.01]	.000
YSQ Insufficient self-control	2.27[1.17]	2.96[1.11]	.003
SMI Bully attack	1.93[0.90]	2.33[0.89]	.02
SMI Angry child	2.37[0.77]	2.68[0.65]	.01
SMI Happy child	4.09[0.84]	3.60[0.84]	.001
SMI Compliant Surrender	2.74[0.87]	3.19[0.2]	.003
SMI Detached protector	2.14[1.09]	2.56[0.88]	.01
SMI Demanding parent	2.68[0.73]	3.06[0.60]	.001
SMI Undisciplined child	2.30[0.89]	2.64[0.78]	.01
SMI Impulsive child	2.21[1.06]	2.49[0.84]	.03
SMI Self-aggrandizer	2.23[0.91]	2.57[0.74]	.01
SMI Vulnerable child	2.20[1.04]	3.03[1.09]	.000
YRAI Intra-psychic avoidance	2.10[1.13]	2.26[0.93]	.002
YRAI Behavioral strategies avoidance	2.74[1.13]	3.40[1.08]	.001
YRAI Dissociative avoidance	2.70[0.82]	3.06[0.94]	.01
YCI Subjugation	0.85[0.21]	0.94[0.24]	.01
YCI Defectiveness/shame compensation	1.54[0.49]	1.85[0.53]	.000
YCI Mistrust/abuse compensation	1.39[0.41]	1.61[0.48]	.003
YCI Failure compensation	1.00[0.34]	1.20[0.31]	.005
YCI Unrelenting standards compensation	1.16[0.40]	1.38[0.46]	.003
YCI Entitlement	0.83[0.46]	1.03[0.52]	.01

significant positive associations were detected between OC symptoms severity and the Failure (r=.32) and Enmeshment / undeveloped self (r=.34) schemas (p<.05). When investigating modes, significant inverse correlations were detected between OC symptoms severity and the happy child (r=-.33) and healthy adult modes (r=-.28, p<.01); whereas a positive association was observed between OC symptoms' intensity and the punitive parent (r=.42), the vulnerable (r=.31) and impulsive (r=.29) child modes (p<.05). No significant association was observed between the OC index and avoidant CS. Within the YCI, significant inverse correlations were detected between overcompensation for failure (r=-.27), vulnerability to harm (r=-.32), dependency (r=-.36), and enmeshment / undeveloped self (r=-.45) schemas CS (p<.05).

Discussion

The goals of this study were to explore ST constructs, such as maladaptive schemas, coping styles and modes in relation to OC symptoms in a non-clinical sample. First we explored the association with OC symptoms severity, and afterwards we explored ST related constructs in two sub-groups, characterized by more severe and no OC symptoms. Finally, we investigated schemas, coping styles and modes in specific OC subtypes.

Previous studies have explored schemas in OCD populations. In one study (Atalay et al. 2008) the social isolation, vulnerability to harm, failure, negativism/ pessimism, subjugation, emotional deprivation, defectiveness/shame, enmeshment/undeveloped self, unrelenting standards, entitlement, and approval-seeking schemas were significantly higher in patients, compared against healthy controls. In a study comparing OCD with other anxiety disorder and with healthy subjects, the OCD group showed emotional deprivation, mistrust/abuse and defectiveness/shame schemas to be more relevant, compared to the other conditions. In particular, defectiveness/shame and vulnerability to harm or illness schemas explained 38% of variance of OC symptoms (Yoosefi et al. 2016). In another research (Voderholzer et al. 2014) a group of patients with mixed diagnoses (OCD, eating disorders and chronic pain disorder) showed, all together, higher vulnerability to harm, abandonment, defectiveness/shame, dependence, emotional inhibition and insufficient self-control schemas, compared against a healthy control group. Within the same study, when considering modes, the main effect of patients' group was significant for the vulnerable and angry child modes, the detached protector and self-soother coping modes, and the punishing and demanding parent modes. When the OCD group was compared against the other two clinical groups, again higher scores in the vulnerable and angry child modes and in the punishing and demanding parent modes were detected. In a more recent study, we found that schemas of social isolation, vulnerability to harm, failure, subjugation, pessimism/negativism, unrelenting standards, abuse/ mistrust, dependence, abandonment, emotional deprivation and inhibition and defectiveness/ shame schemas were significantly more pervasive in OCD patients, compared against healthy samples (Basile et al. 2017).

These previous data are in line with our findings, where OCD severity (in a non-clinical sample) was positively associated with the abandonment, mistrust/abuse, social isolation, vulnerability to harm, subjugation, emotional inhibition and unrelenting standards schemas. Further, subjects with higher OC-like symptoms reported more pervasive mistrust/abuse, vulnerability to harm, unrelenting standards schemas, with, accordingly, a more significant activation of the demanding parent and the vulnerable child modes. As well, we detected a positive association between OC symptoms' severity and the failure and enmeshment / undeveloped self schemas and with the punitive parent mode. The mistrust/abuse schema refers to the believe that others will hurt, abuse, humiliate, manipulate or take advantage of oneself. Usually people with this schema have experienced physical or sexual abuse, or severe punishments or ostracism from their caregivers (Warburton and McIlwain 2005). In fact, several studies reported that many OCD patients have experienced abusive or traumatic experiences in their early life (Lochner et al. 2005, Cromer et al. 2007, Caspi et al. 2008). We also suggest that fear of being reproached, criticized or humiliated when making a mistake might increase threat beliefs and explain the presence of the mistrust/abuse schema in OCD. In line with this schema, we detected the activation of the vulnerable child mode, which refers to negative emotions such as sadness, loneliness, guilt, shame and others that might arise in response to harmful, abusive, neglecting or punitive situations. Another schema that occurred in high OCD participants was vulnerability to harm or illness. This schema refers to an exaggerated fear for an imminent and sudden catastrophe involving a sense of hopelessness, incompetence and failure. According to Sookman and colleagues (2001), within OC pathology, this schema is defined as "an excessive sense of personal susceptibility to danger from internal (thoughts and feelings) as well as from external (illness, accidents, interpersonal) sources". Obsessions related to contamination, illness, accidents or loss, and need to be more careful than others, might reflect an overestimation of danger. Commonly, this schema is associated with the perceived, or actual, feeling that one lacks in the ability to cope and deal with such catastrophic and unpredictable events. The vulnerability schema might also be associated to the punitive parent mode, which was positively correlated to OC symptoms' severity (in both the whole sample and in the highly obsessive sub-group). This mode refers to the internalization of parental rules on deserving punishment because of mistakes or emotions' and needs' expressions, and it might be associated to the unrelenting standard, failure and self-sacrifice schemas. The vulnerable child mode might also arise in response to a punitive or critical message toward the self for having done some mistakes or not having achieved certain high standards. As well, in fact, we also found some evidence of a pervasive unrelenting standard schema, in the high OC symptoms sub-group. This schema is based on the belief that one must strive to meet high standards and to avoid criticism. It is characterized by a sense of pressure, with additional hyper-criticalness thoughts toward oneself and others. This schema activates through the demanding parent mode, which pressures to achieve unrealistically high expectorations and goals, leading to overcontrolling and perfectionistic behaviors, in order to avoid mistakes, and prevent an overall sense of failure. Both the unrelenting standard schema and the demanding parent mode are present in the high OC symptoms group, and in all specific subtypes of OC (i.e., washers, checkers and obsessive thinkers). We suggest that these modes might explain patients' compulsive behaviors, such as checking, washing and rumination. In fact, when considering specific CS, behavioral and intra-psychic avoidant behaviors and many schemas, OC specific

compensation strategies have been detected. Finally, the enmeshment/undeveloped self schema has also been detected in the high OC symptoms group. This schema is associated with an extreme emotional involvement and closeness with parental figures, at the expenses of full individuation and normal social development and might be associated to a sense of insufficiency that impedes the capacity to understand and trust one's own personal desires, values and capabilities, in order to avoid criticism.

Finally, when considering outcomes related to specific OC subtypes, we found high checkers and high washers to share a common schemas/modes' pattern, with high washers displaying additional dysfunctional schemas (i.e., social isolation, self-sacrifice) and modes (i.e., bully/attack, compliant surrender), compared to the other subgroup. On the other hand, participants with high obsessional thinking displayed numerously higher dysfunctional schemas and modes. The most frequent coping strategies involved behavioral avoidance and dissociation, with some overcompensation strategies related to the failure, vulnerability to harm, social isolation, defectiveness/shame, dependence, abandonment and unrelenting standards schemas. Again, CS were analogous across the high OC symptoms sub-group, the high checkers and the high washer, while the high obsessional thinkers showed a more pervasive pattern of both avoidant and compensation coping responses.

The identification of specific personality features in OCD may have important clinical implications, considering both intervention and relational aspects. The presence of the mistrust/abuse schemas might play a role in building a safe therapeutic alliance, while the unrelenting standards schema might lead patients to strive for unrealistic goals or to perfectionistic behaviors within therapy itself. Further, addressing the demanding and punitive parent modes represent an additional important aspect in OCD treatment, as these modes seem to be strongly associated to compulsive behaviors, which in turn represent patients' dysfunctional way to cope with such introjected parental rules.

Strengths and limitations

Although we recruited data from a normal population, symptoms severity within the high OC symptoms sub-group were of clinical significance, with a mean score of 35 (commonly clinical cut-off within the OCI-R is set at 28; Foa et al. 2002). Further, overall measures used to assess schemas, modes and CS show many reliability and validity issues (Kriston et al. 2012, Alfasfos 2009, Oei and Baranoff 2007). Finally, our sample showed high levels of depression, which might have led to confounding results, in particularly when considering the high obsessions thinking group, which was characterized by general thoughts' of un-pleasantness, with no OC symptoms specificities. However, to try to control for this effect, we performed some partial correlation analyses, considering levels of depression as a covariate of no interest.

References

Alfasfos L (2009). *The early maladaptive schemas and their correlations with the psychiatric symptoms and the personality accentuations for palestinian students*. Hamburg University, Hamburg.

American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders*, 4th ed., text revision. Author, Washington DC.

Arntz A, Jacob G (2013). *Schema therapy in practice: an introductory guide to the schema mode approach*. John Wiley and Sons.

Atalay H, Atalay, F, Karahan D, Çaliskan M (2008). Early maladaptive schemas activated in patients with obsessive compulsive disorder: A cross-sectional study. *International Journal of Psychiatry in Clinical Practice* 12, 4, 268-279.

Beck AT, Freeman A (1990). *Cognitive therapy of personality disorders*. Guilford Press, New York.

Baer L, Minichiello WE (1998). Behavior therapy for obsessive compulsive disorder. In MA Jenike, L Baer and WE Minichiello (eds) *Obsessive-compulsive disorder: Practical management*. Mosb, St. Louis, MO.

Basile B, Tenore K, Luppino OI, Mancini F (2017). Schema Therapy mode model applied to OCD. *Clinical Neuropsychiatry* 14, 6, 407-414.

Basile B, Luppino OI, Mancini F, Tenore K (2018). A Theoretical Integration of Schema Therapy and Cognitive Therapy in OCD Treatment: Experiential Techniques and Cognitive-Based Interventions in Action (Part III). *Psychology* 9, 2296-2311.

Caspi A, Vishne T, Sasson Y, Gross R, Livne A, Zohar J (2008). Relationship between childhood sexual abuse and obsessive-compulsive disorder: case control study. *The Israel Journal of Psychiatry and Related Sciences* 45, 3, 177.

Cromer KR, Schmidt NB, Murphy DL (2007). An investigation of traumatic life events and obsessive-compulsive disorder. *Behaviour Research and Therapy* 45, 7, 1683-1691.

Fals-Stewart W, Lucente S (1993). An MCMI cluster typology of obsessive—compulsives: A measure of personality characteristics and its relationship to treatment participation, compliance and outcome in behavior therapy. *Journal of Psychiatric Research* 27, 2, 139-154.

Foa EB, Huppert JD, Leiberg S, Langner R, Kichic R, Hajcak G, Salkovskis PM (2002). The Obsessive-Compulsive Inventory: development and validation of a short version. *Psychological Assessment* 14, 4, 485.

Foa EB, Liebowitz, MR, Kozak MJ, Davies S, Campeas R, Franklin ME, ... Simpson HB (2005). Randomized, placebo-controlled trial of exposure and ritual prevention, clomipramine, and their combination in the treatment of obsessive-compulsive disorder. *American Journal of Psychiatry* 162, 1, 151-161.

Freud S (1926/ 2001). *Hemmung, symptom und angst (inhibitions, symptoms and anxiety)*. Vintage Random House, London.

Gross E, Stelzer N, Jacob G (2012). Treating OCD with the schema mode model. *The Wiley-Blackwell Handbook of Schema Therapy*. John Wiley and Sons, Ltd., Oxford.

Haaland AT, Vogel PA, Launes G, Haaland VØ, Hansen B, Solem S, Himle JA (2011). The role of early maladaptive schemas in predicting exposure and response prevention outcome for obsessive-compulsive disorder. *Behaviour Research and Therapy* 49, 11, 781-788.

Kim JE, Lee SW, Lee SJ (2014). Relationship between early maladaptive schemas and symptom dimensions in patients with obsessive-compulsive disorder. *Psychiatry Research* 215, 1, 134-140.

Koran LM, Hanna GL, Hollander E, Nestadt G, Simpson HB (2007). Practice guideline for the treatment of patients with obsessive-compulsive disorder. *The American Journal of Psychiatry* 164,7, 1.

Kriston L, Schäfer J, von Wolff A, Härter M, Hölzel LP (2012). The latent factor structure of Young's early maladaptive schemas: are schemas organized into domains?. *Journal of Clinical Psychology 68*, 6, 684-698.

Leonard H, Swedo SE, Lenane MC, Rettew DC, Hamburger

SD, Bartko JJ, and Rapoport JL (1993). A 2-to 7-year follow-up study of 54 obsessive-compulsive children and adolescents. *Archives of General Psychiatry* 5, 6, 429-439.

Lochner C, Seedat S, Du Toit PL, Nel DG, Niehaus DJ, Sandler R, Stein, DJ (2005). Obsessive-compulsive disorder and trichotillomania: a phenomenological comparison. *BMC Psychiatry* 5, 1, 1.

Luppino OI, Tenore K, Mancini F, Basile B (2018). A Theoretical Integration of Schema Therapy and Cognitive Therapy in OCD Treatment: Goals and Beliefs of the Obsessive Mind (Part I). *Psychology* 9, 2261-2277.

Mancini F, Gangemi A (2006). The role of responsibility and fear of guilt in hypothesis-testing. *Journal of Behavior Therapy and Experimental Psychiatry* 37, 4, 333-346.

Nakatani E, Nakagawa A, Nakao T, Yoshizato C, Nabeyama M, Kudo A, ... Kawamoto M (2005). A randomized controlled trial of Japanese patients with obsessive-compulsive disorder–effectiveness of behavior therapy and fluvoxamine. *Psychotherapy and Psychosomatics* 74, 5, 269-276.

Oei TP, Baranoff J (2007). Young Schema Questionnaire: Review of psychometric and measurement issues. *Australian Journal of Psychology* 59, 2, 78-86.

Ponniah K, Magiati I, Hollon SD (2013). An update on the efficacy of psychological treatments for obsessive–compulsive disorder in adults. *Journal of Obsessive-compulsive and Related Disorders* 2, 2, 207-218.

Radloff LS (1977). The CES-D scale a self-report depression scale for research in the general population. *Applied Psychological Measurement* 1, 3, 385-401.

Rijkeboer MM, Lobbestael J, Arntz A, Van Genderen H (2010). *The Schema Coping Inventory*. Universiteit Utrecht, Utrecht.

Salkovskis P, Shafran R, Rachman S, Freeston MH (1999). Multiple pathways to inflated responsibility beliefs in obsessional problems: Possible origins and implications for therapy and research. *Behaviour Research and Therapy* 37, 11, 1055-1072.

Sookman D, Pinard G, Beck AT (2001). Vulnerability schemas in obsessive-compulsive disorder. *Journal of Cognitive Psychotherapy* 15, 2, 109-130.

Sookman D, Steketee G (2010). Specialized cognitive behaviour therapy for treatment resistant obsessive-compulsive disorder. In D. Sookman, and R. L. Leahy (eds) *Treatment resistant anxiety disorders. Resolving impasses to symptom remission*, pp. 31e74. Routledge, Taylor and Francis Group Stanley, New York, London.

Stanley MA, Turner SM (1996). Current status of pharmacological and behavioral treatment of obsessive-compulsive disorder. *Behavior Therapy* 26, 1, 163-186.

Tenore K, Basile B, Mancini F, Luppino OI (2018). A Theoretical Integration of Schema Therapy and Cognitive Therapy in OCD Treatment: Conceptualization and Rationale (Part II). *Psychology* 9, 2278-2295.

Tynes LL, Salins C, Winstead DK (1990). Obsessive compulsive patients: familial frustration and criticism. *The Journal of the Louisiana State Medical Society: official organ of the Louisiana State Medical Society* 142, 10, 24-6.

van Vreeswijk M, Broersen J, Nadort M (2012). *The Wiley-Blackwell Handbook of Schema Therapy: Theory, Research and Practice*. John Wiley and Sons.

Voderholzer U, Cuntz U, Schlegl S (2012). Essstörungen. *Der Nervenarzt* 83, 11, 1458-1467.

Young JE (1995). Young Compensatory Inventory (YCI) (On-line). Cognitive Therapy Centre. New York.

Young JE, Arntz A, Atkinson T, Lobbestael J, Weishaar ME, van Vreeswijk MF, Klokman J (2007). *The Schema Mode Inventory*. Schema Therapy Institute, New York.

Young JE, Brown G. (1994). Young schema questionnaire. *Cognitive therapy for personality disorders: A schema-focused approach*, 63-76.

Young JE, Klosko JS, Weishaar ME (2003). *Schema therapy: A practitioner's guide*. Guilford Press, New York.

Young JE, Rygh J (1994). *Young-Rygh Avoidance Inventory (YRAI)*. Cognitive Therapy Center, New York.