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Applying Systems Theory and Therapy to Eating Disorders.
Implications for Etiology, Prevention and Systemic Multifamily Therapy
Across Cultures

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Dipl.-Psych. Annette Ulrike Mehl

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Dean: Prof. Dr. Dirk Hagemann
Advisors: Prof. Dr. Jan Rummel; Jun.-Prof. Dr. Katajun Lindenberg

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ORGINIGAL ARTICLE (SUBMITTED AT FAMILY PROCESS)

Mehl, A., Tomanová, J., Kuběna, A., & Papežová, H. (submitted). Results of the First Pilot Case Series of Multifamily Therapy for DSM-IV Eating Disorders in the Czech Republic. Effects on patients and their parents (*Family Process, submitted).*

Study II: Predictive Effects of Psychosocial Impairment Domains and Items for *DSM-V* Eating Disorder Onset

ORGINIAL ARTICLE (PUBLISHED)

Mehl, A., Rohde, P., Gau, J.M. & Stice, E. (2019). Disaggregating the predictive effects of impaired psychosocial functioning on future DSM-5 eating disorder onset in hihg-risk female adolescents. *International Journal of Eating Disorders,* 1-8. doi:10.1002/eat23082

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EXTENDED ABSTRACT

BACKGROUND. Eating disorders are closely related to *micro-system* variables such as family, friends, school and work. Western systemic family therapy models have long postulated the positive impact of improving the relationship between the child and the family to predict treatment outcomes. Despite their strong evidence base, family therapy models such as multifamily therapy (MFT) for eating disorders have not been implemented or tested in routine care in Eastern European countries, like the Czech Republic. Additionally, it is questionable whether cultural variables from the *macro-system* impede with the implementation and effectiveness of western models across cultures. In contrast, current etiological theories for eating disorders acknowledge the risk of sociocultural variables (e.g. thin beauty ideal) for eating disorder onset, but underestimate the putative predictive effects of *micro-system* domains (family, friends, school and work) on onset of Diagnostic and Statistical Manual of Mental Disorders *(DSM-V)* eating disorders. Although a single longitudinal risk factor study proved that impairments of the individual with its *micro-systems* (operationalized as combined psychosocial outcome) predicted all four eating disorder categories, it remains unclear which domain and individual items show predictive effects on future onset of subthreshold and full syndrome *DSM-V* eating disorder in young women.

OBJECTIVE. The first objective of this dissertation entitled '*Applying Systems Theory and Therapy for Eating Disorders. Implications for Etiology, Prevention and Systemic Multifamily Therapy Across Cultures*' was to identify cultural barriers that impede with the implementation of the first MFT model for eating disorders in the Czech Republic (*Study Ia*). The second objective was to explore its effects on patients' self-esteem and life quality (*Study Ib*). *DSM-IV* eating pathology and body weight of the same patient cohort was examined in addition to life quality and depressive symptoms of the entire sample (with parents) (*Study Ic*). The third objective was to investigate the putative predictive effects of the *micro-system*

domains (family, friends, school and work) and single items on future onset of all subthreshold and full syndrome *DSM-V* eating disorders in a high-risk sample of young women (*Study II*).

METHODS. *Study Ia* used a narrative approach to retrospectively identify cultural barriers of MFT implementation for the inclusion into a cultural competent checklist. In addition, qualitative feedback from patients with *DSM-IV* eating disorders (n = 15, aged 14 – 23) and their parents (n = 26, aged 40 – 54) were obtained at baseline and after 12-months treatment (T2). A patient pilot study (*Study Ib*), tested the effects of the Czech MFT on patients' self-esteem and life quality by self-report, using an Analysis of Variance (ANOVA) with repeated measures and a Wilcoxon Rank Test. In *Study Ic*, the first Czech MFT case series examined the pre-post effects on eating pathology (interview-assessed and by self-report) and body weight including families' self-reports on life quality and depression. A General Linear Model with fixed (GLM) and mixed effects (GLMM) analyzed the effects. *Study II* used studies with prospective longitudinal, interview-based research designs, to examine the univariate and multivariate predictive effects of family, friends, school and work impairments in samples of high-risk young females (n = 1,153; mean age = 18.5 years, SD = 4.2) over a three year period, using Cox Regression Hazard Models (CRM) and Classification Tree Analysis (CTA). Impairments in the *micro-system* domains were assessed with a psychosocial impairment self-report measure at baseline. Subthreshold- and full syndrome *DSM-V* eating disorder onset was monthly assessed, via diagnostic interviews.

RESULTS. *Study Ia* summarized the barriers that complicated Czech MFT implementation to include into a cultural competent checklist. Barriers were1) *underfinanced health-care*, 2) *stigmatization of eating disorders*, 3) *challenging pathways into therapy*, 4) *distrust in psychiatric care*, 5) *corporate climate* and 6) *internalized family roles*. Despite cultural challenges, empirical results showed significant improved life quality scores (not self-esteem) for patients with F (1, 14) = 13.03, $p < 0.001$) at T2. Czech MFT for eating disorders was endorsed well by families, with ambivalent feedback from patients (*Study Ib*). In addition,

MFT significantly improved eating pathology with F (1, 30) = 13.32 and body weight with F (1, 30) = 9.19 (both $p < 0.01$) with large effect sizes (both $\eta^2 > .40$). Post-hoc contrasts indicated better responsiveness for patients with Anorexia Nervosa (AN) and Bulimia Nervosa (BN) compared to patients with eating disorders not otherwise specified (EDNOS) at T2 (all $p < 0.05$). Significantly improved time effects for life quality and depressive scores were obtained for the entire sample with F (1, 82) = 12.83 and F (1, 82) = 9.64 (all $p < 0.001$). Patients showed the largest seizes of improvement ($p < 0.05$). For *Study II*, univariate CRM revealed increased hazard ratios of 107, 22 and 43% for the *micro-system* domains friends, family and school associated with one-unit increase in each domain raw score. In the multivariate CRM, friends emerged as the strongest predictor with 92% for eating disorder onset. The CTA suggested loneliness in the friends' domain as most potent risk factors for subthreshold and full syndrome *DSM-V* eating disorder onset.

CONCLUSION. *Study I* showed that multilevel system variables (such as *macro-system* variables) can make cross-cultural MFT implementation into Eastern European countries challenging. However, despite cultural barriers, Czech MFT for eating disorders was effective in reducing *DSM-IV* eating disorder pathology (including body weight) from pre- to post-treatment. In addition, families showed improved life quality and depressive symptoms after MFT. *Study II* found that *micro-system* impairments of young women within the domains: family, friends and school predicted the onset of all four *DSM-V* eating disorder categories, with friend impairments being the strongest transdiagnostic risk factor. Impairment with friends (e.g. loneliness) should be integrated into etiological theories and inform preventive strategies for *DSM-V* eating disorders in young women.

CLINICAL IMPLICATIONS. When implementing MFT for eating disorders across cultures, a cultural competent checklist should be used to alleviate barriers. MFT for eating disorders showed transcultural robustness and thus should be implemented internationally (*Study I*). The new transdiagnostic risk factors (peer-impairment) for subthreshold and full

syndrome *DSM-V* eating disorders should be incorporated into etiological models. Future studies should test whether impairments with friends is precedent to other risk factors (such as body image concerns). In addition, preventive programs should use impairments with friends as screening variables to identify young women at risk for *DSM-V* eating disorders. Preventive programs should be tailored to improve functioning with friends, led by same-age peer-advocates, and conducted in the teenager's ecological context.

OVERVIEW

This publication-based dissertation is structured into seven chapters. *Chapter 1 'From Systems Theory to Family Systems Therapy*' introduces Bronfenbrenner's Ecological Systems Theory which is used to organize and classify system variables. *Chapter 1* continues to describe the development of the most influential systemic therapy models and core tenets which laid groundwork for the family-oriented treatment models for eating disorders. *Chapter 2 'Eating Disorders'* provides an overview on the diagnostic criteria of subthreshold- and full syndrome *DSM-V* eating disorders and reports on prevalence, peak onset age and the economic burden of eating disorders. *Chapter 3 'Family-oriented Therapy Models for Eating Disorders'* introduces the explanatory and agnostic systemic family therapy models for eating disorders as forerunners of Multifamily Therapy for eating disorders, the manualized intervention tested in this dissertation. *Chapter 4 'Psychosocial Risk Factors for Eating Disorders'* introduces Kraemer's risk factor taxonomy to identify reliable risk factors and provides an overview on well researched psychosocial risk factors for *DSM-V* eating disorder onset. Additionally, the operationalization of the concept of psychosocial impairment was introduced. *Chapter 5: 'Publications'* contains the study rational and the three publications of this dissertation. In *Chapter 6:* '*Implications for the cultural competent treatment, etiology and prevention'* several implications from all study results are drawn to refine etiological models for eating disorders, preventive programs and cross-cultural systemic therapy ending with a brief conclusion. Finally, *Chapter 7 'References'* contains the reference section and the '*List of Abbreviation & The Declaration of Accordance'*.

1
From Systems Theory to Family Systems Therapy

1.1 Bronfenbrenner's Ecological System Theory

Systems theory is an interdisciplinary complex epistemology that has been applied to many disciplines including the humanities and social sciences. Bronfenbrenner's ecological system theory is a *process-person-context model* (Spencer, 2006) that postulates that a child is shaped by its ecological environment with which it interacts. Any behavior of a child is regarded as the outcome of interactions and own traits (Bronfenbrenner, 1979, 1989). The ecological system that surrounds the child (*individual-level*) is the *micro-system*, *meso-system*, *exo-system*, *macro-system* and *chrono-system* (Bronfenbrenner, 1979). All system level are hierarchical and topologically nested into- and interact with each other (Bronfenbrenner, 1970, 1979). The *micro-system* contains the most immediate contacts of the child, such as the family, school, friends or work including their relations with the individual. Additionally, it refers to a pattern of activities and roles. In most cases, the family is the primary *micro-system*. The *meso-system* surrounds the *micro-system* and describes how at least two *micro-system* variables interact and influence each other. Consequently, *meso-system variables* are the relationships between parents, peers, teachers, the neighbors or health care providers (e.g. therapists). The *exo-system* consists of the indirect environment of an individual with which it does not directly interact. The *macro-system* is the sum of all relationships of a culture including societal norms, values, conventions, politics, ideologies, social narratives and traditions. The *chrono-system* describes changes over time (e.g. political changes) (see *Graph 1*). This dissertation borrows Bronfenbrenner's (1979) ecological system model as a theoretical framework to 1) organize and classify system variables and 2) to understand the influence of multilevel system variables on eating disorder onset and whether they impede with the implementation and effectiveness of a systemic multifamily therapy model for patients with eating disorders and their parents across culture.

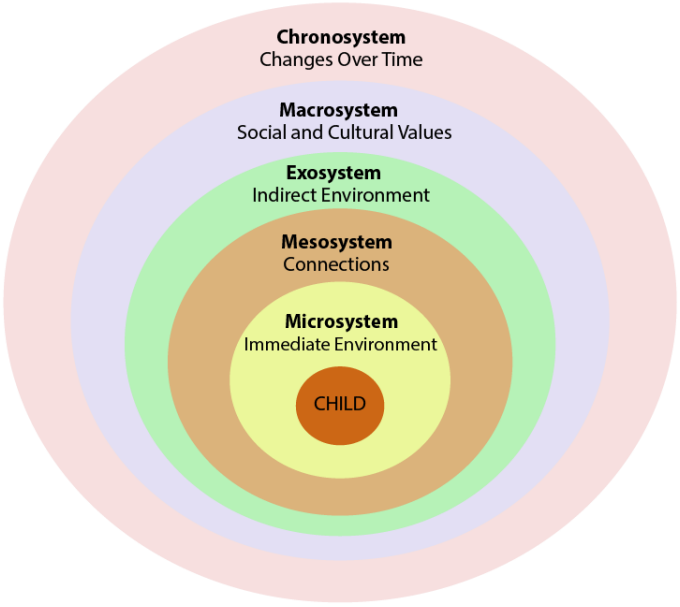

Figure 1: Bronfenbrenner's ecological system model of a child's development (Psychology Notes: *http://www.PsychologyNotes.HQ.com)*

1.2 Family Systems Therapy: Development and Core Tenets

Family systems theory- and therapy extends Bronfenbrenner's model by placing the *micro-systems* (especially the family) and its interactions in the forefront to explain problems, symptoms and pathology of the family with the child as 'designated patient' (Goldenberg & Goldenberg, 2013). Besides, Bronfenbrenner's model, other influential systems theories developed in the field of physiology (von Bertalanffy, 1968), biology (Cannon, 1932) and cybernetics (von Foerster, 2003; Wiener, 1961) have been used as interdisciplinary frameworks for family therapy models to whom they lent important concepts and theoretical assumptions (e.g. concept of homeostasis [Cannon, 1932]). According to family systems theory, a *system* has parts that interrelate, form subsystems (e.g. family, friends, school, society, culture) and interact through communication (e.g. feedback, information exchange or seeking for homeostasis) (Watzlawick & Beavin, 1967). Family therapy models can be classified into three categories the 1) *classical models*, 2) *models of 2nd order cybernetic* and 3) *narrative approaches* as described in (von Schlippe & Schweitzer, 2007).

First attempts to refine the understanding of how *micro-system* operate together in the complex etiology of pathology, have been made in the 1940s, in Palo Alto, United States (US). The Gregory Bateson group that comprised well-known family therapists, such as Don Jackson, John Weakland and Jay Haley who raised particular popularity with their 'double-bind theory' for schizophrenia (Bateson, Jackson, Haley, & Weakland, 1956; Watzlawick, Bavelas, & Jackson, 1967) were the first clinician group to suggest a revolutionary new perspective on problem behavior as the result of distorted *communication* and *interactions* between the individual and its social environment (Bateson et al., 1956; Bavelas & Segal, 1982; Weakland, Fisch, Watzlawik, & Bodin, 1974). In their opinion a 'symptom' was created by an individual's intermediate interrelations with its social context and considered as coping mechanism or problem solving strategy to report an error message back to the family system. As Don Jackson summarized '*Thus symptoms, defenses, character structure and personality can be seen as terms describing an individual's typical interactions which occur in response to a particular interpersonal context*' (Jackson, 1965, p.2). The suggestion that every behavior or pathology makes sense in context was revolutionary on many levels. Firstly, it positively reframed the idea of what a symptom is (e.g. the 'designated patient'), secondly it implied a setting change from an individual- to a family setting, thirdly it reformed the role of the therapist, as either independent, involved or part of the family system (*2nd order cybernetic*), and fourthly it focused on enriching the resources of the *micro-* and *meso-system* (e.g. change communication, explore exceptions) to solve problem behaviors.

These system-oriented postulations formed the framework for *Strategic Family Therapy* (Haley, 1973) which belongs to the classical model and is the most original approach of family systems therapy. Between the 1950 and the 1990s, the Mental Research Institute (MRI) in Palo Alto, California, USA, often referred to as the cradle of systemic thinking (Wienlands, 2002) became one of the leading institutes for different models of family therapy. Founded by Don Jackson, Virginia Satir and Jules Riskin in 1959, it formed the intellectual home for many

well-known family therapists such as Paul Watzlawick and Richard Fish. Another classical model is *Structural Systemic Therapy* by Minuchin et al. (1978) which raised particular popularity in the treatment of patients with eating disorders and their families through changing structural aspects of a family system. According to Minuchin, a symptom creates homeostasis of a dysfunctional family system (Minuchin, 1972, 1974). Symptoms needs to get triggered in a safe therapeutic environment to transform dysfunctional systems into functional ones (Friedlander & Diamond, 2012). Central to Minuchin's approach were 1) the categorization and analysis of the family structure (e.g. parental subsystems, sibling etc.), 2) the alteration of dysfunctional interaction patterns created by hidden alliances and coalitions of the subsystems, 3) the establishment of clear instead of diffuse ('enmeshed') or overly rigid boundaries (Minuchin, 1972), 4) symptom activation in the therapy session ('enactment') and 5) the identification of potential 'triangulation' (e.g. parental conflict or communication deficits between parents) by i). transferring a parental conflict onto the child, ii) transferring parental responsibilities to the child or iii). the assignment of the child into a partner function. The hierarchy shift of 'using' the child as 'partner substitute' became particular popular under the term 'parentalization' coined by Helm Stierlin and colleagues and was one of the key concepts in systemic family therapy models. Other important approaches of the *classical models* are the work of Stierlin (Stierlin, 1975) and Virgin Satir (Satir, 1967). Stierlin advanced the *Transgenerational Concept*, originally developed by Boszormenyi-Nagy & Spark (Boszormenyi-Nagy & Spark, 2015) to understand the influence of past delegations (e.g. belief systems, norms, family secrets and narratives) and legacies of previous generations on the symptom constellation. Virginia Satir shaped the work with family sculptures in her *Experiential Therapy* (Satir, 1989, 1990) that until today is a standard intervention in family therapeutic practice. In the late 1970s, influenced by Gregory Bateson, Mara Selvini-Palazolli and colleagues raised particular attention with the '*Milan Model*' (Selvini-Palazzoli, Boscolo, Cecchin, & Prata, 1978) whose methodology and techniques became an integral part of all

family systems approaches. The Milan Model is a model of *2nd order cybernetics* that saw the therapist no longer as independent entity, but as becoming part of the family system through the therapeutic process. According to Selvini-Palazzoli, the therapist provides 'new information' to the family to interrupt what she calls 'the family game'. In her opinion, psychological disorders are non-existing, just the manifestations of the 'family game' (Klaus, 2017). In the Milan Model specific interventions such as 1) positive connotations of family behaviors, 2) circulative questioning, 3) setting variations, 4) family rituals and 5) paradoxical prescriptions were adapted to the individual character of each familial problem, combined with a completely new therapeutic stance characterized by 'neutrality and circularity', implying 'the non-change paradigm' and 'hypothesizing' (Selvini-Palazzoli, Boscolo, Cecchin, & Prata, 1980a). These ideas were grounded in constructivist principles (Schweitzer & von Schlippe, 2015; von Schlippe & Schweitzer, 2007). All the systemic therapy models, especially the later *Narrative Approaches* are founded on the theory of *Social Constructivism* (Gergen, 1992), a complex position of epistemology. In general, the theory of *Social Constructivism* postulates that an objective truth or reality does not exist (Schiepek, 1987) instead human reality is always 'socially constructed' and the result of 'communication of at least two people' (von Schlippe & Schweitzer, 2007, p. 78). Reality or 'what we take to be the truth about the world importantly depends on the social relationships we are a part of' (Gergen, 2015, p.3). Consequently, the stance of a systemic therapist is characterized by 1) restraining from linear and causal categorizations such as 'right' or 'wrong', 2) following the 'ethical imperative' formulated by von Foerster that postulates 'to act always so as to increase the number of choices' for a client or a family (von Foerster, 2003) and 3) validating the reality of a client, without preconceived ideas or judgments (Chubb & Evans, 1990; Watzlawick, Weakland, & Fisch, 1974). Consequently, systemic thinking postulates 'non-causality' and opposes a linear thinking or communication model, that includes any form of dogmatism, taboos, thinking bans or moral superiority (von Schlippe & Schweitzer, 2007).

The third category are the *Narrative approaches* with *Therapy as Deconstruction* (White, 1992), *the Reflecting Team* (Andersen, 2009) and its most popular model *Solution-focused Brief Therapy* by Steve De Shazer. This future-oriented model strongly focuses on the clients' wishes, goals, motivations and 'problem exceptions' (de Shazer, 1975, 1985). De Shazer coined the famous sentence 'problem talk creates problems; solution talk creates solutions' and recommends therapists to motivate their clients to think about new problem solving strategies with a strict focus on the presence and future (de Shazer, 1988). The most popular intervention from de Shazer and colleague is '*the miracle question'* (de Shazer, Dolan, Korman, McCollum, Trepper et al., 2007) in which the therapist shifts the client from a *problem-* into a *solution trance* through activating resources referring to a solution scenario, on a cognitive, emotional and physical level. Exploring solutions instead of the problem may help to think about new ways to approach problem solving (de Shazer, 1988).

2
Eating Disorders

2.1 Subthreshold and Full Syndrome *DSM-V* Eating Disorders

Subthreshold and full syndrome eating disorders are severe mental conditions characterized by disturbances in eating behaviors and body weight (Schmidt, Adan, Bohm, Campbell, Dingemans et al., 2016). Besides being of multifactorial cause they are marked by comorbidity, chronicity, functional impairment, somatic and psychiatric sequelae and negatively impact patients and their families (Allen, Byrne, Oddy, & Crosby, 2013a; Anastasiadou, Medina-Pradas, Sepulveda, & Treasure, 2014; Arcelus, Mitchell, Wales, & Nielsen, 2011). Full syndrome eating disorders are known to be considerable risk factors for future onset of obesity, depression, substance abuse and ongoing mental health problems in adulthood (Allen, Byrne, Oddy, & Crosby, 2013b; Hay, Girosi, & Mond, 2015). With the highest death- and suicide ratios among all psychiatric conditions eating disorders constitute a major public health concern (Agras, 2001; Arcelus, Haslam, Farrow, & Meyer, 2013; Stice, Marti, & Rohde, 2013b). The *Diagnostic and Statistical Manual for Mental Diseases* (*DSM-V*) (American Psychiatric Association, 2013) distinguishes between several eating disorder categories. *Anorexia Nervosa* (AN) is a syndrome in which patients are very fearful of gaining weight in the presence of abnormally low body weight. They experience body image distortions, undue influence of weight and shape on self-evaluation while ignoring the life-threating consequences of their seriously low body weight. Patients with *Bulimia Nervosa* (BN) engage in recurrent and uncontrollable episodes of binge eating by eating large amount of food within a discrete period of time, followed by compensatory weight control behaviors such as vomiting and purging. Additonal symptoms are the loss of control over eating and undue influence of body shape and weight on self-evaluation. In the absence of compensatory weight control behaviors, patients with *Binge Eating Disorder* (BED) engage in uncontrollable binge eating episodes only. To refine the unspecific *DSM-IV* category *Eating Disorders not Otherwise Specified* (American Psychiatric Association, 2000), *DSM-V* established the following addtitional categories: *Other Specified Feeding and Eating Disorders* (OSFED) that includes

Purging Disorder (PD) in which patients experience episodes of recurrent purging (or the use of laxatives) without other sympom representations, *Atypical AN*, *Subthreshold BN* and -*BED* with fewer symptom representations and *Night Eating Syndrome* (NES). The final category *Unspecified feeding or eating disorders* (FED-NEC) (American Psychiatric Association, 2013) subsumes *Partial Syndrome Eating Disorders* for which only some diagnostic criteria must be met or symptoms show less severity. Diagnostic criteria for *DSM-V* eating disorders and how they were operationalized for this dissertation are displayed in *Table 1*.

Table 1: Diagnostic criteria of subthreshold and full syndrome *DSM-V* eating disorders

Eating Disorder	Criteria operationalized by *(Stice et al., 2013b)*
Anorexia Nervosa	Body mass index (BMI) less than 85% of the median expected for age and gender Definite fear of weight gain more than 75% of the days for at least 3 months Weight and shape were one of the main aspects of self-evaluation
Bulimia Nervosa	At least 4 uncontrollable binge-eating episodes per month for at least 3 months At least 4 compensatory behavior episodes per month for at least 3 months Weight and shape were definitely one of the main aspects of self-evaluation
Binge eating disorder	At least 4 uncontrollable binge-eating episodes/days per months for at least 3 months Less than 1 compensatory behavior on average per month during this period Marked distress about binge eating Binge eating characterized by 3 or more of the following: rapid eating; eating until uncomfortably full, eating large amount when not physically hungry; eating alone because of embarassement, feeling disgusted, depressed or guilty after overeating
Subthreshold anorexia nervosa	BMI between 90% and 85% of that expected for age and gender Definite feat of weight gain more than 25% of the days for at least 3 months
Subthreshold bulimia nervosa	At least 2 compensatory behaivor episodes (i.e. self-induced vomiting, laxatives or diuretic use, fasting, and excessive exercise to compensate for overeating) per month for at least 3 months or at least six episodes over a shorter period
Subthreshold binge eating disorder	At least 2 uncontrollable binge-eating episodes/days per month for at least 3 months or at least six episodes over a shorter period Less than 1 compensatory behavior on average per months during this period Marked distress about binge eating Binge eating characterized by three or more of the following: rapid eating, eating until umcomfortably full, eating large amounts when not physically hungry; eating alone because of emnarassment, feeling disgusted, depressed, or guility after overeating
Purging disorder	At least 4 episodes for self-induced vomiting or diuretic/laxative use for weight control purposes per month for at least 3 months

	Less than 1 uncontrollable binge-eating episodes on average per month during this period Weight and shape were one of the main aspects of self-evaluation
Subthreshold purging disorder	At least two episodes of self-induced vomiting or diuretic/laxatives use for weight control purposes per month for at least 3 months or at least six episodes over a shorter period Less than 1 uncontrollable binge-eating on average per month during this period Weight and shape were one of the main aspects of self-evaluation

2.2 Prevalence and Peak Onset Age of *DSM-V* Subthreshold and Full Syndrome Eating Disorders

DSM-V subthreshold and full syndrome eating disorders are increasing phenomena in adolescence and young adulthood (Galmiche, Dechelotte, Lambert, & Tavolacci, 2019; Swanson, Crow, Le Grange, Swendsen, & Merikangas, 2011). Due to the changes of diagnostic criteria from *DSM-IV* to *DSM- V* [1] only few studies examined *DSM-V* eating disorder prevalence in adolescents and young adulthood (Hammerle, Huss, Ernst, & Bürger, 2016; Herpertz-Dahlmann, Wille, Hölling, Vloet, Ravens-Sieberer et al., 2008; Mustelin, Silen, Raevuori, Hoek, Kaprio et al., 2016; Smink, van Hoeken, Oldehinkel, & Hoek, 2014). Of these studies only two used longitudinal designs with interview-based diagnostics and a comprehensive perspective regarding all *DSM-V* categories. One 8-year longitudinal *DSM-V* interview-based community study by Stice and colleagues (2013) followed n = 469 young females, aged 12 – 15 years at baseline and 20 – 23 at study completion and found prevalence rates of 0.8% for AN, 2.6% for BN and 3.0% for BED. Prevalence rates for OSFED were 2.8% for atypical AN, 3.6% for subthreshold BN, 3.6% for subthreshold BED and 3.4% for PD. Prevalence for FED-NEC was high with 11.5%. Peak onset periods by age were 19 – 20 for AN, 16 – 20 for BN and 18 – 20 for BED, PD, and FED-NEC (Stice et al., 2013b). Allen and colleagues (2013) reported slightly higher prevalence rates in another longitudinal interview-

[1] See detailed changes here: http://www.dsm5.org

based analysis that examined a population-based sample of females (n = 703) at age 14, 17 and 20 (Allen et al., 2013b; Hay et al., 2015).Whereas rates for AN matched with Stice et al. (2013), rates for BN and BED were higher with 6.4% and 4.6% and within the OSFED category for PD at 5.3% and atypical AN at 0.3%, by the age of 20 years. However, Allen and colleagues did not assess subthreshold BN or BED which may explain the inflated BN category.

In summary, the two longitudinal studies suggest, that by the age of 20 years approximately 13% of young women meet diagnostic criteria for any subthreshold or full syndrome eating disorder, of whom 6.5% develop full syndrome AN, BN or BED (Stice et al. 2013). Peak onset age periods are 16 – 20 for all *DSM-V* subthreshold and full syndrome eating disorders (Stice et al. 2013).

2.3 The Burden of Eating Disorders

To tackle subthreshold and full syndrome eating disorders is of global priority. In western countries, full syndrome eating disorders reveal the highest standardized mortality-, suicide- and comorbidity ratios among all psychiatric conditions (Agras, 2001; Keel, Dorer, Eddy, Franko, Charatan et al., 2003). Using *DSM-IV* criteria, mortality ratios[2] are ranging between 1.9 for BN and ENDOS, and 5.8 for AN (Arcelus et al., 2011) whereas standardized suicide ratios for AN, BN and EDNOS are 4.7, 6.5 and 3.9, respectively (Crow, Peterson, Swanson, Raymond, Specker et al., 2009). Relative to the general population, the risk for patients with AN to die of sudden death (due to starvation) is 4 to 5 fold and to commit suicide 57 fold increased (Keel et al., 2003). The Global Burden of Disease Study (IHME, 2017), a comprehensive worldwide epidemiological report to assess mortality and morbidity by several health indicators[3] among all major physical- and psychiatric diseases, found GBD for eating

[2] defined as observed deaths in a population/expected deaths based on demographics
[3] life expectancy; years lived with disability; years of life lost and disability adjusted life years (DALYs)

disorders (AN and BN) increased by 65% between 1990–2016 in high income western countries (Hoek, 2016). The GBD 2013 attributable to eating disorders (AN and BN) in young females (aged 15–19 years) ranked 12th in terms of *disability adjusted life years* DALYs [4] accounting for 2.2% of all DALYs among 306 conditions (Erskine, Whiteford, & Pike, 2016; Murray, Barber, Foreman, Abbasoglu Ozgoren, Abd-Allah et al., 2015). In addition, comorbidity rates of patients with AN and BN range from 50–90%, respectively (Swanson et al., 2011).

Particularly, the economic burden for full syndrome eating disorders regarding hospitalization and treatment costs in western countries is high (Striegel-Moore, Leslie, Petrill, Garvin, & Rosenheck, 2000). In the US, a cost-illness analysis showed that treatment costs account for a total number of US $119 thousand per one patient with AN, with an incremental cost effectiveness ratio ('iCER')[5] of US $ 30 thousand per year of life saved (Crow & Nyman, 2004; Gold, Siegel, Russell, & Weinstein, 1996). Overall health care costs in other Western European countries show annual economic burdens between £80-100 million (BEAT, 2012) for AN, BN and EDNOS in the United Kingdom, and 419 million € for AN and BN combined in Germany (Krauth, Buser, & Vogel, 2002). Besides the direct treatment costs, the loss of productivity for e.g. the German economy summed up to an annual burden of 130.5 million € and 113.9 million € for AN and BN, respectively (Krauth et al., 2002). It should be noted, that health care costs are difficult to compare across countries thus numbers indicate that efficient treatment and prevention strategies for eating disorders are needed to lower the societal-, familial- and personal burden of eating disorders.

[4] one DALY equals one lost healthy life year (Kohler, 2019)
[5] One 'iCER' is the cost-difference of two possible treatments/the difference of their effect (Cohen & Reynolds, 2008)

3
Family Therapy Models for Eating Disorders

3.1 Explanatory Family Therapy Models for Eating Disorders

Family-oriented treatment models are inseparably linked to the treatment of eating disorders and largely embraced by the scientific community as the treatment of choice for AN and BN (American Psychiatric Association, 2006; NICE, 2017). Involving parents as a positive resource in treating patients with eating disorders was pioneered in the 1970s by Salvadore Minuchin and colleagues at the Philadelphia Child Guidance Clinic in the United States (Minuchin, Baker, Rosman, Liebman, Milman et al., 1975). Minuchin postulated that five specific 'dysfunctional family characteristics', 1) enmeshment, 2) rigidity of boundaries, 3) conflict avoidance, 4) over-protectiveness and 5) triangulation play a crucial role in the complex etiology of an eating disorder, especially when it comes to AN (Minuchin et al., 1975; Minuchin & Nichols, 1998; Minuchin, Rosman, & Baker, 1978). He summarized his ideas in the 'psychosomatic model', an explanatory model for AN, that aims 1) to restructure family organization by a directive stance of the therapist and 2) to empower the parents to actively take control of the child's eating disorder symptoms. Minuchin et al. (1978) suggested that within a family with AN-constellations, the parents have lost their function as executives and the child has too much power (Minuchin et al., 1978). Disturbances in hierarchies and boundaries, the lack of conflict resolution, the inability of the parents to adapt to the child's growing need for autonomy in adolescence, together with overly rigid loyalty definitions lead to the child's 'parentification'. Systemically the child is pushed into an adult role to take over parental responsibilities such as 1) helping parents to manage conflicts, 2) protecting parents from painful emotions, experiences or conflict or 3) functioning as partner substitute. The symptom, expressed as AN, maintains an 'unhealthy homeostasis' to stabilize the family system for which the child sacrifices for the sake of a 'functioning' family (Minuchin et al., 1978). Minuchin's structural family therapy model diverts the responsibilities back to the parental system through *enactments*, an individualized here- and now intervention adapted to specific problem behaviors. The *family meal* (Rosman, Minuchin, & Liebman, 1975) is the most popular

enactment that allows to restructure interactions- and communication patterns around food that maintain the eating disorder (Hodes, Eisler, & Dare, 1991; Minuchin et al., 1978). Similar considerations for AN were made by Selvini-Palazolli and Viaro (Selvini-Palazzoli & Viaro, 1988). Their model postulates that families with eating disorders are stuck in three problems areas that orbit around *leadership*, *loyalty* and *guilt* (von Schlippe & Schweitzer, 2007). The origin of the 'anorexic behavior' is an ongoing, unresolved parental conflict that is denied behind the façade peace-at-any-price (Selvini-Palazzoli, 1978). In '*Unlocking the Family Door*', Weber and Stierlin (1989) introduced a model based on their clinical experience with sixty-two families with AN. Their explanatory model draws a picture of families with specific family narratives such as 'giving is better than taking', an extreme sense of justice and fairness with an underlying expectation to sacrifice own individuality, boundaries and needs for the sake of the family peace (Stierlin & Weber, 1989). These narratives combine a parental relationship in which the stability of the relationship is more important than its quality, and a child who is extremely ambitious and loyally attached to the family. In addition, expressions of individuality is connected to guilt and interferes with the child's individuation (Stierlin & Weber, 1989). Due to the lack of empirical support, the explanatory models have been largely critiqued for being overly simplistic and attribute blame to the parents and families (Eisler, 2005). However their hypothesis-generating character combined with their robust systemic methodology laid ground for the development of agnostic family therapy models for eating disorders, such as the Maudsley Model (Eisler, Dare, Russell, Szmukler, le Grange et al., 1997), Family-Based Treatment (FBT) (Lock & Le Grange, 2013) and MFT for eating disorders (Scholz & Asen, 2001).

3.2 The Maudsley Model and Family-based Treatment for Eating Disorders

In contrast to the explanatory models for eating disorders, agnostic family therapy models reveal the best evidence. The Maudsley Model (Eisler et al., 1997) originally developed at the Maudsley Hospital in London and its manualization into Family-based Treatment (FBT) (Lock & Le Grange, 2013) composed by clinicians at Stanford University and the University of Chicago are the leading empirical treatment models for adolescents with AN and BN. Maudsley and FBT are outpatient treatments that similar to Minuchin's model, empower the parents to take active control of the child's eating disorder symptoms (Lock & Le Grange, 2013). Additionally, the outpatient character allows parents to develop a day-to-day routine with the teenager which avoids responsibility shifts towards professionals (Rienecke, 2017). Both models stretch over one year and include three phase. The first phase is the *'weight restoration phase'* in which the therapist emphasizes the serious danger of malnutrition by 'orchestrating an intense scene' (Lock & Le Grange, 2013), examines the interactions and communication patterns around food, and aligns the parents to restore the child's weight or control the eating disorder behaviors. Core interventions of *phase 1* are 1) The empowerment of parents to take responsibility and control over all aspects around food, demonstrating a consequent and zero-tolerance stance toward the eating disorder behaviors. 2) The clear focus on managing weight restoration and the reduction of eating disorder pathology. 3) Depression and anxiety symptoms are seen as consequences of the malnutrition and are not addressed. 4) The focus on externalizing the eating disorder (White, 1992) which intends to separate the eating disorders from the patient's self to reduces criticism from parents and self-blame from patients and finally 5) The interventional family meal (Rosman et al., 1975) as key component to restructure communication patterns around food. In *phase 2* '*Returning control over eating to the teenager'* the teenager has re-developed normal eating patterns, regained weight or stopped eating disorder behaviors. Parents return control over eating back to their child and the

focus is to re-normalize life. *Phase 3* '*establishing healthy adolescent identity*' will be initiated when the child is fully weight restored (95% expected mean body weight) (Lock, 2010). Signs of relapse and prevention strategies are discussed and the teenager is motivated to re-engage into age-appropriate tasks. Throughout the treatment process, the therapist maintains an '*agnostic view'* towards the eating disorder and emphasizes its multifactorial cause, without attributing blame to the parents or patients. In addition, the stance of the therapist can be described as 'non-authoritarian and not-knowing' that postulates that the therapist is the expert for questions around the eating disorder, but parents remain the experts of their families (e.g. food choices, parental practices) (Rienecke, 2017).

The efficacy of Mausdley and FBT is well demonstrated. A large number of RCTs proved the efficacy for patients with AN to improve eating disorder pathology and weight restoration at 12 months and 5 years follow-up (Eisler, Dare, Hodes, Russell, Dodge et al., 2000; Le Grange, Binford, & Loeb, 2005; Le Grange, Crosby, Rathouz, & Leventhal, 2007; Le Grange, Lock, Agras, Bryson, & Jo, 2015; Lock, Le Grange, Agras, Moye, Bryson et al., 2010; Russell, Szmukler, Dare, & Eisler, 1987). FBT adaptions for prodromal AN, full syndrome BN (Le Grange & Lock, 2007) and other eating disorders such as ARFID (Fitzpatrick, Forsberg, & Colborn, 2015) show promising results in reducing eating disorder pathology (Le Grange et al., 2007; Le Grange et al., 2015; Spettigue, Norris, Santos, & Obeid, 2018). In addition, research of the adherence to the major FBT components found parental unity, control and consistency and externalization to be predictors for greater weight gain in patients with AN (Ellison, Rhodes, Madden, Miskovic, Wallis et al., 2012). Other studies found that improved parental self-efficacy and fewer critical comments during FBT weight sessions predicted weight gain and early treatment response in patients with eating disorders (Darcy, Bryson, Agras, Fitzpatrick, Le Grange et al., 2013; Robinson, Strahan, Girz, Wilson, & Boachie, 2013).

3.3 Multifamily Therapy for Eating Disorders

An effective advancement of Maudsley and FBT is multifamily therapy (MFT) for eating disorders (Scholz & Asen, 2001). The group-based outpatient treatment inherits the basic techniques of systemic treatment models including 'circular questioning', 'setting variation' (Selvini-Palazzoli et al., 1978, 1980a), 'symptom externalization' (White, 1992; White & Epston, 1990), 'resource-orientation' (Schiepek & Cremers, 2003) and 'autonomy and boundaries' (Minuchin, 1974). MFT for eating disorders extends a single family setting into a group setting for families who share the same pathology. The idea of treating multiple families together was pioneered by Laqueur in the 1950s in New York City, USA. Laqueur believed that utilizing the combined resources of families with the same pathology can help to improve family communication and learning by analogy (Laqueur, 1972; Laqueur, La Burt, & Morong, 1964; Le Grange & Eisler, 2008). MFT has found application for various psychiatric populations such as patients with depression (Fristad, Verducci, Walters, & Young, 2009), schizophrenia (Dyck, Short, Hendryx, Norell, Myers et al., 2000), post-traumatic stress disorder (Sherman, Perlick, & Straits-Troster, 2012) and patients with eating disorders (Scholz & Asen, 2001). As mentioned, Maudsely, FBT and MFT are eclectic and draw heavily from systemic family therapy in regards to theory and interventions (e.g. circulative questioning, symptom externalization, symptom activation) (Minuchin et al., 1975; Selvini-Palazzoli & Viaro, 1988). However, they differ fundamentally from their explanatory counterparts in their agnostic stance towards the eating disorder. Whereas Minuchin's model emphasized the context of a 'psychosomatic family' as constituting element for eating disorder etiology, agnostic models postulate the importance of the *'family re-organizing principle'* (Eisler, 2005). As seen in families with a chronically ill- or alcoholic patient, the entire family life starts to 'orbit' around the eating disorder (Steinglass, Bennett, Wolin, & Reiss, 1987; Steinglass, 1998). As a result, parents engage in unhealthy coping styles (e.g. conflict avoidance vs. expressed emotions) that maintain the pathology (Scholz, Rix, Scholz, Gantchev, & Thömke, 2005). Two working

groups in London, UK (Dare & Eisler, 2001) and in Dresden, Germany (Scholz et al., 2005) manualized MFT for AN with slight structural variations from Maudsley and FBT. Similarly, it is designed as three-phase outpatient treatment that brings together 4 – 9 families (see *Table 2*). *Phase 1* is *symptom-oriented* and contains 1) Psychoeducative elements (e.g. causes of eating disorders, ego-syntonic nature, body dysmorphia etc.). 2) The reversal of hierarchies concerning food-related issues (e.g. parents define the quantity and quality of food) which leads to therapeutically intended conflicts and power struggles (enactments) in which the parents ideally regain leadership of managing the eating disorder symptoms which includes to stopping negotiations around food. This will challenge 'pseudo-harmonic' (Scholz & Asen, 2001) and 'peace-at-any-price' patterns (Selvini-Palazzoli & Viaro, 1988) in the family. *Phase 2* is *interaction-oriented* and a continuance of *Phase 1*. Parents learn to manage conflicts and build trustful and positive relationship with their child. New communication patterns around food are established and families learn to support each other particularly at meal sessions through modeling or fostering meals for other parents which strengthens the group cohesion. *Phase 3* the *future- oriented phase* starts when healthy eating patterns and a stable BMI are established. Families discuss problems with future stagnation and relapse and learn to give back the responsibility and autonomy around food to their child (Asen, 2002; Dare & Eisler, 2001; Eisler et al., 1997)

In the 1980s, two studies tested the positive impact of MFT for patients with eating disorders and their families in Denmark and the US (Marner & Westerberg, 1987; Slagerman & Yager, 1989). Since then, MFT has been continuously advanced into a more intensive outpatient treatment with treatment blocks throughout the therapy (Asen & Scholz, 2009; Scholz & Asen, 2001). A number of small pilot studies with small sample sizes support positive improvements of eating disorder pathology (mostly AN), body weight, self-esteem and measures of life quality (Dimitropoulos, Farquhar, Freeman, Colton, & Olmsted, 2015; Gelin, Cook-Darzens, & Hendrick, 2018). One randomized controlled trial (RCT) conducted by Eisler

et al. (2016) compared MFT with Maudsley for patients with AN. Eating disorder pathology reduced significantly at treatment completion in both groups, but MFT was superior in weight maintenance at 18-months follow-up (Eisler, Simic, Hodsoll, Asen, Berelowitz et al., 2016). Despite family-oriented therapies being recommended by western therapeutic guidelines (American Psychiatric Association, 2006; NICE, 2017), Maudsley, FBT and MFT are still underrepresented treatment models in Eastern European countries. Furthermore, it is questionable whether western family-oriented therapies for eating disorders show effectiveness in former communist Eastern European countries.

Table 2: MFT for eating disorders with time frame, techniques and therapeutic focus, adapted from Asen & Scholz (2008) for *Study I*

Time Frame	Specific Therapeutic Techniques	Therapeutic Focus
	Introduction Block	
Session 1 **(3hours)**	▪ psychoeducation ▪ empowerment of parents through resource activation (Schiepek & Cremers, 2003) ▪ establishment of rules (e.g. feedback, rights, agreement, openness etc.) for group work	▪ group atmosphere ▪ motivation ▪ diagnostic of patients/parents/subsystems
2 week later	**Phase 1: Symptom Orientation**	
Session 2-4 **(4 days)**	▪ joint meals (Rosman et al., 1975) ▪ food collages ▪ exercise distorted body dysmorphia ▪ externalization of the eating disorders (White, 1992) ▪ reflecting team (setting variation) (Andersen, 2009) ▪ establish hierarchies, boundaries, zero-tolerance strategies (Lock & Le Grange, 2013; Minuchin, 1965) ▪ psychoeducation (e.g. body dysmorphia; consequences of eating disorder) →Parents take full responsibility of eating disorder symptoms	▪ motivation, group cohesion ▪ hierarchies, boundaries, zero-tolerance stance, consequences around food ▪ stop discussions & negotiations ▪ change hierarchy ▪ facets of eating disorders, ▪ specific eating disorders
8 weeks later	**Phase 2: Interaction Orientation**	
Session 4-8 **(4 days)**	▪ live-sculptures (Satir, 1990) ▪ family lines, family circles ▪ fish bowl technique ▪ setting variations (parent's only) ▪ role plays ▪ detect covert coalitions, emotional	▪ existence of working relationships ▪ communication pattern ▪ hierarchies, boundaries ▪ rigidity, family loyality (Minuchin, 1972)

	over-involvement ▪ 'miracle question' (de Shazer et al., 2007)	▪ open discussion & reflection
8 weeks later	**Phase 3: Future orientation**	
Session 8-11 **(4 days)**	▪ stagnation & relapse prevention ▪ autonomy of patients (e.g. adolescence)	▪ healthy eating patterns ▪ stable BMI (min. 18.5)
10 weeks later	**Final Block Meeting**	
Session 12 **(3 hours)**	▪ interconnecting families from all cycles	
Other systemic methods: circulative questioning, exceptions, resource-orientation, scaling questions, future questions, non-change paradigm, interventional family meals and snacks, homework, prescribed symptoms		

3.4 Cultural-Therapeutic Considerations for Eastern European Countries

The influence of system variables (e.g. *micro-systems*) on the understanding and treatment of eating disorders has been studied extensively in the field of systemic family therapy. However, the understanding of *macro-system variables* (e.g. cultural norms and context) and whether they impede with the implementation and effectiveness of evidence-based systemic treatment models such as MFT for eating disorders has been given little attention (Kirmayer, 2012; Rathod & Kingdon, 2014). Especially in growing multi-ethical societies, the need for evidence-based and cultural-sensitive treatment adaptations is growing (Castro, Barrera, & Holleran Steiker, 2010; Rathod, Kingdon, Phiri, & Gobbi, 2010). Despite the existence of practice guidelines for culturally competent psychology (American Psychiatric Association, 2002) there is a lack of research providing practical information (such as 'checklists' or 'guides') on how to 1) implement treatment models such as MFT for eating disorders and 2) carry out culturally-sensitive interventions in regards for the specific cultural background of the target group (Bernal & Sáez-Santiago, 2006; Tseng, 2001). A review of 76 studies proved that culturally-adapted mental health interventions are four times more effective

than their non-adapted counterparts (Drozdek, Kamperman, Tol, Knipscheer, & Kleber, 2013). In addition, most psychotherapeutic models (such as CBT and systemic family therapy) for eating disorders have been developed in western, individualistically-oriented societies (such as the US, UK and Germany) reflect their cultural belief systems (e.g. individualism versus collectivism) (Chowdhary, Jotheeswaran, Nadkarni, Hollon, King et al., 2014; Darwish & Huber, 2003). Western democratic and individualistic societies emphasize the importance of the individual promoting their self-interests and personal identity (Avruch, 2000) which prevail over the needs and interests of the community (LeFebvre & Franke, 2013). For the treatment of eating disorders, western treatment guidelines (American Psychiatric Association, 2006; NICE, 2017) recommend family-oriented models such as MFT, but it is questionable whether such models in their current form may be applicable to Eastern European countries, like the Czech Republic. In former communist Eastern European societies, the implementation of western treatment models such as MFT can be challenging and may conflict with variables on different system levels. On the *chrono-system level*, the legacy of the Czech communist regime that ended with the *Velvet Revolution* in 1989, still pervades in nearly all areas of Czech culture and life (Höschl, Winkler, & Pec, 2012). In many communist countries, like the Czech Republic, social and psychological problems were ideologically reframed as originating from capitalistic ideas which resulted in the 1) marginalization of mental health problems (e.g. such as eating disorders) and 2) primarily biologically-oriented psychiatric research and care system (Höschl et al., 2012; Krupchanka & Winkler, 2016a). The Czech communist legacies still affect variables on the *macro-system* resulting in a 3) slow pace of modernizing of health care and 4) a chronically underfinanced and understaffed health care system with only 4.14% of GDB allocated to mental health care and one fourth of that budget to anxiety- and eating disorder treatment (Czech News Agency, 2010; Höschl et al., 2012; McDaid & Thornicroft, 2005). Other consequences on the *macro-level* are the 5) prevailing suspicion towards psychiatric care which is another legacy of the communist regime in which political dissidents and patients with severe

psychiatric disorders were often confined into psychiatric hospitals (Höschl et al., 2012) and a 6) worrying level of stigmatizing people with psychiatric disorders combined with 'unhealthy' narratives (also present among health professionals) about psychiatric problems, such as eating disorders (e.g. blame attribution to families) (Pec, 2019; Winkler, Mlada, Csemy, Nechanska, & Hoschl, 2015). Other consequences is the 7) help-seeking attitude of patients with psychiatric problems and 8) challenging pathways into mental health care (Höschel, Winkler, & Pec, 2012; Winkler, Csemy, Janouskova, Mlada, Bankovska Motlova et al., 2015). The OECD of 2011 reported that 73% of Czechs with psychological problems turn to their GPs compared to only 14% turning to psychiatrist and psychologists (OECD, 2011; Pec, 2019). In addition, studies on cultural messages concerning family roles and parenting practices (e.g. coping mechanisms, conflict resolution, problem and emotional disclosure etc.) are underrepresented in Eastern European countries (Avruch, 2000). Consequently, the generalization of findings in regards to the effectiveness of therapeutic models may be impacted by cultural variables and impede the effectiveness of western models such as MFT (Rathod, Gega, Degnan, Pikard, Khan et al., 2018). This could affect various areas of MFT structure, interventions and team resources, such as recruitment, participation, drop-out rates, therapeutic relationships and/or quality of care. When implementing a treatment approach a cultural-sensitive analysis of multilevel system variables, particularly from the *macro-system* may be crucial to understand the 1) structural requirements of the cultural context and 2) how these variable conflict, interact with- or impede the implementation and effectiveness of a treatment model (such as MFT).

4
Psychosocial Risk Factors for Eating Disorder Onset

4.1 How to Identify Reliable Risk Factors for Eating Disorder Onset?

In contrast to the family therapy models for eating disorders that lack to incorporate the effects of *macro-system* variables, etiological models and preventive programs for eating disorders have long acknowledged the effects of cultural variables (e.g. internalization of western sociocultural messages of the thin beauty ideal) (e.g. Ata, Schaefer, & Thompson, 2015; Thompson & Stice, 2001; Vander Wal, Gibbons, & Grazioso Mdel, 2008; Weissman & Bulik, 2007) in the prediction of eating disorder onset. However, the assessment of putative predictive *micro-system* impairments in the domains: family, peers, school and work (psychosocial functioning) and how they relate to eating disorder onset, have received little attention (Stice, Gau, Rohde, & Shaw, 2017a). Most eating etiological models for eating disorder (such as the *Dual Pathway Model* (Stice & Menke, 2017)) postulate multifactorial direct- and indirect pathways to eating disorders onset. However, there is a lack of studies that use 'reliable' psychosocial risk factors which in turn affects the reliability of existing etiological theories for eating disorder onset. Kraemer and colleagues define the etiology of an eating disorders as the result of causal chains that involve the complex interplay of several risk factors (non-additive effects), risk factor interactions (additive effects) and risk factor pathways (sequential precedence) (Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001). A risk factor is defined as 'a variable that prospectively predicts a subsequent pathological outcome' (Stice, 2002, p.825). According to their Kraemer's taxonomy three traits constitute a reliable risk factor: 1) *temporal precedence* to the outcome, 2) a *significant correlation* between the risk factor and the outcome and 3) the *potency* that refers to the magnitude of association (Jacobi, Hayward, de Zwaan, Kraemer, & Agras, 2004). In addition most risk factor studies in the field of eating disorders suffer from other methodological weaknesses (Kraemer et al., 2001). They 1) use cross-sectional research designs, 2) display small sample sizes (lack of power), 3) retrospectively examine risk factors for eating disorders onset, 4) use varying risk factor terminologies and/or 5) lack validated diagnostic interview procedures. A reliable risk factor

should be measured temporally before eating disorder onset (at baseline) in disorder-free individuals, ideally via prospective and longitudinal research designs that includes a large enough sample size combined with interview-based diagnostic procedures. A retrospective or simultaneous analysis of risk factors can bias the study results due to factors associated with the eating disorder pathology (e.g. the ego-syntonic nature of the disease, cognitive biases caused by malnutrition, starvation) or a comorbid psychiatric disorders such depressions (Abbate-Daga, Amianto, Delsedime, De-Bacco, & Fassino, 2013; Pender, Gilbert, & Serpell, 2014; Voon, 2015). In addition, detection rates for risk factors in high-risk populations are higher than in low risk counterparts that is why risk factor studies should study high-risk populations (Jacobi et al., 2004).

4.2 Psychosocial Functioning Impairment

Psychosocial functioning is an umbrella term (Ro & Clark, 2009) that according to Bronfenbrenner's theory describes the interactions between the individual and the *micro-system* variables: family, friends, school and work. Psychosocial functioning impairments is defined "as a person's ability to successfully interact with their environment, that includes building and maintaining gratifying relationships with family members, partners, and peers and appropriately responding to societal demands at school, work and other social settings" (Mehta, Mittal, & Swami, 2014, p. 5). Impaired psychosocial functioning is a well-researched *consequence* of subthreshold and full syndrome eating disorders and has been studied across various patient populations (Bentley, Gratwick-Sarll, & Mond, 2015; Bohn, Doll, Cooper, O'Connor, Palmer et al., 2008; Lynch, Striegel-Moore, Dickerson, Perrin, Debar et al., 2010; Mond & Hay, 2007; Moser, Lobato, Rosa, Thomé, Ribar et al., 2013; Ruuska, Koivisto, Rantanen, & Kaltiala-Heino, 2007). Only two prospective studies have investigated whether *micro-system* impairments of the individual (operationalized as psychosocial functioning score) are putative

risk factors to predict future eating disorder onset of all eating disorders categories (Jacobi, Fittig, Bryson, Wilfley, Kraemer et al., 2011; Stice et al., 2017a). A longitudinal study that used data from three prospective eating disorder prevention trials examined the predictors of subthreshold/threshold AN, BN, BED and PD over 3-year follow-up, and found a composite score of impaired psychosocial functioning to be the only risk factor to predict future onset of all four eating disorders (Stice et al., 2017a). Another prospective study that has investigated a similar high-risk sample using the same psychosocial functioning composite measure found no predictive effect on future onset of any eating disorder over 3-years follow-up (Jacobi et al., 2011), potentially because the sample was smaller and the incidence of eating disorder onset lower (Stice et al., 2017a). Both studies investigated the predictive effects of a composite score of psychosocial functioning on future onset of all eating disorders; but failed to examine whether impairments in specific *micro-system* domains of psychosocial functioning (peer, family, school and work) predicted onset of all eating disorders, nor if impairments in any of the individual items constituting the scale were predictors for future eating disorder onset. There are only two longitudinal studies that used interview-procedures, assessed the risk factor prospectively and examined the impact of *micro-system* variables in the prediction of eating disorder onset using the conceptual framework of psychosocial impairment (as a global score).

4.3 Psychosocial Risk Factors for Eating Pathology and Eating Disorders

To understand how risk factors, operate together in the complex etiology of eating disorders is crucial to understand other established psychosocial risk factors. A few meta-analytic reviews summarize psychosocial risk factors for eating disorder onset and eating pathology (Stice, 2002; Stice et al., 2017a; Striegel-Moore & Bulik, 2007). The report by Stice et al. (2017a) is the only comprehensive overview that examined psychosocial risk factors (including BMI) for *DSM-V* subthreshold and full syndrome eating disorders and is the predecessor study for *Study II*. The four most important and well-established psychosocial risk

Factors for *DSM-IV* eating disorders and *DSM-V* subthreshold and full syndrome eating disorders are reported. The correlation coefficient (*r*) is used as index of small (*r* = .10), medium (*r* = .30) and large (*r* = .50) effect sizes (Cohens, 1988 as operationalized in [Stice et al., 2002]). The following paragraph is summarized as described in Stice et al. (2002).

1) *Sociocultural pressure to be thin* is a sociocultural message to embrace a culturally-defined beauty ideal characterized by an ultra-thin or lean body shape (Stice, Presnell, Shaw, & Rohde, 2005; Suelter, Schvey, Kelly, Shanks, Thompson et al., 2018). *Pressure to be thin* found to predict bulimic symptoms (Field, Camargo, Taylor, Berkey, & Colditz, 1999; Stice & Agras, 1998b), onset of binge eating (Stice, Presnell, & Spangler, 2002) and increased eating pathology with small effect sizes across studies (Wertheim, Koerner, & Paxton, 2001).

2) *Thin-ideal internalization* is described as the extent of which an individuals has internalized a socially pre-defined thin ideal combined with the idea to achieve better social acceptance (Thompson & Stice, 2001). This risk factor has found to predict the onset of bulimic symptoms (Field et al., 1999; Stice et al., 2017a), syndrome/subthreshold binge eating pathology (Stice et al., 2017a) and syndrome/subthreshold purging disorder (Stice, 2016; Stice et al., 2017a). It has also found to predict other risk factors such as body dissatisfaction (Stice, 2001), dieting (Stice, Mazotti, Krebs, & Martin, 1998) and negative affect (Stice, 2001) with small to medium effect sizes (Stice et al, 2002).

3) Negative affect defined as a feeling of distress that is caused by the experience of unpleasant emotions such as anger, fear, sadness, anxiety, guilt and shame (Stringer, 2013). Theoretically, 'affect regulation models' explains how an individual attempts to avoid, regulate or deal with unpleasant affective states by eating disorder behaviors as coping strategies (e.g. binging) (Culbert, Lavender, Crosby, Wonderlich, Engel et al., 2016) and binge eating disorders (Hawkins & Clement, 1984). Negative affect has found to be a predictor for of all four eating disorder categories (Stice et al., 2017a) and predicted onset of eating disorder symptoms (Gardner, Stark, Friedman, & Jackson, 2000; Keel, Fulkerson, & Leon, 1997). It predicted PD

(Haedt-Matt & Keel, 2015) and has found to predict full syndrome AN (Stice et al., 2017a) with small to medium effect sizes.

4) Body dissatisfaction describes a subject negative evaluation of one's one own body in term of shape, size, weight. The feeling of discrepancy between one's current and ideal body fosters negative emotions and discontent (Stice et al., 2002). *Body dissatisfaction* is one of the most robust risk- and maintenance factor for eating disorder pathology and has found to predict eating pathology (Wertheim et al., 2001), bulimic symptom onset (Stice & Agras, 1998a; Stice et al., 2017a) and eating disorder symptoms (Gardner et al., 2000) with small effect sizes.

The predecessor study by Stice et al. (2017a) to *Study II*, reported one other risk factor that predicted all *DSM-V* eating disorder categories: psychosocial impairment as global score.

5 Publications

5.1 Experimental Procedure for *Study I* and *Study II*

This cumulative dissertation borrows Bronfenbrenner's (1979) ecological system theory to organize and classify multilevel system variables examined via two studies (*Study I* and *Study II*) resulting in three publications. As demonstrated especially family systems therapy models have incorporated the influence and interactions of *micro-system* variables (such as the family) in the treatment of eating disorders in manualized formats. Western therapeutic guidelines (American Psychiatric Association, 2006; NICE, 2017) specifically recommend family-oriented therapy models such as Mausdley and FBT since they reveal the best evidence to reduce eating pathology. An advancement of Maudsley and FBT is MFT for eating disorders, but it is questionable whether the model is cultural sensitive to get adapted into former communist societies like the Czech Republic. Additionally, it has not been researched whether system variables (particularly from the *macro-system*) impede with its effectiveness. In contrast to the family treatment models for eating disorders, etiological theories and preventive programs for eating disorders have been given little attention to the putative predictive effects of *micro-system* variables (such as family, friends, school and work) that is operationalized via the concept of psychosocial functioning in this dissertation. As described, only two longitudinal prospective studies that followed the Kraemer criteria identified impaired psychosocial functioning (as a global score) to predict subthreshold and full syndrome *DSM-V* eating disorders (Stice et al. 2017a; Jakobi et al., 2011).

In *Study Ia*/*b* and *Ic*, the implementation of the first MFT model for *DSM-IV* eating disorders into an Eastern European country, the Czech Republic is described. *Study Ia*, uses a retrospective narrative approach for the identification of *macro-system* variables that may impede with the implementation and effectiveness of MFT for eating disorders *(Study Ia)*. Additionally, cultural specificity and qualitative feedback with the approach are discussed. In *Study Ib*, effects of a pilot case series empirically tested the impact of Czech MFT on patient's self-esteem and life quality from pre-to post-treatment by self-report (T2), using an Analysis of

Variance (ANOVA) with repeated measures and non-parametric Wilcoxon Rank Tests. In *Study Ic*, the effects of the Czech MFT program are analyzed for patient's eating disorder pathology (interview-assessed and self-report) and body weight using a General Linear Model (GLM) with time and the interaction effect (time x diagnoses). Pre-post self-report changes of depressive symptoms and life quality for the entire sample including parents were examined using a General Linear Model Mixed) (GLMM) with fixed effects (time, family member and interaction) to assess which family member benefited most from MFT. For *Study I* the goal was 1) to develop a cultural competent 'checklist' that alleviates barriers to ease implementation of MFT for eating disorders into different cultural contexts and 2) to test whether despite cultural challenges, MFT shows effects on eating disorder pathology and psychosocial parameters of patients and parents. To our knowledge this is the first Czech MFT model for eating disorders that has been implemented and tested for effectiveness in the Czech Republic.

Study II, builds on the findings of Stice et al. (2017a) that found psychosocial impairment (as global score) to be a transdiagnostic risk factor for all *DSM-V* eating disorders. Studies that formed a high-risk sample of 1,153 young females, disorder-free at baseline, that were followed with monthly diagnostic interviews over 3-year period, to investigate which *micro-system* domain (family, friends, school and work) and single items (*micro-system* relations) of psychosocial impairment most strongly predicted *DSM-V* eating disorder onset. Accordingly, the global measure of psychosocial functioning will be disaggregated to examine which domains of psychosocial impairment (family, friends, school and work) shows the strongest relations to future *DSM-V* eating disorder onset. In a second step, the predictive univariate and multivariate effects of the *micro-system* domains: family, friends, work and school and the 17 single items on future onset of any *DSM-V* eating disorder are tested with Cox proportional Regression Hazard Models (CRM). Item predictors are assessed with Classification Tree Analysis (CTA). The goal was to investigate which the *micro-system* variables family, friends, school and work and single items to 1) refine etiological theories and

2) tailor preventive program. To our knowledge, no prior study has disassembled the predictive effects of separate psychosocial functioning domains and corresponding items on future onset of eating disorders using a high-risk design.

5.2 Adapting multi-family therapy to patients who care for a loved one with an eating disorder in the Czech Republic combined with a follow-up pilot study of efficacy

Mehl, A[a], J. Tomanová[a], A. Kuběna[b] and H. Papežová[a]

[a] Centre for Eating Disorders at the First Psychiatric Clinic of the First Faculty of Medicine and General Teaching Hospital. Charles University, Prague, Czech Republic

Abstract

This research article provides an insight into the Multifamily Therapy (MFT) for families caring for a patient with an eating disorder at the Centre for Eating Disorders at the First Psychiatric Clinic in Prague. We describe the sometimes rocky path of MFT in Czech healthcare and the challenges we encountered in working with this approach in the Czech Republic. Additionally, we discuss the preliminary results of our follow-up-pilot study in which we tested the efficacy of our MFT programme on patients' quality of life and self-esteem. Fifteen patients completed the Rosenberg self-esteem scale (RSES) and the brief Schwartz outcome scale (SOS-10) at pre-treatment and post-treatment. Our results show a significant improvement of quality of life ($F(1, 14) = 13.03$, $P = 0.003$) and a significant reduction of self-esteem ($Z = -2.721$ $P = 0.07$). This pilot study shows divergent results concerning the efficacy of MFT on patients' quality of life and their self-esteem.

Keywords*: multi-family therapy; eating disorders; family therapy; Czech Republic; self-esteem; quality of life*

Introduction

From a systemic perspective, family or multi-family involvement is critically important for the successful treatment of eating disorders. In many western European countries – particularly the UK, Germany and the Nordic countries – the treatment of eating disorders in a multi-family group setting is widespread and well established (Asen, 2002; Dare & Eisler, 2001; Eisler et al., 1997). However, multi-family group work is still a very unique and young approach to treating eating disorders in eastern European countries like the Czech Republic. At present, the Centre for Eating Disorders at the First Psychiatric Clinic in Prague is the only institution in the Czech Republic that offers a multi-family therapy programme for eating disorders patients and their families. Multifamily therapy (MFT) is an eclectic and comprehensive treatment approach that combines elements of various therapeutic styles, including cognitive-behavioural, dynamic, narrative and systemic components (Asen, 2002). It furthermore allows a flexible adaptation according to the unique personalities and dynamics of each family group. Connecting families with an eating disorder in a multi-group setting can reduce feelings of stigmatization, loneliness and social isolation or feelings of being observed by staff or therapists. MFT has been found to strengthen mutual learning processes (for example, sharing coping styles and relapse prevention), to restructure and optimize family constellations and to indicate changes that influence emotional and communicational patterns in families (Asen, 2002; Scholz & Asen, 2001; Tantillo, 2003). In a safe and non-judgmental atmosphere, families are able to divert their attention from the eating disorder to developing healthier interactions and communication styles and to gaining a more positive future perspective (Dare & Eisler, 2001; Lemmens, Wauters, Heireman, Eisler, Lietaer et al., 2003; Scholz et al., 2005). The Centre for Eating Disorders at the First Psychiatric Clinic has offered MFT since 2004. Given the success of the first four cycles, MFT is now used as a standard component of our treatment programme to make it accessible to a larger number of Czech families who care for a patient with an eating disorder. However, MFT is not an established

therapeutic approach to treating eating disorders in the Czech Republic and it is still regarded with suspicion by health professionals and Czech families.

The development of MFT in the Czech Republic

Compared to most western countries, the introduction of family-based interventions such as MFT into the Czech healthcare system happened late. This is partly due to the communist regime, which suppressed innovative ideas as well as 'clinical and scientific exchanges with Western countries' (Papežová, 2002) before 1989, and partly to the reluctance of Czech families to embrace individualistic ideas deriving from western countries. Even though family-based interventions encountered the skepticism of health professionals and Czech families, the first worldwide family therapy congress was held in 1987 in Prague in former Czechoslovakia. During the same time, the first journal for family therapists – *Kontext* – was published periodically, but unofficially (Gjuričová & Kubička, 2003). Despite the suspicion of the socialistic government, health specialists and Czech families, several health professionals – including Drs Peter Bos and Jan Spitz, who proved particularly tenacious – did not give up their strong ideas and convictions on the positive outcomes of family-based interventions.

After the 1989 revolution, specialized literature started to pour into the Czech Republic and professionals started to publish articles and books (Papežová, 2002), hold open seminars and symposia and conduct educational programmes for future family therapists (for example, Psychotherapeutické centrum GAUDIA, Institute of Family Therapy). New institutions and centres were established to specialize in family and couples therapy, offering family-based interventions for mental disorders, like The Prague Family Centre, the Child and Adolescents' Clinic in Motol (Prague) and the Prague Institute of Family Therapy and Psychosomatic Medicine (Gjuričová & Kubička, 2003). Whereas single family treatment developed well and became more and more accepted after 1989, MFT did not – despite the method having been

proved in various worldwide studies to be an effective treatment approach for mental disorders like eating disorders (Shadish & Baldwin, 2003). Additionally, the national guidelines for the treatment of patients with an eating disorder recommend specific family-based interventions for the treatment of children and adolescents suffering from anorexia nervosa and other eating disorders (NICE, 2004).

The Centre for Eating Disorders in Prague is at present the only state or private institution offering MFT in the Czech Republic. It was set up in 1982 as a one-bed, in-patient ward for patients with eating disorders, and has grown to sixteen beds today. Patients arrive under the recommendation of a general practitioner, psychologist or therapist, or of their own volition, and are admitted if they meet the diagnostic criteria for an eating disorder. The average length of stay is 40 days, the maximum length 56 days (Žuchová *et al.*, 2010), which is paid for by several Czech health insurance schemes, such as *Všeobecná zdravotní pojišt'ovna*. In 2002 the ward was expanded to include the out-patient day clinic. With a team of volunteer therapists experienced in family therapy and eating disorders, Hana Papežova in 2004 pioneered the concept of treating more than one family suffering from eating disorders with MFT in the Czech Republic, inspired and supported by Ivan Eisler, one the developers of the Maudsley approach.

Organization and structure of the Prague multi-family model

The original Maudsley model offers a flexible structure, easing the adaptation of the programme for family groups regardless of cultural beliefs and social norms. Like the original Maudsley approach, our Prague MFT model consists of an initial block meeting followed by meetings scheduled at weeks 4, 8, 12, 16 and 24. However, unlike the original Maudsley approach, our introductory block session is shorter, lasting only 3 days (Thursday to Saturday) instead of 4 (or 7 days in Dresden). The last meeting, in week 24, is also a unique characteristic of the Prague model. Families from all recent cycles have the opportunity to meet and exchange their experiences with MFT and their life after the programme. Every day follows a nearly identical structure. The families usually meet at 9 am and leave after a snack between 3–4 pm

in the afternoon. Before the families arrive, the team meets for a reflection session to discuss the most important topics and the scope for the family day. Next comes the multi-family session, with the team, families and patients participating as a group. During this session, the team recounts the most important aspects of the last session and the group can discuss the positive and negative changes which have occurred over the prior 4 weeks. Following the multi-family session and a snack break, the families are divided into working groups. Either every family works with a therapist or the whole group is split into parents and children only. Within each group, therapists work with different therapeutic methods and techniques like relaxation, yoga, art and drama therapy, sculpture work or psycho-education.

One of the most important hallmarks of the MFT is the joint lunch in which families and the team eat together. The joint lunch usually is very stressful and emotional for the families; hence, it is followed by a reflection session about how family members and patients felt during the meal, and questions that arise concerning food, feelings, thoughts and behaviour are discussed. In the afternoon, the whole group again is divided into smaller working groups. At approximately 3:30 pm the whole group comes together for the last multi-family session to reflect on the day and, after the families depart the therapeutic team meets for a final reflection round.

Team and team resources

Our therapeutic team consists of two to three lead therapists and four to five co-therapists, including nurses. Therapeutic styles and techniques can vary depending on the formation of the therapeutic team and the individual needs and requirements of the group. Regular team meetings take place and feedback and reflection rounds are obtained after every MFT session. From the very start of our programme we have tried to optimize internal team resources (for example, peer supervision) and made use of external resources provided by independent supervisors. The team's major resource is the team discussion before and after every MFT day. The team usually discusses and reflects on the potential improvement,

stagnation or decline of each family or family members. In addition to the group discussions, the team members usually conduct smaller, staff-only workshops during which they use systemic methods like sculpting and parts therapy, which is a hypnotherapeutic technique to allow an internal dialogue with different parts of the self or the reflecting team. In these workshops they gain a better understanding of the families and their own position as therapists, both within the system and the team. External face-to face supervision is provided by two independent systemic and family therapists (Drs Hellerová and Eisler) who provide support on the MFT and the families but also help to reflect on the dynamics within the team, such as team communication, transference within the families and the team, personal and individual parts therapy.

Challenges and limitations of multi-family therapy in Prague

In a policy brief on mental health in Europe, McDaid and Thornicroft (McDaid & Thornicroft, 2005) p. 2) pointed out that in many countries in central and eastern Europe, 'the pace of deinstitutionalization has been slow, the stigmatization of mental illness is particularly marked, and the challenges of changing the balance of services are only now being faced'. Now, 21 years after the Velvet Revolution, great suspicion towards mental healthcare generally and psychiatric institutions in particular, remain a legacy of the communist regime in the Czech Republic. Having a mental disorder and being treated in a psychiatric institution still cause social stigmatization and the same holds true for eating disorders. A recent study analysed the association of social stigma and mental health in the Czech printed media, finding negative depictions of mental disorders (for example, eating disorders) in 37 articles, constituting 4 per cent of the 203 news articles reviewed (Nawková, Adámková, Vondráková, Nawka, Miovský et al., 2009). The fear of such stigmatization is strongly internalized, fueling the reluctance many Czech families feel about psychiatric hospitals and mental healthcare in general, and family-based interventions in particular (Izaková, Havlíčková, & Horvátová, 2009) (Tomanová & Papežová, 2006). At the same time, ironically, many Czech families caring for a loved one

with a mental disorder such as an eating disorder see mental health institutions as the only recourse to somehow take care of the child's problem. The fear of social stigmatization, the lack of trust in mental health institutions, and the absence of responsibility concerning children's eating disorders are only some of the challenges our health professionals face in motivating Czech families to register for our MFT programme. Czech families who care for a patient with an eating disorder often start their long journey through the Czech mental healthcare system by seeking medical help from a pediatrician or a general practitioner. The journey proceeds via private psychiatrists, nutritionists and community-based support services, where more patients are being treated than in psychiatric institutions (Immigration and Refugee Board of Canada, 2000). At the very end of their journey, when all attempts to tackle the eating disorder have failed, families register for the MFT programme. MFT in the Czech Republic can be described as not a family's first choice, but a family's last chance to recover from the eating disorder. Of the 15 Czech families which have taken part in our MFT programme, 60 per cent (n = 9) families have had more than three treatment attempts previously, whereas only one family decided immediately to undertake MFT.

Even if the team successfully motivates a family to participate in the MFT, it is difficult to keep the family (parents and patient) committed until the official end of the programme. For example, in the first group, a patient refused to attend the MFT sessions, although the parents decided to stay in the programme without their teenager with the eating disorder. We experienced another dropout in the third group in which the entire family refused to continue the programme after the introductory block, despite the patient's very serious state of health. Though no formal research has been conducted on the behaviour of Czech families in therapeutic settings, anecdotal evidence suggests that mothers and fathers of children with eating disorders react differently during MFT. Mothers tend to initiate the MFT and maintain an active role throughout the process, while fathers often merely attend the MFT passively and do not see themselves as being particularly important for the successful treatment of their child's eating

disorder. It is crucial to constantly stress the importance of the father's role in the child's recovery process from the eating disorder as well as in the child's life in general. We believe that only conjoint family work can activate the healing power of the family and release the child from its triangulation (Minuchin, 1965).

Furthermore, health professionals, including mental health workers and even family therapists, were – and frequently remain – reluctant to involve more than one family in treatment, which has created an ongoing deficit of structural and financial support. The MFT project nearly failed in 2004 merely because the team had difficulties securing the use of a suitable room and a kitchen in which to conduct the programme. For the first three cycles of MFT there was no funding for staff, so the therapeutic team volunteered their time and expertise. However, the lack of financing progressive programmes like the MFT is due to more than the scepticism and reluctance of health professionals in the field. Papežová (2002, p. 3) pointed out that the Czech health system 'lacks an efficient budget policy' which has not only ceased to establish new eating disorder units or investment in existing units, but also the search for more flexible and cost-effective approaches like MFT. As mentioned above, even Czech family therapists and health professionals working with families often oppose the MFT approach. The reason is not clear, and there has been no formal attempt to study their attitudes towards MFT. However, we can speculate on likely causes that might affect and complicate the realization of MFT in the Czech Republic.

The first possibility is economic. The Czech health system does not pay health professionals who work in a team setting conducting MFT, but it does compensate individuals who use established patient- patient-centred and symptom-centred approaches like cognitive behavioural therapy (CBT) or psychoanalysis, which they can conduct in their own private practice. The financial situation generally is grim for health professionals, particularly for those who would divide their time between MFT and established approaches, given that the starting salary for a psychiatrist is about €4 per hour before taxes – roughly the same as a McDonald's

employee (Cameron, 2011). Further, the Czech government has announced budget austerity measures, cutting public sector salaries by 10 per cent in 2011 and prompting a quarter of the nation's hospital physicians – 4000 doctors – to tender their resignations effective in the spring of 2011 (Cameron, 2011; Czech News Agency, 2010).

A second possibility is that many Czech psychiatrists and therapists still perceive their role as being quite authoritative and directive towards patients and families, which is probably a legacy of psychiatric care under the communist regime. Psychiatric care with a rather symptom-oriented medical approach dominated the treatment of mental disorders such as eating disorders in Czechoslovakia until 1989. With great suspicion, the communist regime tolerated mild forms of CBT and regime therapy which – on a very superficial level – could be best brought in line with a somewhat materialistic conception of the human being (a stimulus–response model) and mental disorders. Over the past decade, this concept of the human being and mental disorders is changing only slowly and 'new' western approaches (like MFT) are difficult to integrate in the established Czech health system. Therefore, CBT and regime therapy are still the treatments of choice for treating mental disorders such as eating disorders. Compared to the systemic approaches, they are more expert-oriented and directive, similar to medical symptom-focused treatment forms. The professional is presumed to know what it is best for the patient and the symptom is meant to disappear. However, MFT is an approach which levels power structures and authority by working with families and patients on an equal level, comparable to Andersen's idea of the reflecting team (Andersen, 2009). Health professionals working with the MFT approach are not considered to be the experts who give recommendations and direct behavioural concepts. It is a bottom-up approach in which professionals and families engage in a more vivid and flexible process, trusting that the dynamics within the systems will move the therapeutic process forward.

This relinquishing of authority can be uncomfortable for health professionals accustomed to a more hierarchical approach. Rather than serving as the finder of the solution,

with MFT the professional helps the family members activate their own resources and re-establish the parents' ownership of the process of helping their child. In MFT all parties – including the therapist – are engaged in the therapeutic process. They become part of a new system (second-order cybernetics) by reflecting their own position within the system. Although the therapist still plays a crucial role in the process in MFT, it is nearly the antithesis of the authoritative system in which many Czech mental health professionals have been trained and work comfortably with.

In addition, family therapists may see the approach as competing with their own work, or may simply need more time to embrace new ideas, such as seeing the families as the experts on the disorder. Despite these challenges, we have managed to build a stable team of therapists who are working with MFT. However, the lack of research is striking and more research has to be conducted on the attitude of Czech families towards mental health institutions and multi–family-based treatments as well as to clarify scientifically why Czech family therapists oppose MFT. A study currently underway by Tomanová and colleagues also is seeking reasons and explanations for Czech therapists' opposition to MFT. The study is analysing the service structures of family-based treatment approaches and its service utilisation in the Czech Republic The researchers are conducting semi-structured interviews with therapists to gain a better understanding of how their attitude towards and knowledge about family-based treatment has been formed.

Pilot study

Background

We started our MFT in 2004 with four families. The first year was mostly a time of experimenting with the approach and trying to find a useful adaptation for our clinical setting. We started quantitative data collection in the second cycle of MFT in 2005. We were interested to see if families responded well to our programme and if MFT proved its efficacy on objective

measures like patients' self-esteem and quality of life. Eating disorders can have a devastating effect on various domains in a patient's life and thus can substantially affect their quality of life and self-esteem. Research studies show that patients with an eating disorder usually report a negative impact on different quality of life domains (de la Rie, Noordenbos, & van Furth, 2005) whereas low self-esteem is described as a key factor in developing 'overvalued ideas about body weight and appearance' (Vanderlinden, Kamphuis, Slagmolen, Wigboldus, Pieters et al., 2009) p. 265; (Fairburn & Cooper, 1997b). In clinical practice, however, there is a lack of efficacy studies that investigate the effects of MFT on patients' quality of life and their self-esteem. In particular, the relationship between self-esteem and eating disorders remains unclear (Vanderlinden et al., 2009). We conducted a follow-up pilot study with a single hypothesis in which we predicted a significant increase of self-esteem and quality of life of our patient sample after 12 months of MFT. Additionally, we held group interviews with each family and the patient to explore users' needs and expectations before and their satisfaction after the treatment.

Sample selection

Families suitable for our MFT programme were either recruited through our patients from the in-patient service, via fliers, advertisements or word-of mouth recommendations by staff or ex-users at the Centre for Eating Disorders at the First Psychiatric Clinic in Prague. The families were assessed by a psychiatrist and admitted to the MFT programme if they met our inclusion criteria: (i) a patient with an eating disorder according to *DSM-IV* (American Psychiatric Association, 1994); (ii) family members aged between 16–65; (iii) the patient lives in the household with parents; and (iv) informed consent is provided by patient and parents. We excluded families if they met the following exclusion criteria: (i) diagnostic criteria met for psychosis or substance abuse of a family member; (ii) mental retardation of family members; (iii) suicidal ideation or crisis of a family member; (iv) Axis I or Axis II disorder of a family

member. The participants received a detailed explanation of our pilot study and provided written informed consent.

Participants

Fifteen patients took part in the MFT programme. The characteristics of all patients are shown in *Table 1*. To adjust our treatment, our psychiatrists assessed the eating disorder diagnosis according to *DSM-IV*, the severity of patients' eating disorder and their body mass index (BMI) before and after MFT.

Table 3: Characteristics of all patients who received multi-family therapy (MFT) (N =15)

Variable	Total (N = 15)	Percent
Patients (N)	15	100
Age (overall sample)		
Mean age (standard deviation)	17.67	
Range	14–23 (SD = 2.46)	
Years of illness (per family)		
Less than 1	2	6.7
2	5	16.7
3 and more	8	53.3
Attempts before MFT per family		
None	1	6.7
1	1	6.7
2	4	26.7
3 and more	9	60.0
Body Mass Index (BMI)		
Mean BMI before treatment (SD)	16.87 (1.46)	
Range	14.6–18.8	

Measures

To measure self-esteem, patients completed the Rosenberg self-esteem scale (RSES) at pre-treatment (t1) and post-treatment (t2). The self-report measures have been translated into Czech and validated on Czech groups by Blatný and Osecká (Blatný & Osecká, 1994, 1997). To measure their quality of life the patients completed the Schwartz outcome scale (SOS-10) at t1

and t2, which has also been translated into Czech and validated on a Czech sample (Dragomirecka, Lenderking, Motlova, Goppoldova, & Šelepova, 2006).

The RSES

The RSES (Rosenberg, 1965) measures global self-esteem (GSE) as one factor. It is composed of ten items formulated as statements and measures. Responders respond to these statements on four-point Likert scale (from 1 = strongly disagree to 4 = strongly agree). Five items of the scale are formulated positively and five formulated negatively.

The SOS-10

The SOS-10 consists of ten questions to measure quality of life on a six-point Likert scale (0 = not at all, 7 = completely). The SOS-10 is a brief self-report questionnaire and has a strong internal consistency (Cronbach's alpha = 0.96) and item-to-scale correlations of 0.74 to 0.90. A 1-week test–retest reliability coefficient of 0.87 was found in a non-patient sample. Strong convergent validity and divergent validity for the SOS-10 were established with measures of hopelessness, self-esteem, positive and negative affect, mental health, fatigue, life satisfaction, psychiatric symptoms and desire to live (Blais, Lenderking, Baer, deLorell, Peets et al., 1999).

Semi-structured group interview for families (RPPP-I)

The semi-structured group interview for families (Rodine PPP-I) was developed by Tomanová (unpublished) in 2004 in Czech and conducted by an experienced family therapist from the Centre for Eating Disorders. Each family (parents and patients) provided answers to the following topics before and after the MFT concerning the past year: (i) expectations and needs;(ii) quality of life; (iii) emotional state and mood; (iv) eating disorder symptoms; (v) family's food intake; (vi) communication and family topics; (vii) perceived efficacy of MFT; (viii) partner relationship and satisfaction; (ix) cooperation within the family; (x) future perspective (1, 3 and 10 years). The answers families provided served as user feedback for our treatment programme.

Findings

Quantitative findings

Statistical analysis was performed after the last session (t2) of MFT after 12 months. The self-esteem and the quality of life variable provided data at two times: at t1 and t2. All statistical analyses were conducted using the SPSS version 16. We tested whether all variables (t1 and t2) were distributed normally using the Shapiro–Wilk Test and the Kolmogorov–Smirnov test of normality. Both tests show non-significant results for the SOS-10 at t1 ($P = 0.385$) and t2 ($P = 0.625$) as well as for the RSES at t1 ($P = 0.325$). Significant results were obtained at t2 scores for the RSES ($P = 0.003$) and a non-parametric test is indicated to test for efficacy of the RSES data. Figure 2 shows the regression line for the RSES data at t2.

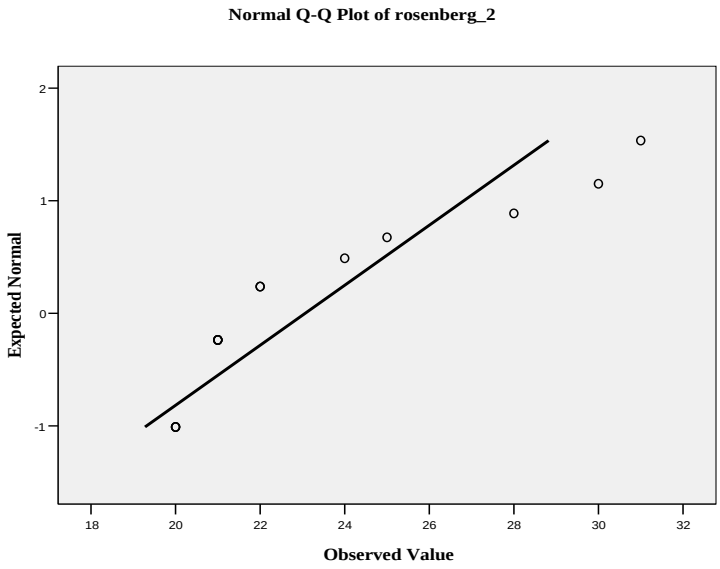

Figure 2: Regression line for Rosenberg self-esteem-scale (RSES) data at post-treatment.

To test the effects of our treatment on patients' quality of life, we conducted an ANOVA with repeated measures (general linear model) using the t1 and t2 scores of the SOS-10 (post–pre ≠ 0). The ANVOA with repeated measure revealed a significant improvement from t1 to t2 for the SOS-10 with F (1, 14) = 13.03, $P = 0.003$ and a large effect size of = 0.482. Significant improvement of quality of life is shown in *Table 4*.

Table 4: Means, standard deviations, effect size, f-value and P of ANOVA with repeated measures

Variable	Means t1 (SD)	Means t2 (SD)	Effect size (η2)	F(1, 14)	*P*
SOS-10	25.73 (9.05)	35.13 (9.57)	0. 482	13.03	0.003**

***P* < .01, SOS-10, SD; t1, pre-treatment; t2, post-treatment.

To test the efficacy of our RSES data at t1 to t2, we calculated the non-parametric Kendall's W test. The results of the test are displayed in *Table 5*.

Table 5: Means, standard deviations, Kendalls' W and P of Kendall's W-Test

Variable	Means t1 (SD)	Means t2 (SD)	Kendall's W	*P*
RSES	25.73 (4.20)	23.07 (3.75)	0. 427	0.01**

***P* < .01. SD, standard deviation; RSRS, Rosenberg self-esteem-scale t1, pre-treatment; t2, post-treatment.

Additionally we calculated the non-parametric Wilcoxon rank sum test and found that in nine patients RSES (t2) < RSES (t1), in one patient RSES (t2) > RSES (t1) and in five patients RSES (t2) = RSES (t1). Results for the Wilcoxon rank sum test are shown in *Table 6*.

Table 6: Means, standard deviations, test statistic Z and P of Wilcoxon rank sum test

Variable	Means t1 (SD)	Means t2 (SD)	Z	*P*
RSES	25.73 (4.20)	23.07 (3.75)	-2.721	0.007**

** *P* < .01, SD, standard deviation; RSES, Rosenberg self-esteem-scale; t1, pre-treatment; t2, post-treatment.

Figure 3 shows the significant improvement of the SOS-10 and a significant reduction of RSES mean.

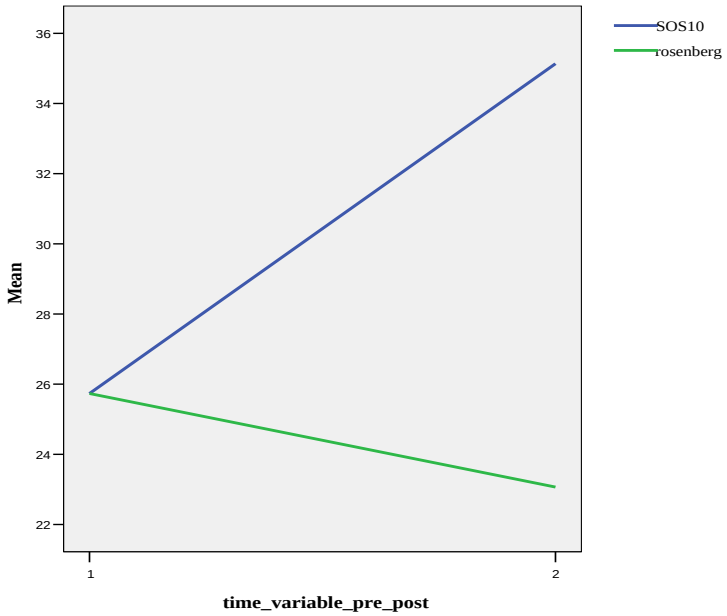

Figure 3: SOS-10- and RSES means before and after multi-family therapy showing Schwartz outcome scale and RSES.

Qualitative findings of the family group interview (RPPP-I)

We found that parents and patients had very different expectations, needs and concerns toward our MFT programme at the beginning and end of our programme. Before the treatment parents usually would say:

> ‘We want to hear what we are doing wrong’; ‘We need advice how to react and behave in different situations, so it does not get worse with our daughter’; ‘We want to know how we can tell our daughter that we love her. That we want the best for her and that we really care and worry about her’; ‘We have tried out everything, but nothing has helped us so far’; ‘We cannot imagine how our future will look if things are not going to change.’

Patients would give comments in the group interview such as:

> ‘I want my parents to understand that it is not their fault’; ‘I don’t think this therapy will help me’; ‘I know that I have to help myself, but I don’t know how’; ‘I don’t really know what to expect from this therapy, but I hope that it will help me at least a little bit.’

After the MFT parents said:

> ‘I am much calmer than before we started MFT’; ‘Now I know that it is not our fault and I don’t have to constantly think about what I have done wrong’; ‘We are so happy to have met all these other families, because we know that we are not alone and not going through all this alone’; ‘I am not afraid of every meal anymore, because I can see that my daughter has improved and we don’t have to negotiate about every bite’; ‘This therapy has really helped us, although we know it is not the end of our journey together.’

Patients had a very different perspective on the MFT, evaluating the treatment more ambivalently than the parents did. The patients’ usual comments would be:

> ‘I have the feeling that my security, the anorexia is gone, but deep inside I know that this is probably right’; ‘I am less happy than I was before, but I know it is good if the anorexia has less power over me’; ‘I liked the techniques and I became more aware of myself and discovered things with the other girls which are helpful for me’; ‘My parents say, this therapy has helped us, but I don’t think so – it is so hard to give the anorexia up, and I sometimes feel that she is still my best friend.’

Discussion and reflections

In the first part of this article we described the development of family and MFT in the Czech Republic during and after the communist regime and reflect on its current situation. We speculated on the likely causes of this situation and try to explain why MFT is not yet an established treatment for eating disorders in the Czech Republic. We noted specific attitudes of Czech families and Czech therapists and psychiatrists towards the approach. Among families, we found a fear of stigmatization, a negative perception of psychiatric care and a high degree of scepticism towards MFT. Among therapists, we found a mistrust of non-traditional western approaches, a lack of financial and structural support as well as a strong adherence to a patient

focused and symptom-focused perspective. However, those families who took part in our MFT programme engaged well in the work with the team and, with the exception of one dropout in the third group, the families attended all MFT meetings. Our experience showed that even though families initially asked for advice and expertise from the staff, they responded best to non-directive recommendations revealed in their own learning and experiencing processes. In the second part of the article we described the results of our follow-up pilot study in which we tested the efficacy of our MFT programme on patients' self-esteem and quality of life.

Before discussing our quantitative and qualitative findings, potential limitations of the study have to be addressed. The first is the small sample size of the patients and the lack of a control group. That is why caution has to be taken not to draw false negative conclusions or interpretations from our results. As mentioned earlier, the small sample size is due to the challenges we encountered (for example, low acceptance, no structural environment, scepticism of families and professionals) to motivate families for our programme and to establish MFT in the Czech healthcare system. Furthermore, our group interview that serves as user feedback was held by one family therapist without a second rater.

The results of our follow-up pilot study show divergent evidence concerning the role of MFT and its positive efficacy on patients with an eating disorder. We found a significant increase of quality of life in patients with a large effect size ($\eta^2 = 0.482$; $P = 0.003$) using an ANOVA with repeated measures. Our non-parametric tests revealed a significant effect on patient's self-esteem scores; however – contrary to our hypothesis – it was in the opposite direction from that expected ($Z = -2.721$, $P = 0.007$). The divergence of our data, with the expected rise in quality of life but an unexpected decline in self-esteem might be a reflection of patients' ambivalence towards change, which is a natural component during their recovery process. It is possible that through MFT, families step into a process together in which communication and interaction patterns get shaken up, with parents regaining responsibility and giving up their teenager's triangulation by sending one clear message that their teenager

has to eat. This, in turn, can affect the patient and the eating disorder in positive and negative ways. Patients who start to give up their eating disorder usually experience a sense of loss because they no longer have the eating disorder as a coping mechanism to address and regulate underlying issues (for example, suppressed negative emotions) previously masked by the eating disorder. Patients simultaneously gain benefits that might be revealed in more general aspects of life, which could explain the increase of quality of life. This dichotomy could be reflected in specific variables increasing while others diminish. Throughout the MFT programme, our patients usually maintained their ambivalence toward the therapeutic approach, as noted above.

Our findings also reflect what other patients with an eating disorder experience during their recovery process.

> 'It sounds really scary just thinking about it. To have recovered … I wouldn't say I don't want to recover, but I wouldn't say that I do want to recover because recovery is such a scary thing and it would mean changing so much of my life'; 'I know the bottom line is that it is a really funny illness – not funny ha-ha, but it's very strange because it's an illness and yet you want to have it'; 'Yes, you haven't got it … it's like taking away your armor. You haven't got anything to protect you' (Tantillo, Newell, & Friedmann, 2010).

Moreover, self-esteem in patients with an eating disorder is often built on their low body weight and physical appearance (Fairburn & Cooper, 1997a) and their self-esteem is therefore extremely sensitive to changes. Patients whose self-esteem is intimately connected to their BMI score might experience a loss in self-esteem if their body weight goes up. A similar relationship is also found in a study by Mendelson (Mendelson, Mendelson, & Andrews, 2000), who explored the relationship of self-esteem, body esteem and BMI in adolescent teenagers. The authors found that, especially among those teenage girls who regard their weight as important,

'high BMI predicts low global self-esteem and a low self-evaluation of appearance' (Mendelson et al., 2000). Our study of patients with an eating disorder reflected these findings. Our patients significantly increased their BMI score during MFT (Wilcoxon rank sum test; Z = - 2.215; P = 0.027), which might explain the significant decrease of their self-esteem. Our hypothesis is in line with the findings of Schupak-Neuberg and Nemeroff (1993, p. 335), who found variables such as 'identity confusion, enmeshment, and an overall instability in self-concept' in patients with eating disorders. Patients often 'shift their focus from their inner selves, allowing their body or their physical appearance to become their sense of self' (Hanlon, 2011).

Other authors confirm the idea that disturbances during the formation of the self in adolescence can lead to disturbed eating. They see especially adolescent girls in danger of developing an eating disorder since they compensate for their insecurity and self-consciousness by criticizing their appearance and their bodies (Bruch, 1982; Fairburn & Wilson, 1993; K. & Nyquist, 2001). If 'food and fasting become the method of self-regulation (emotional and physical), any deviation from the diet (for example, putting on weight) is seen as a failure' (Hanlon, 2011, p.1; Schupak-Neuberg and Nemeroff, 1993) and can affect self-esteem substantially. As a patient pointed out:

> I guess so – I could never use gaining weight as a measure of achievement – it has always felt like a failure, like giving in – you know, putting on felt like I am undoing all my hard work – it felt terrible. (Tantillo *et al.*, 2010)

A recent study by Cockerham *et al.* (2009) argues for a distinction between implicit and explicit self-esteem in patients with eating disorders. The authors found high implicit and low explicit self-esteem scores in patients with an eating disorder compared to healthy controls. They suggest that their results might be the expression of an overall 'fragile self-esteem related to high levels of perfectionism' (Cockerham, Stopa, Bell, & Gregg, 2009) in patients with eating disorders. Our article describes the establishment of MFT in Czech healthcare and the

preliminary results of our follow-up pilot study. Our pilot study indicates that patients who have been treated with MFT show a divergent response towards our programme. However, caution has to be taken not to draw false conclusions due to our very small sample size and the lack of a control group. Our study, however, suggests the importance of including patients' experiences in the process of interpreting and understanding data. More research is needed to replicate and extend our results and to examine the quality of life and especially the role of self-esteem in patients with eating disorders treated with MFT.

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5.3 Results of the first Pilot Case Series of Multifamily Therapy for Eating Disorders in the Czech Republic. Effects on Patients and their Parents

Mehl, A.[a], Lock, J.[b], Kuběna, A [c], Tomanová, J.[d] & Papežová, H[d].

Author Note

[a] Institute of Psychology, University of Heidelberg, Hauptstraße 47-51, 69120 Heidelberg, Germany

[b] Department for Psychiatry and Behavioral Science, Child and Adolescent Psychiatry and Child Development, Stanford University, 401 Quarry Road, Stanford, California 94305, USA

[c] Department of Econometrics, Prague, Czech Republic; Czech Academy of Sciences, Politických vězňů 7, 11121 Prague 1, Czech Repuplic

[d] Centre for Eating Disorders at the First Psychiatric Clinic of the First Faculty of Medicine and General Teaching Hospital. Charles University, Ke Karlova 11, 120 000 Prague 2, Czech Republic

Correspondence should be addressed to Annette Mehl, University of Heidelberg, 47-51, 69120 Heidelberg. Email: annette.mehl@uni-heidelberg.de

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Abstract

Purpose. This study investigates the impact of the first multifamily therapy (MFT) pilot case series for patients with *DSM-IV* eating disorders and their parents in the Czech Republic. **Methods.** Eating disorder pathology was measured with the Eating Disorder Examination Interview, its corresponding self-report questionnaire (EDE-Q) and expected mean body weight in percent (%EMBW) of patients (n = 15, age 14-23). Additionally, life-quality and depressive symptoms for patients and parents (n = 26, age 40-54) were assessed. **Results**. A general linear model showed significant improvements for patients' EDE-Q (global score) with F (1, 30) = 13.32 and %EMBW with F (1, 30) = 9.22, (all $p < 0.01$) and large effect sizes (both $\eta^2 > 0.40$) from pre- to post-treatment (T2). One interaction effect for the EDE-Q: Restrain subscale was significant with F (2, 30) = 6.42, p = 0.013. Post-hoc contrasts indicated significant EDE-Q scores for AN and BN patients compared to EDNOS at T2 (all $p < 0.05$). For the entire sample a General Linear Mixed Model detected significant time effects for the depressive pathology with F (1, 82) = 12.83 and life-quality F (1, 82) = 9.64 for the entire sample (all $p < 0.01$). Patients showed the largest seize of improvement (all $p < 0.05$). **Conclusion**. MFT is an effective treatment to improve eating pathology for patients. Life-quality and depressive symptom improved for the entire sample with patients responding best. Cultural specificities do not impede with the effectiveness of Czech MFT for eating disorders.

Keywords: *multifamily therapy, eating disorders, depression, life quality, Czech Republic*

Impact of Multifamily Case Series on Families with *DSM-IV* Eating disorders in the Czech Republic

Eating disorders are serious psychiatric illnesses and affect approximately 13% of young women during adolescence and young adulthood (Allen et al., 2013a; Stice et al., 2013b). Eating disorders reveal high standardized mortality ratios that range from 1.93 for bulimia nervosa (BN), 1.92 for eating disorders not otherwise specified (EDNOS) to 5.86 for Anorexia Nervosa (AN), respectively (Arcelus et al., 2011). Additionally, eating disorders are associated with high psychiatric comorbidity, chronicity and relapse (Lynch et al., 2010), burden families and negatively impact family functioning (Cerniglia, Cimino, Tafa, Marzilli, Ballarotto et al., 2017; Padierna, Martín, Aguirre, González, Muñoz et al., 2013). Whereas western therapeutic guidelines (American Psychiatric Association, 2006; NICE, 2017) recommend the involvement of family members (e.g. parents and siblings) in the treatment of patients with eating disorders (especially for AN), family-oriented treatment models have not been sufficiently established in Eastern European countries, like the Czech Republic (Mehl, Tomanová, Kuběna, & Papežová, 2013). Due to cultural specificities it is questionable whether they are effective in former communist countries, like the Czech Republic. In regards to family-oriented treatment models, the Maudsley Model for AN (Eisler et al., 1997) and its detailed manualization Family-Based Treatment (FBT) (Lock & Le Grange, 2013) that promote parental control and weight restoration, show the best evidence for patients with AN and BN (Gorrell, Loeb, & Le Grange, 2019; Lock et al., 2010). A body of research supports the efficacy of Maudsley and FBT to improve eating disorder pathology and body weight for patients across various eating disorders (Eisler et al., 2000; Fitzpatrick et al., 2015; Le Grange & Lock, 2007; Lock & Le Grange, 2013; Lock et al., 2010). The idea to involve parents as a positive resource in the treatment of patients with eating disorders was pioneered by Salvadore Minuchin and colleagues at the Philadelphia Child Guidance Clinic, USA in the 1970's (Minuchin et al., 1975; Minuchin et al., 1978). Minuchin developed an explanatory '*model for psychosomatic families'* (Liebman, Minuchin,

& Baker, 1974; Minuchin et al., 1975) that empowers the parents to actively take control of the child's eating disorder symptoms. The goal of Minuchin's model was to restructure the family organization by uniting the 'parental subsystem' to take leadership of the child's eating disorder symptoms (Minuchin, 1965). A system of conflict resolution and boundaries was established in addition to the redefinition of family rules and loyalty through *enactments* (Espie & Eisler, 2015; Hodes et al., 1991; Minuchin et al., 1975). The core enactment of Minchin's approach was the family meal or lunch session (Rosman et al., 1975), that allows symptom activation in a safe therapeutic environment, thus restructure family relationships and communication around food (Minuchin et al., 1975; Minuchin et al., 1978). Together with the *Milan Model* (Boscolo, Cecchin, Hoffman, & Penn, 1987) that restructures the communicational patterns (e.g. circulative questioning and paradoxical interventions) of the family (Selvini-Palazzoli, 1978; Selvini-Palazzoli & Viaro, 1988), techniques from structural family therapy (e.g. boundaries and hierarchies) and *narrative approaches* such as symptom externalization (White, 1992), a strict focus on resource orientation (Schiepek & Cremers, 2003), presence- and future solutions (de Shazer, 1988) laid ground for the development of the agnostic models of eating disorders, the Maudsley Model, FBT and Multifamily Therapy (MFT) (Asen & Scholz, 2009; Dare & Eisler, 2001; Scholz, Rix, Hegewald, & Gantchev, 2003). Contrary to the explanatory models, agnostic treatment models for eating disorders oppose the idea to attribute blame to families and postulate a multifactorial cause of the eating disorder (Le Grange, Lock, Loeb, & Nicholls, 2010). Agnostic models suggest that families 'reorganize' around the symptom and develop pathological coping styles e.g. poor communication, overprotection or conflict avoidance to manage the eating disorder symptoms of the teenager (Eisler, 2005; Eisler et al., 1997). Among the agnostic models for eating disorders, that share similar theoretical assumptions and therapeutic techniques, MFT represents a promising alternative for non-responding patients and families (Rienecke, 2017). It is designed as outpatient treatment that brings together multiple families with the same pathology into a group setting. Initially, MFT was developed as manual-

based treatment program in Dresden, Germany and London, United Kingdom. It is elective of nature, spreads over a period of 6-12 months and is conceptualized for up to nine families. MFT is considered a more intense experience for families (Le Grange, 2005) by adding the group intervention (e.g. social support, fostering parents) and regular 'group family meals' in its treatment portfolio (Scholz & Asen, 2001). Currently, uncontrolled pilot studies support the use of MFT for patients with different eating disorders to improve eating disorder pathology, restore body weight and impact depressive symptoms and life quality (Dimitropoulos et al., 2015; Gelin, Fuso, Hendrick, Cook-Darzens, & Simon, 2015; Hollesen, Clausen, & Rokkedal, 2013; Salaminiou, Campbell, Simic, Kuipers, & Eisler, 2017; Voriadaki, Simic, Espie, & Eisler, 2015). One randomized control trial that compared MFT for AN with single-family therapy found no differences in mean percentage Body Mass Index (BMI), eating disorder pathology, depression and self-esteem at treatment completion, but a higher mean percentage BMI for the MFT group at six months follow-up (Eisler et al., 2016). Due to cultural specificities in the Czech Republic that relate to its communist history and the 'Velvet Revolution' in 1989, western systemic therapeutic models for eating disorders such as MFT are underrepresented. Slow modernization of the health care system and a lack of funds allocated to mental health care, including eating disorders (Höschel et al., 2012; OECD, 2011), make implementation challenging. In addition the stigmatization of patients with psychiatric disorders (e.g. eating disorders) and the mistrust towards psychiatric institutions is particularly high in the Czech Republic, which are other legacies of the former communist regime (Krupchanka & Winkler, 2016b). A predecessor pilot study found increased life quality scores for patients with *DSM-IV* eating disorders and a reduction in self-esteem. In addition, this field-based mixed model approach reviewed cultural barriers and challenges to implement MFT for eating disorders into the Czech health care system (Mehl et al., 2013). The current MFT case series investigated the same patients' cohort and additionally includes corresponding parents. It examined the impact of MFT on patient's *DSM-IV* eating disorder pathology and body weight from pre- to

post-treatment (after 12 months of MFT). In addition, effects on patients' and parents' depressive pathology and quality of life were examined. The primary outcome was a full remission of eating disorder pathology (EDE-Q sum score mean < 4) and ideal body weight (IBW) of greater than 95% expected for gender, age, and height for patients with AN, BN and EDNOS. Secondary outcomes were changes in depressive symptoms and life quality for patients and parents. The purpose of this study was 1) to examine the effectiveness of the first MFT program in the Czech Republic, 2) to strengthen the evidence base for MFT and 3) and to evaluate whether MFT is cultural sensitive enough to implement into an Eastern European country, like the Czech Republic.

Methods and Procedures

Ethics and Framework of the Study

Our case series included five cycles of MFT (one testing-cycle without data collection) and was conducted from 2003 – 2012 (every second year) at the General Teaching Hospital and 1st Medical Faculty of Charles University in Prague, Czech Republic. Participants (patients and corresponding parents) were recruited from September 2004 through September 2012 by advertising to clinicians at our patients' unit of the Center for Eating Disorder at the Psychiatric Clinic of 1st Faculty of Medicine and General Teaching Hospital and the Department of Pediatrics Psychiatry, 2nd Faculty of Medicine, Charles University and Motol Teaching Hospital. Participants (usually one parent) were pre-screened via telephone (N=29) to determine eligibility. When eligible, families (N=20) (patients and parents) were invited for a face-to face diagnostic interview. A detailed study description was given to the families that included information in case of early termination, alternative treatment options and additional safety features. All participants provided written informed consent. For patients under the age of 16 years, informed consent was provided by parents. All family members were required to

be available for the 12 months of treatment duration and agreed to take part in the treatment together (*see Figure 4*).

Inclusion and Exclusion Criteria

Each patient was assessed by a psychiatrist with a Czech adaptation of the Eating Disorder Examination Interview (EDE-Q) (Fairburn & Beglin, 1994a) in Czech language. Families were included when meeting the following inclusion criteria: (i) patient with an eating disorder according to *DSM-IV* (American Psychiatric Association, 2013), (ii) family member is between 13-65 years old, (iii) family members and parents are living in household together; (iv) informed consent provided by family members and patients**.** Participants were excluded when meeting the following exclusion criteria (i) diagnostic criteria for substance abuse or psychosis of family members; (ii) mental impairment of family members; (iii) suicidal ideations of family members. The study was operated according to the Declaration of Helsinki Guidelines and approved by the local ethics committees.

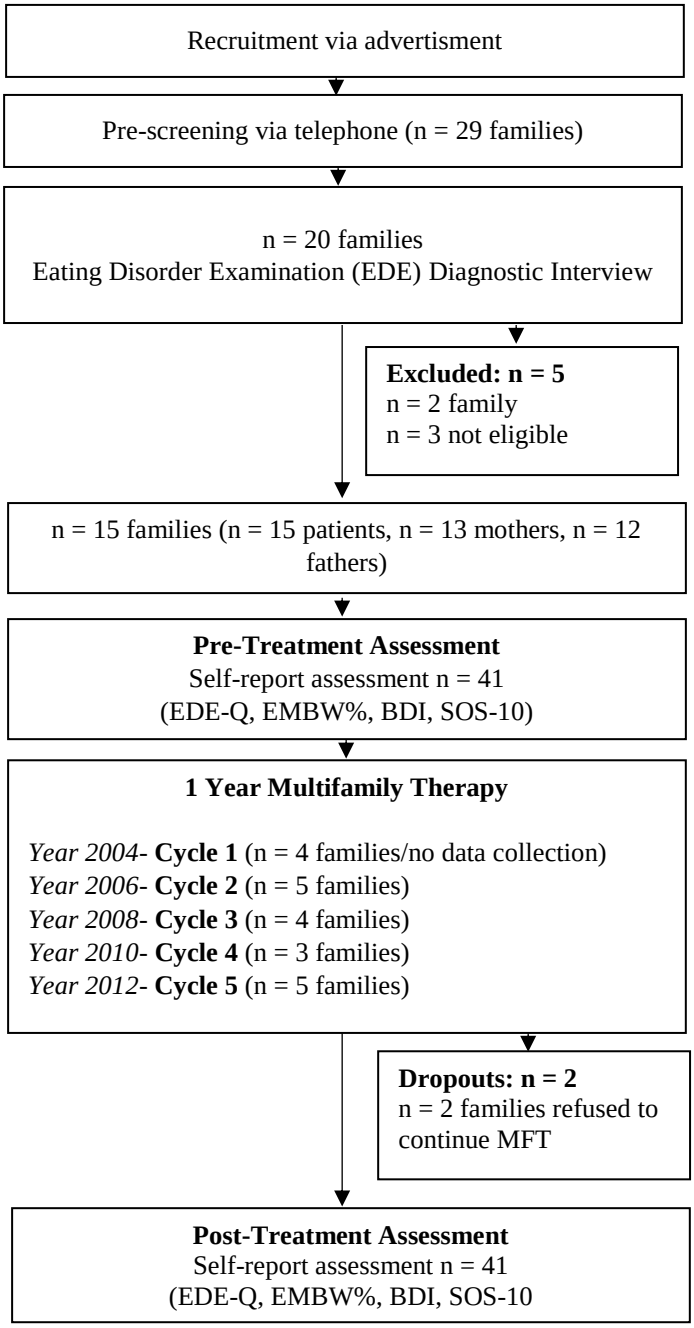

Figure 4: Flow Chart of MFT case series for eating disorders in the Czech Republic from 2004–2012

Measures

Percentage of Ideal Body Weight

To assess percentage of ideal body weight (IBW), we used raw weight and height data at the beginning of the MFT program after 12 months when program ended. We used a digital scale to assess weight in kilograms (with street clothes and without shoes) and a stadiometer (in meters) to measure the heights of the patients. IBW of each patient was determined by using the 50^{th} percentile for height, age and gender according to standardized CDC tables (Centers for Disease Control National Center for Health Statistics, 2006). Percentage of Expected Body Weight (%EBW) was measured by ratio of ideal body weight and actual body weight.

Eating Disorder Examination Interview (EDE)

A psychiatrist or clinical psychologist conducted the Eating Disorder Examination Interview (Fairburn & Cooper, 1993) in Czech language with each patient. The interview assessed DSM-V eating disorder symptoms over the past three months.

Eating Disorder Examination Questionnaire (EDE-Q)

The EDE-Q is a self-report questionnaire (Fairburn & Beglin, 1994b) adapted from the EDE (Fairburn & Cooper, 1993), which measures eating disorder pathology on a six point Likert scale (0 = no days to 6 = every day). The EDE-Q comprises 28 items that form a global score with four subscales: Restrain (5 items), Eating Concern (5 items), Shape Concern (5 items) and Weight concern (8 items). A cut-off score of ≥ 4 indicates clinical significance. The EDE-Q shows robust psychometric properties with internal consistency between $\alpha = 0.90–0.97$ for the sum score and $\alpha = 0.72–0.83$ for the subscales across studies (Peterson, Crosby, Wonderlich, Joiner, Crow et al., 2007). Test-retest reliability is robust with $r_{tt} = 0.88$ for the global score (Mond, Hay, Rodgers, Owen, & Beumont, 2004).

Schwartz-Outcome Scale (SOS-10)

Life quality was assessed by the Czech version of the Schwartz Outcome Scale (SOS-10) (Dragomirecka et al., 2006). The SOS-10 is a self-report measure comprising 10 items to measure life quality on a six-point Likert scale (0 = never to 6 = all the time) with a sum score between 0– 60. Psychometric properties are robust with high internal consistency (Cronbach's alpha = 0.96) and good one week test-retest reliability (r_{tt} = 0.87). Significant correlations were found with features of health, basic needs, relationship and leisure time domains of the Czech version of the Subjective Quality of Life Analysis (Dragomirecká, 2006).

Beck's Depression Inventory (BDI)

The Beck's Depression Inventory (BDI) (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) is a widely used self-report measure comprised of 21 items to measure depressive symptoms on a four-point Likert scale (0–3). The sum score can range from 0–63, with a cut-off score between > 18 for clinical depression. The BDI reveals robust psychometric properties with a mean Cronbach's Alpha coefficients around 0.90 and re-test reliability from α = 0.73 to α = 0.96. External validity shows moderate correlations between α = 0.60–0.74 with clinical ratings (Beck, Steer, & Carbin, 1988).

Statistical Analyses

Statistical analyses were performed with SPSS version 22 for Windows. Demographic description for participants, descriptive statistics, means and standard deviation were displayed in absolute and relative frequencies. Percentage of %EMBW was calculated by ratio of IBW and actual body at baseline and after 12 months. The following statistical analyses were conducted. First, we calculated non-parametric Kruskal-Wallis-Tests to assess baseline EDE-Q (sum score and subscales) mean differences across patients' diagnoses (AN, BN, EDNOS) and outcome measures (BDI, SOS-10) across family members (mother, father, patient).

Second, a General Linear Model used with time and diagnoses (AN, BN, EDNOS) was calculated to assess pre-post differences for patients' eating disorder pathology. Fixed effects were defined for the EDE-Q (sum score and subscales) and body weight with Time i) (T2-T1) and ii) the interaction effect (time x diagnoses). Third, post-hoc contrasts (pairwise comparisons) were calculated between diagnoses for the EDE-Q (sum score and subscales) and %EBMW controlling for baseline differences to examine which patient group (AN, BN and EDNOS) responded best to MFT. Fourth, a General Linear Mixed Model (GLMM) with fixed- and repeated effect (covariate time) was calculated to assess pre-post differences for all measures for patients and parents (SOS-10, BDI). Fixed effects were determined with i) time (T2-T1), ii) family member (grand mean difference between family members) and iii) the interaction effect (family member x time). Additionally, vi) baseline differences were controlled via repeated effects (time covariate) to examine which family member benefited best from MFT (seize of improvement/estimates).

Treatment

The Prague MFT

The Prague MFT is based on the theoretical and therapeutic principles of agnostic family-therapy models for eating disorders and adapted from the Dresden Multifamily Therapy Model for AN (Scholz & Asen, 2001; Scholz et al., 2005). Similar to Mausdley and FBT, MFT is designed as 3–phase intensive outpatient treatment for 4–9 families that includes interventional group family meals. MFT starts with an introductory block of 4–7 days to strengthen the group-cohesion between participating families. Regular monthly block sessions last 3–4 days and are conducted over 12 months. The Prague MFT model comprises a 3–day instead of a 4–day initial block-session and ends with a family group meeting that includes families of all previous cycles (Mehl et al., 2013). Every MFT group day follows an identical time schedule from 9am–4pm with a joint family lunch session, two snacks and different therapeutic systemic

interventions. MFT for eating disorders starts with the '*symptom-orientated phase'* in which parents learn to take leadership and control of the teenager's eating disorder symptoms promoting a zero tolerance stance towards eating disorder behaviors. Core interventions in *Phase 1* include to 'orchestrate an intense scene' (Lock & Le Grange, 2013), to 'externalize the eating disorder' (White, 2004), to conduct psychoeducation in which the therapists emphasize the 'agnostic stance' towards the eating disorders (multi-causal etiology) and explains important topics such as negative effects of starvation or eating disorders are no life-style choice. *Phase 2* is *'interaction oriented'* with a specific focus to restructure family organization, hierarchies, boundaries and communication around food. Parents become empowered to manage conflicts and set boundaries and consequences around food (e.g. fostering other parents). Families support and learn from each other, get encouraged to talk honestly about their feelings and difficulties and build new trustful and positive working relationships with their children. To transfer into *phase 3*, the *'future orientation phase'* patterns of healthy eating and a stable BMI should be established. Parents learn to give autonomy and responsibility on food-related issues back to the teenager. Additionally, potential signs of relapse and stagnation are discussed.

Results

Demographic Description of Participants

We conducted analyses of 15 patients and 26 corresponding parents who completed all 12 MFT-sessions in the Czech Republic. The demographic description of all family members (n = 41) are displayed in *Table 7*.

Table 7: Demographic description of patients and parents of MFT cycles

Variable	**Total**	**Percentage**
Participants	41	100
Patients	15	36.6
Mothers	14	34.1
Fathers	12	29.3
Age (Patients)		
Mean Age (SD)	17.6	
Range	14-23 (SD = 2.46)	
Age (Parents)	45.4	
Range	40-54 (SD = 3.38)	
DSM-IV Diagnoses		
Anorexia	8	53.5
Bulimia	4	26.7
ENDNOS	3	20.0
EMBW of patients in %		
Mean		81.3
Range (SD)	(SD = 7.57)	
Years of illness (per family)		
less than 1 year	2	13.3
2 years	5	33.3
3 and more	8	53.3
Attempts prior to MFT (per family)		
None	1	6.7
1	1	6.7
2	4	26.7
3 and more	9	60.0

Baseline between diagnoses-effects (patients)

Baseline between diagnoses-effects were non-significant (*see Table* 8) with EDNOS patients having the highest mean score (M = 5.1, SD = 0.19). A significant baseline difference was found for the %EMBW across diagnoses (with p = 0.006). Expectedly, lowest mean scores were detected in the AN group with M = 76.22 (SD = 6.58), followed by the EDNOS group with M = 85.77 (SD = 2.11) and the BN group (M = 88.18, SD = 3.50).

Table 8: Pre-differences (M, SD) of EDE-Q and %EMBW across diagnoses at baseline, *significant p < 0.01

Variable	**AN** M (SD)	**BN** M (SD)	**EDNOS** M (SD)	p-Values
EDE-Q				
Sum Score	4.0 (1.08)	4.0 (1.77)	5.1 (0.19)	0.143
Restraint	3.8 (1.16)	4.2 (1.88)	3.4 (1.84)	0.560
Eating Concern	3.4 (1.35)	3.0 (2.19)	5.4 (0.53)	0.120
Weight Concern	4.3 (1.46)	4.2 (2.29)	5.5 (0.50)	0.361
Shape Concern	4.5 (1.31)	4.8 (1.57)	5.7 (0.36)	0.313
%EMBW				
Baseline	76.22 (6.58)	88.18 (3.50)	85.77 (2.11)	0.006*

Baseline between group-effects (family members)

Baseline means and standard deviations across family members varied significantly for The SOS-10 and BDI mean scores. Fathers showed the highest life quality scores with M = 37.42 (SD = 11.52), followed by mothers with M = 29.64 (SD = 8.68) and patients M = 26.00 (SD = 9.04) with significant group effects (p = 0.03). A significant group effect was found for the BDI (p = 0.09) with the highest pathology scores for patient (M = 24.20, SD = 11.66), followed by mothers with M = 16.57, SD = 9.87 and fathers with the lowest scores, with M = 9.33 (SD = 7.19).

Table 9: Pre-differences (M, SD) of SOS-10 and BDI across family members at baseline *significant p < 0.05

Variable	**Patients** M (SD)	**Mothers** M (SD)	**Fathers** M (SD)	p-Values
SOS-10				
Baseline	26.00 (9.04)	29.64 (8.68)	37.42 (11.52)	0.03*
BDI				
Baseline	24.20 (11.66)	16.57 (9.87)	9.33 (7.19)	0.05*

Results of General Linear Model (GLM)

Eating Disorder Pathology & Body Weight (patients)

A significant time effect for patients' EDE-Q sum score (F (1, 30) = 13.32, p = 0.003) and for all subscales was detected, with F (1, 30) = 12.21, p = 0.004, for restraint, F (1, 30) = 13.13, p = 0.003 for eating concern, F (1, 30) = 8.13, p = 0.015 for weight concern and F (1, 30) = 11.63,

p = 0.005 for shape concern, with large effect sizes (η^2 = 0.404 - 0.526). A significant interaction effect (time x diagnosis) was found for the subscale restraint with F (2, 30) = 6.42, p = 0.013 with a large effect size of η^2 = 0.517. The time effect for body weight was significant with with F (1, 30) = 9.19 with a large effect size with η^2 = 0.434. The interaction effect for body weight (time x diagnoses) was not significant (see *Table 4*). Additionally, post-hoc contrasts between diagnoses at T2 showed significant results for AN and EDNOS with t = -3.37, p = 0.006 (CI: 2.89, 6.37) and between BN and EDNOS with t = -2.96, p = 0.012 (CI: -5.43, -0.836). No significant difference was found between AN and BN (p = 0.96). For the subscales: restraint, eating concern, weight and shape concern a significant difference between AN and EDNOS and BN and ENDOS was found for T2 with all p < 0.05, respectively.

Table 10: GLM with fixed effects for EDE-Q and subscales with time and time x diagnosis
Significant effects in bold.

	N	***Df***	***Mean Square***	***F***	***p-values***	***Partial Eta Squared (η^2)***
Variables						
EDE-Q sum score						
Time	30	1	21.30	13.32	**0.003**	0.526
Time x Diagnosis	30	2	2.63	1.65	0.233	0.215
EDE-Q restraint						
Time	30	1	17.24	12.21	**0.004**	0.504
Time x Diagnosis	30	2	9.07	6.42	**0.013**	0.517
EDE-Q eating concern						
Time	30	1	19.82	13.13	**0.003**	0.523
Time x Diagnosis	30	2	0 .64	0.42	0.666	0.66
EDE-Q weight concern						
Time	30	1	20.65	8.13	**0.015**	0.404
Time x Diagnosis	30	2	2.41	0.95	0.411	0.137
EDE-Q shape concern						
Time	30	1	28.46	11.63	**0.005**	0.492
Time x Diagnosis	30	2	3.11	1.27	0.316	0.175
%EBW						
Time	30	1	40.19	9.19	**0.010**	0.434
Time x Diagnosis	30	2	4.24	0.98	0.403	0.141

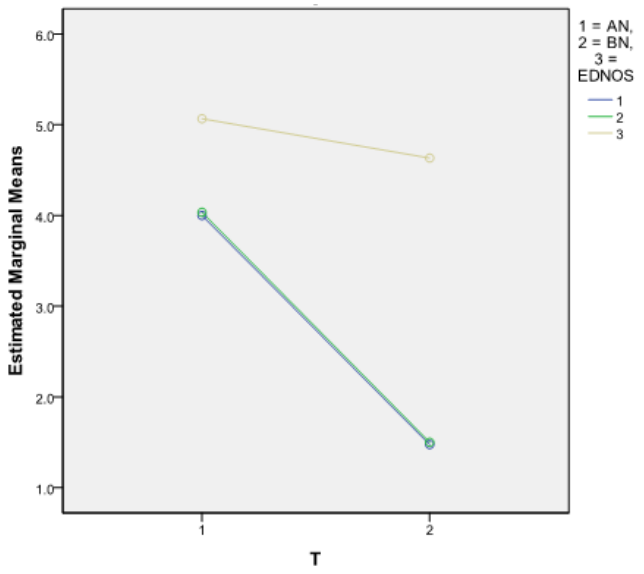

Figure 5: EDE-Q (sum score) pre-post differences across diagnoses

Results of General Linear Mixed Model (GLMM)

Life Quality and Depression (entire sample)

A significant time effect for the life quality scores (SOS-10) across family members was found with F (1, 82) = 9.64, p = 0.000, but no significant difference between family members with F (2, 82) = 1.74, p = 0.185. The interaction effect (time x family member) was not significant with F (2, 82) = 0.34, p = 0.693. Controlling for baseline differences between family members, only the time effect for patient remained significant with Est. = 9.13, t = 2.60, p = 0.011 (CI: 2.16-16.14). For the depression scores (BDI) the time effect and the family effect were significant with F = 12.84, p = 0.001 and F = 3.26, p = 0.047. The interaction effect was not significant with F = 0.846, p = 0.047. Controlling for baseline differences, the time effect for patients was significant with Est. = 10.47.50, t = 3.26, p = 0.002; CI: 16.88-4.06) p = 0.02.

Table 11: GLMM with fixed- and interaction effects for SOS-10 and BDI with time and family effects and interaction effects across family members. Significant effects in bold

	N	***Df***	***F***	***p-values***
Variables				
SOS-10				
Time	82	1	9.64	**0.000**
Family member	82	2	1.74	0.185
Time x family member	82	2	0.34	0.069
BDI				
Time	82	1	12.83	**0.001**
Family member	82	2	3.26	0.047
Time x Family member	82	2	0.85	0.433

Discussion

This report summarizes the results of the first MFT case series in the Czech Republic and its effects on patients with *DSM-IV* eating disorders and their respective parents in the Czech Republic. MFT significantly improved eating disorder pathology and body weight for patients with *DSM-IV* eating disorders from pre- to 12-months post-treatment across diagnoses. However post-hoc differences after treatment indicate that patients with AN and BN (EDE-Q sum score < 2) benefited to a greater extent than patients with EDNOS (EDE-Q sum score > 4) at post-treatment. In addition, life quality and depressive symptoms improved significantly for the entire sample from pre- to post-treatment. However, after controlling for baselines differences, only patients benefited from our program in regards to seize of improvement of depressive symptoms and life quality. Several implications can be drawn from the study results.

Firstly, Czech MFT may be a suitable treatment approach to impact eating disorder pathology in the Czech Republic. However results showed mixed outcomes for *DSM-IV* eating disorder diagnoses in regards to seize of improvement between diagnoses at T2. Patients with BN and AN showed stronger improvement than patients with EDNOS. However, patients with EDNOS showed more severe conditions at baseline compared to patients with AN and BN.

These results indicate to better tailor MFT to families with EDNOS and that mixed group for patients with AN and BN did not impede effectiveness. In addition *DMS-V* offers the possibility to make more specific diagnosis that may help to better tailor the MFT intervention in regards to the specific eating disorder diagnosis (e.g. purging disorder or unspecified eating disorders). Additionally, MFT was originally designed for patients with AN and BN and therapists have more experiences applying a MFT group format to these patient groups (e.g. aligning parents at food sessions etc.). In addition, the burden for patients and families with AN is usually more visible and the motivation for parents is more prompting (e.g. signs of starvation).

Secondly, our MFT program affected weight gain for all patients. As expected body weight differed significantly at baseline with the lowest scores for patients with AN. However the size of improvement was the same in all three groups. At treatment completion only 22% of the patients were fully weight restored (EBW > 95% of IBW), 67% of the sample was partially weight restored with 85% of IBW. This result corresponds with other pilot studies of MFT for eating disorders that found not all patients being weight restored at the end of MFT (Dimitropoulos et al., 2015; Gelin et al., 2015).

Thirdly, we found that MFT positively affected life quality of families. Our results indicate that patients benefited more than mother and fathers from MFT. These results align with the reports of the therapists and other studies showing that patients and mothers are usually more burdened than fathers (Kyriacou, Treasure, & Schmidt, 2008). It is possible that in more traditional-oriented societies, the mothers still is the primary caregiver who spends most time with children. Future studies should utilize male therapists for the MFT program to increase identification processes for fathers.

Fourthly, depressive symptoms improved significantly for the entire sample, which was mostly driven by patients' reduction. As recommended in the treatment portfolio, patients with high depression scores were not excluded from the study due to the potential correlation between depressive symptom and eating disorder pathology.

It is important to consider study limitations. Firstly, our study was a pilot case series which was self-selective, lacked a control group and include mixed diagnoses. Time effect were controlled, but a regression to the mean effect is possible. However due to the changes in body weight and eating pathology it is unlikely that outcomes were a natural progression over time (e.g. by patients getting more mature). Especially since most patients had more than three therapy attempts (e.g. hospitalization or individual therapy) prior to MFT. Additionally, in more than half of the families the disorder existed longer than three years which rules out potential time or random effects. Second, the sample size was very small, with only n = 15 families, which limits the power to detect small effects and increases the possibility that outliers bias the study result. Recruitment and potential cultural factors were outlined in our predecessor paper (Mehl et al., 2013). A third limitation is that the size of family groups differed across our cycles and it is unclear whether group size affected treatment outcomes of patients and/or parents. For example smaller groups may benefit from members being more engaged with the group that may lead to a more intense treatment experience and less responsibility diffusion. More research has to be done to identify which families would benefit from a group-oriented treatment of individual FBT. Another limitation was the mixed group of eating disorders diagnoses which might have reduced treatment outcome, especially for EDNOS patients and may explain that only 22% of patients were weight restored at treatment completion. Despite the small sample size, the results of this study suggest that MFT may be an effective treatment model in reducing eating disorder pathology (including body weight) for patients and depressive symptoms and life quality for the entire sample in the Czech Republic. This is the first case series of MFT for eating disorders in the Czech Republic. Our finding confirm previous pilot studies, but future research should replicate findings in a randomized controlled designs and caution has to be taken by generalizing the results.

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5.4 Disaggregating the predictive effects of impaired psychosocial functioning on future DSM-5 eating disorder onset in high-risk female adolescents

Annette Mehl[a]; Paul Rohde[b]; Jeff M. Gau[b]; Eric Stice[b]

Author Note

[a] Institute of Psychology, University of Heidelberg, Hauptstraße 47-51, 69120 Heidelberg, Germany

[b] Oregon Research Institute, 1776 Millrace Drive, Eugene Oregon, 97403, USA

E-Mail addresses: annettemehl@yahoo.de, paulr@ori.org, jeffg@ori.org, estice@ori.org

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Abstract

Objective: Impaired psychosocial functioning previously emerged as the only risk factor to predict future onset of each of the four DSM-5 eating disorders (Stice et al., 2017). The goal of this follow-up report was to refine understanding of this newly identified risk factor. **Method:** Combining data from women at risk for eating disorders because of body image concerns (*N* = 1,153, mean age =18.5 years, *SD* = 4.2), we investigated which subdomain(s) and individual item(s) of psychosocial functioning (friends, family, school, and work) at baseline predicted onset of any eating disorder, using Cox Regression (CRA) and Classification Tree Analysis (CTA). **Results:** Psychosocial impairment with friends, family, and at school, but not at work, significantly increased risk for disorder onset over 3-year follow-up in univariate models. A one-unit increase in each domain raw score was associated with a 107%, 22%, and 43% increased hazard of eating disorder onset, respectively. Multivariate CRA found friends functioning, with a 92% increased hazard of disorder onset, contributed the strongest unique effect. CTA suggested that loneliness was the most potent risk factor with a 3-fold increased onset risk (eating disorder incidence for high versus low scorers was 27% and 8%). Three friends functioning items and one school functioning item produced additional CTA branches. **Discussion:** Results refine understanding of the relation of psychosocial impairment to future onset of eating disorders, suggesting that peer functioning is the most critical. Data imply it would be useful to target young women with impaired psychosocial functioning in prevention programs.

Keywords: *psychosocial functioning, friends, family, school, eating disorders, prevention, etiology*

Disaggregating the Predictive Effects of Impaired Psychosocial Functioning on Future DSM-5 Eating Disorder Onset in High-Risk Female Adolescents

Eating disorders in young women are serious, disabling and costly mental illnesses (Agras, 2001; Simon, Schmidt, & Pilling, 2005) which can be chronic, show high rates of comorbidity (Allen, Byrne, Forbes, & Oddy, 2009; Swanson et al., 2011), and result in increased suicide attempts (Bulik, Thornton, Pinheiro, Plotnicov, Klump et al., 2008) and mortality rates (Crow et al., 2009). Given that 13% of women will experience a *DSM-5* (American Psychiatric Association, 2013) eating disorder by young adulthood (Stice et al., 2013b), effective prevention programs are needed (Stice et al., 2017a).

Psychosocial functioning has been defined as a person's ability to successfully interact with their environment, which includes building and maintaining gratifying relationships with family members, partners, and peers and appropriately responding to societal demands at school, work and other social settings (Mehta et al., 2014). Though impaired psychosocial functioning has been found to be a *consequence* of eating disorders (Bohn et al., 2008; Lynch et al., 2010) persistent even after recovery (Herzog, Pepose, Norman, & Rigotti, 1985; Wentz, Gillberg, Anckarsater, Gillberg, & Rastam, 2009), to our knowledge only two studies have investigated impaired psychosocial functioning as a putative *risk factor* that predicts future eating disorder onset (Jacobi et al., 2011; Stice et al., 2017a). Both studies used a prospective design assessing psychosocial functioning by a global self-report measure (Weissman, Orvaschel, & Padian, 1980) precedent to eating disorder onset, according to the same risk factor terminology (Kraemer et al., 2001), and using diagnostic interviews to verify future onset of eating disorders.

Jacobi et al. (2011) followed a high-risk sample of female adolescents longitudinally and found no predictive effects of impaired psychosocial functioning on future onset of any eating disorder over 3-year follow up, potentially because their sample included only 236 participants. Stice et al. (2017) followed a larger sample of 1,272 women at high risk for eating

pathology by virtue of self-reported body image concerns and tested whether baseline risk factors predicted future onset of subthreshold and threshold diagnoses (as operationalized in Stice et al. [2013]) of anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder (BED), and purging disorder (PD) over 3-year follow-up. Although other variables had higher hazard ratios in associations with specific eating disorders, impaired psychosocial functioning was the *only* risk factor among those examined to significantly predict future onset of all four eating disorder types at both subthreshold and threshold levels (Stice et al., 2017a), which we label as a 'transdiagnostic' eating disorder risk factor.

Given that impaired psychosocial functioning was the only predictor of onset of each of the four types of eating disorders in this data set, we conducted an exploratory follow-up study to Stice et al. (2017) in a three step procedure. First, we examined the univariate effects of specific psychosocial functioning domains (friends, family, school and work) in predicting future onset of any eating disorder. Second, we tested the unique influence of each subdomain via multivariate analyses. Third, we subdivided the measure into its 17 individual items to explore, using classification tree analysis (CTA), which specific aspect(s) of functioning predicted future onset of any eating disorder. Thus, the primary aim of this exploratory analysis was to disaggregate the global measure of psychosocial functioning to examine which domain(s) and individual item(s) of psychosocial impairment showed the strongest relations to future onset of any eating disorder to advance knowledge of this general eating disorder risk factor.

Results from these analyses may suggest directions regarding how psychosocial impairment could best be integrated into etiological models for eating disorders. To date, models have tended to not conceptualize psychosocial impairment as relevant for the onset of eating disorders. Thus, the present exploratory analyses may advance etiologic theory. It has recently been proposed that adolescent girls who experience impaired psychosocial functioning might turn to pursuit of the culturally sanctioned thin beauty ideal to gain greater social

acceptance, which increases risk for body dissatisfaction, dieting, and negative affect, which increase risk for emergence of unhealthy weight control behaviors and binge eating (Stice & Van Ryzin, in press). As theorized, psychosocial functioning typically emerges before pursuit of the thin beauty ideal, which typically emerges before body dissatisfaction, dieting, negative affect, and onset of eating disorders (Stice & Van Ryzin, in press). A better understanding of psychosocial functioning domains or even individual items could also potentially guide the development of new eating disorder prevention programs. As reported elsewhere (Melioli, Bauer, Franko, Moessner, Ozer et al., 2016; Wilksch, O'Shea, Taylor, Wilfley, Jacobi et al., 2017; Wilksch, O'Shea, & Wade, 2018), programs that reduce the onset of multiple eating disorders would be advantageous from a public health perspective, and could identify high-risk subgroups to target with selective prevention programs.

Method

Participants

As in Stice et al. (2017), we merged data from three randomized controlled trials that collected diagnostic data and conducted an individual patient data (IPD) meta-analysis, which differs from standard meta-analysis. In standard meta-analysis, summary scores on a topic are extracted from each study; conversely, in IPD meta-analysis the original data from individual participants in each of the studies are combined and re-analyzed. By increasing statistical power, IPD meta-analyses should improve the reliability of results (Thomas, Radji, & Benedetti, 2014). We combined data from one efficacy trial (Stice, Marti, Spoor, Presnell, & Shaw, 2008) and two effectiveness trials: Trial 2; (Stice, Marti, & Durant, 2011); Trial 3; (Stice, Rohde, Butryn, Shaw, & Marti, 2015) for the present study. Trial 1 participants (N = 481 from high schools or college, mean age = 17.0 [SD = 1.4]; 95% retention) were randomized to the *Body Project* prevention program, *Healthy Weight* prevention program, an expressive writing

intervention, or assessment-only control. Trial 2 (*N* = 306 from high schools, mean age = 15.7 [*SD* = 1.1]; 84% retention) and Trial 3 (*N* = 485 from colleges, mean age = 21.6 [*SD* = 5.6]; 89% retention) participants were randomized to the *Body Project* or educational brochure control. The only inclusion criterion in all trials was that participants answer affirmatively to having body image concerns during a phone screen. Participants completed surveys and interviews at baseline and at 1-, 6-, 12-, 24-, and 36-month follow-up (the 6-month assessment was not conducted in Trial 3). The resulting 1,272 participants (mean age at study entry = 18.5, *SD* = 4.2) were composed of 5% African American, 10% Asian American/Pacific Islander, 67% White, 11% Hispanic, 2% Native American and 4% who specified as other or mixed racial heritage. Parental education was 11% high school graduate or less, 18% some college, 37% college graduate, and 33% advanced graduate/professional degree.

Measures

Eating pathology. The semi-structured Eating Disorder Diagnostic Interview (EDDI; (Stice et al., 2013b) assessed eating disorder symptoms over the past 3 months at baseline and since the last interview at follow-ups on a month-by-month basis, allowing us to examine variables that predict future onset of any DSM-5 eating disorder over 3-year follow-up. DSM-5 criteria for eating disorders were used, as operationalized in Stice et al. (2013), which included threshold and subthreshold criteria for AN, BN, BED, and PD. EDDI eating disorder diagnoses have shown 1-week test-retest reliability (κ = .79), inter-rater agreement (κ = .75), convergent validity, and sensitivity to detecting prevention program effects (Stice et al., 2008).

Psychosocial impairment. Impairment in the friends, family, school and work domains was measured with 17 items from the Social Adjustment Scale-Self Report for Youth (Weissman et al., 1980). The original scale has shown convergent validity with clinician and collateral ratings (mean *r* = .72) and sensitivity to treatment effects (Weissman & Bothwell, 1976). The 17-item version has shown internal consistency (α = .77) and 1-week test–retest

reliability (r = .83; Stice et al., 2008). Participants were asked to "circle the best response to describe your behavior over the last 6 months" using a 5-point response (1 = never, 5 = always); three positively worded items were reverse coded so that higher scores indicated poorer functioning. An average score was created for each domain. The family domain (α = .81) consisted of two items: "*Had arguments with your family?*" and "*Had your feeling hurt by a family member?*" The school domain (α = .81) consisted of four items: "*Missed school?*"; "*Felt upset at school?*"; "*Felt ashamed of how you do your school work?*" and "*Had arguments with people at school?*" The work domain (α = .76) consisted of four items: "*Missed work?*"; "*Felt upset at work?*"; "*Felt ashamed of how you do your work?*" and "*Had arguments with people at work*?" The 7-item friends domain showed lower internal consistency (α = .51) suggesting that functioning with same-aged peers might be more variable. Items were as follows: "*Seen friends or spoken on the telephone?*"; "*Gone out socially with other people, such as to a movie?*"; "*How often have you had arguments with friends?*"; "*How often have you had your feelings hurt by a friend?*"; "*How often have you felt shy or uncomfortable with people?*"; "*How often have you felt lonely and wished for more friends?*"; and "*How often have you dated someone?*" .

Statistical Procedures

We first examined the univariate predictive effects of impairments in the 4 specific domains of psychosocial functioning predicted future onset of any eating disorder. Univariate Cox proportional hazard models tested whether each of the baseline domains of psychosocial functioning, when they were examined separately, predicted time to the onset of any partial/full syndrome eating disorder. Second, we tested the unique influence of each subdomain via multivariate analyses (controlling for other subdomains) associated with disorder onset. Multivariate Cox proportional hazard models were used to examine which of the baseline

domains of psychosocial functioning, adjusted for the other subdomains, contributed the most unique influence to onset of any partial/full syndrome eating disorder.

Models specified onset of disorder in months since the baseline assessment and were fit with STATA software. Participants who met diagnostic criteria at baseline were excluded from the Cox models. The Breslow (1974) method was used to handle tied event times in the hazard models. The proportional hazard assumption for each model was examined and tested with Schoenfeld residuals.

Missing onset data were accounted for with right-censoring in the hazard models. Missing data for psychosocial predictors were minimal (1-2%) with the exception of the work domain (22%) because not all participants were employed. Models controlled for the condition to which participants were assigned. We examined whether intervention condition interacted with each of the psychosocial functioning measures in predicting eating disorder onset; not of those interactions were significant, suggesting that condition did not differentially impact the predictive effects of functioning. In a third step, we subdivided the measure into its 17 individual items to explore, using classification tree analysis (CTA; Breiman, Friedman, Stone, & Olshen, 2018) to examine which specific aspect(s) of functioning best predicted onset of any eating disorder. This seemed important because some of the domain subscales had low internal consistency and also because CTA is uniquely able to detect interactions, including non-linear interactions (Breiman et al., 1984). CTA is a hypothesis-generating approach that investigates potential interactions between risk factors in the prediction of a dichotomous outcome (e.g., eating disorder onset). CTA first identifies the single most potent risk factor that predicts the outcome and selects the optimal cutpoint on that risk factor that creates subgroups with maximally different probabilities for the outcome. This process is repeated in each of the identified subgroups, or branches, in a recursive fashion until there are no remaining predictors for adequately large groups of participants. When different risk factors emerge for two branches from the same fork, it signifies an interaction. The Chi-Square Automatic Interaction Detection

(CHAID) growing method was used and the minimum node size was set at 25 for the parent (i.e., initial) node and 10 for child (i.e., subsequent) nodes to minimize Type I error and influential outliers. A Bonferroni correction was used to maintain alpha at $p = .05$ for splitting nodes. CTA provides a nonparametric alternative to linear and additive logistic models for dichotomous outcomes and is an exploratory method of examining (a) which specific psychosocial functioning items are most predictive of eating disorder onset, and (b) what cut-points of each item provide the greatest predictive ability.

Results

Preliminary Analyses

At baseline, 8.5% of the 1,272 participants met diagnostic criteria for an eating disorder and were excluded from analyses, resulting in a sample of 1,153; among the participants who were diagnosis-free at baseline, 12.5% showed onset of a threshold or subthreshold eating disorder during the 36-month follow-up. Table 1 provides correlations and descriptive statistics for the study predictors. Correlations ranged from r = .15 to .40 (all $p < .001$; mean $r = .29$). Data suggest that school functioning was most strongly correlated with functioning in the family ($r = .40$) and work domains ($r = .40$). Mean functional impairment scores were highest for family (mean = 2.77; *SD* = 1.02), followed by friends (mean = 2.75; *SD* = 0.62), school (mean = 2.18; *SD* = 0.70), and work (mean = 1.48; SD = 0.59).

Table 12: Pearson Correlations and Descriptive Statistics for Study Predictors.

		1	**2**	**3**	**4**	**5**
1.	Peer group	1.00				
2.	Family	.30	1.00			
3.	School	.37	.42	1.00		
4.	Work	.15	.19	.40	1.00	
	Mean	2.78	2.82	2.22	1.51	
	SD	0.63	1.04	0.71	0.61	

N = 1,153. All correlations statistically significant at p p<.001.

Domain Subscale Predictors of Eating Disorders Onset

We first estimated univariate Cox proportional hazard models to determine the relations between baseline functional impairment domains and future onset of an eating disorder (Table 6). Three of the four psychosocial domains significantly predicted onset of any eating disorder: friends, family and school. The domain of work did not have a predictive effect, potentially because 22% of the sample was not working. In these three models, a one unit increase in raw scores on the domain measures of friends, family, and school impairment was associated with a 107%, 22%, and 43% increase in hazard of an eating disorder onset, respectively. Next, we ran a multivariate Cox proportional hazard models with those psychosocial functioning domains (friends, family, and school) that showed significant relations to eating disorder onset. In this model only the friends functioning domain showed a significant unique effect (see Table 2). A one unit increase in raw score on this domain was associated with an increased hazard of 92% of disorder onset.

Table 13: Univariate Cox Regression Models

	Hazard Ratio	**SE**	**z-value**	**p-value**	**95% CI**
Univariate Models					
Peer group	2.07	.29	5.29	**<.001**	1.58-2.71
Family	1.22	.10	2.51	**.012**	1.05-1.43
School	1.43	.16	3.11	**.002**	1.14-1.79
Work	1.32	.19	1.93	.054	0.99-1.76

SE = standard error, CI = confidence interval. Bolded p-values are statistically significant at p<.05.

Individual Item Predictors of Eating Disorders Onset

We then conducted an exploratory CTA to test whether any of the 17 items of the psychosocial functioning scale predicted onset of an eating disorder, singly or in combination. All items were coded so that higher scores indicated greater impairment. Results are shown in Figure 1. Each box in the figure shows the number of participants in that branch of the

classification tree and the number (and percentage) who developed an eating disorder over follow-up (incidence rates refer to only the number of participants in that specific box and do not reflect cumulative risk). The friends item of "*How often have you felt lonely and wished for new friends?*" emerged as the most potent predictor of eating disorder onset creating a three level split; the model divided the total sample into 523 participants with low scores, 540 with medium scores, and 90 with high scores. Among participants with high loneliness scores, 26.7% developed a future eating disorder, compared to 14.3% of participants with medium loneliness scores, and 8.2% of participants with low loneliness scores, suggesting a 3-fold increase in risk for disorder onset for the highest versus lowest risk groups.

The CTA had four subsequent branches indicating different risk pathways, one for participants with low loneliness scores (it had two branches) and another pathway for participants with medium loneliness scores (it had two different branches). For participants with low loneliness, the friends item "*Seen friends or spoken on the telephone?*" was the first branch. Participants who reported low rates of seeing or speaking with friends had a 13.3% rate of eating disorder onset compared a rate of 4.8% for those who reported high rates, reflecting a 3-fold increase in onset risk. Another significant branch emerged for participants with low friend engagement for the item "*How often have you felt shy or uncomfortable with people?*" Among this group of 211 participants, 34.8% of the 23 individuals who reported high rates of shyness experienced eating disorder onset compared to 10.6% of the remaining 188 participants who reported low rates.

Another risk pathway emerged for the 540 participants who had medium loneliness scores, with two branches. First, a branch split was found for the friends item "*Feelings get hurt by a friend?*" For the small number of participants who scored very high on this measure (n = 13), almost half (46.2%) developed an eating disorder versus 13.5% for the remaining 527 participants who reported lower scores of hurt, which reflected a 3-fold increase in onset risk. The last branch occurred for the 527 participants who had low rates of hurt feelings, on the item

"*Felt ashamed of how you do your school work?*" with three branches. This split was somewhat difficult to interpret because it suggested a quadratic effect in that the 129 participants with the highest rates of schoolwork embarrassment showed an incidence rate of 21.7% for an eating disorder onset versus 14.4% for the 250 participants with low scores, however, the lowest onset rate (4.7%) was for the 148 individuals with medium scores on this item.

Overall, the CTA model had an 87.5% correct classification rate, indicating three general risk pathways.

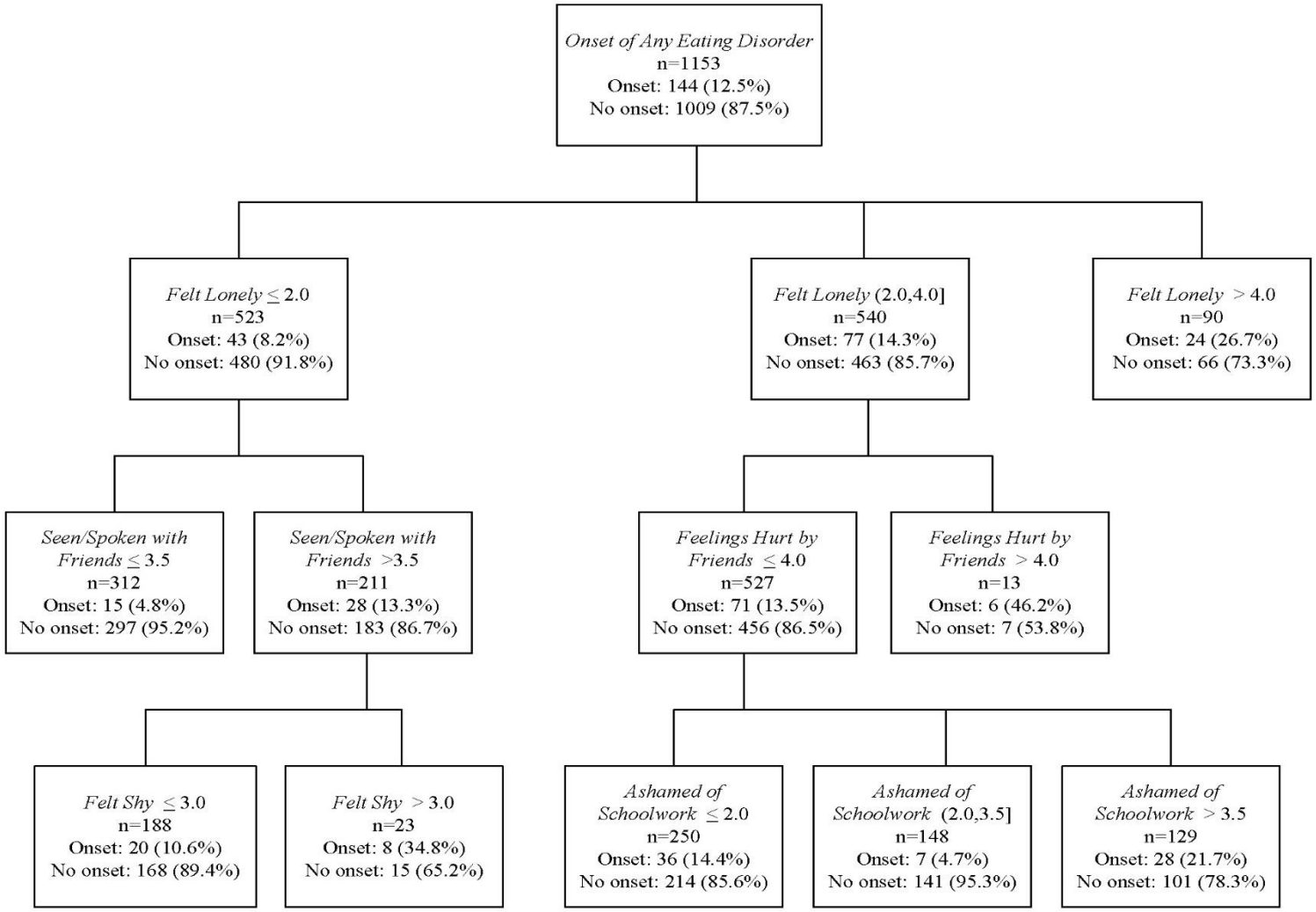

Figure 6: Classification Tree Analysis of Individual Psychosocial Functioning Items Predicting Eating Disorder Onset.

Discussion

Our report is an exploratory analysis that sought to refine our understanding of psychosocial impairment, which was recently found to be the only variable in that study predicting future onset of each of the four eating disorders (Stice et al., 2017a). Although a number of earlier papers have hypothesized the importance of factors related to psychosocial impairment in association with disordered eating and weight control behaviors, including public self-consciousness and social anxiety (Striegel-Moore, Silberstein, & Rodin, 1993), shame (Silberstein, Striegel-Moore, & Rodin, 1987), low assertiveness and social skill deficits (Arcelus et al., 2013), to our knowledge, only one other study (Jacobi et al., 2011) used a prospective design with non-disordered individuals to test the relation of psychosocial functioning to future eating disorder onset. To deepen the understanding of which specific aspects of this risk factor may increase risk for eating disorders, we examined this same high risk sample of young women to disaggregate the global measure of psychosocial functioning and investigate the univariate, multivariate, and individual item effects of specific functioning domains (friends, family, school and work) in an individual patient data (IPD) meta-analysis. Whereas the univariate models found significant predictive effects for the three domains of friends, family and school, a subsequent multivariate model found that the friends domain was the only aspect of functioning that had a unique predictive association with future eating disorder onset adjusting for other domains. The importance of friends functioning for adolescent well-being more broadly is well-known as social contacts with peers and the identification with a peer group are important for developmental tasks during this time period, including identity formation, positive self-concept, increased sense of autonomy from parents, and independent decision-making (Brown & Lohr, 1987; Sussman, Pokhrel, Ashmore, & Brown, 2007). The domain of work functioning did not have a univariate predictive effect on eating disorder onset, which may be explained by the smaller sample size because many

participants did not work, which could have attenuated sensitivity, or because psychosocial functioning in the work domain is less important in explaining onset of eating disorders.

Although there are important reservations when relying on single items, the exploratory CTA of individual items from the functioning measure likewise underscored the potential importance of functioning problems with friends as risk factors for eating disorder onset, in that 4 of the 5 branches consisted of items from the friends domain. Loneliness in the area of same-aged peers was the strongest individual predictor. For young women who reported the highest loneliness, it was the sole predictor of eating disorder onset. For women with medium loneliness, reports of having one's feelings hurt by friends amplified the predictive effects of loneliness. For women with low loneliness, low social contact with friends emerged as a pathway to eating disorder onset. The CTA model further suggested that high shyness amplified the risk conveyed by low social contact with friends for onset of any eating disorder.

The one non-friends item selected in the CTA model was feeling ashamed of one's school work. For this item, both very low and very high feelings of shame were associated with greater eating disorder onset. We did not collect data on actual school performance and high shame could either signal actual or perceived poor academic performance that indicate high perfectionism and performance pressure (Forbush, Heatherton, & Keel, 2007) or fear of negative evaluation (Levinson & Rodebaugh, 2012), which have found to be associated with eating disorders. A prospective study found that high scholastic performance increased risk for the development of AN and BN (Sundquist, Ohlsson, Winkleby, Sundquist, & Crump, 2016). Overall, the CTA results are clearly hypothesis-generating rather than hypothesis-confirming, but suggest intriguing possibilities for future research.

Our findings are consistent with results of a prior prospective study that found that withdrawal from social activities, acting immature, getting teased, not being liked by one's peers predicted onset of any type of subthreshold/threshold eating disorders, with mixed evidence for AN (Allen, Byrne, Oddy, Schmidt, & Crosby, 2014).

Similarly, a large cross-sectional study comparing eating disordered patients with healthy controls found that retrospective reports of less socializing with friends preceded the onset of subthreshold and threshold eating disorders (Krug, Penelo, Fernandez-Aranda, Anderluh, Bellodi et al., 2013).

Though we did not conduct a sequential analysis to assess whether aspects of impaired psychosocial functioning predicted future increases in other established risk factors included in the Dual Pathway model (Stice, 1994), a recently published exploratory prospective study by Stice & Van Ryzin (2019) using different data, found that psychosocial impairment tended to precede the emergence of pursuit of the thin beauty ideal, which in turn typically emerged before body dissatisfaction, dieting, and negative affect, which typically emerged before the onset of BN, BED, and PD (AN onset was excluded in that study because body dissatisfaction, dieting, and negative affect did not predict onset of AN). In the context of the Dual Pathway model, it is possible that psychosocial impairments may motivate young women to begin pursuing the thin ideal in an effort to gain greater personal and social acceptance (Cruz-Saez, Pascual, Salaberria, Etxebarria, & Echeburua, 2015). Continued examination of psychosocial functioning in sequential pathways to the development of any or of specific types of eating disorder should be a focus of future research.

Our results are novel and may influence both etiological models and preventive programs for eating disorders. Our previous research found that impaired psychosocial functioning was the only risk factor to predict future onset of all four types of eating disorders. The present findings suggest that this risk may be driven most strongly by deficits in peer functioning, including loneliness, hurt feelings (perhaps indicating interpersonal sensitivity), limited social contact/social withdrawal, and shyness. Many of these aspects of functioning could be consequences of temperamental shyness and/or social anxiety, which have been found to be comorbid with AN and BN (Arcelus et al., 2013; Brewerton, Lydiard, Herzog, Brotman, O'Neil et al., 1995; Bulik, Sullivan, Weltzin, & Kaye, 1995; Kaye, Bulik, Thornton, Barbarich,

& Masters, 2004; Levinson & Rodebaugh, 2012). Impairment in key areas of functioning is a fundamental aspect of all mental disorders (American Psychiatric Association, 2013) and disorders such as social anxiety, which could result in peer/friend functioning problems, have been found to predate eating disorder onset (Bulik, Sullivan, Fear, & Joyce, 1997). Regarding prevention implications, findings suggest that it might be useful if young women with deficits in friends, family, and school functioning were offered preventive intervention that focus on improving these limitations. These domains and possibly specific aspects of the friends domain (loneliness, poor interaction with peers, shyness) could serve both as potential screening variables and could guide the development of new preventive interventions aimed at increasing social engagement (behavioral activation), reducing social anxiety (social skills training), and possibly even academic tutoring, suggesting that psychosocial functioning is a risk factor that can be manipulated rather than being static. Interestingly, qualitative data from college aged women who completed the *Body Project* eating disorder prevention programs revealed that the most valued aspect of the intervention was the social support provided by other groups members (Shaw, Rohde, & Stice, 2016), potentially suggesting that one of the mechanism by which this intervention reduces eating disorder risk is by improving functioning with same-aged peers.

It is important to consider study limitations. The first category of limitations concerned our independent variable: psychosocial functioning is a broad construct that has been operationalized differently across studies (Ro & Clark, 2009). Also, psychosocial functioning was determined in the present report by a relatively brief self-report measure and some of the domains were assessed by a small number of items, some of which could also reflect symptoms of disorder (e.g., arguments as a symptom of Oppositional Defiant Disorder; shyness and social withdrawal as symptoms of Social Anxiety Disorder); thus differentiating psychosocial functioning from comorbid psychiatric disorders will be important in future research. The internal consistency of some of these domains (especially friends) was low, suggesting that the

items do not represent a cohesive single domain. Also, we had no data on the reliability and validity of individual functioning items, which makes the CTA analyses particularly speculative. Ideally, we would have assessed multiple aspects of functioning with more extensive measures, include reports by friends, other peers, family members, teachers, and others in the network directly or check external validity with other measures (e.g., adverse childhood experiences) for conceptual overlap, as interactions between social factors, biological influences, earlier adverse events, and culture are complex (Spence & Rapee, 2016). A second type of limitation is that participants in this study completed eating disorder prevention programs, though the effects of condition were statistically adjusted for and the predictive effects of the risk factors were not found to be affected by condition. Third, due to the exploratory nature of this report, we examined a single dependent variable assessing the future onset of any eating disorder. Future research should evaluate if different subdomains of psychosocial functioning are associated or predict different eating disorders. Fourth, due to a fairly low incidence rate, the CTA model was built using the entire sample rather than developing an initial model with part of the sample and cross-validating it. Fifth, psychosocial functioning impairments had emerged as the sole transdiagnostic eating disorder risk factor in our prior research but that work did not include other variables which could lead to future psychosocial functioning problems, such as the receipt of critical eating and body-related comments, which predicted the onset of various eating disorders (Jacobi et al., 2011), or early childhood adversities, which were found to be associated with some forms of eating disorder (i.e., BN and eating disorders-not otherwise specified but not AN) in retrospective assessments (Larsen, Munk-Olsen, Bulik, Thornton, Koch et al., 2017). Sixth, the study focused on women only and results may not apply to men. To our knowledge, the present study is the first longitudinal prospective study to unpack the unique predictive effects of multiple psychosocial functioning domains on the future onset of eating disorders. By merging data across three trials using an individual patient data (IPD) meta-analysis and removing individuals with pre-existing

eating disorders at baseline, the study was able to have greater statistical power to detect prospective onset effects with a rigorous methodology. It extends the findings of Stice et al. (2017a) and begins to disaggregate the predictive effects of impaired psychosocial functioning domains and items, offering several tentative directions for both etiological models and better tailored prevention programs. Future research should attempt to replicate findings and further assess and unpack the predictive effects of impaired psychosocial functioning, and evaluate prevention programs that improve psychosocial functioning to experimentally test whether reducing psychosocial impairment prevents future onset of all eating disorders.

6
Implications for Cultural Competent Treatment, Etiology & Prevention of Eating Disorders

6.1 A Cultural Competent Checklist and Transcultural Considerations

Study Ia described the implementation process of the first MFT model into the Czech health care system. A 'cultural competent checklist' is introduced that responds to 1) the cultural variations of the context and the specific target group (Czech families) and to 2) the individual character of each family, to ease adaption in a replicable and individualized way. It is impossible to summarize all system variables and understand how they interact with MFT and its effectiveness on families' and patients' health parameter. However, our experienced field-based narrative approach is a valuable tool to identify cultural barriers experienced by those working with MFT. A culturally competent 'checklist' is introduced below that use Bronfenbrenner's system model to order and classify system variables from the outer circle inwards, with the MFT model replacing the individual level. Our checklist proposes to 1) identify and organize system variables (barriers) that may impede with a smooth implementation, 2) formulate for hypotheses how these barriers may impact the treatment structure, team and interventions and 3) formulate an action plan in reference to each system level, if barriers exist. In *Study Ia* the following multilevel barriers have been summarized and sorted into the checklist.

- On the c*hrono-system level* we found 1) *the legacies of communism* in the Czech Republic to pervade into the lower system levels.
- On the *macro-system* level we identified 2) an *under-financed health care system* that lacked fund-allocation towards treatment programs for eating disorders and new western models, such as MFT. For the Czech MFT program the professionals volunteered their time and expertise and supervision was provided from external sources. Additionally, we experienced 3) *worrisome cultural stigmas* and *narratives* about eating disorders such as blame attribution to families with eating disorders, existing among families, but also health professionals. This resulted in smaller group

seizes of the MFT program which made the therapeutic process more intense (e.g. less responsibility shifting to professionals). 4) *Challenging pathways into healthcare* affected recruitment and participation rates (two thirds of our sample had sought help at their GPs prior to MFT). This increased the likelihood of having more severe and chronic cases in addition to mixed eating disorder groups. Therapists had to provide higher levels of care for the families and needed more supervision on how to handle groups with mixed eating disorder diagnoses. 5*) Distrust in psychiatric care* was another variable that affected participation rates and potentially therapeutic relationships. To build trustful relationship.

- On the *exo-system level* we found 6) *corporate climate* such as unresolved hierarchy and decision making and skepticism from other health professionals towards western approaches (such as MFT), that reflected in therapeutic stance and narratives from therapists on the etiology of eating disorders.
- On the the *micro-system levels*: 7) *internalized family roles* and *parenting practices* in different cultural context can lead to complications, such as non-participation by fathers as in our MFT program.

To perform cultural competent treatment, all identified barriers should be incorporated into a cultural competent checklist that should formulate pro-active questions that should be answered with yes or no. If answered with yes, a (cultural) barrier exists and an action plan is needed to 1) adapt MFT interventions, structure and team resources and 2) take actions on each system level that should be subject of future studies (see *Table 14*).

Table 14: Culturally competent checklist with barriers and action plan for different system levels

Culturally competent checklist according to Bronfenbrenner's system theory		
	Barrier	**Action Plan (if barrier exists)**
Chrono- System	Have there been any major political events affecting health care system progress?	▪ extra training for professionals in evidence-based therapies ▪ networking with international partners
Macro- System	Is there health care budget to allocate to mental health care program (such as MFT)?	▪ policies to allocate budget towards mental health care ▪ obtain funds outside the health care system (e.g. reimbursement system) **MFT structure/team and interventions** ▪ supervision and training options for therapists (local or international) ▪ obtain funds for therapists and resources (e.g. food, kitchen)
Macro- System	Are there stigmas and/or cultural (harmful) narratives about mental disorders?	▪ de-stigmatization campaigns of eating disorders (including psychoeducation) through websites, social media or other appropriate means ▪ international conferences to create awareness of local providers **MFT structure/intervention team** ▪ informational events (psychoeducation) to recruit families ▪ integrate reflections on stigmas into group sessions
Macro- System	Is there a cultural mistrust of psychiatric care and western-models?	▪ de-institutionalization and de-stigmatization campaigns ▪ include community services, out-patient services, partnerships with non-governmental organizations (NGO) ▪ referral system between GPs/NGO and psychiatric hospitals

		MFT structure/intervention team ▪ increase duration of initial sessions to build trustful working relationships and explain the outline of MFT
Macro- System	Are the pathways to specialized health care difficult to navigate?	▪ networking between psychiatric care and community services ▪ establishment of networking and client referral system **MFT structure/intervention team** ▪ training and supervision to handle groups and meal sessions with mixed eating disorder groups ▪ training and supervision to handle severe and chronic cases
Exo-System	Is there a corporate discourse- and communication structure?	**MFT structure/intervention team** ▪ supervision, coaching and guidelines for professionals on evidence-based practices ▪ supervision to ensure care-quality
Exo- System	Do local health professionals show a distrust towards western-models?	▪ supervision, coaching and guidelines for professionals on evidence-based practices ▪ presentations and networking at international conferences
Exo- System	Are the parents not seen as a detriment to the progress of the patient?	▪ support for multi-disciplinary team and team resources **MFT structure/intervention team** ▪ supervision, coaching and guidelines for professionals on evidence-based practices ▪ train professionals in systemic treatment approaches
Micro- System	Are fathers not seen as responsible for caregiving?	**MFT structure/intervention team** ▪ utilize male therapists for role modeling and mirroring

*Study Ib/c f*ound that multi-level system variables did not impede the effect of the first MFT model for eating disorders in the Czech Republic. For *Study Ib*, preliminary results indicated that the MFT program positively impacted patient's life quality, but not self-esteem. *Study Ic*, the MFT case series showed improvements of eating disorder pathology scores (including %EMBW). Patients with AN and BN seemed to have benefited more from MFT, than patients with EDNOS. But only 22% of the sample reached ideal body weight at treatment completion, which may stem from the fact of having mixed eating disorders groups. For the entire sample, depressive symptoms and life quality scores improved, and controlling for baseline differences, patients responded best (seize of improvement). In addition, Czech MFT was well endorsed by family, analyzing the qualitative feedback of *Study Ib*. Parents showed particular satisfaction with the group setting: 1) feeling less alone, 2) happy about seeing their child improved, 3) less afraid and calmer and 4) knowing it is not their fault and, 5) felt more confident around food, which aligns with other studies in the field (e.g. Lemmens et al., 2003). Patients gave more ambivalent feedback saying they felt 1) less secure without the eating disorder, 2) less happy, 3) gained more self-awareness by the systemic techniques, but 4) had difficulties to let go of the eating disorder ('AN is still my best friend'). This corresponded with the loss of self-esteem in our and other studies reporting on treatment experiences of eating disorders (e.g. Tantillo et al., 2010). Studies show, that especially the group-based format that connects families with the same pathology can help to reduce feelings of stigmatization, loneliness and social isolation or feeling observed by staff. It furthermore stipulates mutual learning processes and strengthens resources, problem- and conflict solving strategies (Scholz & Asen, 2001). In addition, system techniques and methods such as 'circulative questioning' and 'positive reframing' (Selvini-Palazzoli et al., 1980a) allow to collect multiple view points and narratives of problem behaviors to explore the sphere of possibilities and solutions rather than getting conflicted with feelings of guilt and shame (de Shazer, 1985; Le Grange et al., 2010). The agnostic stance of the therapist empowers the parents

to regain confidence by trusting their capabilities of managing the child's eating disorder symptom. The clear therapeutic focus on what can be done in the future stipulates a resource-focus instead of a problem-focus (de Shazer, 1985). Systemic techniques such as symptom externalization, life sculptures or other experienced-based techniques (e.g. life lines, miracle question etc.) can help to separate the symptom form the individual's sphere to gain a deeper inside insight into the specific symptom constellation (Satir, 1990; White, 2004). Despite cultural barriers existed systemic family therapy approaches (such as MFT for eating disorders) seem to be universally applicable and have not impeded effectiveness in our study.

Implications for Culturally Competent Systemic Treatment Models

- **Implication 1**: Cultural barriers should be alleviated with a culturally competent checklist to ease the implementation of treatment models (e.g. MFT) into different cultural contexts.

- **Implication 2**: Systemic Therapy Models, especially group-based models (such as MFT) should be disseminated across cultures.

6.2 Implications for Etiological Models for *DSM-V* Eating Disorders

Study II was the first longitudinal, prospective risk factor report to analyze the unique predictive effects of *micro-system* impairments in the family, friends, work and school domains on future onset of subthreshold and full syndrome eating disorders. The study extended the findings of Stice et al. (2017a) and disentangled the predictive effects of impaired psychosocial functioning domains and single item predictors providing valuable implications for etiological models. Our etiological implications are threefold. Firstly, our results partly align with theoretical assumptions of systemic explanatory models and psychoanalytic models for eating disorders (Bruch, 1978; Minuchin et al., 1975; Palazzoli & Viaro, 1988) that have postulated that family context (e.g. family communication) contributes to eating disorder onset. Similarly, some theoretical etiological models for eating disorders propose a multi-causal etiology (e.g. Tylka & Subich, 2004) and suggest that the interplay of individual variables (psychological and biological), *micro-system* variables (family) and macro-system variables (culture) are predisposing of eating disorder pathology. However, no study has ever tested whether impairments in the domains (family, friends, school and work) are temporally precedent to eating disorder onset. In our study, impairment in the family domain prospectively predicted eating disorder onset, however impairments with friends had the strongest predictive influence. Caution should be taken by generalizing our findings on all aspects of family functioning, since our study measured family functioning with two items only (*Had arguments with your family?* and *Had your feeling hurt by a family member?*) which reflect only limited aspects of family functioning (e.g. communicational aspects). Future prospective research should investigate whether other aspects of family functioning have predictive capacity for eating disorder onset. In addition, these aspects should be measured by a larger variety of items or peer-report (e.g. parents and teachers). Secondly, peer-impairment was found to be the strongest predictor for eating disorders onset and the CTA identified predominantly peer-functioning items that

increased the risk for future onset of all eating disorders. Impaired functioning with friends, more precisely 'being lonely' and 'not seeing friends' or 'being hurt by friends' should be considered in etiological theories for *DSM-V* eating disorders since they showed direct and indirect pathways to eating disorder onset. Our results aligned with retrospectively tested multi-causal etiological models such as the *Tripartite Influence Model* (van den Berg, Thompson, Obremski-Brandon, & Coovert, 2002) that proposes that the influence of the *micro-systems* (such as peers and parents) and *macro-system variables* (such as the media) onsets eating disorders pathology and body image disturbances via two mediational mechanisms 1) the *internalization of the thin beauty ideal* and 2) *appearance comparisons* between the adolescents that lead to restrictive eating patterns (Keery, van den Berg, & Thompson, 2004). However, there is only one etiological theory, the *Dual Pathway Model* that includes established and reliable risk factors and explains risk factor interactions and pathways for eating disorder onset (Stice, 2001; Stice & Menke, 2017). The *Dual Pathway Model* is a well-tested multivariate etiological model for bulimic spectrum disorders that combines three etiological theories (sociocultural model, the dietary restraint model, and the affect regulation model) (Stice, 2001; Stice & Agras, 1998b; Vander Wal et al., 2008). It suggests, that *pressure for thinness* and the *internalization of the thin beauty ideal* leads to *body dissatisfaction* which in turn leads to bulimic symptoms via the pathways *dietary restraints* or *negative affect* (Stice, 2001; Stice & Menke, 2017). According to our results, the *Dual Pathway model* should be complemented by our new risk factors from the friends domain (e.g. loneliness) that describe direct pathways to onset of all four eating disorder categories. Our study is the first longitudinal report to suggest that peer-functioning problems are precedent to eating disorder onset. More research should be conducted to understand the origin of peer-functioning deficits (e.g. loneliness and not having friends) and test whether they derive from temperamental traits (such as temperamental shyness, introversion etc.) or whether they are the result of other psychiatric disorders such as depression or social anxiety which are accompanied by psychosocial impairments (e.g. social

withdrawal). There was only one item predictor from the school domain (‘ashamed of doing schoolwork’) that indicated social anxiety or temperamental shyness.

Thirdly, several established and reliable psychosocial risk factors are considered in the *Dual Pathway Model*. To understand direct risk factor pathways and potential mediations through other risk factors, it is crucial to understand how reliable risk factors operate together. Recent exploratory and prospective evidence (Stice & Van Ryzin, 2019) found that psychosocial impairment (as a global score) precedes the *pursuit of the thin beauty ideal*, which typically emerges before *body dissatisfaction, dieting* and *negative affect* in onset of subthreshold BN, BED and PD. Patients with AN were not excluded in that study because *body dissatisfaction, dieting,* and *negative affect* did not predict onset of AN. In our study, we did not test whether any of the emerged friend predictors (e.g. loneliness) were precedent to other risk factors (such as the *pursuit of the thin beauty ideal*), but this should be subject of future research (Stice & Van Ryzin, 2019). Stice et al. (2019) suggest important etiological considerations specifically that impaired functioning appears precedent to *body image concern* which implies to improve peer-deficits to stop the pathway to *body dissatisfaction* that thereby leads to eating disorder pathology. It is likely that helping adolescents to connect with friends (e.g. social skills training) can prevent teenagers from *pursuing the thin-ideal* in an attempt to achieve social acceptance.

In summary, peer-impairment have yet to be incorporated into existing etiological models and our results indicated that peer influences is more important than familial influence. In young adulthood, the connection with peers and not families drive the onset of an eating disorder, specifically problems with peers/friends, not having a peer groups or being lonely are transdiagnostic risk factors for eating disorder onset.

Summary: Implications for Etiological Models of *DSM-V* Eating Disorders

- **Implication 3**: Impairments with friends should be considered as transdiagnostic risk factor to predict onset of eating disorder.

- **Implication 4:** Impairments with friends should be incorporated into etiological theories for *DSM-V* eating disorder onset.

- **Implication 5**: Impairments with friends should be considered as precedent to body image concerns for bulimic spectrum disorders and tested in future studies.

6.3 Implications for Prevention Programs for *DSM-V* Eating Disorders

In addition to the etiological considerations, *Study II* found that impairments between the adolescent and its ecological context (family, friends and school) predicted onset of all four eating disorder categories. In our study, the domain friends ('loneliness' and 'not seeing friends', 'feeling hurt by friends' or 'being shy') emerged as the most potent risk factor for all subthreshold and full syndrome eating disorders. It is well researched that adolescence is a sensitive period in which young women are particularly prone to develop any eating disorder. Our results indicate, that perceived or actual social exclusion, lack of social support structures and/or lack of social acceptance increase the risk for eating disorder onset. In addition, perceived rejection by friends or simply the lack of a strong social network (e.g. social support) could trigger social avoidance patterns (due to feelings of inadequacy) that may result in increased social withdrawal or shame about completing tasks in front of others (e.g. schoolwork). Our result support the findings of two other studies that found that retrospective reports of less socializing (operationalized as excessively doing homework and watching TV alone instead of engaging with friends) (Krug et al., 2013) and prospective reports of social problems (e.g. to act immature, getting teased, not being liked by peers) (Allen et al., 2014) predicted any type of subthreshold and full syndrome eating disorders, with mixed evidence for AN. Our results align with developmental theories from Bronfennbrenner and Piaget that suggest that during a child's development different *micro-systems* become more influential than others (Bronfenbrenner, 1979). Particularly in adolescence, peers and friends of the same age begin to take the most prominent role with their values being most important (Piaget & Inhelder, 1993). These developmental stages are crucial for forming one's identity, creating a positive self-concept and making independent decision from one's parents (Brown & Lohr, 1987; Sussman et al., 2007). However, harmful values from peers and friends (such as idolizing a slim body shape) can motivate teenagers to actually pursue *the thin beauty ideal* in order to gain

greater social acceptance within their group of friends. It is unclear whether our study identified a specific subgroup of socially anxious or temperamentally shy young women (being lonely, having no friends, being ashamed of schoolwork) since social withdrawal is a core symptom of social anxiety disorder; or a consequence of depression. Studies show, that socially inhibited children exhibit deficits in their social skills repertoire (e.g. communication deficits) due to the lack of social exposure, which makes them more prone to develop mental disorders including eating disorders (Bulik et al., 1995). Another report indicates that socially withdrawn young women (independent from the values of their peer-group) may engage in disturbed eating behaviors due to beliefs (e.g. internalized sociocultural messages) associated with the importance of weight and body shape as means of personal and social acceptance (Cruz-Saez et al., 2015). Other reviews suggest that not fitting in a peer-group or being a loner increases an adolescent's probability of engaging in problem-prone behaviors, such as substance abuse or risk taking which is associated with eating disorder behaviors (Jessor, 1984; Keel & Forney, 2013). Consequently, preventive programs should focus on connecting same-aged peers and reducing impairments with their friends and peers by e.g. improving their social skills or self-esteem. Our results lead to several implications for tailoring preventive programs in regards to structure and content to prevent the development of subthreshold and full syndrome eating disorders (AN, BN, BED and PD) in young women. These include specific etiological knowledge on how established risk factors operate together including precedence sequential order or mediation which may affect the direction and content of preventive programs (Kraemer et al., 2001; Stice & Desjardins, 2018).

Firstly, domain scores of psychosocial impairment measures (peer, family, school), specifically items reflecting peer-domain deficits (such as loneliness) could serve as potential screening variables to specifically tailor preventive interventions for those with peer-deficits to further reduce eating disorder onset rates in young women. Young women with peer deficits should be identified and offered an additional component with a specific peer-socialization

focus. In general, awareness should be raised regarding the ecological context of the teenager (e.g. with parents, teachers or coaches) to be alarmed when realizing peer deficits or reduced contact with friends (e.g. loneliness, social withdrawal, feeling shy) in young women.

Secondly, a new component that tackles impairments with friends and peers should be developed and incorporated into existing eating disorder prevention programs. The major focus of prevention programs should be to reduce empirically tested risk factors for eating disorder onset (e.g. friend-impairment, body image). Simultaneously protective factors (e.g. social support and self-esteem) should be fostered (Stice, 2002). According to Stice and colleagues, four prevention programs for eating disorders have proved efficacy under real-world conditions (Stice, Becker, & Yokum, 2013a). Two were tested in community-based populations (Neumark-Sztainer, Butler, & Palti, 1995; Stewart, Carter, Drinkwater, Hainsworth, & Fairburn, 2001; Stice et al., 2013a) and two in high-risk samples (Stice, Shaw, Burton, & Wade, 2006). Of the real-world preventive programs only two programs, the *Body Project* (Stice, Rohde, & Shaw, 2012) and the *Healthy Weight Intervention* (Stice et al., 2008) effectively reduced eating disorder onset rates by 60% over a 2-year and 3-year follow-up period. In addition, an internet-based stepped care prevention program *YoungEs[s]prit* (Lindenberg, 2012) for eating disorders proved efficacy in reducing eating disorder onset in adolescents. In lights of our findings, the most effective program should be advanced by adding in a specific component that reduces impairments with friends (e.g. loneliness and not seeing friends). The most effective and disseminated real-world program is the *Body Project* that has been developed by researcher at Stanford University, the University of Texas and the Oregon Research Institute. It is a group-based eating disorder prevention program that lasts 3 hours and uses a cognitive dissonance intervention (the *Body Project* intervention) in which young women actively critique the *thin beauty ideal* through in-vivo exercises (Stice et al., 2012).

Thirdly, the new component should contain a specific peer-socialization focus to reduce impairments with same-aged peers to be integrated in existing preventive programs (such as the

Body Project) or conducted in stepped-care approach offering a peer-socialization component to only those indiviudals who experience peer-deficits. The implication to focus on peer-functioning is novel in the field of eating disorder prevention programs since established eating disorder prevention programs (such as the DOVE program and the *Body Project*) have targeted body image such as *body dissatisfaction* or *pursuing the thin beauty ideal* (Stice et al., 2013a), but not focused on peer-socialization. Thus, existing preventive programs such as the *Body Project* should be advanced by a component that contains a specific friend-socialization and additionally should be conducted in a group format with same aged-peers. This would allow to targets both 1) social skills and 2) body image concerns by using the resources of the entire group. A group-based format of the prevention intervention conducted with same-aged peers would naturally build social support structures (protective factors) while improving social skills which were found to positively affect self-esteem (protective factor). Interventions that strengthen social skills and peer-functioning are for example *Social Skill Trainings* that include behavioral experiments in-vivo or role plays and get conducted in groups for young people with social anxiety disorders (Beidel, Alfano, Kofler, Rao, Scharfstein et al., 2014; Schneider & Byrne, 1985) and/or autism (Barry, Klinger, Lee, Palardy, Gilmore et al., 2003). These techniques should be used as preventive strategies for eating disorders, to help build and improve social skills with peers and prevent loneliness and social withdrawal (e.g., improve communication and interaction skills, develop and maintain friend and romantic relationships, increase peer acceptance). Alternatively, adolescent prevention groups that based on *Interpersonal Therapy* (Young, Mufson, & Davies, 2006) could serve as preventive intervention to improve positive social outcomes and reduce interpersonal deficits, or *Behavioral Activation for adolescents* (McCauley, Gudmundsen, Schloredt, Martell, Rhew et al., 2016), another well-established prevention program for depression. Experiences with group-based real-world and internet-based prevention programs for eating disorders, such as the *Body Project* or *YoungEs[s]prit* identified social support from the group and a group

membership as the most valuable factors in eating disorder prevention groups for adolescents (Lindenberg, 2012; Shaw et al., 2016).

Fourthly, group-based prevention programs that focus on improving social skills and e.g. body image concerns such as the *Body Project* should be led by other peers or peer-advocates (positive role modeling and mirroring). This aligns with a report by Stice and colleagues that showed that peer-led and clinician-led *Body Project* interventions were more effective in reducing onset rates, than a computer-based version (Stice, Rohde, Shaw, & Gau, 2017b). Peer-functioning with same-aged peers in groups with peer- or clinician-led advocates that are tailored to peer-functioning deficits should be implemented to reduce *DSM-V* eating disorder onset.

The fifth implication is structural in that a preventive programs for eating disorders should follow an ecological approach (Bronfenbrenner, 1979) and place a preventive program in the ecological context of young women at risk (at school, in the classroom or sport clubs). Similarly, to systemic group-based treatment models for eating disorders (such as MFT) that bring together multiple families in an outpatient-settings to treat pathology group-based prevention programs should tackle risk factors (such as impairments with friends) in the social context of the teenager.

Sixthly, the *Body Project* intervention attempts to change the narrative or specific peer-group values (e.g. lean thin ideal) through critiquing the thin beauty ideal. Changing the narrative of the peer-group from a harmful to more ‘preferable’ social value (e.g. not let anyone behind) should help to reduce the risk for young women to develop any eating disorder (Keel et al., 2013) and should be tested in future studies.

Summary: Implications for Prevention Programs for *DSM-V* Eating Disorders

- **Implication 7:** Impairments with friends should be used as screening variables to identify young women at risk to develop any *DSM-V* eating disorders.

- **Implication 8**: Preventive programs for *DSM-V* eating disorders should be advanced by a component that addresses impairment with friends.

- **Implication 9**: Preventive programs for *DSM-V* eating disorders should be conducted by same-age peer-advocates, ideally in the natural ecological environment of the teenager (e.g. the classroom).

- **Implication 10**: Preventive programs for *DSM-V* eating disorders, should foster preferable social values in peer-groups which should be subject of future studies.

6.4 Conclusion

In summary, this dissertation with the title '*Applying Systems Theory and Therapy to Eating Disorders. Implications for Etiology, Prevention and Systemic Multifamily Therapy Across Cultures'* contributes to the body of knowledge of 'reliable' risk factors for *DSM-V* subthreshold and full syndrome eating disorder onset. In addition, it contributes to the cross-cultural evidence of MFT for *DSM-IV* eating disorders and its effectiveness for patients and their parents.

The first MFT program for eating disorders implemented in the Czech Republic reported that cultural barriers do not impede with effectiveness for Czech patients with eating disorders and their respective parents. For this reason, MFT for eating disorders should be recommended in additional cultural contexts. For future implementations of MFT for eating disorders, our cultural competence checklist should be used to alleviate any cultural barriers to successful implementation. Future studies need to validate the checklist and conduct randomized controlled studies with larger sample sizes to draw reliable implications with regards to effectiveness and efficacy of the Czech MFT for eating disorders.

In addition, the first prospect longitudinal, interview-based risk factor study tested the putative predictive effects of *micro-system* impairments in the domains of family, friends, school and work on future onset of all four *DSM-V* eating disorder categories and identified a new risk factor. The results suggested to incorporate impaired functioning with friends (e.g. loneliness) into etiological models for subthreshold and full syndrome *DSM-V* eating disorders. Additionally, preventative programs for eating disorders should be tailored towards peer-socialization. Future research should attempt to replicate findings and further unpack the predictive effects of impaired psychosocial functioning, but more importantly, should evaluate prevention programs that improve psychosocial functioning to experimentally test whether reducing psychosocial impairment prevents future onset of all eating disorders.

7
References

Abbate-Daga, Giovanni, Amianto, Federico, Delsedime, Nadia, De-Bacco, Carlotta, & Fassino, Secondo. (2013). Resistance to treatment in eating disorders: A critical challenge. *BMC Psychiatry, 13*, 294-294. doi:10.1186/1471-244X-13-294

Agras, W. S. (2001). The consequences and costs of the eating disorders. *The Psychiatric clinics of North America*, *24*(2), 371-379.

Allen, K., Byrne, S., Oddy, W., & Crosby, R. (2013a). DSM–IV–TR and DSM-5 eating disorders in adolescents: Prevalence, stability, and psychosocial correlates in a population-based sample of male and female adolescents. *Journal of Abnormal Psychology*, *122*(3), 720-732. doi:10.1037/a0034004

Allen, K. L., Byrne, S. M., Forbes, D., & Oddy, W. H. (2009). Risk Factors for Full- and Partial-Syndrome Early Adolescent Eating Disorders: A Population-Based Pregnancy Cohort Study. *Journal of the American Academy of Child & Adolescent Psychiatry, 48*(8), 800-809. doi:doi.org/10.1097/CHI.0b013e3181a8136d

Allen, K. L., Byrne, S. M., Oddy, W. H., Schmidt, U., & Crosby, R. D. (2014). Risk factors for binge eating and purging eating disorders: differences based on age of onset. *The International Journal of Eating Disorders*, *47*(7), 802-812. doi:10.1002/eat.22299

Allen, K.L., Byrne, S. M., Oddy, W. H., & Crosby, R.D. (2013b). Early onset binge eating and purging eating disorders: course and outcome in a population-based study of adolescents. *Journal of Abnormal Child Psychology*, *41*(7), 1083-1096. doi:10.1007/s10802-013-9747-7

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental health disorders (4th ed.)*. Arlington. VA: American Psychiatric Publishing.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders (4th ed.)*. Arlington. VA: American Psychiatric Publishing.

American Psychiatric Association. (2002). Guidelines on Multicultural Education,Training, Research, Practice, andOrganizational Change for Psychologists.

American Psychiatric Association. (2006). *Treatment of patients with eating disorders* (3rd edition ed.). Arlington, Virginia: American Psychiatric Association.

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

Anastasiadou, D., Medina-Pradas, C., Sepulveda, A.R., & Treasure, J. (2014). A systematic review of family caregiving in eating disorders. *Eating Behaviors, 15*(3), 464-477. doi:10.1016/j.eatbeh.2014.06.001

Andersen, T. (2009). *Das reflektierende Team. Dialoge und Dialoge über Dialoge*. Dortmund: Modernes Lernen.

Arcelus, J., Haslam, M., Farrow, C., & Meyer, C. (2013). The role of interpersonal functioning in the maintenance of eating psychopathology: a systematic review and testable model. *Clinical Psychology Review, 33*(1), 156-167. doi:10.1016/j.cpr.2012.10.009

Arcelus, J., Mitchell, A. J., Wales, J., & Nielsen, S. (2011). Mortality rates in patients with anorexia nervosa and other eating disorders. A meta-analysis of 36 studies. *Archives of general psychiatry, 68*(7), 724-731. doi:10.1001/archgenpsychiatry.2011.74

Asen, E. (2002). Multiple family therapy: an overview. *Journal of Family Therapy, 24*(1), 3-16. doi:10.1111/1467-6427.00197

Asen, E., & Scholz, M. (2009). *Praxis der Multifamilientherapie* (2nd edition ed.). Heidelberg: Carl-Auer-Verlag.

Ata, R.N., Schaefer, L.M., & Thompson, J.K. (2015). Sociocultural Theories of Eating Disorders. In L. Smolak & M.P. Levine (Ed.), *The Wiley Handbook of Eating Disorders* (pp. 269-282).

Avruch, K. (2000). Culture and Negotiation Pedagogy. *Negotiation Journal*, *16*(4), 339-346. doi:10.1023/A:1026632704258

Barry, T. D., Klinger, L. G., Lee, J. M., Palardy, N., Gilmore, T., & Bodin, S. D. (2003). Examining the effectiveness of an outpatient clinic-based social skills group for high-functioning children with autism. *Journal of Autism and Developmental Disorders, 33*(6), 685-701.

Bateson, G.D., Jackson, D., Haley, J., & Weakland, J. H. (1956). Towards a Theory of Schizophrenia. *Behavioral Science, 1*, 251-264.

Bavelas, J., & Segal, L. (1982). Family Systems Theory: Background and Implications. *Journal of Communication, 32*, 99-107. doi:10.1111/j.1460-2466.1982.tb02503.x

BEAT. (2012). *The costs of eating disorders in England. Economic impact on anorexia nervosa, bulimia nervosa and other eating disorders focusing on young people*. Retrieved from

Beck, A., Steer, Robert A., & Carbin, Margery G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review, 8*(1), 77-100. doi:https://doi.org/10.1016/0272-7358(88)90050-5

Beck, A., Ward, C.H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4*, 561-571.

Beidel, Deborah C., Alfano, Candice A., Kofler, Michael J., Rao, Patricia A., Scharfstein, Lindsay, & Wong, Nina. (2014). The Impact of Social Skills Training For Social Anxiety Disorder: A Randomized Controlled Trial. *Journal of Anxiety Disorders, 28*(8), 908-918. doi:10.1016/j.janxdis.2014.09.016

Bentley, C., Gratwick-Sarll, K., & Mond, J. (2015). Perceived psychosocial impairment associated with eating disorder features: responses to a mental health literacy intervention. *Journal of Eating Disorders, 3*, 2-7. doi:10.1186/s40337-015-0084-9

Bernal, G., & Sáez-Santiago, E. (2006). Culturally centered psychosocial interventions. *Journal of Community Psychology, 34*(2), 121-132. doi:10.1002/jcop.20096

Blais, M. A., Lenderking, W. R., Baer, L., deLorell, A, Peets, K., Leahy, L., & Burns, C. (1999). Development and Initial Validation of a Brief Mental Health Outcome Measure. *Journal of Personality Assessment, 73*(3), 359-373. doi:10.1207/S15327752JPA7303_5

Blatný, M., & Osecká, L. (1994). Rosenbergova škála sebehodnocení: struktura globálního vztahu k sobě. *Československá psychologie, 38*(6), 481-488.

Blatný, M., & Osecká, L. (1997). The relationship between global self-assessment and temperament and interpersonal personality characteristics. *Studia Psychologica, 39*(1), 39-44.

Bohn, K., Doll, H. A., Cooper, Z., O'Connor, M., Palmer, R.L., & Fairburn, C.G. (2008). The measurement of impairment due to eating disorder psychopathology. *Behaviour Research and Therapy, 46*(10), 1105-1110. doi:doi.org/10.1016/j.brat.2008.06.012

Boscolo, L., Cecchin, G., Hoffman, L., & Penn, P. (1987). *Milan systemic family therapy*. New York: Basic Books.

Boszormenyi-Nagy, I. , & Spark, G.M. (2015). *Unsichtbare Bindungen: Die Dynamik familiärer Systeme*: Klett-Cotta.

Breiman, L., Friedman, J., Stone, C.J., & Olshen, R.A. (1984). *Classification and Regression Trees*: Taylor & Francis.

Brewerton, T. D., Lydiard, R. B., Herzog, D. B., Brotman, A. W., O'Neil, P. M., & Ballenger, J. C. (1995). Comorbidity of axis I psychiatric disorders in bulimia nervosa. *The Journal of Clinical Psychiatry, 56*(2), 77-80.

Bronfenbrenner, U. (1970). *Two worlds of childhood: U.S. and U.S.S.R.* New York, NY, US: Russell Sage Foundation.

Bronfenbrenner, U. (1979). *The Ecologcy of Human Development. Experiments by Nature and Design*. Cambridge, US; London, UK: Harvard University Press.

Bronfenbrenner, U. (1989). Ecological System Theory. In R. Vasta (Ed.), *Annals of Child's Development* (Vol. vol. 6, pp. 187-249). Greenwich CT: JAI Press.

Brown, B. B., & Lohr, M. J. (1987). Peer-group affiliation and adolescent self-esteem: an integration of ego-identity and symbolic-interaction theories. *Journal of Personality and Social Psychology, 52*(1), 47-55.

Bruch, H. (1982). Anorexia Nervosa: therapy and theory. *American Journal of Psychiatry, 139*(12), 1531-1538. doi:10.1176/ajp.139.12.1531

Bruch, Hilde. (1978). *The Golden Cage: The Enigma of Anorexia Nervosa* (1 ed.). Cambridge, MA: Harvard University Press.

Bulik, C., Sullivan, P., Weltzin, T., & Kaye, W. (1995). Temperament in eating disorders. *International Journal of Eating Disorders, 17*(3), 251-261. doi:10.1002/1098-108X(199504)17:3<251::AID-EAT2260170306>3.0.CO;2-V

Bulik, C., Thornton, L., Pinheiro, A. P., Plotnicov, K., Klump, K. L., Brandt, H., . . . Kaye, W. H. (2008). Suicide attempts in anorexia nervosa. *Psychosomatic Medicine, 70*(3), 378-383. doi:10.1097/PSY.0b013e3181646765

Bulik, C.M., Sullivan, P.F., Fear, J.L., & Joyce, P.R. (1997). Eating disorders and antecedent anxiety disorders: a controlled study. *Acta Psychiatrica Scandinavica, 96*(2), 101-107.

Cameron, R. (2011, 7 January). Czech doctors go for broke. *BBC News*. Retrieved from http://www.bbc.co.uk/news/world-europe-12128729.

Cannon, W. B. (1932). *The wisdom of the body*. New York: W.W. Norton & Company, Inc.

Castro, F.G., Barrera, M., & Holleran Steiker, L.K. (2010). Issues and challenges in the design of culturally adapted evidence-based interventions. *Annual review of clinical psychology, 6*, 213-239. doi:10.1146/annurev-clinpsy-033109-132032

Centers for Disease Control National Center for Health Statistics. (2006). Growth Charts for Girls. 2 to 20 years. Retrieved from https://www.chartsgraphsdiagrams.com/HealthCharts/growth-2-20-girls.html

Cerniglia, L., Cimino, S., Tafa, M., Marzilli, E., Ballarotto, G., & Bracaglia, F. (2017). Family profiles in eating disorders: family functioning and psychopathology. *Psychology Research and Behavior Management 10*, 305-312. doi:10.2147/PRBM.S145463

Chowdhary, N., Jotheeswaran, A. T., Nadkarni, A., Hollon, S. D., King, M., Jordans, M. J., . . . Patel, V. (2014). The methods and outcomes of cultural adaptations of psychological treatments for depressive disorders: a systematic review. *Psychological Medicine, 44*(6), 1131-1146. doi:10.1017/s0033291713001785

Chubb, H., & Evans, E. L. (1990). Therapist efficiency and clinic accessibility with the mental health research institute brief therapy model. *Community Mental Health Journal, 26*(2), 139-149. doi:10.1007/BF00752391

Cockerham, E., Stopa, L., Bell, L., & Gregg, A. (2009). Implicit self-esteem in bulimia nervosa. *Journal of Behavior Therapy and Experimental Psychiatry, 40*(2), 265-273. doi:10.1016/j.jbtep.2008.12.003

Cohen, D. J., & Reynolds, M. R. (2008). Interpreting the results of cost-effectiveness studies. *Journal of the American College of Cardiology, 52*(25), 2119-2126. doi:10.1016/j.jacc.2008.09.018

Cohens, J. (1988). *Statistical power analysis for the behavioral sciences* (Vol. 2nd edition). Hillsdale, NJ: Erlbaum.

Crow, S. J., & Nyman, J. A. (2004). The cost-effectiveness of anorexia nervosa treatment. *International Journal of Eating Disorders, 35*(2), 155-160. doi:10.1002/eat.10258

Crow, S. J., Peterson, C. B., Swanson, S. A., Raymond, N. C., Specker, S., Eckert, E. D., & Mitchell, J. E. (2009). Increased mortality in bulimia nervosa and other eating

disorders. *The American Journal of Psychiatry, 166*(12), 1342-1346. doi:10.1176/appi.ajp.2009.09020247

Cruz-Saez, S., Pascual, A., Salaberria, K., Etxebarria, I., & Echeburua, E. (2015). Risky eating behaviors and beliefs among adolescent girls. *Journal of Health Psychology, 20*(2), 154-163. doi:10.1177/1359105313500683

Culbert, K. M., Lavender, J. M., Crosby, R. D., Wonderlich, S. A., Engel, S. G., Peterson, C. B., . . . Fischer, S. (2016). Associations between negative affect and binge/purge behaviors in women with anorexia nervosa: Considering the role of negative urgency. *Compr Psychiatry, 66*, 104-112. doi:10.1016/j.comppsych.2016.01.010

Czech News Agency. (2010). Trade unions plan a day-long strike against govt's budget cuts for 8 December. from Prague Daily Monitor

Darcy, A. M., Bryson, S. W., Agras, W. S., Fitzpatrick, K. K., Le Grange, D., & Lock, J. (2013). Do in-vivo behaviors predict early response in family-based treatment for anorexia nervosa? *Behav Res Ther, 51*(11), 762-766. doi:10.1016/j.brat.2013.09.003

Dare, C. , & Eisler, I. (2001). A multi-family group day treatment programme for adolescent eating disorders. *Eurpean Eating Disorder Review, 8*, 4-18.

Darwish, A. F., & Huber, G. (2003). Individualism vs. Collectivism in Different Cultures: A cross-cultural study. *Intercultural Education, 14*, 47-56 doi:10.1080/1467598032000044647

de la Rie, S. M., Noordenbos, G., & van Furth, E. F. (2005). Quality of life and eating disorders. *Quality of Life Research, 14*(6), 1511-1522.

de Shazer, S. (1975). Brief Therapy: Two's Company. *Family Process, 14*(1), 79-93. doi:10.1111/j.1545-5300.1975.00079.x

de Shazer, S. (1985). *Brief Therapy*. New York: W.W. Norton.

de Shazer, S. (1988). *Investigating Solutions in Brief Therapy.* New York: W.W Norton.

de Shazer, S., Dolan, Y., Korman, H., McCollum, E., Trepper, T., & Berg, I. K. (2007). *More than miracles: The state of the art of solution-focused brief therapy*. New York, NY, US: Haworth Press.

Dimitropoulos, G., Farquhar, J.C., Freeman, V.E., Colton, P.A., & Olmsted, M.P. (2015). Pilot Study Comparing Multi-family Therapy to Single Family Therapy for Adults with Anorexia Nervosa in an Intensive Eating Disorder Program. *European Eating Disorders Review, 23*(4), 294-303. doi:doi:10.1002/erv.2359

Dragomirecká, E. . (2006). SQUALA. Příručka pro uživatele české verze Dotazníku subjektivní kvality života SQUALA 1st ed. *Psychiatrické centrum Praha*.

Dragomirecka, E., Lenderking, W. R., Motlova, L. , Goppoldova, E., & Šelepova, P. (2006). A brief mental health outcomes measure: Translation and validation of the Czech version of the Schwartz Outcomes Scale-10. *Quality of Life Research, 15*, 307-312. doi:DOI 10.1007/s11136-005-1389-y

Drozdek, B., Kamperman, A. M., Tol, W. A., Knipscheer, J. W., & Kleber, R. J. (2013). Is legal status impacting outcomes of group therapy for posttraumatic stress disorder with male asylum seekers and refugees from Iran and Afghanistan? *BMC Psychiatry, 13*, 148. doi:10.1186/1471-244x-13-148

Dyck, D. G., Short, R. A., Hendryx, M. S., Norell, D., Myers, M., Patterson, T., . . . McFarlane, W. R. (2000). Management of negative symptoms among patients with schizophrenia attending multiple-family groups. *Psychiatric Services, 51*(4), 513-519. doi:10.1176/appi.ps.51.4.513

Eisler, I. (2005). The empirical and theoretical base of family therapy and multiple family day therapy for adolescent anorexia nervosa. *Journal of Family Therapy, 27*(2), 104-131. doi:10.1111/j.1467-6427.2005.00303.x

Eisler, I., Dare, C., Hodes, M., Russell, G., Dodge, E., & Le Grange, D. (2000). Family therapy for adolescent anorexia nervosa: the results of a controlled comparison of two family interventions. *Journal of Child Psycholy and Psychiatry, 41*(6), 727-736.

Eisler, I., Dare, C., Russell, G. F., Szmukler, G., le Grange, D., & Dodge, E. (1997). Family and individual therapy in anorexia nervosa. A 5-year follow-up. *Archives of General Psychiatry, 54*(11), 1025-1030.

Eisler, I., Simic, M., Hodsoll, J., Asen, E., Berelowitz, M., Connan, F., . . . Landau, S. (2016). A pragmatic randomised multi-centre trial of multifamily and single family therapy for adolescent anorexia nervosa. *BMC Psychiatry, 16*(1), 422. doi:10.1186/s12888-016-1129-6

Ellison, R., Rhodes, P., Madden, S., Miskovic, J., Wallis, A., Baillie, A., . . . Touyz, S. (2012). Do the components of manualized family-based treatment for anorexia nervosa predict weight gain? *Int J Eat Disord, 45*(4), 609-614. doi:10.1002/eat.22000

Erskine, H. E., Whiteford, H. A., & Pike, K. M. (2016). The global burden of eating disorders. *Current Opinion in Psychiatry, 29*(6), 346-353. doi:10.1097/yco.0000000000000276

Espie, J., & Eisler, I. (2015). Focus on anorexia nervosa: modern psychological treatment and guidelines for the adolescent patient. *Adolescent health, medicine and therapeutics, 6*, 9-16. doi:10.2147/AHMT.S70300

Fairburn, C. G., & Beglin, S. J. (1994a). Assessment of eating disorders: interview or self-report questionnaire? *International Journal of Eating Disorders, 16*(4), 363-370.

Fairburn, C. G., & Beglin, S. J. (1994b). Assessment of eating disorders: interview or self-report questionnaire? *Int J Eat Disord, 16*(4), 363-370.

Fairburn, C. G., & Cooper, P. (1997a). Eating Disorders. In K. Hawton, J. Kirk, P.M. Salkovskis, & D.M. Clark (Eds.), *Cognitive Behaviour Therapy for Psychiatric Problems* (pp. 227-314). Oxford: Oxford University Press.

Fairburn, C. G., & Cooper, Z. (1993). The Eating Disorder Examination (12th edition). *Binge eating: Nature, assessment, and treatment.*, 317-360.

Fairburn, C. G., & Wilson, G. (1993). *Binge Eating*. New York: Guilford Press.

Fairburn, D., & Cooper, P. (1997b). Eating disorders. In K. Hawton, P. M. Salkovskis, J. Kirk, & D. M. Clark (eds) (Eds.), *Cognitive Behaviour Therapy for Psychiatric Problems* (pp. 277-314). Oxford: Oxford University Press.

Field, A. E., Camargo, C. A., Jr., Taylor, C. B., Berkey, C. S., & Colditz, G. A. (1999). Relation of peer and media influences to the development of purging behaviors among preadolescent and adolescent girls. *Archives of Pediatrics & Adolescent Medicine, 153*(11), 1184-1189. doi:10.1001/archpedi.153.11.1184

Fitzpatrick, K.K., Forsberg, S.E., & Colborn, D. . (2015). Family-based therapy for avoidant restrictive food intake disorder: families facing food neophobias. In K.L. Loeb, Le Grange D., & J. Lock (Eds.), *Family therapy for adolescent eating and weight disorders: new applications* (pp. pp. 256-276). New York: Routledge.

Forbush, K., Heatherton, T. F., & Keel, P. K. (2007). Relationships between perfectionism and specific disordered eating behaviors. *The International Journal of Eating Disorders, 40*(1), 37-41. doi:10.1002/eat.20310

Friedlander, M., & Diamond, G. (2012). Couple and Family Therapy. In E. M & Hansen Altmaier, Jo-Ida M. (Ed.), *The Oxford Handbook of Counseling Psychology*. New York: Oxford University Press.

Fristad, M. A., Verducci, J. S., Walters, K., & Young, M. E. (2009). Impact of multifamily psychoeducational psychotherapy in treating children aged 8 to 12 years with mood disorders. *Archives of General Psychiatry, 66*(9), 1013-1021. doi:10.1001/archgenpsychiatry.2009.112

Galmiche, M., Dechelotte, P., Lambert, G., & Tavolacci, M. P. (2019). Prevalence of eating disorders over the 2000-2018 period: a systematic literature review. *The American Journal of Clinical Nutrition, 109*(5), 1402-1413. doi:10.1093/ajcn/nqy342

Gardner, R. M., Stark, K., Friedman, B. N., & Jackson, N. A. (2000). Predictors of eating disorder scores in children ages 6 through 14: a longitudinal study. *Journal of Psychosomatic Research, 49*(3), 199-205. doi:10.1016/s0022-3999(00)00172-0

Gelin, Z., Cook-Darzens, S., & Hendrick, S. (2018). The evidence base for Multiple Family Therapy in psychiatric disorders: A review (part 1). *Journal of Family Therapy, 40*, 302-325. doi:10.1111/1467-6427.12178

Gelin, Z., Fuso, S., Hendrick, S., Cook-Darzens, S., & Simon, Y. (2015). The effects of a multiple family therapy on adolescents with eating disorders: an outcome study. *Family Process, 54*(1), 160-172. doi:10.1111/famp.12103

Gergen, K. J. (1992). The social constructionist movement in modern psychology *The restoration of dialogue: Readings in the philosophy of clinical psychology.* (pp. 556-569). Washington, DC, US: American Psychological Association.

Gergen, K. J. (2015). *An Invitation to Social Construction* London: Sage.

Gjuričová, S. , & Kubička, J. (2003). *Family Therapy. Systemic and Narrative Approaches* Prague: Grada.

Gold, M.R., Siegel, J.E., Russell, L.B., & Weinstein, M.C. (1996). *Cost-Effectiveness in Health and Medicine*: Oxford University Press.

Goldenberg, H., & Goldenberg, I. (2013). *Family Therapy. An overview*. Belmont, CA.: Brooks/Cole, Cengage Learning.

Gorrell, S., Loeb, K. L., & Le Grange, D. (2019). Family-based Treatment of Eating Disorders: A Narrative Review. *The Psychiatric Clinics of North America, 42*(2), 193-204. doi:10.1016/j.psc.2019.01.004

Haedt-Matt, A. A., & Keel, P. K. (2015). Affect regulation and purging: An ecological momentary assessment study in purging disorder. *Journal of Abnormal Psychology, 124*(2), 399-411. doi:10.1037/a0038815

Haley, J. (1973). *Uncommon Therapy*. New York: Norton.

Hammerle, F., Huss, M., Ernst, V., & Bürger, A. (2016). Thinking dimensional: prevalence of DSM-5 early adolescent full syndrome, partial and subthreshold eating disorders in a cross-sectional survey in German schools. *BMJ Open, 6*(5), e010843. doi:10.1136/bmjopen-2015-010843

Hanlon, K. . (2011). What is the relationship between low self-esteem and eating disorders? , from Vanderbuilt University

Hawkins, R.C., & Clement, P.F. . (1984). Binge eating: Measurement problems and a conceptual model. In R.C. Hawkins, W.J. Fremouw, & P.F. Clement (Eds.), *The binge purge syndrome: Diagnosis, treatment, and research* (pp. pp. 229-251). New York: Springer.

Hay, P., Girosi, F., & Mond, J. (2015). Prevalence and sociodemographic correlates of DSM-5 eating disorders in the Australian population. *Journal of Eating Disorders, 3*, 19. doi:10.1186/s40337-015-0056-0

Herpertz-Dahlmann, B., Wille, N., Hölling, H., Vloet, T. D., Ravens-Sieberer, U., & group, the BELLA study. (2008). Disordered eating behaviour and attitudes, associated psychopathology and health-related quality of life: results of the BELLA study. *European Child & Adolescent Psychiatry, 17*(1), 82-91. doi:10.1007/s00787-008-1009-9

Herzog, D. B., Pepose, M., Norman, D. K., & Rigotti, N. A. (1985). Eating disorders and social maladjustment in female medical students. *The Journal of Nervous and Mental Disease, 173*(12), 734-737.

Hodes, M, Eisler, I, & Dare, C. (1991). Family Therapy for Anorexia Nervosa in Adolescence: A Review. *Journal of the Royal Society of Medicine, 84*(6), 359-362. doi:10.1177/014107689108400617

Hoek, H. W. (2016). Review of the worldwide epidemiology of eating disorders. *Curr Opin Psychiatry, 29*(6), 336-339. doi:10.1097/yco.0000000000000282

Hollesen, A., Clausen, L., & Rokkedal, K. (2013). Multiple family therapy for adolescents with anorexia nervosa: a pilot study of eating disorder symptoms and interpersonal functioning. *Journal of Family Therapy, 35*(S1), 53-67. doi:doi:10.1111/1467-6427.12000

Höschel, C., Winkler, P., & Pec, O. (2012). The state of psychiatry in the Czech Republic. *International Review of Psychiatry, 24*(4), 278-285. doi:https://www.academia.edu/17580918/The_state_of_psychiatry_in_the_Czech_Republic

Höschl, C., Winkler, P., & Pec, O. (2012). The state of psychiatry in the Czech Republic. *International Review of Psychiatry 24*, 278-285. doi:10.3109/09540261.2012.688730

IHME. (2017). *The global burden of disease (GBD)*. Seattle, Washingtion, USA: The Institute for Health Metrics and Evaluation

Immigration and Refugee Board of Canada. (2000). *Available treatment for psychiatric disorders; social stigma for those with psychiatric disorders*. 14 January: CZE33477.E, retrieved 26 October 2011 from http://www.unhcr.org/refworld/topic,463af2212,49709c822,3ae6ad5758,0.html.

Izaková, L., Havlíčková, E., & Horvátová, V. (2009). Media stigmatisation of female patients with eating disorders in long-term treatment (in Slovak). *Psychiatrie pro praxi, Suppl. B, 10*, 28-29.

Jackson, D. (1965). The Study of the Family. *Family Process, 4*, 1-20.

Jacobi, C., Fittig, E., Bryson, S. W., Wilfley, D., Kraemer, H. C., & Taylor, C. B. (2011). Who is really at risk? Identifying risk factors for subthreshold and full syndrome eating disorders in a high-risk sample. *Psychological Medicine, 41*(9), 1939-1949. doi:10.1017/s0033291710002631

Jacobi, C., Hayward, C., de Zwaan, M., Kraemer, H. C., & Agras, W. S. (2004). Coming to terms with risk factors for eating disorders: application of risk terminology and suggestions for a general taxonomy. *Psychological bulletin, 130*(1), 19-65. doi:10.1037/0033-2909.130.1.19

Jessor, R. . (1984). Adolescent development and behavioral health. In J. D. Matarazzo, Weiss, S. M., Herd, J. A., Miller, N. E., and Weiss, S. M. (Ed.), *Behavioral Health: A Handbook of Health Enhancement and Disease Prevention* (pp. 69-90). New York: Wiley.

K., Stein F., & Nyquist, L. (2001). Disturbances in the self: a source of eating disorders. *Eating Disorder Review, Retrieved 17 November 2011 from http://*

www.bulimia.com/client/client_pages/newsletter18.cfm.

Kaye, W. H., Bulik, C. M., Thornton, L., Barbarich, N., & Masters, K. (2004). Comorbidity of anxiety disorders with anorexia and bulimia nervosa. *The American Journal of Psychiatry, 161*(12), 2215-2221. doi:10.1176/appi.ajp.161.12.2215

Keel, P. K., Dorer, D. J., Eddy, K. T., Franko, D., Charatan, D. L., & Herzog, D. B. (2003). Predictors of Mortality in Eating Disorders. *JAMA Psychiatry, 60*(2), 179-183. doi:10.1001/archpsyc.60.2.179

Keel, P. K., & Forney, K. J. (2013). Psychosocial risk factors for eating disorders. *The International Journal of Eating Disorders, 46*(5), 433-439. doi:10.1002/eat.22094

Keel, P. K., Fulkerson, J. A., & Leon, G. R. (1997). Disordered eating precursors in pre- and early adolescent girls and boys. *Journal of Youth and Adolescence, 26*(2), 203-216. doi:10.1023/A:1024504615742

Keery, H., van den Berg, P., & Thompson, J. K. (2004). An evaluation of the Tripartite Influence Model of body dissatisfaction and eating disturbance with adolescent girls. *Body Image, 1*(3), 237-251. doi:10.1016/j.bodyim.2004.03.001

Kirmayer, L. J. (2012). Rethinking cultural competence. *Transcult Psychiatry, 49*(2), 149-164. doi:10.1177/1363461512444673

Klaus, D. . (2017). im Gespräch mit Mara Selvini Palazzoli. "Es ist unmöglich, wirklich systemisch zu denken, weil wir die Sprache benutzen (1979)". In R. Wolf, T. Levold, D. Foertsch, & D. Bauer (Eds.), *Erkunden, erinnern, erzählen: Interviews zur Entwicklung des systemischen Ansatz*. Göttingen: Vandenhoeck & Ruprecht.

Kohler, S. (2019). Die Vermessung der globalen Gesundheit [Measuring global health] *Gesundheit und Gesellschaft/Wissenschaft(GGW)* (Vol. 19, pp. 16–23): Wissenschaftliches Institute der AOK.

Kraemer, H. C., Stice, E., Kazdin, A., Offord, D., & Kupfer, D. (2001). How do risk factors work together? Mediators, moderators, and independent, overlapping, and proxy risk factors. *The American Journal of Psychiatry, 158*(6), 848-856. doi:10.1176/appi.ajp.158.6.848

Krauth, C., Buser, K., & Vogel, H. (2002). How high are the costs of eating disorders - anorexia nervosa and bulimia nervosa - for German society? *The European Journal of Health Economics, 3*(4), 244-250. doi:10.1007/s10198-002-0137-2

Krug, Isabel, Penelo, Eva, Fernandez-Aranda, Fernando, Anderluh, Marija, Bellodi, Laura, Cellini, Elena, . . . Treasure, Janet. (2013). Low social interactions in eating disorder patients in childhood and adulthood: A multi-centre European case control study. *Journal of Health Psychology, 18*(1), 26-37. doi:10.1177/1359105311435946

Krupchanka, D., & Winkler, P. (2016a). State of mental healthcare systems in Eastern Europe: do we really understand what is going on? *BJPsych International, 13*(4), 96-99. doi:10.1192/s2056474000001446

Krupchanka, D., & Winkler, P. (2016b). State of mental healthcare systems in Eastern Europe: do we really understand what is going on? *BJPsych Int, 13*(4), 96-99. doi:10.1192/s2056474000001446

Kyriacou, O., Treasure, J., & Schmidt, U. (2008). Understanding how parents cope with living with someone with anorexia nervosa: Modelling the factors that are associated with carer distress. *International Journal of Eating Disorders, 41*(3), 233-242. doi:doi:10.1002/eat.20488

Laqueur, H. (1972). *Mechanisms of change in multiple family therapy*. New York: Brunner/Mazel.

Laqueur, H.P. , La Burt, H., & Morong, E. (1964). Multiple family therapy: further developments. *Internal Journal of Social Psychiatry, 10*, 69-80.

Larsen, J. T., Munk-Olsen, T., Bulik, C. M., Thornton, L. M., Koch, S. V., Mortensen, P. B., & Petersen, L. (2017). Early childhood adversities and risk of eating disorders in women: A Danish register-based cohort study. *The International Journal of Eating Disorders, 50*(12), 1404-1412. doi:10.1002/eat.22798

Le Grange, D. (2005). The Maudsley family-based treatment for adolescent anorexia nervosa. *World psychiatry : official journal of the World Psychiatric Association (WPA), 4*(3), 142-146.

Le Grange, D., Binford, R., & Loeb, K. L. (2005). Manualized Family-Based Treatment for Anorexia Nervosa: A Case Series. *Journal of the American Academy of Child & Adolescent Psychiatry, 44*(1), 41-46. doi:https://doi.org/10.1097/01.chi.0000145373.68863.85

Le Grange, D., Crosby, R. D., Rathouz, P. J., & Leventhal, B. L. (2007). A randomized controlled comparison of family-based treatment and supportive psychotherapy for adolescent bulimia nervosa. *Arch Gen Psychiatry, 64*(9), 1049-1056. doi:10.1001/archpsyc.64.9.1049

Le Grange, D., & Eisler, I. (2008). Family Intervention in Adoelscent Anorexia Nervosa. *Child and Adolescent Psychiatric Clinics of North America, 18*, 159-173.

Le Grange, D., & Lock, J. (2007). *Treating Bulimia in Adolescents: A Family-Based Approach*. New York: Guilford.

Le Grange, D., Lock, J., Agras, W. S., Bryson, S. W., & Jo, B. (2015). Randomized Clinical Trial of Family-Based Treatment and Cognitive-Behavioral Therapy for Adolescent Bulimia Nervosa. *J Am Acad Child Adolesc Psychiatry, 54*(11), 886-894.e882. doi:10.1016/j.jaac.2015.08.008

Le Grange, D., Lock, J., Loeb, K., & Nicholls, D. (2010). Academy for Eating Disorders position paper: the role of the family in eating disorders. *International Journal of Eating Disorders, 43*(1), 1-5. doi:10.1002/eat.20751

LeFebvre, R., & Franke, V. (2013). Culture Matters: Individualism vs. Collectivism in Conflict Decision-Making *Societies, 3*, 128-146. doi: doi:10.3390/soc3010128

Lemmens, G. M., Wauters, S., Heireman, M., Eisler, I., Lietaer, G., & Sabbe, B. (2003). Beneficial factors in family discussion groups of a psychiatric day clinic: perceptions by the therapeutic team and the families of the therapeutic process. *Journal of Family Therapy, 25*(1), 41-63. doi:10.1111/1467-6427.00234

Levinson, C. A., & Rodebaugh, T. L. (2012). Social anxiety and eating disorder comorbidity: the role of negative social evaluation fears. *Eating behaviors, 13*(1), 27-35. doi:10.1016/j.eatbeh.2011.11.006

Liebman, R., Minuchin, S., & Baker, L. (1974). The Role of the Family in the Treatment of Anorexia Nervosa. *Journal of the American Academy of Child & Adolescent Psychiatry, 13*(2), 264-274. doi:10.1016/S0002-7138(09)61315-7

Lindenberg, K. (2012). *Gestufte Prävention von Essstörungen mit YoungEs[s]prit - Wirksamkeit eines Internet-vermittelten Präventionsprogramms bei Schülern* Dissertation. Heidelberg Dokumentenserver (heiDok), Heideberg.

Lock, J. (2010). Treatment of Adolescent Eating Disorders: Progress and Challenges. *Minerva psichiatrica, 51*(3), 207-216.

Lock, J., & Le Grange, D. (2013). *Treatment Manual for Anorexia Nervos: A Family-Based Approch* (Vol. 2nd). New York: Guilford.

Lock, J., Le Grange, D., Agras, W. S., Moye, A., Bryson, S. W., & Jo, B. (2010). Randomized clinical trial comparing family-based treatment with adolescent-focused individual therapy for adolescents with anorexia nervosa. *Archives of general psychiatry, 67*(10), 1025-1032. doi:10.1001/archgenpsychiatry.2010.128

Lynch, F. L., Striegel-Moore, R. H., Dickerson, J. F., Perrin, N., Debar, L., Wilson, G. T., & Kraemer, H. C. (2010). Cost-effectiveness of guided self-help treatment for recurrent binge eating. *Journal of Consulting and Clinical Psychology, 78*(3), 322-333. doi:10.1037/a0018982

Marner, T., & Westerberg, C. (1987). Concomitant group therapy with anorectics and their parents as a supplement to family therapy. *Journal of Family Therapy, 9*(3), 255-263. doi:10.1046/j..1987.00280.x

McCauley, Elizabeth, Gudmundsen, Gretchen, Schloredt, Kelly, Martell, Christopher, Rhew, Isaac, Hubley, Samuel, & Dimidjian, Sona. (2016). The Adolescent Behavioral Activation Program: Adapting Behavioral Activation as a Treatment for Depression in Adolescence. *Journal of Clinical Child and Adolescent Psychology, 45*(3), 291-304. doi:10.1080/15374416.2014.979933

McDaid, D. , & Thornicroft, G. (2005). *Policy brief: mental health II. Balancing institutional and community based care. European observatory on health systems and policies*. Copenhagen: WHO Regional Office for Europe Retrieved from https://apps.who.int/iris/handle/10665/107632.

Mehl, A., Tomanová, J., Kuběna, A., & Papežová, H. (2013). Adapting multi-family therapy to families who care for a loved one with an eating disorder in the Czech Republic combined with a follow-up pilot study of efficacy. *Journal of Family Therapy, 35*(S1), 82-101. doi:10.1111/j.1467-6427.2011.00579.x

Mehta, S., Mittal, P.K., & Swami, M.K. (2014). Psychosocial Functioning in Depressive Patients: A Comparative Study between Major Depressive Disorder and Bipolar Affective Disorder. *Depression Research and Treatment*, 6. doi:http://dx.doi.org/10.1155/2014/302741

Melioli, T., Bauer, S., Franko, D. L., Moessner, M., Ozer, F., Chabrol, H., & Rodgers, R. F. (2016). Reducing eating disorder symptoms and risk factors using the internet: A meta-analytic review. *The International Journal of Eating Disorders, 49*(1), 19-31. doi:10.1002/eat.22477

Mendelson, M., Mendelson, B., & Andrews, J. A. (2000). Self-esteem, body esteem, and body-mass in late adolescence: is a competence x import model needed? *Journal of Applied Developmental Psychology, 21*, 249–266.

Minuchin, S. (1965). Conflict-Resolution Family Therapy. *Psychiatry, 28*(3), 278-286. doi:10.1080/00332747.1965.11023435

Minuchin, S. (1972). Structural family therapy. In G. Caplan (Ed.), *American handbook of psychiatry* (Vol. 2nd (ed.), pp. 178-192). New York: Basic.

Minuchin, S. (1974). *Families and family therapy*. Cambridge, MA: Harvard University Press.

Minuchin, S., Baker, L., Rosman, B. L., Liebman, R., Milman, L., & Todd, T. C. (1975). A conceptual model of psychosomatic illness in children: Family organization and family therapy. *Archives of General Psychiatry, 32*(8), 1031-1038. doi:10.1001/archpsyc.1975.01760260095008

Minuchin, S., & Nichols, M.P. (1998). Structural family therapy *Case studies in couple and family therapy: Systemic and cognitive perspectives.* (pp. 108-131). New York, NY, US: Guilford Press.

Minuchin, S., Rosman, B.L., & Baker, L. (1978). *Psychosomatic families: Anorexia nervosa in context*. Oxford, England: Harvard U Press.

Mond, J. M., & Hay, P. J. (2007). Functional impairment associated with bulimic behaviors in a community sample of men and women. *The International Journal of Eating Disorders, 40*(5), 391-398. doi:10.1002/eat.20380

Mond, J. M., Hay, P. J., Rodgers, B., Owen, C., & Beumont, P. J. (2004). Validity of the Eating Disorder Examination Questionnaire (EDE-Q) in screening for eating disorders in community samples. *Behaviour Research and Therapy, 42*(5), 551-567. doi:10.1016/s0005-7967(03)00161-x

Moser, Carolina Meira, Lobato, Maria Inês Rodrigues, Rosa, Adriane R., Thomé, Emi, Ribar, Julia, Primo, Lucas, . . . Brunstein, Miriam Garcia. (2013). Impairment in psychosocial functioning in patients with different subtypes of eating disorders. *Trends in Psychiatry and Psychotherapy, 35*, 111-118. doi:dx.doi.org/10.1590/S2237-60892013000200004

Murray, C. J., Barber, R. M., Foreman, K. J., Abbasoglu Ozgoren, A., Abd-Allah, F., Abera, S. F., . . . Achoki, T. (2015). Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990-2013: quantifying the epidemiological transition. *Lancet, 386*(10009), 2145-2191. doi:10.1016/s0140-6736(15)61340-x

Mustelin, L., Silen, Y., Raevuori, A., Hoek, H. W., Kaprio, J., & Keski-Rahkonen, A. (2016). The DSM-5 diagnostic criteria for anorexia nervosa may change its population prevalence and prognostic value. *Journal of Psychiatric Research, 77*, 85-91. doi:10.1016/j.jpsychires.2016.03.003

Nawková, L., Adámková, T., Vondráková, P., Nawka, A., Miovský, M. , & Raboch, J. (2009). The picture of eating disorders in Czech printed media. *Psychiatrie pro praxi, Suppl. B*(31), 1-36.

Neumark-Sztainer, D., Butler, R., & Palti, H. (1995). Eating disturbances among adolescent girls: Evaluation of a school-based primary prevention program. *Journal of Nutrition Education, 27*(1), 24-31. doi:10.1016/S0022-3182(12)80262-7

NICE. (2004). *National Institute for Health and Clinical Excellence: Guidance*. Leicester (UK): British Psychological Society (UK)The British Psychological Society & The Royal College of Psychiatrists.

NICE. (2017). *National Institute for Health and Clinical Excellence*. British Psychological Society (UK)The British Psychological Society & The Royal College of Psychiatrists.

OECD. (2011). Health at a Glance 2011: OECD Indicators. *Paris: Organization for Economic Co-operation and Development Publishing*. doi:doi:10.1787/health_glance-2011-en

Padierna, A., Martín, J., Aguirre, U., González, N., Muñoz, P., & Quintana, J. M. . (2013). Burden of caregiving amongst family caregivers of patients with eating disorders. *Social Psychiatry and Psychiatric Epidemiology, 48*(1), 151-161. doi: https://doi.org/10.1007/s00127-012-0525-6

Palazzoli, S., & Viaro, M. (1988). *The Anorectic Process in the Family: A Six-Stage Model as a Guide for Individual Therapy* (Vol. 27).

Papežová, H. (2002). History of services for eating disorders with regard to political and women's situational changes in the Czech Republic. *European Eating Disorders Review, 10*(2), 79-84. doi:10.1002/erv.455

Pec, O. (2019). Mental health reforms in the Czech Republic. *BJPsych international, 16*(1), 4-6. doi:10.1192/bji.2017.27

Pender, Sarah, Gilbert, Sam J., & Serpell, Lucy. (2014). The Neuropsychology of Starvation: Set-Shifting and Central Coherence in a Fasted Nonclinical Sample. *PLoS ONE, 9*(10), e110743. doi:10.1371/journal.pone.0110743

Peterson, C.B., Crosby, R.D., Wonderlich, S.A., Joiner, T., Crow, S.J., Mitchell, J.E., . . . le Grange, D. (2007). Psychometric properties of the eating disorder examination-questionnaire: Factor structure and internal consistency. *International Journal of Eating Disorders, 40*(4), 386-389. doi:doi:10.1002/eat.20373

Piaget, J., & Inhelder, B. (1993). *Die Psychologie des Kindes*. München: Deutscher Taschenbuch Verlag GmbH & Co.KG.

Rathod, S., Gega, L., Degnan, A., Pikard, J., Khan, T., Husain, N., . . . Naeem, F. (2018). The current status of culturally adapted mental health interventions: a practice-focused review of meta-analyses. *Neuropsychiatric disease and treatment, 14*, 165-178. doi:10.2147/NDT.S138430

Rathod, S., & Kingdon, D. (2014). Case for cultural adaptation of psychological interventions for mental healthcare in low and middle income countries. *Bmj, 349*, g7636. doi:10.1136/bmj.g7636

Rathod, S., Kingdon, D., Phiri, P., & Gobbi, M. (2010). Developing culturally sensitive cognitive behaviour therapy for psychosis for ethnic minority patients by exploration and incorporation of service users' and health professionals' views and opinions. *Behav Cogn Psychother, 38*(5), 511-533. doi:10.1017/s1352465810000378

Rienecke, R. D. (2017). Family-based treatment of eating disorders in adolescents: current insights. *Adolescent Health, Medicine and Therapeutics, 8*, 69-79. doi:10.2147/ahmt.s115775

Ro, E., & Clark, L. A. (2009). Psychosocial functioning in the context of diagnosis: assessment and theoretical issues. *Psychological Assessment, 21*(3), 313-324. doi:10.1037/a0016611

Robinson, A.L., Strahan, E., Girz, L., Wilson, A., & Boachie, A. (2013). 'I Know I Can Help You': Parental Self-efficacy Predicts Adolescent Outcomes in Family-based Therapy for Eating Disorders. *European Eating Disorders Review, 21*(2), 108-114. doi:doi:10.1002/erv.2180

Rosenberg, M. (1965). *Society and the Adolescent Child*. Princeton, NJ: Princeton University Press.

Rosman, B. L., Minuchin, S., & Liebman, R. (1975). Family lunch session: an introduction to family therapy in anorexia nervosa. *Am J Orthopsychiatry, 45*(5), 846-853. doi:10.1111/j.1939-0025.1975.tb01212.x

Russell, G. F., Szmukler, G. I., Dare, C., & Eisler, I. (1987). An evaluation of family therapy in anorexia nervosa and bulimia nervosa. *Arch Gen Psychiatry, 44*(12), 1047-1056.

Ruuska, J., Koivisto, A. M., Rantanen, P., & Kaltiala-Heino, R. (2007). Psychosocial functioning needs attention in adolescent eating disorders. *Nordic Journal of Psychiatry, 61*(6), 452-458. doi:10.1080/08039480701773253

Salaminiou, Eva, Campbell, Mari, Simic, Mima, Kuipers, Elizabeth, & Eisler, Ivan. (2017). Intensive multi-family therapy for adolescent anorexia nervosa: an open study of 30 families. *Journal of Family Therapy, 39*(4), 498-513. doi:doi:10.1111/1467-6427.12075

Satir, V. (1967). *Conjoint family therapy: A guide to theory and technique (rev. ed).* Palo Alto, CA: Science & Behavior Books.

Satir, V. (1989). *The new Peoplemaking*. Palo Alto: Science and Behavior Books.

Satir, V. (1990). *Kommunikation. Selbstwert. Kongruenz*: Junferman Verlag.

Schiepek, G. (1987). *Systeme erkennen Systeme, Individuelle, soziale und methodische Bedingungen systemischer Diagnostik*. München-Weinheim: Psychologie Verlags Union.

Schiepek, G., & Cremers, S. (2003). Ressourcenorientierung und Ressourcendiagnostik in der Psychotherapie. In: Schemmel, Heike / Schaller, Johannes (Hrsg.) Ressourcen. Ein Hand- und Lesebuch zur therapeutischen Arbeit. S. 147-193 *Ressourcen. Ein Hand- und Lesebuch zur therapeutischen Arbeit* (pp. 147-193): Schemmel, H.Schaller, J.

Schmidt, U., Adan, R., Bohm, I., Campbell, I. C., Dingemans, A., Ehrlich, S., . . . Zipfel, S. (2016). Eating disorders: the big issue. *Lancet Psychiatry, 3*(4), 313-315. doi:10.1016/s2215-0366(16)00081-x

Schneider, Barry H., & Byrne, Barbara M. (1985). Children's Social Skills Training: A Meta-Analysis. In Barry H. Schneider, Kenneth H. Rubin, & Jane E. Ledingham (Eds.), *Children's Peer Relations: Issues in Assessment and Intervention* (pp. 175-192). New York: Springer US.

Scholz, M., & Asen, E. (2001). Multiple family therapy with eating disordered adolescents: Concepts and preliminary results. *European Eating Disorders Review, 9*(1), 33-42. doi:10.1002/erv.364

Scholz, M., Rix, M., Hegewald, K., & Gantchev, K. (2003). Tagesklinische Multifamilientherapie bei Anorexia nervosa – Manual des Dresdner Modells. In Steinbrenner & Schönauer-Cejpek (Ed.), *Therapie in Theorie und Praxis*. Vienna. Maudrich Verlag: Steinbrenner & Schönauer-Cejpek.

Scholz, M., Rix, M., Scholz, K., Gantchev, K., & Thömke, V. (2005). Multiple family therapy for anorexia nervosa: concepts, experiences and results. *Journal of Family Therapy, 27*(2), 132-141. doi:doi:10.1111/j.1467-6427.2005.00304.x

Schweitzer, J., & von Schlippe, A. (2015). *Lehrbuch der systemischen Therapie und Beratung II: Das störungsspezifische Wissen*. Göttingen: Vandenhoeck & Ruprecht.

Selvini-Palazzoli, M. (1978). *Self-Starvation: From Individual to Family Therapy in the Treatment of Anorexia Nervosa* (Vol. Auflage: New ed (7. Juli 1977)): Jason Aronson Inc. Publishers.

Selvini-Palazzoli, M., Boscolo, L., Cecchin, G., & Prata, G. (1978). *Paradox and counterparadox. A new model in the therapy of the family in schizophrenic transaction.* New York: Jason Aronson.

Selvini-Palazzoli, M., Boscolo, L., Cecchin, G., & Prata, G. (1980a). Hypothesizing-cicularity-neutrality: Three guidelines for the conductor of the session. *Family Process, 19*(2-18).

Selvini-Palazzoli, M., & Viaro, M. (1988). The anorectic process in the family: a six-stage model as a guide for individual therapy. *Family Process, 27*(2), 129-148.

Shadish, W.R., & Baldwin, S.A. (2003). Meta-Analysis of MFT Interventions. *Journal of Marital and Family Therapy, 29*(4), 547-570. doi:10.1111/j.1752-0606.2003.tb01694.x

Shaw, H., Rohde, P., & Stice, E. (2016). Participant feedback from peer-led, clinician-led, and internet-delivered eating disorder prevention interventions. *The International Journal of Eating Disorders, 49*(12), 1087-1092. doi:10.1002/eat.22605

Sherman, M. D., Perlick, D. A., & Straits-Troster, K. (2012). Adapting the multifamily group model for treating veterans with posttraumatic stress disorder. *Psychological Services, 9*(4), 349-360. doi:10.1037/a0028963

Silberstein, L.R., Striegel-Moore, R.H., & Rodin, J. (1987). Feeling fat: A woman's shame *The role of shame in symptom formation.* (pp. 89-108). Hillsdale, NJ, US: Lawrence Erlbaum Associates, Inc.

Simon, J., Schmidt, U., & Pilling, S. (2005). The health service use and cost of eating disorders. *Psychological Medicine, 35*(11), 1543-1551. doi:10.1017/s0033291705004708

Slagerman, M., & Yager, J. (1989). Multiple family group treatment for eating disorders: a short term program. *Psychiatr Med, 7*(4), 269-283.

Smink, F. R., van Hoeken, D., Oldehinkel, A. J., & Hoek, H. W. (2014). Prevalence and severity of DSM-5 eating disorders in a community cohort of adolescents. *International Journal of Eating Disorders, 47*(6), 610-619. doi:10.1002/eat.22316

Spence, S. H., & Rapee, R. M. (2016). The etiology of social anxiety disorder: An evidence-based model. *Behaviour Research and Therapy, 86*, 50-67. doi:10.1016/j.brat.2016.06.007

Spencer, M.B. (2006). Phenomenology and Ecololgical Systems Theory. Development of Diverse Groups. In R. Lerner (Ed.), *Handbook of Child Development. Theoretical Model of Human Development* (6th edition ed., Vol. 1, pp. 865-868). New Jersey: John Wiley & Sons.

Spettigue, W., Norris, M.L., Santos, A., & Obeid, N. (2018). Treatment of children and adolescents with avoidant/restrictive food intake disorder: a case series examining the feasibility of family therapy and adjunctive treatments. *Journal of eating disorders, 6*, 20-20. doi:10.1186/s40337-018-0205-3

Steinglass, P., Bennett, L. A., Wolin, S. J., & Reiss, D. (1987). *The alcoholic family*. New York, NY, US: Basic Books.

Steinglass, Peter. (1998). Multiple family discussion groups for patients with chronic medical illness. *Families, Systems, & Health, 16*(1-2), 55-70. doi:10.1037/h0089842

Stewart, D. A., Carter, J. C., Drinkwater, J., Hainsworth, J., & Fairburn, C. G. (2001). Modification of eating attitudes and behavior in adolescent girls: A controlled study.

Int J Eat Disord, 29(2), 107-118. doi:10.1002/1098-108x(200103)29:2<107::aid-eat1000>3.0.co;2-1

Stice, E. (1994). Review of the evidence for a sociocultural model of bulimia nervosa and an exploration of the mechanisms of action. *Clinical Psychology Review, 14*(7), 633-661. doi:doi.org/10.1016/0272-7358(94)90002-7

Stice, E. (2001). A prospective test of the dual-pathway model of bulimic pathology: mediating effects of dieting and negative affect. *Journal of Abnormal Psychology, 110*(1), 124-135.

Stice, E. (2002). Risk and maintenance factors for eating pathology: A meta-analytic review. *Psychological Bulletin, 128*(5), 825-848. doi:10.1037/0033-2909.128.5.825

Stice, E. (2016). Interactive and Mediational Etiologic Models of Eating Disorder Onset: Evidence from Prospective Studies. *Annual Review of Clinical Psychology, 12*(1), 359-381. doi:10.1146/annurev-clinpsy-021815-093317

Stice, E., & Agras, W. S. (1998a). Predicting onset and cessation bulimic behaviors during adolescence: A longitudinal grouping analysis. *Behavior Therapy, 29*(2), 257-276. doi:10.1016/S0005-7894(98)80006-3

Stice, E., & Agras, W. S. (1998b). Predicting onset and cessation of bulimic behaviors during adolescence: A longitudinal grouping analysis. *Behavior Therapy, 29*(2), 257-276. doi:https://doi.org/10.1016/S0005-7894(98)80006-3

Stice, E., Becker, C. B., & Yokum, S. (2013a). Eating disorder prevention: current evidence-base and future directions. *Int J Eat Disord, 46*(5), 478-485. doi:10.1002/eat.22105

Stice, E., Gau, J. M., Rohde, P., & Shaw, H. (2017a). Risk factors that predict future onset of each DSM-5 eating disorder: Predictive specificity in high-risk adolescent females. *Journal of Abnormal Psychology, 126*(1), 38-51. doi:10.1037/abn0000219

Stice, E., Marti, C. N., & Durant, S. (2011). Risk factors for onset of eating disorders: evidence of multiple risk pathways from an 8-year prospective study. *Behaviour Research and Therapy, 49*(10), 622-627. doi:10.1016/j.brat.2011.06.009

Stice, E., Marti, C. N., & Rohde, P. (2013b). Prevalence, incidence, impairment, and course of the proposed DSM-5 eating disorder diagnoses in an 8-year prospective community study of young women. *Journal of Abnormal Psychology, 122*(2), 445-457. doi:10.1037/a0030679

Stice, E., Marti, C. N., Spoor, S., Presnell, K., & Shaw, H. (2008). Dissonance and healthy weight eating disorder prevention programs: long-term effects from a randomized efficacy trial. *Journal of Consulting and Clinical Psychology, 76*(2), 329-340. doi:10.1037/0022-006x.76.2.329

Stice, E., Mazotti, L., Krebs, M., & Martin, S. (1998). Predictors of adolescent dieting behaviors: A longitudinal study. *Psychology of Addictive Behaviors, 12*(3), 195-205. doi:10.1037/0893-164X.12.3.195

Stice, E., & Menke, K. (2017). Dual-Pathway Model of Bulimic Spectrum Eating Disorders. In Tracey Wade (Ed.), *Encyclopedia of Feeding and Eating Disorders* (pp. 227-230). Singapore: Springer Singapore.

Stice, E., Presnell, K., Shaw, H., & Rohde, P. (2005). Psychological and behavioral risk factors for obesity onset in adolescent girls: a prospective study. *Journal of Consulting and Clinical Psychology, 73C*(2), 195-202. doi:10.1037/0022-006x.73.2.195

Stice, E., Presnell, K., & Spangler, D. (2002). Risk factors for binge eating onset in adolescent girls: a 2-year prospective investigation. *Health Psychology, 21*(2), 131-138.

Stice, E., Rohde, P., Butryn, M. L., Shaw, H., & Marti, C. N. (2015). Effectiveness trial of a selective dissonance-based eating disorder prevention program with female college students: Effects at 2- and 3-year follow-up. *Behaviour Research and Therapy, 71*, 20-26. doi:10.1016/j.brat.2015.05.012

Stice, E., Rohde, P., & Shaw, H. (2012). *The Body Project: A Dissonance-Based Eating Disorder Prevention Intervention* Oxford, New York: Oxford University Press.

Stice, E., Rohde, P., Shaw, H., & Gau, J. M. (2017b). Clinician-led, peer-led, and internet-delivered dissonance-based eating disorder prevention programs: Acute effectiveness of these delivery modalities. *Journal of Consulting and Clinical psychology, 85*(9), 883-895. doi:10.1037/ccp0000211

Stice, E., Shaw, H., Burton, E., & Wade, E. (2006). Dissonance and healthy weight eating disorder prevention programs: a randomized efficacy trial. *Journal of consulting and clinical psychology, 74*(2), 263-275. doi:10.1037/0022-006X.74.2.263

Stice, E., & Van Ryzin, M. J. (2019). A prospective test of the temporal sequencing of risk factor emergence in the dual pathway model of eating disorders. *J Abnorm Psychol, 128*(2), 119-128. doi:10.1037/abn0000400

Stice, E., & Van Ryzin, M. J. (in press). A Prospective Test of the Temporal Sequencing of Risk Factor Emergence in the Dual Pathway Model of Eating Disorders. *Journal of Abnormal Psychology*. doi:dx.doi.org/10.1037/abn0000400

Stice, Eric, & Desjardins, Christopher D. (2018). Interactions between risk factors in the prediction of onset of eating disorders: Exploratory hypothesis generating analyses. *Behaviour Research and Therapy, 105*, 52-62. doi:https://doi.org/10.1016/j.brat.2018.03.005

Stierlin, H. (1975). *Von der Psychoanalyse zur Familientherapie: Theorie, Klinik (Konzepte der Humanwissenschaft)* Heidelberg: Klett.

Stierlin, H., & Weber, G. (1989). *Unlocking the family door: A systemic approach to the understanding and treatment of anorexia nervosa*. Philadelphia, PA, US: Brunner/Mazel.

Striegel-Moore, R. H., & Bulik, C. M. (2007). Risk factors for eating disorders. *Am Psychol, 62*(3), 181-198. doi:10.1037/0003-066x.62.3.181

Striegel-Moore, R. H., Leslie, D., Petrill, S. A., Garvin, V., & Rosenheck, R. A. (2000). One-year use and cost of inpatient and outpatient services among female and male patients with an eating disorder: evidence from a national database of health insurance claims. *The International Journal of Eating Disorders, 27*(4), 381-389.

Striegel-Moore, R.H., Silberstein, L.R., & Rodin, J. (1993). The social self in bulimia nervosa: Public self-consciousness, social anxiety, and perceived fraudulence. *Journal of Abnormal Psychology, 102*(2), 297-303. doi:10.1037/0021-843X.102.2.297

Stringer, D. M. (2013). Negative Affect. In Marc D. Gellman & J. Rick Turner (Eds.), *Encyclopedia of Behavioral Medicine* (pp. 1303-1304). New York, NY: Springer New York.

Suelter, C. S., Schvey, N., Kelly, N. R., Shanks, M., Thompson, K. A., Mehari, R., . . . Shomaker, L. B. (2018). Relationship of pressure to be thin with gains in body weight and fat mass in adolescents. *Pediatric obesity, 13*(1), 14-22. doi:10.1111/ijpo.12179

Sundquist, J., Ohlsson, H., Winkleby, M. A., Sundquist, K., & Crump, C. (2016). School Achievement and Risk of Eating Disorders in a Swedish National Cohort. *Journal of the American Academy of Child and Adolescent Psychiatry, 55*(1), 41-46.e41. doi:10.1016/j.jaac.2015.09.021

Sussman, S., Pokhrel, P., Ashmore, R. D., & Brown, B. B. (2007). Adolescent peer group identification and characteristics: a review of the literature. *Addictive Behaviors, 32*(8), 1602-1627. doi:10.1016/j.addbeh.2006.11.018

Swanson, S. A., Crow, S. J., Le Grange, D., Swendsen, J., & Merikangas, K. R. (2011). Prevalence and correlates of eating disorders in adolescents. Results from the national comorbidity survey replication adolescent supplement. *Archives of General Psychiatry, 68*(7), 714-723. doi:10.1001/archgenpsychiatry.2011.22

Tantillo, M. (2003). Eating disorders multifamily therapy group. Captializing on the healing power of relationships. *Eating Disorders Today, 2,* 11-13.

Tantillo, M., Newell, C., & Friedmann, D. . (2010). *What kind of difference do we want to make? Incorporating the patient experience to improve eating disorders in treatment and research*. Paper presented at the International Conference on Eating Disorders, Salzburg.

Thomas, D., Radji, S., & Benedetti, A. (2014). Systematic review of methods for individual patient data meta- analysis with binary outcomes. *BMC Medical Research Methodology, 14*, 79. doi:10.1186/1471-2288-14-79

Thompson, J. K., & Stice, E. (2001). Thin-Ideal Internalization: Mounting Evidence for a New Risk Factor for Body-Image Disturbance and Eating Pathology. *Current Directions in Psychological Science, 10*(5), 181-183. doi:10.1111/1467-8721.00144

Tomanová, J., & Papežová, H. (2006). Multifamily therapy for patients suffering from anorexia nervosa in the unit for eating disorders. *Czech and Slovak Psychiatry 102*(358-362).

Tseng, W.S. (2001). Culture and Psychotherapy: AnOverview In W.S. Tseng & J. Streltzer (Eds.), *Culture and Psychotherapy. A guide to clinical practice*

Washington: American Psychiatric Press.

Tylka, T. L., & Subich, L. M. (2004). Examining a Multidimensional Model of Eating Disorder Symptomatology Among College Women. *Journal of Counseling Psychology*, *51*(3), 314-328. doi:10.1037/0022-0167.51.3.314

van den Berg, P., Thompson, J. K., Obremski-Brandon, K., & Coovert, M. (2002). The Tripartite Influence model of body image and eating disturbance: a covariance structure modeling investigation testing the mediational role of appearance comparison. *Journal of Psychosomatic Research*, *53*(5), 1007-1020. doi:10.1016/s0022-3999(02)00499-3

Vander Wal, J. S., Gibbons, J. L., & Grazioso Mdel, P. (2008). The sociocultural model of eating disorder development: application to a Guatemalan sample. *Eating Behaviors, 9*(3), 277-284. doi:10.1016/j.eatbeh.2007.10.002

Vanderlinden, J., Kamphuis, J. H., Slagmolen, C., Wigboldus, D., Pieters, G., & Probst, M. (2009). Be kind to your eating disorder patients: the impact of positive and negative feedback on the explicit and implicit self-esteem of female patients with eating disorders. *Eating and Weight Disorders, 14*(4), e237-242.

von Bertalanffy, L. (1968). *General System Theory. Foundations, Development, Applications* (Vol. 2nd edition). New York: George Braziller.

von Foerster, H. (2003). Cybernetics of Cybernetics. In K. Kripprendorf (Ed.), *Communication and Control* (pp. 283-386). New York: Springer.

von Schlippe, A., & Schweitzer, J. (2007). *Lehrbuch der systemischen Therapie und Beratung* (Vol. 10). Göttingen: Vandenhoeck & Ruprecht.

Voon, Valerie. (2015). Cognitive biases in binge eating disorder: the hijacking of decision making. *CNS Spectrums, 20*(6), 566-573. doi:10.1017/S1092852915000681

Voriadaki, T., Simic, M., Espie, J., & Eisler, I. (2015). Intensive multi-family therapy for adolescent anorexia nervosa: adolescents' and parents' day-to-day experiences. *Journal of Family Therapy, 37*(1), 5-23. doi:doi:10.1111/1467-6427.12067

Watzlawick, P., Bavelas, J., & Jackson, D. (1967). *Pragmatics of Human Communication: A Study of Interactional Patterns, Pathologies and Paradoxes*. New York: Norton.

Watzlawick, P., & Beavin, J. (1967). Some Formal Aspects of Communication. *American Behavioral Scientist, 10*(8), 4-8. doi:10.1177/0002764201000802

Watzlawick, P., Weakland, J. H., & Fisch, R. (1974). *Change: Principles of problem formation and probelm resolution*. New York: Guilford Press.

Weakland, J. H., Fisch, R., Watzlawik, P., & Bodin, A. M. (1974). Brief Therapy: Focused Problem Resolution. *Family Process, 13*(2), 141-168. doi:10.1111/j.1545-5300.1974.00141.x

Weissman, M., & Bothwell, S. (1976). Assessment of Social Adjustment by Patient Self-Report. *Archives of General Psychiatry, 33*, 1111-1115. doi:10.1001/archpsyc.1976.01770090101010

Weissman, M., Orvaschel, H., & Padian, N. (1980). Children's symptom and social functioning self-report scales. Comparison of mothers' and children's reports. *The Journal of Nervous and Mental Disease, 168*(12), 736-740.

Weissman, R., & Bulik, C. (2007). Risk Factors for Eating Disorders. *The American psychologist, 62*, 181-198. doi:10.1037/0003-066X.62.3.181

Wentz, E., Gillberg, I. C., Anckarsater, H., Gillberg, C., & Rastam, M. (2009). Adolescent-onset anorexia nervosa: 18-year outcome. *The British Journal of Psychiatry, 194*(2), 168-174. doi:10.1192/bjp.bp.107.048686

Wertheim, E. H., Koerner, J., & Paxton, S. J. (2001). Longitudinal Predictors of Restrictive Eating and Bulimic Tendencies in Three Different Age Groups of Adolescent Girls. *Journal of Youth and Adolescence, 30*(1), 69-81. doi:10.1023/A:1005224921891

White, M. (1992). *Deconstruction and therapy*. Adelaide: Dulwich Centre Publications

White, M. (2004). *Narrative practice and exotic lives : resurrecting diversity in everyday life*. Australia: Adelaide, S. Aust. : Dulwich Centre Publications.

White, M., & Epston, D. (1990). *Narrative means to therapeutic ends*: W.W. Norton & Company.

Wiener, N. (1961). *Cybernetics: Or the Control and Communication in the Animal and the Machine* (Vol. 2nd edition revised from 1948). Paris: Cambridge Mass.

Wienlands, A. (2002). Palo Alto: die Wiege des systemischen Denkens. *Zeitschrift für systemische Therapie, 20*(3), 1-14.

Wilksch, S., O'Shea, A., Taylor, C. B., Wilfley, D., Jacobi, C., & Wade, T. D. (2017). Online prevention of disordered eating in at-risk young-adult women: a two-country pragmatic randomized controlled trial. *Psychological Medicine, 48*(12), 2034-2044. doi:10.1017/S0033291717003567

Wilksch, S., O'Shea, A., & Wade, T.D. (2018). Media Smart-Targeted: Diagnostic outcomes from a two-country pragmatic online eating disorder risk reduction trial for young adults. *International Journal of Eating Disorders, 51*(3), 270-274. doi:doi:10.1002/eat.22825

Winkler, P., Csemy, L., Janouskova, M., Mlada, K., Bankovska Motlova, L., & Evans-Lacko, S. (2015). Reported and intended behaviour towards those with mental health problems in the Czech Republic and England. *Eur Psychiatry, 30*(6), 801-806. doi:10.1016/j.eurpsy.2015.05.003

Winkler, P., Mlada, K., Csemy, L., Nechanska, B., & Hoschl, C. (2015). Suicides following inpatient psychiatric hospitalization: A nationwide case control study. *Journal of Affective Disorders, 184*, 164-169. doi:10.1016/j.jad.2015.05.039

Young, J. F., Mufson, L., & Davies, M. (2006). Efficacy of Interpersonal Psychotherapy-Adolescent Skills Training: an indicated preventive intervention for depression. *Journal of Child Psychology and Psychiatry, 47*(12), 1254-1262. doi:10.1111/j.1469-7610.2006.01667.x

List of Abbreviation

AN = Anorexia Nervosa

ANOVA = Analysis of Variance

ARFID = Avoidant Restrictive Food Intake Disorder

BDI = Beck's depression inventory

BED = Binge eating disorder

BED = Binge eating disorder

BN = Bulimia Nervosa

CRM = Cox Regression Hazard Model

CSAI = Chi-Square Automatic Interaction Detection

CTA = Classification Tree Analysis

CSAI = Chi-Square Automatic Interaction Detection

DALY = Disability adjusted life years

DSM-IV = Diagnostic and statistical manual of mental disorder, 4th edition

DSM-V = Diagnostic and statistical manual of mental disorders, 5th edition

EDE-Q = Eating Disorder Examination Questionnaire

EDNOS = Eating disorder not otherwise specified

FBT = Family-based Treatment

FED-NEC = Unspecified feeding or eating disorder

GBD = Global Burden of Disease

GLM = Generalized Linear Model

GLMM = Generalized Linear Mixed Model

iCER = Incremental cost efficacy ratio

M = Mean

MFT = Multifamily Therapy

MRI = Mental Research Institute

NES = Night Eating Syndrome

PD = Purging Disorder

RCT = Randomized Controlled Trial

RPPP-I = Semi-structured group interview for families

RSES = Rosenberg self-esteem scale

SD = Standard deviation

SOS-10 = Schwartz Outcome Scale

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