

## Appendix

**Table 1**

### *Characteristics of Included Studies*

	<b>Authors (Year)</b>	<b>Population</b>	<b>Coping/ Defense as Main Aim?</b>	<b>Study Design</b>	<b>Intervention</b>	<b>Defense Measure</b>	<b>Coping Measure</b>	<b>Results Summary</b>
1	Blaase and Elklit 2001, Denmark	Eating Disorder patients (adult, 100% female)	No	Cross sectional	No intervention	Defense Style Questionnaire (DSQ- 40; Andrews et al., 1993)	The Coping Styles Questionnaire (CSQ) (Roger et al., 1993)	- Maladaptive coping and high levels of immature defense in active ED patients, not recovered. - Acute symptoms leads to difficulty in coping and defense
2	Bonafede 2020, Italy	Mesothelioma patients (adult, 67% male) and caregivers (adult, 72% female)	Yes- between group differences	Cross sectional	No intervention	Defense Style Questionnaire (DSQ- 40; (Andrews et al., 1993)	Coping Orientation to Problems Experienced- New Italian Version (COPE- NVI 60 item) (Sica et al., 2008)	- Women used more coping mechanisms as well as more defense mechanisms compared to men. - High religion based coping and defense of humor protected against depression. - Defense of passive aggression and avoidance coping increased risk of trauma symptoms.
3	Bouchard and Thériault 2003, Canada	Heterosexual couples (adult, 50% female)	Yes- intercorrel ations	Cross Sectional	No intervention	Defense Style Questionnaire (DSQ- 40; (Andrews et al., 1993)	Ways of Coping Questionnaire (Bouchard et al., 1995; Folkman & Lazarus, 1988)	- Coping and defense contribute independently to adjustment. - Distancing and avoidance coping and immature defenses predict marital adjustment. - Intermediate defenses and positive reappraisal coping related positively to marital adjustment.

4	Colenda and Dougherty 1990, US	Major Depressive Disorder patients (adult, 70% female) Chronic Pain patients (adult, 54% male), and controls (adults, 60% female)	Yes-between group differences	Cross Sectional	no intervention	Defense Mechanism Inventory (DMI; Gleser & Ihilevich, 1969)	Health and Daily Living Questionnaire (HDLQ) (Moos et al., 1984)	- -	MDD patients had increased immature defenses compared to chronic pain patients and control. Coping was consistent across groups.
5	Coveney & Olver 2017-Canada	University staff and students (young adults and adults, 82.9% female)	Yes-between group differences	Cross Sectional	No intervention	Defense Style Questionnaire (DSQ-40; (Andrews et al., 1993)	COPE scale (Carver et al., 1989)	-	Elevated eating disorder (ED) symptoms correlated with greater use of maladaptive defenses and coping mechanisms. Defenses were more consistent predictors of ED traits.
6	Erickson et al. 1997 - US	Adolescents (54% male)	Yes-intercorrelations	Cross sectional	no intervention	Defense Style Questionnaire (DSQ-78; Andrews, 1989)	Coping Response Inventory-Youth Form (CRI-Youth) (Moos, 1993)	- - -	Immature defenses correlated strongly with avoidance coping. Mature defenses did not correlate with coping mechanisms. Higher overlap in defense and coping for males than females, females demonstrated more diverse strategies.
7	Erickson and Feldstein 2007 - US	Adolescents (60.6% female)	No	Cross Sectional	no intervention	Response Evaluation Measure (REM-71; Steiner et al., 2001)	Coping Response Inventory-Youth Form (CRI-Youth) (Ebata & Moos, 1991)	- -	Less adaptive coping and immature defenses tended to cluster. Humor more aligned with defenses than with conscious coping efforts.
8	Foto-Özdemir et al 2016 - Turkey	Suicidal adolescents (60.9% female)	No	Cross Sectional	no intervention	Defense Mechanism Inventory (DMI; Gleser & Ihilevich, 1969)	Ways of Coping Inventory (Folkman & Lazarus, 1980)	- - -	Males tended to use “turning against object” defense, females tended toward “turning against self.” No gender differences in coping Emotion focused coping increased as negative life events increased, no change in defense as life events increased
9	Fulde et al. 1995-Germany	Lumbar disc surgery patients (adults, 53% male)	Yes-intercorrelations	longitudinal	No intervention	Defense Mechanisms Questionnaire (German) (Ehlers & Peter, 1989)	Coping Strategies Questionnaire (German) (Hoppe, 1985)	- -	Defense of regression correlated with both non-verbal pain expression and search for social support coping mechanisms. Defense mechanisms were better predictors of symptomology than coping strategies
10	Gori et al. 2020- Italy	Individuals experiencing COVID-19 lockdowns (adults, 70% female)	No	Cross Sectional	no intervention	Italian Forty Item Defense Style Questionnaire (I-DSQ-40; Farma & Cortinovis, 2000)	Coping Orientation to Problems Experienced-New Italian	-	Mature defenses and approach coping negatively correlated with perceived stress; all other strategies correlated positively with stress.

							Version (COPE-NVI 60 item) (Sica et al., 2008)	-	Positive attitude/approach coping may reduce stress reactivity whereas mature defenses facilitate acceptance
11	Guðmundsdóttir et al. 2006 - Iceland	Parents of chronically ill children (adults, 63% female)	No	Cross Sectional	no intervention	Defense Style Questionnaire (DSQ-40; (Andrews et al., 1993)	Coping Style Questionnaire (CSQ; Roger et al., 1993)	-	Immature defenses predicted avoidance coping, which was then associated with more psychological distress - Immature defense may have a role in determining interpretation of memories of disease, which may affect coping methods utilized
12	Hersoug et al. 2002 - Norway	Adults in brief dynamic psychotherapy (86% female)	No	longitudinal	brief dynamic psychotherapy	Defense Mechanism Rating Scales (DMRS; (Sica et al., 2008); Defense Style Questionnaire (DSQ; Bond et al., 1989))	Way of Coping Checklist (WCCL, short version; Vitaliano et al., 1985)	-	Adaptive pretherapy defenses did not predict adaptive coping capacity when corrected. - Defensive functioning did change significantly from pre-to-post treatment on DMRS, but not on DSQ.
13	Hyphantis et al. 2016 - Greece	Non-metastatic colorectal cancer patients (adult, 70.2% male), non-metastatic breast cancer patients (adults, 100% female), cancer of unknown primary site patients (adults, 62% female) and controls (adults, 70.2% male)	No	longitudinal	No intervention	Defense Style Questionnaire, Greek version (Hyphantis, 2010)	Sense of Coherence Scale, Greek version (SOC-29) (Karalis et al., 2004)	-	Defensive functioning related to more difficulties with sleep than coping - Defensive profiles may be more predictive of sleep challenges over time.
14	Hyphantis et al. 2013- Greece	Patients with cancer of unknown primary site (adult, 62% female), non-metastatic known primary cancer patients (adults, 64% female) and metastatic known primary cancer patients (adults, 73.1% female)	No	Cross Sectional	no intervention	Defense Style Questionnaire, Greek version (Hyphantis, 2010)	Sense of Coherence Scale, Greek version (SOC-29) (Karalis et al., 2004)	-	Those with stronger/more flexible coping were more inclined to understand and manage complications of illness. - Defenses may be activated due to trauma of diagnosis, however intellectualization and flexible coping may reduce painful emotions
15	Ioan Craşovan et al 2019 - Romania	college students (young adult, 100% female)	Yes-change over time	longitudinal	No intervention	Defense Style Questionnaire (Thygesen et al., 2008)	COPE scale (Carver et al., 1989)	-	No significant change in coping or defenses over time - Unclear if due to small sample size or stability of traits over time

16	Kramer 2010b-Switzerland	Bipolar Disorder inpatients and age, education, and gender matched control group (adults, 67% female)	Yes-change over time	longitudinal	no intervention	Defense Mechanism Rating Scales (French) (DMRS; Perry, 1990); French translation: (Perry et al., 2004)	Coping Action Patterns (CAP; (Kramer & Drapeau, 2011; Perry et al., 2005)	- - -	Immature defenses related to maladaptive coping Mature defenses related to adaptive coping Defenses remained stable over time, while coping changed
17	Kramer et al. 2013 - Switzerland	Major Depression outpatients (adults, 75% female)	Yes-intercorrelation and change over time	Longitudinal	psychodynamic psychotherapy twice weekly (n=2), cognitive therapy once or twice weekly (n=2), psychoanalysis three times/week (n=2), and clinical management/control (n=2)	Defense Mechanism Rating Scales (French) DMRS; Perry, 1990); French translation: (Perry et al., 2004)	Coping Action Patterns (CAP; Drapeau, 2011; Perry et al., 2005)	- - -	No intercorrelations found between defenses and coping Defense change was related to active treatment conditions, coping was not Changes in defensive functioning may precede symptomatic change
18	Kramer et al. 2010 - Switzerland	Adjustment Disorder outpatients (adults; 82% female)	Yes-change over time	longitudinal	Short Term Dynamic Psychotherapy (STDP)	Defense Mechanism Rating Scales (French) DMRS; Perry, 1990); French translation: (Perry et al., 2004)	Coping Action Patterns (CAP; Drapeau, 2011; Perry et al., 2005)	- -	Defensive functioning improved in adaptiveness over course of STDP, while coping functioning remained stable Defensive functioning was more predictive of symptom reduction than coping
19	Kramer et al. 2009-Switzerland	Adjustment Disorder outpatients (adults; 82% female)	Yes-intercorrelation and change over time	longitudinal	Short Term Dynamic Psychotherapy (STDP)	Defense Mechanism Rating Scales (French) DMRS; Perry, 1990) French translation: (Perry et al., 2004)	Coping Action Patterns (CAP; Drapeau, 2011; Perry et al., 2005)	- - - -	Immature defenses correlated with coping when facing stress appraised as a threat mature defenses correlated with coping when facing stress was appraised as a challenge increasing alliance was associated with increased defensive functioning decreasing alliance associated with coping functioning
20	Labouvie-Vief et al. 1987 - US	Americans ages 10-77 (50% female)	Yes-intercorrelation and between group comparisons	Cross Sectional	no intervention	Defense Mechanism Inventory (DMI; Gleser & Ihilevich, 1969)	Ways of Coping Inventory (Lazarus & Folkman, 1984)	-	those at lower developmental level (age, ego level, stress source) used more immature defenses and coping strategies

21	Maricutoiu and Crasovan, 2016 - Romania	Romanian Adults (74.5% female)	Yes-intercorrelations	Cross Sectional	No intervention	Defense Style Questionnaire- 60 (DSQ-60; (Thygesen et al., 2008)	COPE scale (Carver et al., 1989)	<ul style="list-style-type: none"> <li>- consistent correlations between adaptive defenses and problem focused coping, emotional coping, or social support seeking coping.</li> <li>- Avoidant coping strategies correlated with maladaptive defenses</li> <li>- Models that assumed a relationship between coping and defense was stronger than one that assumed independence</li> </ul>
22	Muris et al. 1994 - The Netherlands	College Students (young adult, 68.7% female)	Yes-intercorrelations	Cross Sectional	No intervention	Defense Style Questionnaire (Andrews, 1989)	COPE scale (Carver et al., 1989)	<ul style="list-style-type: none"> <li>- intercorrelations and clusters led to integrated “clusters”: immature and problem avoidant, emotion venting, and mature/problem oriented</li> </ul>
23	Nicolas et al 2017 - Reciprocal Effects, France	Athletes (young adult, 77% male)	Yes-change over time	longitudinal	no intervention	Defense Style Questionnaire (DSQ-40; (Andrews et al., 1993)	Coping Inventory for Competitive Sport (CICS; Gaudreau et al., 2002)	<ul style="list-style-type: none"> <li>- use of mature defenses predicted increase in task oriented coping</li> <li>- immature defense use predicted increase in disengagement coping</li> <li>- task oriented coping predicted immature defense use</li> <li>- coping and defense may be reciprocal, not synchronized</li> </ul>
24	Nicolas and Jebrane, 2008 - France	Athletes (young adult, 73% male)	Yes-intercorrelations	Cross Sectional	no intervention	Defense Style Questionnaire (DSQ-40; (Andrews et al., 1993)	Ways of Coping Questionnaire (Folkman & Lazarus, 1985)	<ul style="list-style-type: none"> <li>- significant positive relationships found between mature defenses and several types of adaptive coping strategies</li> <li>- function of positive reappraisal, planning, and problem solving coping are posited to be similar to function of mature defenses because they correct relationship between person and environment</li> </ul>
25	Nicolas and Jebrane 2009 - France	Athletes (young adults, 77% male)	Yes-change over time	longitudinal	No intervention	Defense Style Questionnaire (DSQ-40; (Andrews et al., 1993)	Ways of Coping Questionnaire (Lazarus & Folkman, 1984)	<ul style="list-style-type: none"> <li>- coping changed over time and situation, whereas defenses remained stable</li> <li>- personality found to relate to defenses, but not to coping</li> <li>- defenses may be more personality dependent, coping more situational</li> </ul>
26	Nicolas et al. 2017 - Defense profiles in Adaptation - France	Athletes (young adult, 77% male)	Yes-change over time	longitudinal	No intervention	Defense Style Questionnaire (Thygesen et al., 2008)	Coping Inventory for Competitive Sport (CICS; Gaudreau & Blondin, 2002)	<ul style="list-style-type: none"> <li>- two types of “defensive profiles”: high defense (using more of all types of defenses) and low defenses (using fewer of all types)</li> <li>- high defense profiles used more styles of coping as well</li> </ul>

								- high defense and coping profiles may allow for increased adaptiveness; may be related to quantity not quality of mechanisms
27	Nicolas et al. 2013 - France	Adults in Space Simulation (adult, 100% male)	Yes-change over time and intercorrelations	longitudinal	no interventions	Defense Style Questionnaire (DSQ-40; (Andrews et al., 1993)	COPE scale (Carver, 1997)	- positive relationship observed between mature defenses, positive emotions, and task oriented coping - -coping and defense mechanisms appear to be used simultaneously
28	Oloff et al., 1992- Netherlands	high school teachers (adult, 100% male)	Yes-intercorrelations	Cross Sectional	no intervention	Life Style Index (Plutchik et al., 1979); Defense Mechanism Inventory (DMI; Gleser & Ihilevich, 1969)	Utrecht Coping List (UCL; (Schreurs et al., 1988)	- four factor model of coping and defense generated from data - "instrumental mastery oriented coping" includes UCL Active Coping (negative correlation due to reversed polarity), UCL Depressive Reaction Patterns, UCL Avoidance, and Reaction Formation. - Factor two is defined as "cognitive defense" and includes mainly cognitive defense scales, including "denial/intellectualization," and "reversal" (e.g. denial, reaction formation). - Factor three is defined as "defensive hostility" and is comprised of DMI "turning against object" as well as DMI "projection" and LSI "projection.." - The fourth factor is defined as "emotion focused coping" and includes UCL "seeking social support," "expressing emotions," as well as a negative loading from LSI "repression."
29	Parker et al. 1998 - Canada	Community adults (51.6% female) and undergraduate university students (young adult, 54.2% female)	No	Cross Sectional	no intervention	Defense Style Questionnaire (DSQ; Bond, 1986)	Coping Inventory for Stressful Situations (CISS) (Endler & Parker, 1990)	- students with alexithymic tendencies used more distraction and emotion-oriented coping strategies, as well as more immature defense mechanisms
30	Renzi et al. 2017 - Italy	cancer patients (adult, 100% female)	Yes-intercorrelations	Cross Sectional	no intervention	Response Evaluation Measure (REM-71; Steiner et al., 2001)	Mini-Mental Adjustment to Cancer Scale (Mini-MAC; Grassi et al., 2005)	- observed correspondence between mature defenses and adaptive coping strategies - similar correspondence between immature defense mechanisms and maladaptive coping styles

31	Stepanchuk et al. 2013 - Russia	Cancer patients (adult, 62.5% male)	Yes-intercorrelations	Cross Sectional	no intervention	Life Style Index (LSI; Life Style Index (Plutchik et al., 1979)	Ways of Coping Questionnaire (WCQ; Folkman & Lazarus, 1985)	- -	coping and defense mechanisms were not found to relate to age, gender, or education utilization of specific coping strategies correlates with “severity” or certain defenses
32	Timmerman et al. 2009 - Belgium	Belgian caregivers (adult, 88% female)	Yes-intercorrelations	Cross Sectional	No intervention	Semi-structured interview; Thematic Apperception Test (TAT; Murray, 1943); Defense Style Questionnaire (DSQ-60; Thygesen et al. 2008)	COPE scale (Carver et al., 1989); Ways of Coping Questionnaire (Lazarus & Folkman, 1984)	- -	defenses of denial and distortion (which inhibit consciousness of acceptable ideas) are strongly correlated with adaptive coping strategies. Defense mechanisms may facilitate the coping strategies of seeking social support, problem focused, and emotion-oriented coping.
33	Vally et al 2020 - United Arab Emirates	young adults (75.3% female)	No	Cross Sectional	No intervention	Defense Style Questionnaire (DSQ-28; Saint-Martin et al., 2013)	brief COPE scale (Carver, 1997)	- -	Defense of autistic fantasy may lead to creation of “idealized virtual self” to manage difficulties, leading to neglect of other strategies Adaptive coping and defenses both correlated negatively with problematic internet use
34	van Wijk-Herbrink et al. 2011 - The Netherlands	Personality Disorder patients (65.3% female)	Yes-intercorrelations	Cross Sectional	no intervention	Defense Style Questionnaire (DSQ-60; (Trijsburg et al., 2003)	Cognitive Emotion Regulation Questionnaire (CERQ; (Garnefski et al., 2001)	-	Severe personality pathology is associated with increased maladaptive coping and immature defenses.
35	Verheij et al. 1997 - The Netherlands	Panic Disorder patients (adult, 86.6% female) and controls (adult, 50% female)	No	Cross Sectional	no intervention	Defense Mechanisms Inventory- Dutch version (Passchier & Verhage, 1986)	Utrecht Coping List (UCL; Schreurs et al. 1984)	- -	Patients reported increased avoidance coping strategies and immature defense mechanisms than controls