Maladaptive (dark-side) and adaptive (bright-side) personality traits and defense styles

Adrian Furnham [a,*], Stephen Cuppello [b]

[a] Department of Leadership and Organisational Behaviour, Norwegian Business School (BI), Nydalveien, Olso, Norway
[b] Department of Psychology, City University London, London, United Kingdom of Great Britain and Northern Ireland

A R T I C L E   I N F O

A B S T R A C T

This study explores the relationship between bright- and dark-side personality traits and four major styles of defense mechanisms (DMs) as this relationship remains unexplored and important in understanding the DMs. In all, 435 adult working participants (241 men; 194 women; Mean age 46.06 yrs) mainly in middle management jobs, completed a 78-item, six-trait measure of bright-side personality (HPTI: High Potential Type Indicator), a 25-item five-trait measure of the dark-side personality (PID-5;BF: *DSM-5—Brief Form*) and 88-item, four-styles measure of defense mechanisms (Defense Style Questionnaire). The aim was to examine demographic (sex, age, education), ideological and personality trait correlates of the DMs. It was hypothesized that the dark-side traits, particularly Detachment would be most strongly related to the DMs. Thereafter, a hierarchical linear regression was performed with each DM factor as criterion and predictors being demography, ideology, self-esteem as well as bright- and dark-side personality traits. Detachment was associated with all DMs, particularly Maladaptive ($r = 0.68$) and Image Distorting Style ($r = 0.38$) while Conscientiousness was associated with none. One implication concerns the assessment of DMs by standard tests. Limitations are acknowledged and include method invariance and sample homogeneity.

1. Introduction

This study focuses on bright- and dark-side personality trait correlates of defense mechanisms (DMs). For over 20 years personality psychologists have distinguished between bight-side "normal, adjusted" personality traits, often based on the Big Five model, and dark-side "maladaptive" traits based on the personality disorders (PDs) (Hogan & Hogan, 2001). The aim of this study was to explore the relationship between normal, higher-order personality traits, and dark-side PDs, and four higher order DMs to help understand the psychological processes and mechanisms associated with the latter.

Work in the area of DMs began with Anna Freud (1936) nearly ninety years ago. It remains an active research topic across many disciplines including psychoanalysis; psychology and psychiatry (Blanco et al., 2023; Cramer, 2015a, 2015b; Di Giuseppe et al., 2021; Di Giuseppe & Perry, 2021; Fenech & Thomson, 2015; Furnham, 2012; Gori et al., 2020; Nicolas et al., 2017; Ramezani et al., 2022; Vlachopanou & Karagiannopoulou, 2022; Wolmer et al., 2020; Young, 2022; Zhang & Guo, 2017).

There remains much debate in the area and still no consensus on

their classification and measurement. However, it is true to say that DMs are thought to be *unconscious* strategies used to cope with anxiety and stress. Some are considered healthy but can become pathological and problematic when over-used. They are related to, but not the same as, coping strategies which are usually conscious (Cramer, 1998; Davidson & MacGregor, 1998). Cramer (2008) noted research has supported seven basic tenets regarding defenses which include: (1) defenses function outside of awareness; (2) there is a chronology of defense development; (3) defenses are present in the normal personality; (4) defense use increases under conditions of stress; (5) defense use reduces the conscious experience of negative emotions; (6) defense function is connected to the autonomic nervous system; (7) excessive use of defenses is associated with psychopathology.

Both the coping and DM literature has tried to classify these strategies into a parsimonious hierarchical structure (Maricutoiu & Crasovan, 2016). There is, however, no real consensus on the number, labelling or classification of DMs. Vaillant's (1977) taxonomy is widely acknowledged because it is simple and inclusive (Paulhus et al., 1991). He theorised a developmental hierarchy of four levels ranging from *pathological mechanisms* (e.g., denial and distortion) to *mature mechanisms* (e.g.,

Table 1
Correlations between variables: Means, standard deviations and Person correlation coefficients.

	Mean	SD	1	2	3	4	5	6
(1) Sex	1.58	0.49						
(2) Age	46.06	11.26	−0.02					
(3) Degree	1.32	0.47	−0.05	0.12*				
(4) Religion	3.53	2.56	−0.04	0.08	−0.00			
(5) Politics	5.38	1.94	0.16**	−0.08	−0.14**	−0.17***		
(6) Optimism	6.82	1.84	0.09	0.17***	0.03	0.06	0.04	
(7) SE	273.83	55.64	−0.03	0.06	−0.20***	0.09	0.07	0.38***
(8) Conscientious	70.86	8.91	0.07	0.16**	0.01	0.07	−0.09	0.27***
(9) Adjustment	63.08	12.36	−0.07	0.22***	0.01	−0.01	−0.03	0.48***
(10) Curious.	67.68	8.77	−0.04	0.06	−0.09	0.05	0.10*	0.32***
(11) RiskAppr.	63.65	10.19	−0.11*	0.19***	0.01	0.05	−0.05	0.39***
(12) AmbAccept.	51.51	9.97	−0.03	0.23***	−0.06	−0.16**	0.03	0.28***
(13) Competitive.	48.41	12.27	−0.10*	−0.18***	−0.05	0.02	−0.17***	0.06
(14) MaladaptAct.	113.81	34.82	0.12**	−0.30***	−0.01	0.10*	0.06	−0.40***
(15) ImageDistort.	51.98	16.06	−0.18***	−0.17***	0.01	0.17***	−0.14**	−0.08
(16) SelfSacra.	36.09	9.02	0.02	−0.02	−0.03	0.15**	0.10*	0.15**
(17) Adaptive	41.69	8.43	−0.09*	0.10*	−0.07	0.14**	0.04	0.37***
(18) Disinhibit.	8.00	2.73	−0.05	−0.17***	−0.00	0.04	0.01	−0.10*
(19) Detach.	8.88	3.21	−0.04	−0.19***	0.07	0.02	−0.06	−0.43***
(20) Psychot.	8.98	3.32	−0.08	−0.30***	0.04	0.11*	0.01	−0.25***
(21) NegAffect	9.60	3.23	0.17***	−0.35***	−0.06	−0.03	0.07	−0.33***
(22) Antagonism	8.21	2.75	−0.16**	−0.17***	0.10*	−0.00	−0.07	−0.06

SE = self esteem.

*** $p < .001$.

** $p < .01$.

* $p < .05$.

sublimation, humour and altruism). Individuals can also display *immature defenses* (e.g., acting out and fantasy) and *neurotic defenses* (e.g., intellectualisation, displacement). Vaillant (1977, 1993) argued that as people grew older there was a decrease in immature and neurotic defenses and an increase in the use of a mature defense style (Labouvie-Vief et al., 1989).

Later Bond et al. (1983) noted four styles *Maladaptive style*: the employment of immature DMs (e.g., withdrawal, acting out, inhibition, passive-aggressiveness, projection, projective identification, somatization, consumption, fantasy, help-rejecting, complaining, and regression); *Image distorting style*: primitive DMs like splitting, omnipotence, and primitive idealization; *Self-sacrificing style*: more mature DMs whose aim is social acceptance and inclusion as a solution to ego struggles (e.g., pseudo-altruism, repression, reaction formation). *Adaptive style*: mature DMs that channel drives to age-appropriate interests and goals (e.g., sublimation, task-orientation, anticipation, humour, suppression, affiliation).

1.1. Measuring the DMs

There is an inherent problem of measuring DMs by self-report as they are considered un- or pre-conscious mechanism not easily available to introspection and accurate report (Bond et al., 1983; Nishimura, 1998). Despite this, there are various self-report measures (Davidson & MacGregor, 1998): *Defense Mechanism Inventory* (Anderson & Leitner, 1991; Gleser & Ihilevich, 1969; Juni, 1998; Klusman, 1982), the *Defense Style Questionnaire* (Bond, 2004) *New Defense Style Questionnaire* (Thygeson et al., 2008) and the *Defense Mechanisms Rating Scale - Self-Report – 30 item (DMRS-SR-30)* (Prout et al., 2022). There are also numerous versions of some of these scales (Bond et al., 1983). Studies are still done on these questionnaires which have neither been much updated nor subject to psychometric investigation (Parekh et al., 2010; Zoccali, Bellinghieri, et al., 2006, Zoccali, Muscatello, et al., 2006).

1.2. The Defense Style Questionnaire (DSQ)

In this study we used the DSQ (Andrews et al., 1993) which has been cited nearly 1200 times and used in many studies (Saint-Martin et al., 2013; Zeigler-Hill et al., 2008; La Cour, 2002). It has been subject to a great deal of psychometric investigation and various shorter versions of it appear. According to Floros (2017) "*the standard 88-item version has demonstrated good reliability and validity across all languages, with Cronbach alphas ranging from 0.65 for the adaptive defense style to a high of 0.85 for the maladaptive defense style, while factor analysis typically reproduces the four-factor structure. Concurrent validity with other paper-pen instruments that measure character traits or pathology is also high*" (p. 1035).

The test measures four DM styles defined as Maladaptive, Image distorting, Self-sacrificing and Adaptive style which are mature DMs that channel drives to age-appropriate interests and goals (e.g., sublimation, task-orientation, anticipation, humour, suppression, affiliation).

1.3. Big Five (Adaptive) Personality Trait, Personality Disorders (Maladaptive) traits and DMs

There has been some research in the relationship between Big Five personality traits and DMs. Cramer (2003) in a longitudinal study found that using immature DMs, such as denial and projection, were related to high Neuroticism and low Extroversion and Agreeableness. Costa et al. (1991) found that the most mature and adaptive defenses were positively correlated with Extroversion and Openness, while maladaptive and more neurotic defenses were positively and predictably correlated with Neuroticism. Agreeableness was related to the more self-sacrificing defenses and repression, while denial correlated with Conscientiousness. Also, Soldz et al. (1995) found that immature defenses were positively related to Neuroticism and negatively to Agreeableness and Conscientiousness, while mature defenses were related to Extroversion and Openness.

There has been relatively little work on the relationship between the dark-side Personality Disorders (PDs) and the DMs (Ivzāns & Mihailova, 2017; Perry et al., 1998; Pini et al., 2013; Presniak et al., 2009), though Cramer (1999), a pioneer in DM research, always noted an association. In a study using 130 psychiatric patients Berman and McCann (1995) found correlations between antisocial traits and acting out, obsessive–compulsive traits and reaction formation, paranoid traits and projection, passive–aggressive traits and displacement, and self-defeating traits and devaluation. Perry et al. (2013) showed that Borderline

7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
0.24***														
0.33***	0.26***													
0.22***	0.37***	0.22***												
0.29***	0.54***	0.49***	0.46***											
0.14**	0.18***	0.50***	0.29***	0.45***										
0.20***	0.37***	0.02	0.12*	0.28***	0.06									
−0.31***	−0.26***	−0.68***	−0.11*	−0.45***	−0.46***	−0.06								
0.10*	0.07	−0.20***	0.08	0.07	−0.20***	0.37***	0.44***							
0.01	−0.04	−0.08	0.15**	−0.09*	−0.12*	−0.21***	0.31***	0.20***						
0.32***	0.24***	0.37***	0.35***	0.39***	0.15**	0.08	−0.20***	0.15**	0.21***					
−0.08	−0.18***	−0.22***	0.06	−0.07	−0.10*	0.15**	0.37***	0.33***	0.11*	−0.11*				
−0.32***	−0.18***	−0.50***	−0.12*	−0.31***	−0.36***	−0.07	0.62***	0.38***	0.17***	−0.13**	0.27***			
−0.25***	−0.23***	−0.39***	0.04	0.25***	−0.32***	0.02	0.60***	0.42***	0.26***	−0.09	0.39***	0.50***		
−0.30***	−0.21***	−0.61***	−0.20***	−0.46***	−0.43***	−0.06	0.68***	0.18***	0.20***	−0.28***	0.26***	0.46***	0.50***	
0.10*	0.07	−0.09*	0.09	0.07	−0.05	0.49***	0.21***	0.47***	−0.04	0.04	0.37***	0.15**	0.31***	0.18***

Personality Disorder was most associated with DMs, particularly major image-distorting defenses, especially splitting, dissociation and repression.

Recent developments in the PD literature have suggested a new five-dimensional model of the PDs measured as dimensions each with sub-factors (Krueger et al., 2012). This is the Alternative Model for Personality Disorders (AMPD). In this study we examine the relationship between the five maladaptive traits and this measure of the DMs. This has five dimensions: I. *Negative Affectivity* (Anxiousness, Emotional lability, Hostility, Perseveration, Lack of restricted affectivity, Separation insecurity, Submissiveness), II. *Detachment* (Anhedonia, Depressivity, Intimacy Avoidance, Suspiciousness, Withdrawal), III. *Antagonism* (Attention seeking, Callousness, Deceitfulness, Grandiosity, Manipulativeness), IV. *Disinhibition* (Distractibility, Impulsivity, Irresponsibility, Lack of rigid perfectionism, Risk taking) and V. *Psychoticism* (Eccentricity, Perceptual dysregulation, Unusual beliefs and experiences). As Gomez et al. (2020) noted: "*Numerous studies have established good support for the following psychometric properties of PID-5: factor structure (five-factor model); internal consistency; test–retest reliability; construct, convergent, discriminant, and criterion validity; relationships with maladaptive responses associated with personality disorders; relationships with Section II personality disorders and psychopathology in general; and the ability to distinguish between individuals with and without personality disorders*" (p. 69).

1.4. Gender and the DMs

Many studies have investigated and found gender differences in the DMs (Cramer, 1987, 2006; Drapeau et al., 2011; Foto-Özdemir et al., 2016; Mahalik et al., 1998; Vaillant, 1993, 1994; Watson, 2002; Watson & Sinha, 1998). It has been demonstrated that women use more internalising DM and men more externalising defenses. In one study Petraglia et al. (2009) found men and women differed in their choice of defense style, defense level, and individual defense mechanisms. They found evidence that men endorsed suppression, isolation, devaluation, splitting, and omnipotence more than women who used more affiliation as a way to manage conflict.

1.5. This study

This exploratory study examines five correlates of the four DM styles.

First, we examine sex, age and educational differences with a particular interest in sex differences. We anticipated, based on the previous literature that males more than females, older more than younger and better, rather than less-well educated people would employ more mature DMs. Second, we look at ideological (specifically religion and political beliefs) factors as these have been linked to both bright- and dark-side traits. Based on the limited research in this area we anticipated that more religious and politically conservative people would employ less mature DMs. Third, we look at self-esteem and trait optimism as we assume it is in part both and cause and consequence of having healthy DMs. Fourth, we look at bright-side personality correlates. Based on the previous literature we expected trait Adjustment (low Neuroticism) and Curiosity to be positively related to Adaptive and negatively related to Maladaptive DMs. Finally we examined maladaptive (dark-side) trait correlates of the DMs. Similarly, we expected all the PDs to be negatively associated with the less Adaptive DMs. It is particularly the correlates of the Bight- and Dark-Side traits that we believe helps fill the research gap in the knowledge about the DMs.

2. Method

2.1. Participants

A total of 435 participants completed the questionnaire: 241 were men and 194 were women. They ranged in age from 22 to 68 years, with the mean age being 46.06 years ($SD = 11.26$ years). Almost all had completed secondary school education (97.45 %) and 61.3 % had a university degree. In total, 18.5 % were single and 57.1 % married. Participants rated their beliefs on three scales: Religiousness (1 = Not at all; 9 Very); $M = 3.53$, $SD = 2.54$; Politics (1 = Conservative; 9 = Liberal) $M = 5.63$, $SD = 1.89$; Optimism (1 = Not at all; Very = 9 $M = 6.82$, $SD = 1.83$). Asked about their management level, the majority said they were in middle management jobs across a wide range of job sectors (e.g. education, health, manufacturing). The vast majority were white though we do not have precise details of their racial makeup.

2.2. Materials

1. *Defense Styles Questionnaire* (Andrews et al., 1993). This is an 88-item question which can be used to measure DMs at the specific and higher order level. In this study we obtained four scores per person

Table 2
Multiple linear regression analysis: Predictors of the defense mechanisms.

	Maladapt act				Image distort				Self sacrac				Adaptive			
	B	SE	Beta	t	B	SE	Beta	t	B	SE	Beta	t	B	SE	Beta	t
Sex	6.77	1.96	0.10	3.45**	−2.07	1.23	−0.06	−1.68	−0.87	0.82	−0.05	−1.06	−0.89	0.72	−0.05	−1.23
Age	−0.11	0.09	−0.04	−1.19	−0.01	0.06	0.00	−0.10	0.03	0.04	0.03	0.66	0.02	0.03	0.02	0.50
Degree	0.59	2.03	0.01	0.29	0.73	1.28	0.02	0.58	−0.67	0.85	−0.03	−0.79	−1.02	0.75	−0.06	−1.37
Religious	1.17	0.37	0.09	3.15**	0.51	0.23	0.08	2.18*	0.40	0.16	0.11	2.60*	0.28	0.14	0.09	2.09
Politics	0.64	0.49	0.04	1.29	−0.45	0.31	−0.05	−1.44	0.29	0.21	0.06	1.39	0.26	0.18	0.06	1.42
Optimism	−0.55	0.62	−0.03	−0.90	0.31	0.39	0.04	0.79	1.27	0.26	0.26	4.91***	0.84	0.23	0.18	3.70***
SE	0.00	0.02	−0.01	−0.25	0.05	0.01	0.16	3.75***	0.01	0.01	0.05	1.05	0.02	0.01	0.12	2.54*
Conscient.	−0.09	0.14	−0.02	−0.65	0.00	0.09	0.00	0.00	0.06	0.06	0.06	0.99	−0.03	0.05	−0.03	−0.65
Adjustment	−0.79	0.11	−0.28	−7.28***	−0.08	0.07	−0.06	−1.12	0.02	0.05	0.02	0.36	0.16	0.04	0.23	4.01***
Curiosity	0.28	0.13	0.07	2.24*	−0.02	0.08	−0.01	−0.29	0.13	0.05	0.13	2.55*	0.17	0.05	0.18	3.70***
RiskAppr.	−0.28	0.13	−0.08	−2.15*	0.21	0.08	0.13	2.54*	−0.08	0.05	−0.09	−1.44	0.15	0.05	0.18	3.14**
AmbAccept.	−0.10	0.12	−0.03	−0.90	−0.12	0.07	−0.08	−1.72	−0.03	0.05	−0.03	−0.62	−0.10	0.04	−0.11	−2.26*
Competitive	−0.08	0.10	−0.03	−0.80	0.25	0.06	0.19	4.13***	−0.15	0.04	−0.20	−3.61***	0.00	0.04	0.00	0.02
Disinhibit	1.03	0.38	0.08	2.69**	0.46	0.24	0.08	1.90	0.13	0.16	0.04	0.80	−0.35	0.14	−0.11	−2.50*
Detachment	2.38	0.37	0.22	6.45***	1.46	0.23	0.29	6.33***	0.38	0.15	0.14	2.46*	0.43	0.14	0.16	3.20**
Psychot	1.76	0.38	0.17	4.68***	1.04	0.24	0.22	4.42***	0.48	0.16	0.18	3.03**	0.09	0.14	0.03	0.63
NegativeAff	2.22	0.42	0.21	5.33***	−0.22	0.26	−0.04	−0.85	0.42	0.17	0.15	2.42*	−0.08	0.15	−0.03	−0.53
Antagonism	0.73	0.42	0.06	1.73	1.14	0.26	0.20	4.34***	−0.17	0.18	−0.05	−0.95	0.11	0.15	0.04	0.73
Adjusted R^2	0.695				0.435				0.207				0.299			
F	59.567				20.749				7.688				11.956			
p	<.000				<.000				<.000				<.000			

B = beta coefficient.
SE = standard error.
*** $p < .001$.
** $p < .01$.
* $p < .05$.

each with an acceptable alpha: Maladaptive style: (0.89); Image distorting style (0.74) Self-sacrificing style (0.61) and Adaptive style (0.59). The latter two alphas fall below the usual specified requirement of 0.70 which is a potential limitation.

2. *High Potential Trait Indicator (HPTI)* (MacRae & Furnham, 2020) – The HPTI is a measure of personality traits, specifically within a workplace context. It is comprised of six factors: Conscientiousness (α = 0.72), Adjustment (α = 0.82), Curiosity (α = 0.74), Risk Approach (α = 0.76), Ambiguity Acceptance (α = 0.72) and Competitiveness (α = 0.81). The inventory is 78 items in length. It has been used in a number of studies (Furnham & Impellizzeri, 2021; Furnham & Treglown, 2018; Teodorescu et al., 2017).

3. *PID-5—Brief Form* (Krueger et al., 2012). The Personality Inventory for DSM is a 25-item self-rated assessment scale which assesses 5 personality trait domains (Negative Affect (α = 0.74), Detachment (α = 0.60), Antagonism (α = 0.68), Disinhibition (α = 0.72) and Psychoticism (α = 0.75)) with each trait domain consisting of 5 items. It has been validated by a number of psychometric studies in different countries.

4. *Self-Esteem* (Furnham & Robinson, 2023). Participants rated themselves on four scales each on a 1–100 point scale: Physical Attractiveness (M = 59.88, SD = 19.16); Physical Health (M = 63.81, SD = 21.64); IQ (M = 75.35, SD = 14.78); and Emotional Intelligence (EQ) (M = 74.79, SD = 19.31). This were combined into a single score and the alpha was α =0.71.

2.3. Procedure

Questionnaires were completed online. Participants were contacted via a group email, which described the purpose of the questionnaire, the requirements for taking part and the research objectives. All questionnaires were presented in the same order; DSQ, PID-5, HPTI, Personal Questions and was not counterbalanced. All participants were part of a consortium which expressed an interest in HR issues. In this sense they were a convenience sample, used in a number of psychometric studies. They were recruited by the authors when consulting various organisations. Participants were all fluent English speakers, and 90 % were

British. Each received a detailed report on their motivational patterns directly after completing the survey. Ethical permission was sought and received by the organisation's review board (TI-LSA:2022) which ensured participant agreement and confidentiality.

3. Results

3.1. Correlations between variables

Table 1 shows the correlations between all the variables: demographic, ideological, self-assessment, HPTI, DSQ and Pid-5. Focusing on the correlates of the four DMs the results show three correlates with sex (males scored lower on Maladaptive Style; but higher on Image Distorting and Adaptive Style) and three with age showing younger people higher on Maladaptive Style (r = −0.30) and Image Distorting (r = −0.17) and lower on Adaptive Style (r = 0.10) Being more religious was correlated with all four DMs (0.10 < r < 0.17). Of the six bright-side traits, three showed the clearest pattern namely Adjustment, Risk Approach and Ambiguity Tolerance with high scores being associated with lower scores on Maladaptive Style and Image Distorting but higher on Adaptive Style. Of the twenty correlations with the five PD measures all but three were positively significant and eight with r > 0.30. The highest correlations were between the PDs and the Maladaptive Style: Detached r = 0.62, Psychoticism r = 0.60, and Negative Affectivity r = 0.68.

3.2. Hierarchical regression results

Table 2 shows the last step in four hierarchical linear regressions where five sets of variables were the dependent/predictor variables: demography (sex, age, education); ideology (religious and political beliefs), self-ratings (self-esteem and optimism), six bright-side personality variables and finally five dark-side traits. These were entered in five steps. The independent/criterion variable was the four DMs. In the first step sex, age and education were entered and accounted for 10, 6, 0, and 2 % of the variance indicating that demography was more relevant for the least adaptive DMs. In the second step religious and political beliefs were added and these accounted for an additional 2, 3, 3 and 2 percent

additional variance suggesting ideology not strongly related to DMs. In the third step Self-esteem and self-rated optimism accounted for an additional 16, 1, 2, and 15 % of the variance suggesting that this was related most to the least and most adaptive DMs. When the bright-side six personality traits were added they accounted for 27, 14, 9 and 9 % of the variance. Finally, when the dark-side maladaptive traits were entered they accounted for an additional 15, 20, 7 and 2 % of the variance. Table 2 shows that these factors in all accounted for 70, 44, 21 and 30 % of the variance (effect size namely R-square value).

In all, over 2/3 of the variance (70 %) was explained in the first DM which was the least adaptive. Females more than males, and more rather than less religious people adopted this style. Similarly, less Adjusted, more Curious and those less Risk Oriented (Courageous) used this style. Further, four of the five PDs were related to this style, particularly Detachment and Negative Affectivity. The second DM, Image Distortion, regression accounted for 44 % of the variance and showed more religious people with higher self-esteem and being more Competitive and Risk Oriented, as well as higher on three PDs particularly Detachment used this DM more. The third DM style, namely Self Sacrificial, indicated that more religious and more optimistic people with higher scores on trait Curiosity and lower scores on trait Competitive and who scored higher on three PDs (Detachment; Psychoticism and Negative Affectivity) used this DM style most. The final regression concerning the most healthy DM style (Adaptive) showed those with higher self-esteem and optimism and who were more Adjusted, Curious, with a higher Risk Approach but lower Ambiguity Tolerance adopted this approach. Of the five PDs two were related to this style suggesting that Disinhibition was negatively, but Detachment positively, associated with this healthy DM style.

4. Discussion

This study set out to explore the correlates of fundamental higher-order DMs: asking the question what sort of people employ less vs more adaptive DMs? The results from the regressions (see Table 2) suggested that some of the variables measured were unrelated to all the DMs. These were age, education, political beliefs and trait Conscientiousness. Some studies have suggested that these factors, particularly age and trait Conscientiousness are related to the DMs but our results may have been constrained by range restrictions. It may be assumed that as people age they acquire more mature DMs, but possibly because of the restricted range of ages in the sample (we had few people in their 20's), we found no correlation with age. The same was true of education where nearly 2/3 were graduates. It may be that more mature DMs are related to getting into higher education institutions and that they are reinforced with education. Similarly. there seems no theoretical reason why political, as opposed to religious beliefs are related to DMs,

Equally some variables like Psychological Detachment and were related to all DMs. The correlational results suggested that all five maladaptive were strongly negatively associated with the lest adaptive DMs and positively related to the adaptive DMs.

Overall, it seemed the demographic factors measured here seem little to related to the DMs, though this could be because of the range restrictions in our sample who tended to be educated, middle-aged and middle-class people. Regressions did reveal one sex difference with females using the least functional DM more than males.

It is interesting to note that whereas political beliefs were unrelated to any of the DMs, religious beliefs were associated with the three less adaptive DMs. There is an interesting but equivocal literature of the relationship between religion and mental health (van Elk, 2021). In this study we simply assessed how religious a person claimed to be. It would be interesting to explore much more about their religious beliefs and practices (e.g., beliefs about the afterlife; the problem of evil; worship-place attendance) to get a better understanding of why religion is associated with the DMs. It may be more complex and nuanced religious beliefs about good and evil, and the afterlife are associated with more mature DMs while more simplistic and childlike religious beliefs are associated with less mature religious beliefs,

The two self-ratings showed interesting findings with the DMs. Optimism was positively correlated with Self-sacrificing style and Adaptive style, while overall Self-Esteem was associated with Image distorting style and Adaptive style. It is particularly interesting those with higher SE have a higher image distorting style which suggests that self-image ratings could be significantly distorted and as much an index of a coping mechanism as a veridical indication of what a person is like.

Of the six bright-side traits one (Conscientiousness) was unrelated to all four DMs while two (Curiosity and Risk Approach) were related to three. Adjustment (low Neuroticism) was related negatively to the least adaptive DM (Maladaptive acts) and positively related to the most adaptive DM (Adaptive) which is to be expected. Neuroticism is often associated with poor coping and emotional dysregulation. Curiosity which is essentially Openness and may be related to Schizotypy when very high and which may account for these associations. Risk Approach, also called Courage, is explicably positively correlated with healthy, and negatively correlated with unhealthy DMs. In short this measures assertiveness, which unlike passivity or aggressiveness, is associated with healthy DMs. The personality variables however showed in the hierarchical regression that they accounted for a significant amount of the variance above demography, ideology and self-esteem.

It seemed clear from both the correlation and regression results that, not unsurprisingly, the PDs, were most strongly related to the DMs. This was particularly true of Detachment which was related to ¾ of the less adaptive styles. Detachment is essentially about denial as well as the suppression and repression of various thoughts. The three facets of Detachment are Withdrawal, Anhedonia, Intimacy Avoidance. Interestingly, it is strongly associated with two of the least adaptive DMs but also the most adaptive suggesting that Detachment might take many forms. There are three facets of Negative Affectivity which Emotional Lability, Anxiousness, Separation Insecurity which was strongly related to maladaptive and primitive DMs.

The PD Psychoticism (with facets Unusual Beliefs & Experiences, Eccentricity, Perceptual Dysregulation) was also strongly associated with ¾ of the less effective DMs. Psychoticism as measured by the DSM-5 measures maladaptive eccentricity. The highest correlations were with the first two factors, namely Maladaptive and Image distorting, suggesting those higher in psychoticism are more likely to employ less adaptive DMs.

While these are interesting findings, they give no insight into the process: do poor DMs influence the development of the maladaptive traits? Or is a DM essentially a marker of a disorder? Therapy is, in part, concerned with helping people adopt more healthy coping strategies and where appropriate being more aware of their DMs. Certainly, one way of helping people with PDs would be increase their awareness of the DMs as coping strategies and encouraging more adaptive and healthy strategies.

In what way do these results contribute to the field? Firstly, the bright- and dark-side trait literature has paid little attention to the DMs possible because of problems associated with classification and measurement. Our results showed that we could account for much more variance in predicting maladaptive, as opposed to adaptive DMs. Second, the study suggested that some variables like religious beliefs, hitherto neglected, may play a part in the development and change in DMs. Third, while some bright-side traits like Adjustment and Risk-Approach are clearly related to the most and least adaptive DMs, other like Competitiveness (i.e. Low Agreeable) are more clearly related to Image Distortion and Self-Sacrificial DMs. Finally, it is the maladaptive traits that give most insight into the precise nature of the less adaptive DMs which is unsurprising but which highlight the importance of Detachment and Psychoticism.

Future research in this area may develop best by using the long version of the PID-5 questionnaire to get facet measures of the PDs while concentrating on some of the more common, healthy and unhealthy DMs to attempt to reveal more about their mechanisms and processes.

4.1. Limitations

The limitation of this study concerns primarily the fact that it is limited to self-report data and therefore method invariance, as well as possible overlap between supposedly independent measures. It would be particularly desirable to obtain some observational data (such as "other" reports) or even behavioural data (such as the analysis of media usage) to help overcome self-report bias. Also, our sample was large but relatively homogenous confined more to middle-aged, middle-class professions who were for the most part relatively well adapted at least in terms of their work success and experience. This may have biased the data through range restriction. We note also that some of the scale reliabilities fell below the usually acceptable cut-off of 0.70, though it could be argued that a high alpha is an index of redundancy. Finally, there may have been moderating, mediating and confounding variables such as whether the participants have received clinical, counselling or coaching feedback, as well as their knowledge of the type of tests used in this study.

Ethics approval

UCL Psychology Dept number CEHP/514.2013 granted permission for this study to be done.

Registration

This paper was not pre-registered with the journal.

Ethics

This was sought and obtained (CEHP/514/2017).

Informed consent

Participants gave consent for their anonymised data to be analysed and published.

Author contribution

AF: Visualisation, Writing - review
SC: Data curation; analysis.

Declaration of competing interest

There is no conflict of interest in this research or paper.

Data availability

This is obtainable from the first author upon request.

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