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Defense styles, well-being, and functional disability in the African context: A structured interview-based study

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Abstract

Objective: We investigated the defense styles in the African context by exploring their internal structure in Burkinabé individuals. Moreover, we explored how defense styles were related to sociocultural variables. Finally, we tested whether defense styles could mediate the relationship between sociocultural variables and mental well-being as well as functional disability.

Method: The study recruited 998 individuals (66.9% male; age = 25.50 ± 7.8 years) living in Burkina Faso. Standard measures for defense mechanisms, mental well-being, and functional disability were administered as a structured interview in the local vehicular language, that is, Dyula.

Results: Principal component analysis identified three major defense styles—mature, neurotic, and immature. Gender, formal education, living area, and believing in traditional practices were associated with any of the three defense styles. Moreover, the immature style mediated the impact of sociocultural variables on specific outcomes, such as higher functional disability and lower mental well-being. The neurotic style was associated with lower functional disability, while the mature style was not associated with any of the outcome variables.

Conclusion: Our study provided preliminary support to the notion that defense styles may function similarly across cultures and they are likely reactive to the sociocultural context.

KEYWORDS

cross-cultural, defense styles, disability, well-being

1 | INTRODUCTION

Defense mechanisms (DMs) are involuntary and automatic coping strategies that protect the individual from experiencing excessive anxiety derived from internal or external events (Cramer, 2015; Vaillant, 2000). Importantly, DMs exhibit varying levels of adaptiveness, as they can either facilitate or hinder well-being and psychosocial functioning (Vaillant, 2022). Due to their function as coping mechanisms, these mechanisms have been extensively examined across different contexts, such as in individuals with mood and anxiety disorders (Babl et al., 2019; Perry et al., 2020), personality disorders (Di Giuseppe et al., 2019; Perry et al., 2013), oncological and chronic pain-related disorders (Di Giuseppe et al.,

2018; Romeo et al., 2022), sexual dysfunctions (Ciocca et al., 2023), and a history of childhood trauma (Wang et al., 2021), but also with respect to psychological well-being (Lyke, 2016) and resilience (Prout et al., 2019).

1.1 | Measuring defense mechanisms

Measuring DMs is a complex issue, with observer-rated reports and self-reports being the primary approaches used (Prout et al., 2022). In the observer-rated category, the Defense Mechanisms Rating Scales (DMRS; Perry, 1990) and the Defense Mechanisms Rating Scales Q-sort (DMRS Q-sort; Di Giuseppe & Perry, 2021) are commonly employed for empirical assessment of DMs. However, these methods are time-consuming and resource-intensive, as they involve observers rating clinical transcriptions or deep understanding of the individual through psychotherapy (Di Giuseppe et al., 2014). Despite being standard measures for DMs, the practical requirements of the DMRS instruments limit their use in large-scale research (Prout et al., 2022).

Self-report measures represent another viable method for evaluating DMs (Di Giuseppe et al., 2014). The Defense Style Questionnaire-40 (DSQ-40; Andrews et al., 1993) is the most commonly used questionnaire, which was cross-culturally validated in numerous languages, such as Arabic (Punamäki et al., 2002), Brazilian–Portuguese (Blaya et al., 2007), Finnish (Ruuttu et al., 2006), German (Schauenburg et al., 2007), Greek (Giovazolias et al., 2017), and Japanese (Hayashi et al., 2004). The DSQ-40 demonstrated acceptable-to-good psychometric properties (Bond, 2004), including convergent validity with other DMRS instruments (Bond, 1992; Prout et al., 2022). Unlike observer-rated reports, the DSQ-40 is frequently used in large-scale studies ($n > 1000$; Biondi et al., 2021).

1.2 | Styles of defense mechanisms

Theoretical frameworks (Cramer, 2015; Perry, 1990) and empirical evidence (Andrews et al., 1993; Di Giuseppe et al., 2014; Prout et al., 2022) indicate that DMs can be hierarchically organized in three main defense styles, namely immature, neurotic, and mature. Unlike the self-report questionnaires (DSQ-40; Andrews et al., 1993), the DMRS instruments also involve an intermediate level between individual defense mechanisms and defense styles. For instance, the immature defense style consists of four defense levels (e.g., minor and major image distortion, disavowal, and action), which in turn comprise several DMs (Di Giuseppe et al., 2020). However, regardless of the methodology used (i.e., self-report vs. observer-rated measures; Andrews et al., 1993; Di Giuseppe et al., 2020), each of the three styles encompasses similar DMs. Consistent with this, there is evidence supporting convergent validity between studies that relied on both DSQ-40 and DMRS instruments (Bond, 1992; Prout et al., 2022).

The immature defense style is considered the most maladaptive style and it is characterized by disavowal, image distortion, and impulsive action, resulting in reduced flexibility and an illusory sense of emotional control (Di Giuseppe & Perry, 2021; Vaillant, 2022). It is associated with adverse features and outcomes, including childhood neglect and abuse (Wang et al., 2021), emerging personality disorders (Di Giuseppe et al., 2019), a diagnosis of major depression or panic disorder (Calati et al., 2010), reduced well-being (Lyke, 2016), and impaired psychosocial functioning (Soldz & Vaillant, 1998). Longitudinal studies have also linked the immature style to increased depressive symptoms (da Silva Machado et al., 2023), relapse in alcohol addiction (Evren et al., 2013), and posttraumatic symptoms in bereaved parents (Ferrajão, 2022).

The neurotic style has an intermediate profile between the immature and mature styles and includes mechanisms that alter either the cognitive or emotional aspects of stressors (Di Giuseppe & Perry, 2021; Vaillant, 2022). It is associated with major depression and panic disorder (Calati et al., 2010) as well as obsessive-compulsive personality features (Di Giuseppe et al., 2019). Interestingly, it can also have a protective role, showing a negative correlation with antisocial and narcissistic personality traits while positively correlating with high functioning (Di Giuseppe et al., 2019). Although it may be not directly related to well-being (Lyke, 2016), it is associated with better-perceived health and psychosocial functioning compared with those with immature defenses (Di Giuseppe et al., 2019; Soldz & Vaillant, 1998). In addition, longitudinal studies show that this style predicts lower levels of PTSD symptoms in bereaved parents (Ferrajão, 2022), but it is unrelated to future depressive symptoms (da Silva Machado et al., 2023) and relapse in alcohol-addicted patients (Evren et al., 2013).

Finally, the mature style is characterized by the ability to maintain awareness of external and internal stressors while promoting the integration of cognitive, affective, motivational, and behavioral information. Mature defenses are consistently linked to lower levels of depression (Calati et al., 2010) and higher personality functioning (Di Giuseppe et al., 2019), as well as better perceived-health and improved psychosocial functioning (Soldz & Vaillant, 1998). Additionally, the mature

style predicts a reduction in depressive symptoms after psychotherapy (da Silva Machado et al., 2023) and fewer PTSD symptoms in bereaved parents after a six-month period (Ferrajão, 2022).

1.3 | Cross-cultural generalizability of defense mechanisms

Defense styles are widely recognized for their clinical utility in Western countries (Lingiardi & McWilliams, 2015). However, their applicability to non-Western cultures has been questioned (Kakar, 1985), and their reception beyond Europe, as well as North and South America, has been limited (Tori & Bilmes, 2002). This is concerning considering that the majority of the world's population resides outside Western societies.

The lack of empirical evidence for DMs and defense styles in non-Western countries is evident in the African continent, where only a small number of quantitative studies investigated these important psychological processes. For example, a study on adolescents displaced after the Boko Haram insurgency in Nigeria found that repression, regression, rationalization, and projection were the most commonly adopted DMs (Nwachukwu et al., 2015). Another recent study reported that the immature style mediated the relationship between direct adverse childhood experiences and symptoms of depression and anxiety in Kenyan adolescents, while neurotic and mature styles did not play a significant role (Ferrajão et al., 2022). Despite these initial findings, there has been no comprehensive exploration of the structure of defense styles and their psychosocial correlates among African individuals, who constitute 18.2% of the global population in 2023.[1]

Burkina Faso provides an ideal context for investigating these processes due to its distinct characteristics that differentiate it from Western cultures. Located in West Africa, south of the Sahara desert, the country has a population of over 20 million people and a very low annual GDP per capita ($642 in 2017). The median age is 17.6 years, and the average life expectancy is 63 years. The population experiences a high annual growth rate of 2.8%, and polygamy is frequent, with 42% of women in polygamous unions. Urban areas are home to only 31% of the population, and the literacy rate is 41.2%, with a notable gender disparity (50.1% in males vs. 32.7% in females). The majority of individuals in Burkina Faso are Muslims (63.8%), followed by Christians (26.3%) and Animists (9%). Compared with Western countries, the culture of the West African region is generally more collectivist, accepting of status differences, and values traditions. (Hofstede & Hofstede, 2001).

1.4 | Current study

Our study aims to accomplish three goals: (i) examining whether the structure of DMs in a large sample of individuals from Burkina Faso aligns with the three major styles (e.g., mature, neurotic, and immature) usually reported in the literature; (ii) exploring the relationship between defense styles and background variables (e.g., gender, age, religion, and living area); and (iii) investigating the mediating role of defense styles in the relationship between background variables and various outcomes, such as depressive and anxiety symptoms, perceived quality of life and physical health, as well as functional disability.

It is to stress that psychological research in Africa has often relied on questionnaires administered in European idioms, excluding less educated and preliterate individuals (Ferrajão et al., 2022; Rossier et al., 2013). While observer-rated methods could address this limitation, the associated workload made them an unviable option for this study. To strike a balance between participant accessibility and feasibility, we developed a structured interview based on the widely used DSQ-40 questionnaire. The interview was translated and conducted in the Dyula language, a common vehicular language in Burkina Faso, allowing us to recruit a large, representative sample of Burkinabé individuals from the city of Bobo-Dioulasso and surrounding villages.

2 | METHODS

2.1 | Participants

Out of the initial 1006 individuals, eight participants were excluded because of missing data. The final sample consisted of 998 individuals (68.9% male), with average age of 25.50 ± 7.8 years (range 18–76) and average education of 12 ± 4.3 years (range 0–24). Participants came from the city districts of Bobo-Dioulasso (e.g., Do, Dafra, and Konsa), as well as a number of surrounding rural settlements (e.g., Bana, Farakoba, Kotedougou, Koumi, Matourkou, Pala, Samagan, Tondogosso, and Yegueresso). Moreover, 54.0% of respondents were single/unmarried, 40.9% were married or cohabiting, and the remaining 3.6% were widowed, separated, or divorced. Only 38.5% of respondents were formally employed and 34.7% were involved in some kind of informal work activity. Approximately two-thirds of the respondents (63.1%) identified themselves as Muslims, 29.5% as Christians, and 7.4% as practicing traditional African animist faiths. Regardless of religion, 82.3% of participants relied on traditional healing or protective rituals, 81.8% believed that witchcraft could harm people, and 21.0% asked a fortune teller for advice.

2.2 | Measures

Defense Style Questionnaire-40 (DSQ-40; Andrews et al., 1993). The DSQ-40 is a self-report questionnaire aiming to capture the conscious derivatives of DMs. It consists of 40 items on a 9-point Likert scale (i.e., "People say I tend to ignore unpleasant facts as if they didn't exist"), ranging from 1 ("Totally disagree") to 9 ("Totally agree"). Previous psychometric studies have typically found a three-component solution (Bond, 2004), namely immature, neurotic, and mature (Andrews et al., 1993; Blaya et al., 2007). Occasionally, a four-component solution has been proposed, with the imaging-distorting style being distinguished from the neurotic style (Giovazolias et al., 2017; Ruuttu et al., 2006). The DSQ-40 items were used in developing the structured interview intended for our research.

World Health Organization Quality of Life-BREF (WHOQOL-BREF; WHOQOL Group, 1998). The WHOQOL-BREF is an assessment tool of perceived quality of life, which is the short version of the WHOQOL-100 (Power et al., 1999). In our study, we administered only four items in order to measure perceived quality of life ("How would you rate your quality of life?"), perceived physical health ("How satisfied are you with your health?"), depressive symptoms ("How often do you have negative feelings such as blue mood, despair, and depression?"), and anxiety symptoms (How often do you have negative feelings such as anxiety?"). Each item was rated using a 5-point Likert scale. The WHOQOL-BREF has been translated in a large variety of languages and used extensively in cross-cultural research (Skevington et al., 2004).

World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0; Üstün et al., 2010). The WHODAS 2.0 is a 12-item measure for assessing reduced functional disability, and it assesses difficulties major areas, such as understanding, communicating, getting around, self-care, interpersonal functioning, life activities, and participation in society (i.e., "In the past 30 days, how much difficulty did you have in (i) taking care of your household responsibilities?" or "(ii) joining in community activities (e.g., festivities, religious, or other activities) in the same way as anyone else can?"). Each item was rated using an ad hoc 6-point Likert scale, ranging from 1 ("none") to 6 ("extreme or cannot do"). Furthermore, it lists three questions assessing the number of days of inability to perform regular activities in the past 30 days. The instrument has been extensively used across different languages, ethnic groups, and age (Federici et al., 2017).

In the present study, all the instruments were administered as a structured interview and the response scales followed a culturally adapted format, compatible with that of the original assessment tools.

2.3 | Translation and cultural adaptation of the instruments, interviewers training, and data collection

A professional Malian translator translated the French questionnaires in Bambara, a language with a good written tradition, which is very close to Dyula. This latter language is instead substantially unwritten. Two bilingual experts then independently relied on the Bambara version to develop the Dyula version, resolving discrepancies through consensus under the supervision of a linguist specializing in African languages. A separate bilingual translator, not involved in the initial translation, conducted a backward translation to ensure congruity between the original and translated questionnaires. Moreover, the scoring system for each instrument was culturally adjusted. Specifically, we replaced the numbers of the Likert scales with clustered color gradients, specifically developed for the instruments (for more details, refer to Supplementary Material).

The authors provided training to seven interviewers who were all master students attending classes unrelated to psychology or medicine.[2] The interviewers were fluent in Dyula and affiliated with the Centre Jigi Semé in Bobo-Dioulasso. The training included instructions on obtaining informed consent and conducting structured interviews to minimize any systematic bias during the data collection phase. Simulated interviews were organized to provide feedback, and any unclear aspects of the methodology were addressed during discussions of individual interviews in the initial phase. Monthly online meetings were then held to supervise the interviewers. Data collection began in May 2021 and concluded in January 2022.

2.4 | Statistical analysis

We first conducted a pilot study to (i) asses the comprehensibility of the translated instruments, (ii) and rule out the presence of systematic bias in the respondents' scores. Second, we employed principal component analysis (PCA) with oblique rotation to examine the structure of the Dyula version of the DSQ-40. In line with previous literature (Blaya et al., 2007; Ruuttu et al., 2006; Schauenburg et al., 2007), PCA was conducted on mean scores of the item pairings, with each pair representing a distinct defense mechanism. Third, descriptive statistics and inter-correlations between defense styles, well-being features, and functional disability scores were examined. Fourth, we conducted a series of multiple regressions for each defense style on sociodemographic and cultural information, entered simultaneously as independent variables. Fifth, after identifying significant predictors, we investigated their effect on mental well-being and functional disability, via mediation of

each defense style. While testing a specific style as mediator, the other two were entered as covariate.

3 | RESULTS

3.1 | Pilot study

The pilot study was completed by 38 participants (25 males and 13 females; $\chi^2 = 3.79$, $p = 0.052$; age $M = 27.9$, $SD = 11.3$, range = 18–60; average education = 13.7 ± 3, range = 5–20). To ensure quality and comprehensibility of Dyula version of the DSQ-40, all the participants evaluated to what extent they would be able to (i) translate each item into their mother tongue or (ii) explain the item to a child in Dyula on an ad hoc 6-point Likert Scale. Moreover, they rated to what extent they agreed on the content of each item on the standard Likert scale. The analysis revealed that the general level of comprehensibility was more than adequate ($M = 4.16$, $SD = 1.72$), with values usually clustering toward the upper end of the scale (Figure S1). Furthermore, averaging the comprehensibility score across the 40 items for each participant revealed that the difference between participants with less than 14 years of formal education ($N = 18$) and those with more than 14 years of formal education ($N = 20$) was not statistically significant ($M = 4.04$, $SD = 1.43$ and $M = 4.27$, $SD = 1.42$ respectively; $t = 0.49$, $df = 36$, $p = 0.624$). The same results were obtained when male ($N = 25$) and female ($N = 13$) participants were compared ($M = 4.22$, $SD = 1.36$ and $M = 4.03$, $SD = 1.56$ respectively; $t = 0.40$, $df = 36$, $p = 0.693$). Importantly, item comprehension and agreement were statistically unrelated (item average $r = 0.04$, $SD = 0.17$, Bonferroni-corrected $p > 0.05$; Table S1).

3.2 | Principal component analysis

PCA with oblique rotation was performed on the 20 mechanisms to identify the underlying groups of DMs, namely the defense styles. Scree plot and parallel analysis indicated a three-component solution (Figure S2; Sakaluk & Short, 2017). Generally, DMs neatly segregated across the three rotated components, with a loading value >0.30 being the highest absolute (Table 1). Reaction formation and pseudo-altruism cross-loaded on the first and third component and were included in the neurotic defense styles by theoretical consensus. The first component, consisting of splitting, idealization, humor, acting out, pseudo-altruism, and reaction formation, was defined *neurotic style*. The second component, consisting of displacement, devaluation, autistic fantasy, dissociation, isolation, passive aggression, denial, projection, and somatization, was called *immature style*. The third component consisting of sublimation, anticipation, undoing, rationalization, and suppression, was defined *mature style*.

TABLE 1 Factor loadings for the Dyula version of the DSQ-40.

Defense mechanisms	Rotated component		
	RC1	RC2	RC3
Splitting	0.80		
Idealization	0.68		
Humor	0.42		
Acting out	0.39		
Pseudo-altruism	0.31		0.40
Reaction formation	0.31		0.32
Displacement		0.63	
Devaluation		0.61	
Autistic fantasy		0.61	
Dissociation		0.59	
Isolation		0.51	
Passive aggression		0.48	
Denial		0.45	
Projection		0.43	
Somatization	0.31	0.35	
Sublimation	−0.47		0.75
Anticipation			0.72
Undoing			0.62
Rationalization			0.41
Suppression			0.34
Eigenvalues	3.68	1.97	1.25
Explained variance	18.38%	9.86%	6.23%

Note: Loadings smaller than 0.30 were omitted. RC1: Neurotic style; RC2: Immature style; RC3: Mature style.

Consistent with prior research (Cazan & Clinciu, 2015; Saint Martin et al., 2013), the internal consistency (i.e., reliability) of the three styles was deemed low yet acceptable. Although Cronbach's alphas ranged from 0.55 to 0.69, suggesting low-to-moderate levels, the inter-item correlations demonstrated a suitable level of item homogeneity and specificity (ranging from 0.18 to 0.20; Piedmont & Hyland, 1993). Additionally, the correlations between the defense styles were moderate and statistically significant. Specifically, the neurotic and mature styles exhibited the highest correlation ($r = 0.48$, $p < 0.001$), followed by the neurotic and immature styles ($r = 0.32$, $p < 0.001$), and then the mature and immature styles ($r = 0.28$, $p < 0.001$).

3.3 | Descriptive statistics of defense styles, well-being, and functional disability

Descriptive statistics for the defense styles, well-being features, and functional disability are shown in Table S2.

The mature style had the highest mean score ($M = 7.14$, $SD = 1.14$), as expected from a nonclinical sample, followed by the neurotic style ($M = 6.41$, $SD = 1.24$) and lastly the immature style ($M = 4.75$, $SD = 1.29$) ($F = 1546.58$, $df = (2, 1992)$, $\eta^2 = 0.61$, $p < 0.001$; Figure S3). In the context of the WHOQOL-BREF, perceived quality of life and physical health scores were higher ($M = 3.35$, $SD = 0.80$ and $M = 4.35$, $SD = 0.72$, respectively) than depressive and anxiety symptoms ($M = 2.33$, $SD = 0.76$ and $M = 2.12$, $SD = 0.82$, respectively) ($F = 1686.16$, $df = (3, 2928)$, $\eta^2 = 0.63$, $p < 0.001$; Figure S3). Lastly, WHODAS 2.0 functional disability score in our sample was moderate ($M = 20.36$, $SD = 8.16$), finding which was corroborated by the total days of experienced difficulty ($M = 2.02$, $SD = 4.65$). Furthermore, defense style was modestly correlated with functional disability and well-being (Table S3). In particular, immature style was positively associated with overall functional disability and depressive as well as anxiety symptoms, and negatively with perceived quality of life. Neurotic style was positively associated with anxiety symptoms, while both mature and neurotic styles were negatively linked with functional disability.

3.4 | Multiple regression analyses

The results of the regression models are presented in Table 2. Among the sociodemographic predictors, only age, education, living area, and gender significantly predicted at least one of the three defense styles. Age was negatively associated with the neurotic style, while the number of years of formal education was negatively linked with all three defense styles, with a stronger effect for the immature style. Conversely, living in rural villages cross-sectionally predicted higher immature style scores than living in urban areas, and females showed higher neurotic style scores than males. In terms of sociocultural background, relying on traditional practices such as protection spells, witchcraft, and fortunetelling proved to be a significant predictor of at least one of the three defense styles. In this respect, believing in traditional practices and witchcraft predicted higher scores for both the neurotic and mature styles. On the contrary, consulting a fortune teller predicted higher scores on the immature style. Lastly, there were no statistically significant associations found between religious faiths, marital status, and having a formal occupation with any of the defense styles.

3.5 | Mediation analyses

Path analyses revealed a complex, yet consistent, pattern of associations, where each defense style plays a specific role in mediating the influence of sociocultural factors on both mental well-being and functional disability (Figure 1). It is worth reminding that, when investigating the influence of a defense style, the other two served as covariates.

TABLE 2 Results of multiple regressions of defense styles as a function of sociodemographic and cultural variables.

	Immature style			Neurotic style			Mature style		
	Beta	***SE***	***t* (*df* = 854)**	**Beta**	***SE***	***t* (*df* = 855)**	**Beta**	***SE***	***t* (*df* = 855)**
Intercept	0.25	0.18	1.33	−0.43	0.19	−2.30*	−0.24	0.18	−1.35
Age	0.01	0.05	0.16	**−0.10**	**0.05**	**−1.98***	0.01	0.05	0.31
Formal education	**−0.27**	**0.04**	**−7.66*****	**−0.14**	**0.04**	**−4.03*****	**−0.18**	**0.03**	**−5.25*****
LIVING area[a] (Rural village)	**0.19**	**0.08**	**2.33***	−0.08	0.08	−0.98	0.04	0.08	0.47
Gender[a] (Female)	−0.13	0.14	−0.94	**0.28**	**0.14**	**2.05***	0.07	0.13	0.51
Religion[a] (Other)	0.17	0.13	1.31	−0.15	0.13	−1.10	−0.16	0.13	−1.19
Religion (Christian)	−0.09	0.07	−1.18	−0.10	0.07	−1.33	−0.02	0.07	−0.26
Marital status[a] (other)	0.05	0.20	0.26	0.33	0.20	1.63	0.09	0.20	0.43
Marital status (cohabiting)	−0.17	0.15	−1.19	0.00	0.15	0.02	−0.06	0.14	−0.42
Marital status (single/unmarried)	−0.18	0.15	−1.15	0.03	0.15	0.20	−0.13	0.15	−0.84
Formal occupation[a] (Yes)	−0.10	0.08	−1.30	−0.01	0.08	−0.08	−0.05	0.07	−0.68
Traditional practices[a] (*believe in?*)	−0.13	0.09	−1.46	**0.24**	**0.09**	**2.64****	**0.25**	**0.09**	**2.78****
Witchcraft[a] (*has any effect?*)	−0.02	0.09	−0.27	**0.24**	**0.09**	**2.55***	**0.19**	**0.09**	**2.15***
Fortune teller[a] (*any contact?*)	**0.22**	**0.08**	**2.59****	−0.08	0.08	−0.93	−0.06	0.08	−0.68

Note: Reference levels: Living Area = "Urban district"; Gender = "Male"; Religion = "Muslim"; Marital status = "Married"; Formal occupation = "No"; Traditional practices = "No," Witchcraft = "No," Fortune teller = "No." Statistically significant results were highlighted in bold.

[a]Categorical independent variable.

*$p < 0.05$ (two-tailed); **$p < 0.01$ (two-tailed); ***$p < 0.001$ (two-tailed).

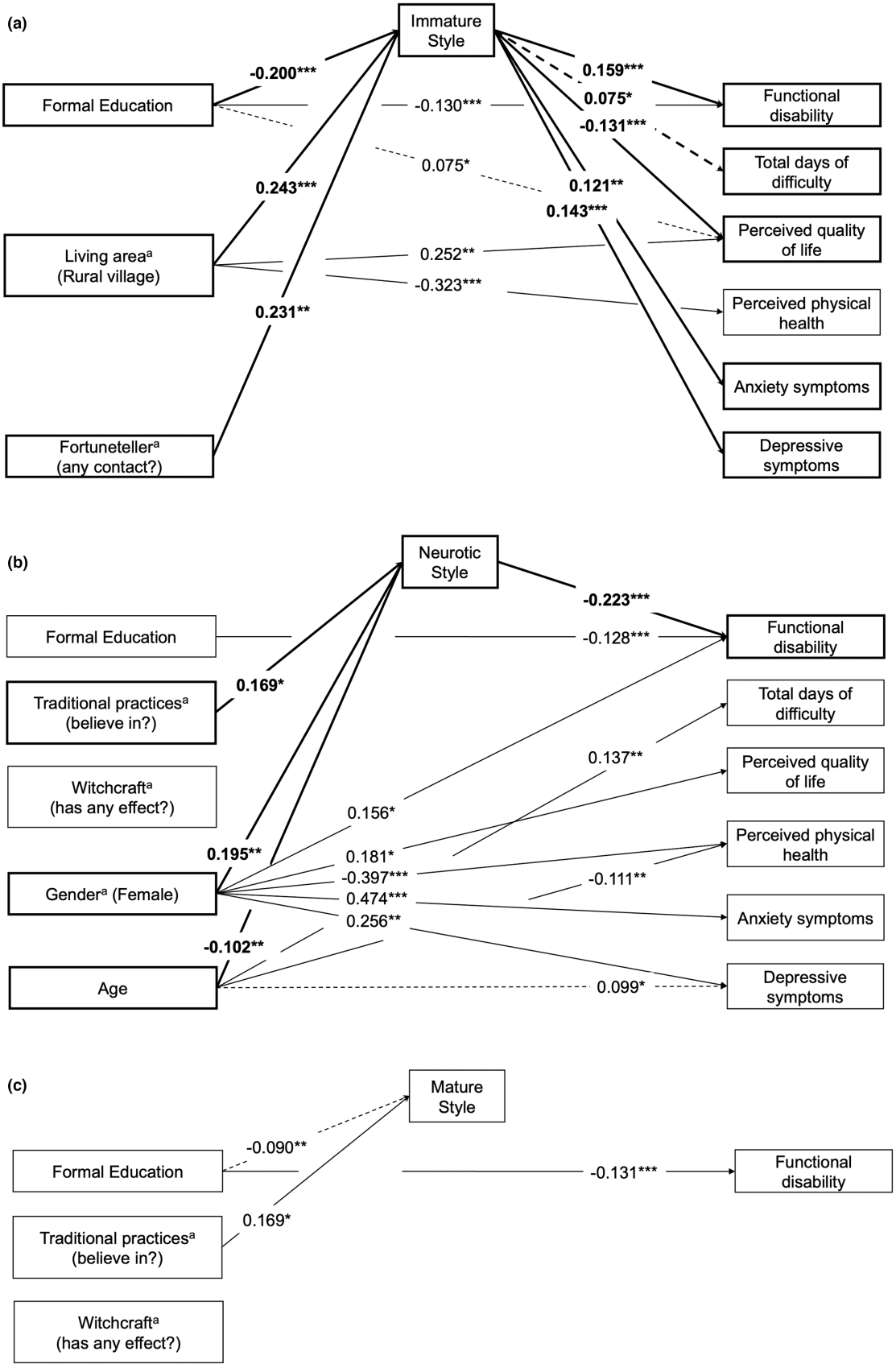

FIGURE 1 Results of the standardized coefficients of the mediation analyses. Only statistically significant values were presented. Indirect pathways have been highlighted in bold, while those with an effect size of <0.10 (small effect) have been dashed. (a): model with the immature style serving as mediator; (b) model with the neurotic style serving as mediator; (c) model with the mature style serving as mediator. Robust Satorra–Bentler *p*: * <0.05 (two-tailed); ** <0.01 (two-tailed); *** <0.001 (two-tailed).

By doing so, we could shed light on the specificity of each class of automatic coping processes.

First, lower formal education, living in a rural area (as compared to urban area), and having asked a fortune teller for advice was associated with higher levels of immature style, which in turn was positively linked to functional disability, total days of psychosocial difficulty, as well as anxiety and depressive symptoms (Table S4; Figure 1a). Sociocultural variables were also associated with lower levels of perceived quality of life, via mediation of immature style. Interestingly, living in a rural area was directly connected to higher levels of perceived quality of life, but lower levels of perceived physical health.

Second, believing in traditional practices of protection and healing, being a woman, and being younger was associated with higher levels of neurotic style, which in turn predicted lower levels of functional disability (Table S5; Figure 1b). Predominant was the direct effect of being a woman, in that it was associated with higher levels functional disability, perceived quality of life, and distress symptoms, while reporting lower levels of perceived physical health.

Third, no significant indirect effect was detected for mature style, which was moderately associated with believing in traditional practices and poorly with lower levels of formal education (Table S6; Figure 1c).

4 | DISCUSSION

Defense mechanisms (DMs) are involuntary and automatic coping strategies that not only play an important role in personality functioning but have also demonstrated significant clinical utility (Lingiardi & McWilliams, 2015). Although this phenomenon has been developed and extensively studied in Europe as well as North and South America (Cramer, 2015), empirical studies investigating its generalizability in non-Western cultures are scarce (Ferrajão et al., 2022; Tori & Bilmes, 2002). In our study, we investigated DMs in the context of Burkina Faso (Africa) and focused on the structure of these processes along with their sociocultural characteristics and correlates of mental well-being and functional disability.

The analyses revealed that the structure of the DMs in Burkina Faso, as measured with our newly developed interview in Dyula language, was markedly similar to that reported for the original self-report questionnaire (DSQ-40; Andrews et al., 1993). In detail, DMs clustered into three groups, which largely represented the immature, neurotic, and mature styles. The immature style consisted of DMs characterized by action, disavowal, negation, image distortion, and somatization, while the neurotic style was defined by processes altering interpersonal relationships and the cognitive as well as affective mental contents. Finally, the mature style was mostly characterized by the individual's tendency to anticipate stressors and, in turn, effectively adhere to social norms.

It is important to interpret our results in light of studies that have examined the structure of DMs with the DSQ-40 in diverse cultural and linguistic contexts. Differently from Andrews et al.' (1993) study but in line with studies investigating the structure of DSQ-40 in Brazilians (Blaya et al., 2007), Palestinians (Punamäki et al., 2002), and Germans (Schauenburg et al., 2007), rationalization was clustered in the mature style, instead of immature. Similarly, although splitting and acting out are predominantly deemed as immature (Andrews et al., 1993), these mechanisms were grouped into the neurotic style. This finding aligned with previous studies, which investigated the structure of self-report DSQ-40 across Greek (Giovazolias et al., 2017), German (Schauenburg et al., 2007), and Finnish (Ruuttu et al., 2006). Furthermore, while humor is usually considered a mature defense mechanism, in our study it was clustered in the neurotic style, as it was in Palestinian men exposed to political violence (Punamäki et al., 2002). The mental undoing items that pertain to self-affirmativeness, anger, and the inclination to preserve social connections were categorized under the mature defense style instead of the neurotic style. It is worth mentioning that the Burkinabé way of life is characterized by interdependence, emphasizing community harmony over individual pursuits (Hart, 2014). Hence, the proclivity to rely on this mechanism could be regarded as contextually more mature in this country than in individualistic cultures.

Notwithstanding the minor deviations in structure, the defense styles observed in Burkinabé individuals largely aligned with the current understanding of DMs, as deduced from non-African samples. For instance, as expected in a large nonclinical sample, mature style was the most frequently adopted style, followed by neurotic and immature, respectively. Previous studies showed that healthy individuals primarily rely on mechanisms that foster social integration and do not alter internal or external reality (Andrews et al., 1993; Blaya et al., 2007; Giovazolias et al., 2017), while major distortions are frequent in patients or individuals exposed to traumatic events (Ferrajão et al., 2022; Schauenburg et al., 2007). Similarly, in line with prominent theorizations (Cramer, 2015), our findings suggest that DMs may be posited on a continuum of adaptiveness, such that closer styles (i.e., immature and neurotic as well as neurotic and mature) are more strongly correlated than distant styles (i.e., immature and mature) (Giovazolias et al., 2017; Ruuttu et al., 2006; Schauenburg et al., 2007). Although preliminary, these findings may indicate that the structure of DMs in the Burkinabé context is similar to what is typically reported in Western countries.

The regression and mediation analyses revealed complex, yet consistent, patterns of findings for each defense style. First, the immature style acted as a mediator between three sociocultural characteristics associated with experiencing stress in Burkina Faso (e.g., lower education, rural residence, and consulting fortune tellers) and negative outcomes. Lower education has been linked to personal distress in Burkina Faso (Pigeon-Gagné et al., 2017), while living in rural areas, where people face major challenges such as food and water insecurity, extreme poverty, as well as limited access to primary healthcare, can significantly impact mental well-being (Porfilio-Mathieu et al., 2022). Furthermore, fortune tellers are typically consulted in the African context when people lack resources to deal with potentially stressful situations (e.g., illness, auspicious time to have children, choosing which child to send for emigration; Beneduce, 2016). Similar to previous studies which relied on self-report questionnaires (i.e., DSQ-40) and observer-rated measures (i.e., DMRS), the immature style was associated with lower psychosocial functioning (Di Giuseppe et al., 2019; Soldz & Vaillant, 1998), higher depressive and anxiety symptoms (Calati et al., 2010; Ferrajão et al., 2022), and lower perceived quality of life (Lyke, 2016). Overall, the findings suggest that challenging environmental and social circumstances may lead individuals to develop an ineffective immature defense style (Rice & Hoffman, 2014), which can be emotionally and functionally taxing (Ferrajão et al., 2022).

Second, the neurotic style was a significant mediator between sociocultural features (e.g., being a woman, younger, and believing in traditional practices of healing and protection), and lower functional disability. Previous studies highlighted that neurotic defenses may indeed promote functionality (Soldz & Vaillant, 1998). This notion received further confirmation through the use of observer-rated measures, such as DMRS, which reported a strong correlation between an obsessional-like neurotic defense style and a high-functioning personality (Di Giuseppe et al., 2019).

However, it is important to exercise caution when interpreting this result due to the noticeable association between the neurotic style and being a woman in Burkina Faso, where gender inequality is high (ranking 157 out of 170 countries in 2021; United Nations Development Programme, 2022). In such a context, women, particularly young ones, often face discrimination within their families, limited access to resources, and restricted civil liberties. Therefore, it is possible that higher levels of neurotic defense style may represent an effort to adjust to chronic stress by relying on emotionally taxing defense mechanisms, as suggested by previous research (Calati et al., 2010). In line with this, Burkinabé women are expected to be highly functioning when performing domestic work and care activities (i.e., female–male ratio of average time spent equal to 6.65 in 2019; Organization for Economic Cooperation and Development, 2019). Hence, low levels of functional disability in women mediated by the neurotic style may not necessarily indicate an actual high level of psychosocial functioning, but it may instead reflect the societal pressure for women to conform to traditional gender roles. Accordingly, believing in healing and protection practices could imply a strong adherence to norms of society, where deviations from these norms are rarely tolerated (Boateng & Sottie, 2021). Overall, these findings may indicate that societal contexts and norms are likely to play an important role in steering the role of defense styles, which should always be considered in a contextualized approach.

Third, the mature style showed a specific association with the belief in traditional healing and protection practices, while its connection with formal education and believing in witchcraft had little to no impact, as demonstrated in the mediation analysis. Interestingly, this style did not act as mediator between sociocultural variables and psychosocial outcomes. This finding is consistent with other research from both European (Colovic et al., 2016) and African (Ferrajão et al., 2022) contexts, where the mature style showed no correlation with anxiety and depressive symptoms. It can be speculated that coping strategies that involve maintaining conscious awareness of emotions and thoughts related to stressors may not provide protection against psychological distress in a chronically challenging environment (Ferrajão et al., 2022).

Our analysis revealed inconsistent findings concerning the quality of life. Several nonmutually exclusive interpretations could be proposed. First, previous research has emphasized that measuring subjective quality of life with simple (i.e., one-item) indices fails to capture the complexity of this construct in the African context (Anum et al., 2021). Second, Burkina Faso is a country where community cohesiveness and harmony supersedes the individual pursuit of happiness (i.e., African *ubuntu*; Møller & Roberts, 2021). Consistent with this, qualitative research on the Burkinabé prototype of the "ideal wife" and "ideal husband" revealed that openly complaining is not socially acceptable, although indirect ways to express discontent are allowed (Thorsen, 2002). Thus, a single, direct question about the quality of life by the interviewer might have been a suboptimal strategy for measuring this construct.

This study has several strengths. First, we made substantial efforts to develop a series of instruments that could be linguistically and culturally sensitive to the Burkinabé context. While the majority of previous studies relied on European languages versions of the instruments (for a notable exception, see Rossier et al., 2013), we translated ours in Dyula, one of the most widespread vehicular idioms in Burkina Faso. The pilot study confirmed that intelligibility of the items was high, making it possible to include

individuals with low or absent education. Second, all the instruments were administered as a structured interview. While time-consuming, this approach ensured high levels of data quality (i.e., occasional misunderstandings were immediately clarified) and virtual absence of missing data (i.e., approximately 1%). Third, in order to investigate the relationship between defense styles and mental well-being as well as functional disability, we collected extensive information about the sociocultural characteristics of the sample. This approach allowed for the consideration of the complexity of this phenomenon, taking into account features such as gender, age, education, living area, and traditional beliefs were considered at the same time. By doing us, we could identify three different pattern of associations comprising sociocultural variables, defense styles, mental well-being, and psychosocial functioning.

This study has several weaknesses too. First, no clinical evaluation was carried out and, consequently, the clinical status of our sample is unknown. It is worth reminding that formal mental health diagnoses are very rare in Burkina Faso. According to the World Health Organization, only 11 psychiatrists and five psychologists were actively working in the country in 2020. Second, although carrying out structured interviews provided several benefits, it also led to some disadvantages, including vulnerability to social desirability. Future studies may want to take a multimethod approach, where both interviews and questionnaires are administered, or specifically add a brief evaluation of social desirability (Verardi et al., 2009). Third, mental well-being variables were measured with single items, which markedly reduced the richness of the phenomena investigated (e.g., quality of life, perceived physical health, depression, and anxiety). This approach was chosen in order to minimize the burden on the interviewees, who were not used to answer psychological surveys and were not compensated for the participation. In addition, the study employed well-validated WHO instruments (WHODAS 2.0 and WHOQOL-BREF), which have been extensively used in cross-cultural research (Federici et al., 2017; Skevington et al., 2004). Fourth, although observer-rated instruments are deemed as standard measures for DMs, they were not used in this study due to the unfeasible workload required. Future studies could either rely on these rating systems or, more practically, develop another structured interview based on a newly developed self-report derived from the DMRS system (i.e., DMRS-SR-30; Di Giuseppe et al., 2020). Two points are worth noting. At this current juncture, there is dearth of information pertaining to the psychometric properties of the DMRS-SR-30, and this tool had not been developed at the commencement of our research project.

In summary, our study offers preliminary evidence in support of the hypothesis that defense styles may function similarly across cultures (Ferrajão et al., 2022; Tori & Bilmes, 2002). It is noteworthy that the core features of psychological defenses we observed in Burkina Faso were largely consistent with those originally identified in Western societies. Our findings also suggest that defense styles may be sensitive to the sociocultural context, whereby individuals adopt increasingly distorting and emotionally taxing mechanisms to cope with increasingly stressful situations (e.g., discrimination, poverty, and hunger). Hence, we acknowledge that cultural diversity should not be disregarded, but rather embraced for its valuable contribution to our comprehension of human beings. Similarly, we believe that cross-cultural research in personality psychology should be encouraged in order enrich our understanding of personality dynamics. As such, recent research enterprises where psychological notions developed in non-Western societies (i.e., African *ubuntu*) are tested for generalizability in the Western context are particularly timely and warranted (Adetula et al., 2022).

In conclusion, we argue that cross-cultural research is essential to unravel the complex interplay between personality, sociocultural factors, and mental health. We hope that this study can inspire future investigations on the universality and cultural variation of personality mechanisms, further advancing our understanding of human psychological functioning.

AUTHOR CONTRIBUTIONS

All the authors conceived and designed the study. Ilaria Micheli supervised the translation process of all the tools. Michele Grassi analyzed the data. Igor Marchetti drafted the article. All the authors reviewed and approved the article.

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CONFLICT OF INTEREST STATEMENT

None.

DATA AVAILABILITY STATEMENT

Data and code generated in the current study are available at https://doi.org/10.17605/OSF.IO/Q4CZK.

ETHICS STATEMENT

This project was approved by the Italian Ministry of Foreign Affairs and International Cooperation.

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ENDNOTES

[1] According to Worldometers Web site (https://www.worldometers.info/world-population/population-by-region/), Europe and North America, respectively, represent 9.2% and 4.7% of the global population in 2023.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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