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Forgiveness Profiles Reveal the Protective Role of Divine Forgiveness in Psychological Adaptation to Fibromyalgia

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Abstract
Fibromyalgia is a chronic, centrally sensitized pain condition frequently accompanied by psychological distress, making psychosocial resources important for adaptation. This study examined dispositional forgiveness profiles in 236 women with fibromyalgia across four forgiveness domains: self, others, situations, and divine forgiveness. Latent profile analysis identified four subgroups: low divine–low human forgiveness, high divine–moderate human forgiveness, high divine–high human forgiveness, and low divine–high human forgiveness. Forgiveness profiles differed significantly in depression, anxiety, and anger, but not in fibromyalgia severity/impact, which nonetheless correlated negatively with forgiveness of self, others, and situations. Women low in both divine and human forgiveness showed the most unfavorable outcomes, whereas those high in both domains reported the most favorable outcomes. The remaining two profiles showed intermediate results, with outcomes less positive when divine forgiveness was low. These findings suggest that forgiveness—especially divine forgiveness—represents a meaningful dispositional resource linked to psychological resilience in fibromyalgia and may complement established therapeutic interventions.

Keywords Fibromyalgia · Forgiveness · Divine forgiveness · Psychological resilience · Depression · Anxiety · Anger

Introduction

Fibromyalgia is a chronic, multifaceted pain condition marked by widespread musculoskeletal discomfort, persistent fatigue, sleep disturbances, and cognitive difficulties often referred to as “fibro fog” (Clauw, 2014; Rahman, 2022). It affects approximately 2–4% of the global population and is diagnosed disproportionately among women, with prevalence estimates suggesting that up to 90% of clinical samples are female (Berwick et al., 2022). Beyond its physical manifestations, fibromyalgia is strongly associated with psychological distress, including elevated rates of depression, anxiety, and anger (Galvez-Sánchez et al., 2022; Thieme et al., 2004). These comorbidities not only intensify patients’ subjective symptom burden but also complicate treatment outcomes and diminish quality of life

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(Henao Pérez et al., 2020). Because fibromyalgia lacks a definitive cure and remains resistant to purely biomedical approaches, identifying psychosocial resources that may mitigate its impact is a central goal for both clinicians and researchers.

Growing evidence suggests that fibromyalgia is closely linked to dysregulation of the stress response. Alterations in the hypothalamic–pituitary–adrenal axis and the autonomic nervous system have been observed, with findings indicating both hyper- and hypo-activation patterns, often varying across subgroups of patients (Martinez-Lavin, 2012). Stressful life events, interpersonal conflict, and daily difficulties have been consistently reported as triggers for symptom exacerbation (Fischer et al., 2016). Such evidence has led to conceptualizations of fibromyalgia as a complex syndrome in which maladaptive responses to environmental demands are somatically expressed through heightened pain sensitivity, fatigue, and distress. Consequently, therapeutic strategies that address not only physical symptoms but also stress and emotion regulation are of relevance in this population.

Psychological therapies for chronic pain—including acceptance and commitment therapy (ACT) and various cognitive-behavioral therapies (CBTs)—are designed to reduce negative emotions and maladaptive cognitions (e.g., pain catastrophizing, fear avoidance) while fostering adaptive coping strategies, such as pain acceptance, behavioral activation, and relaxation techniques (Bennett & Nelson, 2006; Eastwood & Godfrey, 2024; Lee et al., 2024; Wicksell et al., 2013). Beyond these interventions, forgiveness has been highlighted as a process that not only alleviates negative emotions such as anger, resentment, and rumination (Mullet et al., 2005) but also promotes positive psychological resources, including compassion, acceptance, and meaning (Skalski-Bednarz et al., 2025a, 2025b). Forgiveness is conceptualized as a prosocial change in emotions, cognitions, and motivations toward oneself or others following real or perceived transgressions (Enright et al., 1998; Worthington & Scherer, 2004). It can complement established psychotherapeutic interventions; dedicated forgiveness programs have demonstrated evidence of effectiveness (Lee & Enright, 2014; O'Beirne et al., 2020; Vismaya et al., 2024).

Forgiveness is a multidimensional process that can be directed toward oneself, others, or situations; in religious or spiritual contexts, it may also involve divine forgiveness (Toussaint et al., 2023b). It can be examined both as a transient state and as a relatively stable trait (Rye et al., 2001; Worthington et al., 2007). Forgiveness has been consistently linked to lower levels of anger, depression, and anxiety (Skalski-Bednarz et al., 2024a, 2024b, 2024c, 2024d; Skalski-Bednarz et al., 2024a, 2024b, 2024c, 2024d; Toussaint et al., 2023a, 2023b; Toussaint et al., 2008), while both trait and experimentally induced state forgiveness (i.e., forgiveness evoked through structured exercises) have been shown to reduce sympathetic arousal, enhance parasympathetic functioning, and promote better health and longevity (Friedberg et al., 2007; Skalski-Bednarz et al., 2024a, 2024b, 2024c, 2024d; Webb et al., 2012; Whited et al., 2010). According to the *stress-and-coping model of forgiveness* (Strelan, 2020; Worthington & Scherer, 2004), which draws on Lazarus and Folkman's (1984) broader framework, forgiveness functions as a coping response that integrates both emotion-focused and action-oriented strategies. Whereas unforgiveness represents a chronic stressor, engaging in forgiveness helps regulate negative affect, reduce psychophysiological arousal, and reframe stressful events in less threatening and more productive ways. In this sense, forgiveness entails not only emotional relief but also intentional cognitive reappraisal and behavioral shifts toward oneself or others that foster constructive adaptation (Strelan, 2020). Dysregulation of the stress response is a central feature of fibromyalgia, which could make forgiveness particularly relevant in this population.

Both self- and other-forgiveness have been linked to higher quality of life and lower levels of depression, anxiety, and anger (Offenbaecher et al., 2017; Toussaint et al.,

2009). Vallejo et al. (2020) observed that greater forgiveness of self was associated with more active coping and greater acceptance, whereas lower levels were tied to heightened emotional distress and catastrophizing. King (2021) further demonstrated that forgiveness of self, but not of others, was significantly associated with fibromyalgia severity/impact, although both forms were related to anger, depression, and quality of life. Although situational forgiveness and divine forgiveness have not been directly examined in fibromyalgia, evidence from other chronic conditions provides indirect support. Research on spinal cord injury populations indicates that situational forgiveness and self-forgiveness predict biopsychosocial adjustment and overall well-being (Cornish et al., 2022; Webb et al., 2010), while Trost et al. (2016) reported that forgiveness of self, others, and situations was negatively correlated with state anger (i.e., momentary emotional arousal in response to provocation), trait anger (i.e., a stable tendency to experience anger across situations), and perceived injustice. Similarly, Svalina and Webb (2012) found that while forgiveness of self was most consistently related to health outcomes in a rehabilitation sample, divine forgiveness was uniquely associated with health-related social functioning. These observations suggest that forgiveness may represent a promising resource for supporting emotional regulation and resilience in fibromyalgia.

Current Study

Research on forgiveness in people living with chronic pain has primarily examined isolated dimensions using variable-centered methods that emphasize average associations across individuals with fibromyalgia (Offenbaecher et al., 2017; Toussaint et al., 2009; Vallejo et al., 2020). While informative, this approach overlooks the possibility that forgiveness may cluster in distinct patterns within individuals, reflecting heterogeneous profiles of strengths and vulnerabilities. For instance, some patients may demonstrate a strong capacity for self-forgiveness while expressing limited forgiveness toward others, whereas others may exhibit equilibrium across all domains. These constellations may carry different implications for adjustment and coping with fibromyalgia. Recent evidence from a general community sample suggests that forgiveness can indeed form distinct latent profiles with meaningful links to well-being (Bailly et al., 2024). However, no study to date has applied this person-centered approach in a clinical population.

The aim of the present study is therefore to identify forgiveness profiles in individuals with fibromyalgia, focusing on forgiveness directed toward the self, others, situations, and by God (divine). We conceptualize these forgiveness tendencies as dispositional resources that may anticipate how patients cope with the stress and demands of chronic illness, such as fibromyalgia (Skalski-Bednarz et al., 2024a, 2024b, 2024c, 2024d). To evaluate the relevance of these profiles, we examine their associations with key indicators of psychological functioning and illness impact: depression, anxiety, fibromyalgia severity/impact, and anger. Given the lack of prior evidence in clinical samples, our analysis is exploratory, but we hypothesize that profiles characterized by high forgiveness across all targets will be associated with lower depression, anxiety, and anger, as well as reduced fibromyalgia severity/impact.

Materials and methods

Participants

Potential participants were recruited from the Mayo Clinic patient registry under approval of the Mayo Clinic Institutional Review Board. Eligibility criteria included being at least 18 years old, fluency in English, and a confirmed clinical diagnosis of fibromyalgia. Participants were drawn from the registry of the Fibromyalgia and Chronic Fatigue Clinic (Mayo Clinic, Rochester, Minnesota), which included individuals currently in treatment as well as those in follow-up care. Recruitment was conducted via email invitations between fall 2024 and spring 2025, yielding a sample with a response rate of approximately 41%. Participation was voluntary and anonymous, and all participants provided informed consent. No additional exclusion criteria were applied.

Initially, sex was not an inclusion criterion. However, because only 25 males responded, their data were excluded due to substantial underrepresentation. Although this distribution reflected the typical sex imbalance observed in fibromyalgia (clinically and scholarly) (Bennett et al., 2009), it did not allow for meaningful comparative analyses. Therefore, the final analytic sample consisted of 236 females.

Participants had a median age of 46 years ($M = 46.10$, $SD = 12.41$) and a median body mass index (BMI) of 29.70 ($M = 30.85$, $SD = 7.98$). Regarding sexual orientation, 87% identified as heterosexual, 11% as homosexual, and 2% as bisexual. In terms of racial and ethnic background, most participants identified as White (86%), with smaller proportions identifying as mixed race (4%), Black/African American (3.5%), Native American (3%), Central/South American (1%), Mexican (2%), and Middle Eastern (0.5%). This distribution is broadly consistent with U.S. clinical fibromyalgia samples, which are predominantly female and largely composed of White patients (Clauw, 2014; Wolfe et al., 2018). Epidemiological studies indicate that fibromyalgia is diagnosed far more frequently in women than in men, with women comprising approximately 80–90% of clinical cases, although men may be underdiagnosed in clinical settings (Bennett et al., 2009; Queiroz, 2013). Similarly, the predominance of White participants in clinical samples may partly reflect disparities in healthcare access, referral patterns, and diagnostic practices rather than true differences in prevalence.

Procedure

All survey and demographic data were collected online via REDCap, with participants completing the survey at their own pace. The survey encompassed the assessment of forgiveness, mental health symptoms, and anger; additional data including validated mood scores and fibromyalgia severity/impact scores were abstracted from the electronic medical records. On average, completion time was 20–25 min. After providing informed consent, participants proceeded through the measures in a fixed order. To facilitate comparability of forgiveness tendencies across latent profiles, scores on the forgiveness measures were analyzed and reported as scale means. This approach allows for direct comparisons between groups on a standardized response scale. In contrast, health-related outcomes were analyzed and reported as summed scale scores, consistent with their conventional use in clinical contexts. Presenting these variables in raw units

provides a more intuitive representation of symptom burden, which is particularly useful for clinical interpretation and aligns with standard practice in health research.

Power analysis

An a priori power analysis was conducted to evaluate whether the study sample provided sufficient statistical power to detect effects of interest. For bivariate correlations, a sample of this size yields 80% power to detect effects of approximately $r \geq .20$. For group comparisons, assuming 3–6 latent profiles with unequal cell sizes (but at least 35 participants per class), the sample affords 80% power to detect medium effects (Cohen's $f \approx .25$, $\eta^2 \approx .06$). For pairwise comparisons between classes, the study was sufficiently powered to detect effects of $d \geq 0.48$ (medium magnitude). Thus, the present sample size was adequate for identifying effects of small-to-moderate magnitude but not for very small effects.

Measures

Divine forgiveness Divine forgiveness was measured with the Divine Forgiveness Scale (DFS; Fincham & May, 2021). The scale comprises four items that assess a relatively stable disposition to perceive oneself as forgiven by the divine (e.g., "I am certain that God forgives me when I seek his forgiveness"). Responses are provided on a 7-point scale (1 = *never*, 7 = *very often*), with higher scores indicating a stronger, more enduring sense of divine forgiveness. In the present study, the DFS demonstrated good internal consistency ($\alpha = .82$).

Forgiveness of self, others, and situations Dispositional forgiveness was assessed with the Heartland Forgiveness Scale (HFS; Thompson et al., 2005), which measures a general tendency to grant forgiveness across time and circumstances. The HFS consists of 18 items across three subscales: forgiveness of self (6 items; e.g., "Although I feel bad at first when I mess up, over time I can give myself some slack"), forgiveness of others (6 items; e.g., "Although others have hurt me in the past, I have eventually been able to see them as good people"), and forgiveness of situations (6 items; e.g., "Eventually I let go of negative thoughts about bad circumstances that are beyond anyone's control"). Items are rated on a 7-point scale (1 = *almost always false of me*, 7 = *almost always true of me*), with higher scores reflecting a stronger dispositional tendency to forgive. In the present study, internal consistency was acceptable, with $\alpha = .75$ for forgiveness of self, $\alpha = .78$ for forgiveness of others, and $\alpha = .79$ for forgiveness of situations.

Depression Depressive symptoms were measured with the Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001), a self-report instrument that assesses the presence and severity of depressive symptoms over the past 2 weeks. The scale consists of nine items (e.g., "Little interest or pleasure in doing things"), each rated on a 4-point scale (0 = *not at all*, 3 = *nearly every day*). Although originally developed to reflect DSM-IV criteria, the PHQ-9 has been successfully applied under DSM-5 diagnostic standards. A total score was computed as an indicator of overall depression severity, with higher values reflecting greater symptom burden. In the present study, internal consistency was excellent ($\alpha = .93$).

Anxiety Generalized anxiety symptoms were measured with the Generalized Anxiety Disorder 7-item scale (GAD-7; Spitzer et al., 2006), a widely used screening tool that assesses

the frequency of anxiety symptoms over the past 2 weeks. The scale consists of seven items (e.g., “Feeling nervous, anxious, or on edge”), each rated on a 4-point scale (0 = *not at all*, 3 = *nearly every day*). A composite total score was calculated, with higher values indicating greater symptom severity. In the present study, internal consistency was excellent (α = .95).

Fibromyalgia severity/Impact The Revised Fibromyalgia Impact Questionnaire (FIQR; Bennett et al., 2009) assesses the past-week impact of fibromyalgia across three domains: Function (9 items; e.g., “How much your fibromyalgia made it difficult to do: Brush or comb your hair”), Overall Impact (2 items; e.g., “Fibromyalgia prevented me from accomplishing goals for the week”), and Symptoms (10 items; e.g., “Please rate your level of pain”). Items are rated on 11-point numeric scales from 0 to 10; anchors vary by item but consistently reflect 0 = *best/least* impairment and 10 = *worst/most* severe. Scoring follows the published algorithm: the summed Function score (range 0–90) is divided by 3, Overall Impact (0–20) is unchanged, and the summed Symptoms score (0–100) is divided by 2. The FIQR total score is the sum of these domain scores (range 0–100), with higher values indicating greater severity/impact. Compared to the original FIQ (Burckhardt et al., 1991), the FIQR uses updated functional wording and includes additional items assessing memory, tenderness, balance, and environmental sensitivity. The measure demonstrated strong psychometric properties, including excellent internal consistency (α = .95 in the present study), strong convergence with the original FIQ in prior validation research (total score r ≈ .88), and evidence of discriminant validity against other clinical and healthy comparison groups.

Anger Anger was assessed with the Dimensions of Anger Reactions–5 (DAR-5; Forbes et al., 2014), a brief self-report instrument measuring the frequency and intensity of anger over the past four weeks. The scale consists of five items (e.g., “I found myself getting angry at people or situations”), rated on a 5-point scale (1 = *none or almost none of the time*, 5 = *all or almost all of the time*). Scores are summed to yield a total ranging from 5 to 25, with higher scores reflecting greater anger severity. A cutoff of 12 or higher has been suggested to indicate clinically elevated anger. In the present study, internal consistency was strong (Cronbach’s α = .88).

Data analysis

All analyses were conducted in Jamovi (version 2.4.7). The analytic strategy proceeded in several steps. First, data were screened for accuracy and completeness, and descriptive statistics and bivariate correlations were computed. Next, latent profile analysis (LPA) was employed to identify subgroups of participants with distinct forgiveness tendencies across the four dimensions (divine, self, others, situations).

Model fit was evaluated using several criteria: Akaike information criterion (AIC; smaller values indicate better fit), Bayesian information criterion (BIC; smaller values indicate better fit), sample-size adjusted BIC (SABIC; smaller values indicate better fit), integrated completed likelihood (ICL; smaller values indicate better fit), entropy (higher values indicate better classification accuracy), and average posterior probabilities of class membership (values closer to 1 indicate clearer class separation). To ensure stability of solutions and minimize the risk of local maxima, each model was estimated with 500 random start values, retaining the 50 best solutions, followed by 1,500 additional random starts for the final optimization.

In the final step, forgiveness profiles were compared on health-related outcomes (depression, anxiety, fibromyalgia severity/impact, anger). Because the assumption of homogeneity of variances was violated, Welch's ANOVA was applied, followed by post hoc pairwise comparisons. To control for multiple testing, p values were adjusted using the sequential Hochberg (Hochberg, 1988) procedure, a step-up method that provides greater statistical power than the Bonferroni correction. Statistical significance was determined at the conventional threshold of $p<.05$.

Results

The correlation matrix (see Table 1) revealed meaningful associations among the study variables. Most forgiveness dimensions were positively interrelated, with effect sizes ranging from small to large. However, the association between divine forgiveness and forgiveness of others was nonsignificant. All forgiveness dimensions demonstrated small to moderate negative associations with depression, anxiety, fibromyalgia severity/impact, and anger, suggesting that greater forgiveness was linked to fewer symptoms and severity. Among health indicators, depression and anxiety were strongly correlated, representing a large effect, and both showed small-to-moderate positive associations with fibromyalgia severity/impact and anger. Age was weakly positively related to some forgiveness dimensions and weakly negatively related to mental health symptoms. Body mass index displayed only weak correlations to depression, anxiety, and fibromyalgia severity/impact. Overall, the pattern of findings aligns with expectations, suggesting that forgiveness is generally associated with better psychological adjustment and lower symptom burden. Importantly, indices of skewness and kurtosis for all variables were within conventional thresholds (± 2), suggesting that the distributions were reasonably close to normal.

After preliminary data screening, we proceeded with LPA to identify subgroups of participants with distinct forgiveness patterns. Latent class models ranging from one to eight classes were estimated to ensure a comprehensive exploration of potential solutions and to assess the stability of fit indices across a broad range of models. Although the AIC decreased monotonically with additional classes, the BIC and SABIC reached their lowest values in the four-class solution. Moreover, this model yielded the highest entropy (.84) and the most favorable ICL (-3576) compared with adjacent models (see Table 2). On this basis, the four-class model was selected as the best-fitting and most parsimonious representation of the data.

Table 3 presents the estimated means and standard errors for the four-class solution. Class 1 (*low divine–low human forgiveness*, $n=46$) was characterized by the lowest levels of divine forgiveness and relatively low scores on forgiveness of self, others, and situations. Class 2 (*high divine–moderate human forgiveness*, $n=69$) showed moderate scores across domains, particularly in forgiveness of self. Class 3 (*high divine–high human forgiveness*, $n=76$) consistently reported the highest levels across all dimensions, indicating a broadly forgiving orientation. By contrast, Class 4 (*low divine–high human forgiveness*, $n=45$) showed very low divine forgiveness but relatively high levels of self-, other-, and situational forgiveness. The average posterior probabilities for class membership were Class 1 = .84, Class 2 = .82, Class 3 = .80, and Class 4 = .75, indicating reasonably distinct class separation. This structure is visualized in Fig. 1, which depicts the estimated means for each dimension across the four latent profiles. Detailed statistical comparisons of forgiveness dimensions across profiles are provided in Appendix 1 (Table 5).

Table 1 Descriptive statistics and intercorrelations among study variables (N = 236)

Variable	*M*	*Med*	*SD*	*Sk*	*K*	1	2	3	4	5	6	7	8
1. Divine forgiveness	3.08	3.20	1.16	–0.59	–0.76	—							
2. Forgiveness of self	4.31	4.50	1.17	–0.52	–0.06	.20** [.07,.32]	—						
3. Forgiveness of others	4.59	4.67	0.95	–0.58	0.51	.12 [–0.01, 0.24]	.26*** [.15,.37]	—					
4. Forgiveness of situations	4.49	4.50	1.06	–0.34	–0.22	.27*** [.15,.39]	.60*** [.51,.67]	.43*** [.33,.53]	—				
5. Depression	11.32	11	5.53	0.38	–0.52	–.15* [–.27, –.02]	–.30*** [–.41, –.19]	–.16* [–.28, –.04]	–.23*** [–.34, –.11]	—			
6. Anxiety	8.31	8	5.73	0.40	–0.83	–.20** [–.32, –.07]	–.34*** [–.44, –.23]	–.20** [–.31, –.08]	–.35*** [–.46, –.24]	.74*** [.68,.79]	—		
7. Fibromyalgia severity/impact	55.71	58	17.47	–0.32	–0.26	–0.06 [–.19,.07]	–.21*** [–.32, –.09]	–.20** [–.32, –.08]	–.20** [–.32, –.08]	.39*** [.28,.49]	.28*** [.16,.38]	—	
8. Anger	9.39	9	3.80	0.98	0.92	–.14* [–.26, –.01]	–.33*** [–.44, –.22]	–.36*** [–.46, –.25]	–.36*** [–.46, –.24]	.21*** [.09,.33]	.26*** [.14,.37]	.26*** [.14,.37]	—
Age	46.10	46	12.41	0.18	–0.52	.23*** [.10,.34]	.22*** [.10,.33]	.05 [–.07,.17]	.20** [.08,.32]	–.15* [–.26, –.02]	–.20** [–.31, –.08]	–.19** [–.30, –.07]	–.17** [–.29, –.05]
BMI	30.85	29.70	7.98	0.87	0.90	–.03 [–.16,.10]	–.05 [–.17,.07]	–.08 [–.20,.04]	–.10 [–.22,.02]	.17** [.04,.28]	.13* [.01,.25]	.20** [.08,.32]	.02 [–.10,.14]

M mean; *Med* median; *SD* standard deviation; *Sk* skewness; *K* kurtosis. Values below the diagonal are Pearson's *r*. Values in brackets indicate 95% confidence intervals. * $p<.05$, ** $p<.01$, *** $p<.001$

Table 2 Fit indices for 1–8 class solutions (N = 236)

Classes	LogLik	AIC	AWE	BIC	CAIC	CLC	KIC	SABIC	ICL	Entropy
1	–1822	3660	3754	3688	3696	3646	3671	3663	–3688	1
2	–1757	3539	3693	3584	3597	3515	3555	3543	–3633	.71
3	–1731	3498	3711	3560	3578	3463	3519	3503	–3611	.79
4	–1700	3446	3719	3526	3549	3402	3472	3453	–3576	.84
5	–1700	3456	3789	3553	3581	3401	3487	3464	–3669	.73
6	–1688	3442	3835	3556	3589	3377	3478	3452	–3672	.75
7	–1682	3439	3892	3571	3609	3365	3480	3451	–3696	.74
8	–1671	3429	3941	3578	3621	3344	3475	3442	–3670	.81

LogLik log-likelihood; *AIC* Akaike information criterion; *AWE* approximate weight of evidence; *BIC* Bayesian information criterion; *CAIC* consistent Akaike information criterion; *CLC* classification likelihood criterion; *KIC* Kashyap information criterion; *SABIC* sample-size adjusted BIC; *ICL* integrated completed likelihood

Table 3 Estimated means and variances for the four-class model (N = 236)

Parameter	Class 1 (*n* = 46)		Class 2 (*n* = 69)		Class 3 (*n* = 76)		Class 4 (*n* = 45)	
	M	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*
Divine forgiveness	1.90	0.42	3.43	0.09	3.92	0.08	1.17	0.06
Forgiveness of self	2.69	0.37	3.86	0.14	5.16	0.10	4.62	0.23
Forgiveness of others	3.89	0.43	4.33	0.10	5.09	0.08	4.75	0.16
Forgiveness of situations	2.82	0.35	4.01	0.11	5.45	0.09	4.76	0.28

Estimates represent class-specific means and variances. *SE* = standard error. All parameters were statistically significant at $p < .001$

In the final step, we examined whether the identified latent profiles differed in health-related outcomes (see Table 4). The assumption of homogeneity of variances was violated (Levene's tests, $p < .05$); therefore, Welch's ANOVA was applied, followed by post hoc comparisons.

For depression, there was a significant effect of forgiveness profile, $F_{(3,80)} = 4.11$, $p = .009$. Post hoc tests indicated that Class 1 reported significantly higher depression than Class 2 ($t_{(235)} = 2.67$, $p = .040$) and Class 3 ($t_{(235)} = 3.65$, $p = .002$). For anxiety, the effect of profile was also significant, $F_{(3,78)} = 6.63$, $p < .001$. Post hoc tests showed that Class 1 scored significantly higher than Class 3 ($t_{(235)} = 4.24$, $p < .001$), and Class 2 scored higher than Class 3 ($t_{(235)} = 3.11$, $p = .011$). For anger, there was a robust effect of profile, $F_{(3,78)} = 8.94$, $p < .001$. Post hoc analyses indicated that Class 1 reported significantly higher anger than Class 2 ($t_{(235)} = 3.55$, $p = .003$), Class 3 ($t_{(235)} = 5.83$, $p < .001$), and Class 4 ($t_{(235)} = 4.50$, $p < .001$). In addition, Class 2 reported higher anger than Class 3 ($t_{(235)} = 3.55$, $p = .003$). For fibromyalgia severity/impact, no significant profile differences were observed, $F_{(3,83)} = 2.12$, $p = .104$. Similarly, quantitative variables (age, BMI) did not differ significantly between profiles ($p_s > .05$).

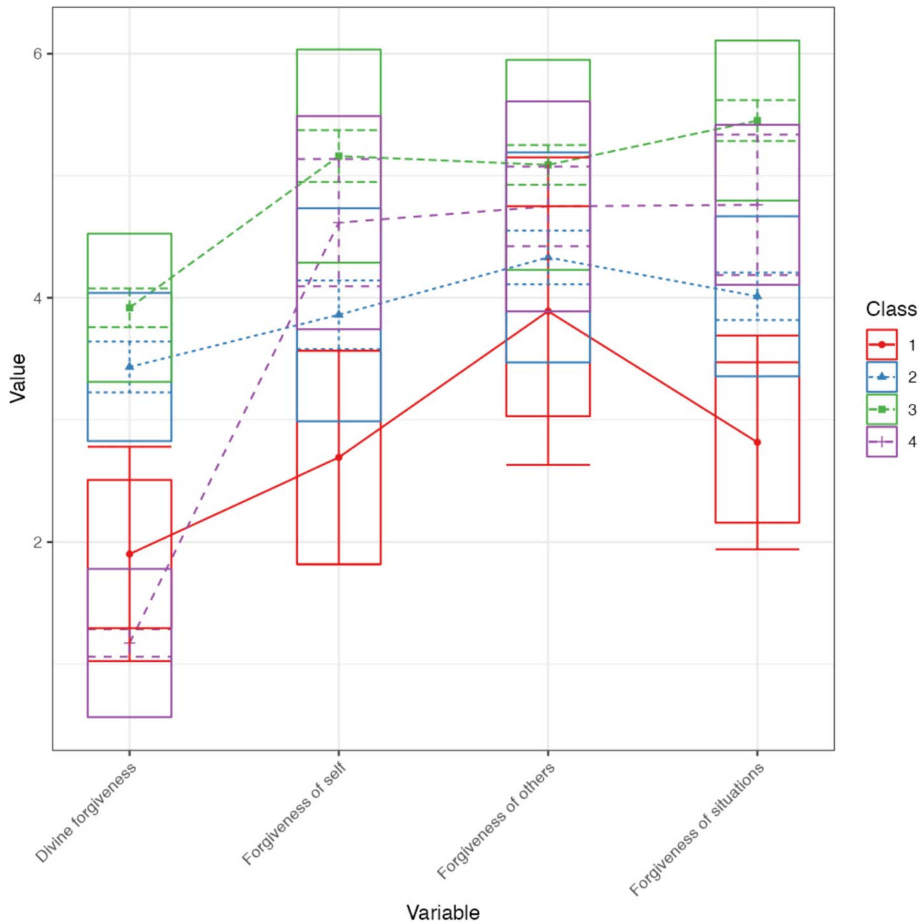

Fig. 1 Estimated means across the four latent profiles (N = 236)

Table 4 Group means, standard deviations, and post hoc comparisons for health-related outcomes across latent profiles (N = 236)

Measure	Class 1 [A] ($n = 46$)		Class 2 [B] ($n = 69$)		Class 3 [C] ($n = 76$)		Class 4 [D] ($n = 45$)		Post hoc
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	
Depression	14.58	5.66	11.37	5.42	10.09	5.53	11.31	5.14	A > B, C
Anxiety	11.65	6.36	8.92	5.74	6.30	5.03	8.31	5.74	A > C; B > C
Fibromyalgia severity/impact	60.35	15.31	57.16	17.40	51.90	18.59	56.85	16.74	n/a
Anger	12.69	5.66	9.92	3.51	8.03	2.98	8.57	2.69	A > B, C, D; B > C

Discussion

The present study is, to our knowledge, the first to examine forgiveness profiles in a clinical population, specifically among women with fibromyalgia (men were excluded due to very low numbers, insufficient for subgroup comparisons). Using LPA across four targets of forgiveness—self, others, situations, and divine forgiveness—we identified four distinct subgroups that varied in psychological functioning. The most pronounced differences emerged for anger, with additional though less consistent differences in depression and anxiety, whereas no systematic differences were observed in fibromyalgia-related health outcomes. These results extend prior evidence from studies in fibromyalgia that consistently linked forgiveness with psychological well-being (Offenbaecher et al., 2017; Toussaint et al., 2009; Vallejo et al., 2020) by showing that such associations also differentiate subgroups of patients when considered through a person-centered lens.

Forgiveness profile-level patterns provided further nuance. Patients in the low divine–low human forgiveness group (Class 1) reported the most unfavorable psychological outcomes, consistent with the stress-and-coping model of forgiveness (Strelan, 2020; Worthington & Scherer, 2004), which conceptualizes unforgiveness as a chronic stressor. In contrast, those in the high divine–high human forgiveness group (Class 3) demonstrated the lowest levels of depression, anxiety, and anger, highlighting the benefits of a broadly forgiving orientation. The high divine–moderate human forgiveness group (Class 2) showed intermediate outcomes, suggesting that strong dispositional tendencies toward divine forgiveness may promote resilience even when forgiveness toward human targets is less developed. Finally, the low divine–high human forgiveness group (Class 4) showed some benefits compared to Class 1 in lower anger but did not demonstrate the broader protective effects observed in the high divine profiles. This pattern suggests that divine forgiveness may be a uniquely important factor in psychological adaptation, beyond forgiveness directed toward self, others, or situations.

Although much of the literature has emphasized forgiveness of self as the most consistent predictor of health and well-being (Skalski-Bednarz et al., 2025a, 2025b; Svalina & Webb, 2012), emerging evidence points to a particularly important role of divine forgiveness. Upenieks (2021), in a longitudinal study of older adults, found that forgiveness by God was more strongly related to physical health than forgiveness of self and others, especially when accompanied by strong beliefs in God-mediated control. Our results extend these insights to a clinical context, suggesting that divine forgiveness—likely not yet examined in fibromyalgia—may also serve as a key dispositional resource for psychological functioning. Complementary evidence further indicates that divine forgiveness interacts with other forgiveness dimensions: Skalski-Bednarz (2024) showed that the stress-reducing benefits of forgiveness of self were amplified when individuals also felt forgiven by God, while Fincham and May (2023a, 2023b) demonstrated that divine forgiveness predicted later interpersonal forgiveness but not vice versa. Divine forgiveness, as understood in Christian theology (the dominant religion in the United States), is described as liberating from guilt and shame, restoring reconciliation with God, and affirming human dignity in God's unconditional love (e.g., 1 John 1:9). Similarly, forgiveness is a central theme in Islam, where the Qur'an emphasizes God's mercy and readiness to forgive those who repent (e.g., Qur'an 39:53), and in Judaism, where the Torah highlights divine forgiveness as restoring covenantal relationship and moral renewal (e.g., Exodus 34:6–7). Experiencing this grace may enable patients to frame suffering in a redemptive way, fostering resilience, hope, and trust in God. This interpretation resonates with broader research on the

importance of spiritual care in healthcare (Büssing et al., 2013), the role of religious coping in chronic illness (Rand et al., 2011), and the sanctification of suffering as protective resources for adaptation (Skalski-Bednarz & Toussaint, 2025).

The findings indicate that forgiveness manifests in distinct patterns across individuals with fibromyalgia. Evidence from nonclinical samples also points to such heterogeneity; Bailly et al. (2024) identified "resistant, contextual, compassionate, and resolute forgivers" using the Forgivingness Questionnaire. Although their dimensional approach (resentment, contextual sensitivity, unconditionality) differs from the target-based framework applied here, both studies emphasize meaningful variation in forgiveness. Extending this perspective to a clinical population, our results demonstrate that such heterogeneity is also salient among patients with fibromyalgia.

Differences in fibromyalgia severity/impact did not reach statistical significance across forgiveness profiles. This is noteworthy given that the correlational results showed significant negative associations between forgiveness dimensions (except divine forgiveness) and fibromyalgia severity/impact, consistent with previous findings that forgiveness of self is important for this outcome (King, 2021). The discrepancy likely reflects methodological factors; correlations capture linear associations across the entire sample, whereas latent profiles group individuals based on response patterns, allowing for substantial within-profile variability. In addition, as indicated by the a priori power analysis, the present sample was powered to detect medium effects but not small ones, which may have limited sensitivity to detect subtle between-group differences. These results suggest that forgiveness may still buffer illness impact in fibromyalgia, even if such effects were not robust enough to emerge at the profile level.

Age was positively associated with divine forgiveness and forgiveness of self and negatively associated with all outcome variables, including depression, anxiety, anger, and fibromyalgia severity/impact. This suggests that older patients reported both higher levels of forgiveness and lower illness burden. These findings are consistent with lifespan research showing that forgiveness, particularly of others and by God, tends to increase with age and demonstrates stronger associations with health outcomes in middle and older adulthood (L. L. Toussaint et al., 2001). They also converge with clinical evidence that younger and middle-aged patients with fibromyalgia experience greater symptom severity and poorer quality of life compared to older patients (Jiao et al., 2014). In contrast, higher BMI was positively correlated with depression, anxiety, and fibromyalgia severity/impact, pointing to a greater illness burden in these patients. This pattern is consistent with prior evidence that elevated BMI is associated with poorer physical functioning and more severe symptomatology in fibromyalgia (Yunus et al., 2002). However, similar to fibromyalgia severity/impact in the profile analyses, neither age nor BMI differentiated the forgiveness subgroups, suggesting that while these factors are important correlates of health, they do not account for heterogeneity in forgiveness patterns.

Limitations

This study's findings have several limitations to consider. First, the cross-sectional design precludes causal inferences about the relationships between forgiveness profiles and health outcomes; longitudinal approaches, such as latent transition analysis, will be needed to clarify temporal dynamics. Second, we examined only women as the small number of male respondents made meaningful subgroup comparisons impossible. Although this approach is consistent with prior research given the overwhelming predominance of women among patients with fibromyalgia, it limits generalizability and underscores the methodological challenge of collecting reliable male samples with this condition. Third, we did not control for participants' religiosity, denominational affiliation, or spiritual practices. This is particularly relevant because seeking or perceiving divine forgiveness is shaped by multiple factors, including cultural norms, religious and community influences, and individual representations of God (Fincham & May, 2023b; Granqvist & Kirkpatrick, 2016; Svalina & Webb, 2012). While it might appear self-evident that atheists would not endorse divine forgiveness, research suggests that even nonbelievers may engage with the construct in symbolic, cultural, or relational ways (Barrett, 2004; Gervais, 2013). Thus, although the Divine Forgiveness Scale is widely used in both religious and nonreligious populations (Fincham & May, 2020, 2023a; Kim et al., 2022; L. L. Toussaint et al., 2001), the absence of measures of personal religiosity limits the interpretation and generalizability of our findings. Finally, the inclusion of additional indicators of physical health (e.g., biomarkers, functional assessments) could provide a more comprehensive picture of how forgiveness relates to illness functioning in fibromyalgia.

Practical implications

Our findings suggest that forgiveness-oriented interventions may complement established biomedical and psychological treatments for fibromyalgia, such as ACT and CBT. Structured forgiveness programs, which have been shown in quantitative research in non-fibromyalgia populations to reduce anger, rumination, and maladaptive cognitions while promoting compassion, acceptance, and meaning, could be adapted as an additional psychosocial resource for this population (Ho et al., 2024; Lin et al., 2014). Qualitative evidence specifically in fibromyalgia further indicates that forgiveness education is acceptable, feasible, and perceived by patients as beneficial for managing emotional distress and pain. In a workshop-based study, participants reported that forgiveness helped them release resentment, focus on controllable aspects of their experience, and cope more effectively with chronic pain, suggesting that forgiveness may function as an emotion-focused

self-management strategy in this condition (Toussaint et al., 2014). Importantly, the present findings highlight the unique potential of divine forgiveness, which emerged as particularly relevant for psychological adjustment in fibromyalgia.

Structured forgiveness interventions explicitly focusing on divine forgiveness are being developed currently and could be applied in fibromyalgia care (Cowden et al., 2025); however, broader forms of spiritual care may also foster divine forgiveness-related processes. Chaplaincy, reflective dialogue, or narrative reframing can gently encourage reconciliation with God and support the perception of divine grace and mercy as tangible expressions of forgiveness. In practice, this may take concrete forms such as guided conversations in which patients are invited to express feelings of guilt, anger, or spiritual struggle; facilitated prayers or meditations focused on receiving compassion and mercy; or reflective reading of sacred texts emphasizing forgiveness (e.g., in Christian contexts, passages such as the parable of the prodigal son in Luke 15). Such practices may support acceptance of uncontrollable aspects of the illness while reducing maladaptive rumination and self-blame, thereby enhancing psychological flexibility. Chaplains or spiritual care providers may also support symbolic or behavioral expressions of reconciliation, such as writing a letter to God, participating in confession or repentance rituals where appropriate to the patient's tradition, or engaging in forgiveness-focused journaling that emphasizes self-compassion and acceptance of divine mercy.

Importantly, these approaches can be adapted across religious and spiritual backgrounds. For example, practitioners might encourage patients to reflect on how their tradition understands compassion, mercy, or ultimate acceptance, to recall moments in which they felt forgiven or supported by a higher power, or to formulate personal statements of acceptance (e.g., "I am imperfect but worthy of compassion"). Even in nontheistic or spiritual-but-not-religious contexts, analogous practices—such as compassion meditation, narrative reframing of suffering, or rituals of letting go—may facilitate processes functionally similar to experiencing divine forgiveness. These practices may help patients process guilt, shame, or spiritual distress, reduce unresolved resentment and self-blame, and foster a more compassionate orientation toward themselves and their illness.

Conclusions

The study identified distinct forgiveness profiles among women with fibromyalgia, showing that differences across human forgiveness (of self, others, and situations) and divine forgiveness are meaningfully linked to psychological functioning. Women characterized by high levels of both human forgiveness and divine forgiveness demonstrated the most favorable outcomes, underscoring the protective role of a broadly forgiving orientation. By contrast, profiles marked by low divine forgiveness—even when human forgiveness was relatively high—were associated with poorer adjustment, highlighting the distinctive relevance of this dimension. These findings indicate that divine forgiveness may represent a key but underexplored resource for psychological resilience and adaptation to chronic illness. Although spiritual and religious variables were not assessed in the present study, previous research suggests that religious culture and beliefs may influence whether feeling forgiven by God is particularly important. Future work could therefore benefit from incorporating such factors to better understand the conditions under which divine forgiveness exerts its effects on health outcomes in fibromyalgia.

Appendix 1

Table 5 Welch's ANOVA and Tukey post hoc comparisons for forgiveness dimensions across latent profiles

Variable	Welch's F (df1, df2)	p	Significant Tukey Comparisons (Mean Difference, p)
Divine forgiveness	525.4 (3,86)	<.001	A–B: – 1.54, <.001; A–C: – 2.06, <.001; A–D: 0.75, <.001; B–C: – 0.51, <.001; B–D: 2.29, <.001; C–D: 2.81, <.001
Forgiveness of self	76.7 (3,78)	<.001	A–B: – 1.20, <.001; A–C: – 2.58, <.001; A–D: – 1.99, <.001; B–C: – 1.38, <.001; B–D: – 0.80, <.001; C–D: 0.58,.005
Forgiveness of others	17.1 (3,77)	<.001	A–C: – 1.20, <.001; A–D: – 0.88, <.001; B–C: – 0.76, <.001
Forgiveness of situations	162.4 (3,74)	<.001	A–B: – 1.26, <.001; A–C: – 2.75, <.001; A–D: – 2.04, <.001; B–C: – 1.49, <.001; B–D: – 0.78, <.001; C–D: 0.71, <.001

Welch's ANOVA was used due to violation of homogeneity of variances. Tukey post hoc tests report only statistically significant pairwise comparisons. Profiles A–D correspond to latent classes identified in the latent profile analysis (see Table 4). Negative values indicate lower scores for the first-listed profile in each comparison

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Declarations

Competing interests The authors declare no competing interests.

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