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Workplace Discrimination, Family, and Chronic Pain: The Longitudinal Buffering Role of Work-to-Family Enrichment

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Purpose/Objective: As work and family life are deeply interconnected, stressors in the work domain, such as workplace discrimination, can spill over into the family domain, affecting its dynamics and overall health outcomes. Despite work-to-family (WF) enrichment having emerged as a critical protective factor in the literature, research on the protective role of WF enrichment for working adults with chronic pain, particularly in the face of workplace discrimination, remains limited. ***Research Method/Design:*** The current study employed a longitudinal moderated mediation model to examine whether WF enrichment moderated the relationship between workplace discrimination and pain interference through perceived family support. Data were drawn from two waves of the national Midlife in the United States (MIDUS) study, with 243 participants with chronic pain. ***Results:*** Mediation analyses revealed that higher workplace discrimination at Time 1 predicted lower family support at Time 2, which in turn predicted greater pain interference at Time 2. Moderated mediation analyses revealed that WF enrichment at Time 1 moderated this mediation model by buffering the negative association between workplace discrimination and family support. ***Conclusion/Implications:*** These findings highlight how workplace discrimination was predictive of disruptions in family dynamics and greater pain interference. Furthermore, WF enrichment emerged as a protective factor, moderating the adverse associations between workplace discrimination and pain-related outcomes through family support.

Impact and Implications

Using nationally representative, longitudinal Midlife in the United States (MIDUS) study data, this study integrates workplace discrimination, work-to-family (WF) enrichment, and chronic pain interference within a single model. It frames discrimination as an environmental barrier and positions WF enrichment as a modifiable, strengths-based resource, addressing a key gap in rehabilitation and health psychology where these domains are often siloed and integrated insight has been limited. Findings highlight the harm workplace discrimination poses for working midlife adults with chronic pain and show that higher WF enrichment buffers the adverse association between workplace discrimination and pain outcomes through family support. Implications span multiple levels of rehabilitation practice: family-focused pain interventions that intentionally cultivate WF enrichment and organizational practices that foster an antidiscrimination, accommodation-supportive climate. By linking an upstream organizational stressor to downstream pain outcomes and demonstrating a protective pathway, the study addresses the empirical gap and offers practical implications to improve daily functioning and quality of life for midlife adults with chronic pain.

Keywords: workplace discrimination, chronic pain, work-to-family enrichment, family support, midlife adults

In a system that values individuals based on socially constructed notions of normality and productivity, those living with chronic pain often face elevated risks of workplace discrimination due to the limitations their pain imposes (Adams & Salomons, 2021; Kunin, 2023; Perugino et al., 2022). Chronic pain, frequently termed an invisible disability, affects over 51.6 million U.S. adults, 20.9% of the population, according to the 2021 National Health Interview Survey (Rikard et al., 2023). For working adults who juggle job responsibilities alongside family demands, chronic pain introduces substantial challenges, often straining their well-being in both domains (Darr &

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Johns, 2008). As work and family are deeply interconnected, stressors or resources from one domain can spill over into the other. This dynamic is central to work–family interface theory (Greenhaus & Beutell, 1985), which describes how experiences in one domain influence functioning in the other through a process known as spillover.

Spillover from work to family can take two primary forms: work-to-family (WF) negative spillover, or WF conflict, where stressors in the work domain harm or interfere with family life; and WF positive spillover, which is also often conceptualized as WF enrichment, where beneficial experiences or resources from work enhance the family domain (Greenhaus & Powell, 2006; ten Brummelhuis & Bakker, 2012). For example, workplace discrimination can negatively spill over into the family domain, undermining family dynamics and individuals' health outcomes (Okechukwu et al., 2014). In contrast, WF enrichment has been shown to buffer against the adverse impacts of work stressors on family functioning and broader health outcomes (Gareis et al., 2009; Thomas et al., 2022). Despite growing recognition of the interconnected nature of work, family, and health, prior research has yet to examine the concurrent relationships among workplace discrimination, work–family interface, and chronic pain, leaving an important gap in pain psychology literature and interventions. To address this, the current study draws on longitudinal data from the Midlife in the United States (MIDUS) national data set to examine the associations among workplace discrimination, WF enrichment, perceived family support, and pain interference among working adults living with chronic pain.

The Direct Effect of Workplace Discrimination on Pain Interference

Pain is a complex sensory and emotional experience shaped by biological, psychological, and social influences and is best understood through the biopsychosocial model, which emphasizes how environmental stressors can worsen pain-related outcomes (Bevers et al., 2016; Gatchel et al., 2007). Social pain, stemming from rejection, ostracism, or discrimination, shares neural pathways with physical pain and can heighten inflammatory responses that intensify physical pain experiences (Eisenberger, 2012; Nguyen & Kim, 2025; Ong et al., 2021). Extending from this view, Okechukwu et al. (2014) proposed a theoretical framework in which workplace discrimination, understood as a form of social pain, exposes individuals to multiple occupational hazards that contribute to chronic stress and adverse health outcomes. Recent research has demonstrated that workplace discrimination predicts worsened pain symptoms, particularly in increased pain interference, defined as the extent to which chronic pain disrupts multiple domains of daily life, including activities, sleep, and mood (Cleeland & Ryan, 1994). Collectively, these findings underscore the role of workplace discrimination as a social stressor that exacerbates unfavorable pain-related outcomes, particularly pain interference.

Workplace Discrimination, Family Support, and Pain Interference

One potential mechanism through which workplace discrimination may contribute to worsened pain outcomes is its detrimental impact on family dynamics. Within the framework of work–family interface theory (Greenhaus & Beutell, 1985), this process aligns with WF negative spillover, wherein stressors or negative emotions experienced in the work domain carry over into the family domain, impairing one's capacity to engage meaningfully with their family members. Okechukwu et al.'s (2014) theoretical framework further explicates this mechanism, highlighting that workplace discrimination creates a toxic and stressful work environment that heightens individuals' stress. This heightened stress can then spill over into individuals' personal lives, which impairs their ability to engage effectively in family functioning, disrupts family well-being, and ultimately contributes to adverse health outcomes.

Empirical evidence supports this framework, suggesting that perceived workplace discrimination predicted poorer marital quality, increased parent–child conflict, and lower levels of family support (Doyle & Molix, 2014; Hengstebeck et al., 2018; Riina & McHale, 2010). Strained family dynamics and diminished family support, in turn, have been shown to predict unfavorable health and pain-related outcomes (De Souza & Frank, 2011; Jaremka et al., 2014). In particular, a lack of perceived family support was found to predict greater pain interference and pain catastrophizing (Lewandowski et al., 2010; Woods et al., 2019). The Nguyen et al. (2023) study also demonstrated cascading mechanisms whereby WF negative spillover predicted greater family strain, which in turn exacerbated psychological distress and pain interference. Taken together, these findings suggest that perceived family support may serve as a key mechanism linking workplace discrimination to chronic pain outcomes. However, this proposed mediating pathway has not yet been tested among working adults with chronic pain within a single longitudinal framework that integrates work, family, and pain processes.

WF Enrichment as a Protective Factor

Although WF negative spillover can strain family relationships and health, it is not the only pathway through which work influences home life. The work–home resources model suggests that WF positive spillover, also known as WF enrichment, can co-occur alongside WF negative spillover (ten Brummelhuis & Bakker, 2012). Enrichment arises when engagement in the work domain facilitates the accumulation of personal resources, such as skills, income, and social support, that enhance an individual's capacity to function and connect within the family domain. Notably, enrichment does not simply reflect the absence of conflict. Rather, it emerges from distinct processes and may operate even in the presence of substantial WF strain or negative spillover (Gareis et al., 2009).

WF enrichment has been shown to predict positive outcomes, such as improved life satisfaction, job performance, physical well-being, and family satisfaction (Chan et al., 2016; Rhee & Zheng, 2019; Zhang et al., 2018). A meta-analysis by Crain and Hammer (2013), which synthesized findings across 86 studies, found consistent associations between WF enrichment and enhanced family functioning. In addition to the direct effects, WF enrichment has also been shown to buffer the adverse effects of WF negative spillover on family relationships and overall well-being (Gareis et al., 2009; Kim et al., 2024; Vieira et al., 2018). For example, Wang et al. (2021) found that WF enrichment buffered against the negative effects of maternal WF conflict on children's academic adjustment, suggesting that gains from work role, such as skill development, financial stability, or social support, can foster more positive parent–child interactions and mitigate the adverse impacts of WF conflict. Similarly, Zhao et al. (2023) found that interventions promoting WF enrichment predicted

successful aging at work and improved family relationships among working adults, particularly in the context of workplace age discrimination. In all, existing literature suggests a plausible buffering role of WF enrichment against the negative impacts of workplace discrimination on family dynamics; however, these pathways have not been examined concurrently among working adults with chronic pain within an integrated and longitudinal framework.

The Current Study

Theoretical and empirical evidence has suggested the mediating association between workplace discrimination, perceived family support, and pain outcomes, as well as the potential protective role of WF enrichment. However, this evidence remains fragmented across distinct lines of research, and no studies have examined these processes concurrently within a single longitudinal model that integrates work, family, and pain dynamics among working adults living with chronic pain. To address this gap and contribute to the literature in pain and rehabilitation psychology, this study proposed the longitudinal moderated meditation model (see Figure 1) to examine whether WF enrichment at Time 1 (T1) will moderate the mediation model of perceived workplace discrimination (T1) and pain interference at Time 2 (T2) via perceived family support (T2).

Method

Participants

The current study used the two waves of the national longitudinal study of MIDUS, with MIDUS II as T1 (Ryff et al., 2006) and MIDUS III as T2 (Ryff et al., 2006). There were about 9 to 10 years between the two waves, and all participants in the study completed the two waves of the study. Participants were recruited using telephone banks. After consenting to the study, they completed the study by responding to the phone interview and mail-in survey.

There were 4,963 participants in MIDUS II and 3,294 participants in MIDUS III. After adjusting for mortality and ineligibility, the overall longitudinal retention rate for the full MIDUS study was approximately 77% (Radler, 2014). For this study, we selected a subset of 243 participants from those who completed both MIDUS II and MIDUS III. Eligibility criteria for inclusion were (a) reporting chronic pain symptoms (i.e., experiencing pain for more than three months) at both time points and (b) being employed at T1. At T1, participants' ages ranged from 34 to 75 (M = 51.9, SD = 8.94). At T2, participants' ages ranged from 43 to 84 (M = 60.99, SD = 8.91). Regarding sex, 57.2% of participants identified as female and 42.8% identified as male. Furthermore, 226 participants self-identified as White, eight as Black, three as Native American, and six preferred not to answer. At T1, all participants were employed. At T2, 182 participants were employed, 15 were self-employed, six were looking for work, 29 had retired, and 11 had other employment situations (e.g., homemaker, laid off, permanently disabled). For marital status, 175 participants at T1 and 162 participants at T2 were married or cohabiting. Additional demographic information of participants across both waves is presented in Table 1.

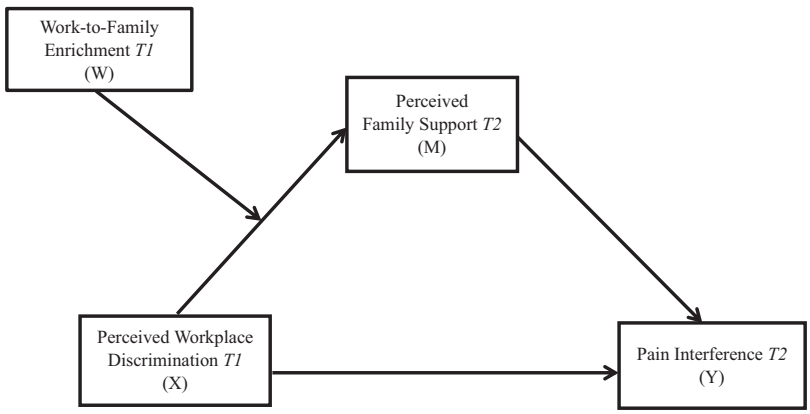
Measurements

Perceived Workplace Discrimination (T1)

Perceived workplace discrimination was measured by using the six-item Chronic Job Discrimination Scale (Williams et al., 1997). Items (i.e., "Unfairly given jobs no one else wanted"; "Watched more closely at job than others"; "Boss uses ethnic/racial/sexual slurs"; "Coworkers use ethnic/racial/sexual slurs"; "Ignored/not taken seriously by boss"; "Coworker promoted before you") were assessed on a 5-point scale (1 = *never* to 5 = *once a week and more*). Scores were summed up, and higher scores from the scale indicated higher levels of perceived workplace discrimination. In a previous study conducted by Brown et al. (2018), perceived workplace discrimination was positively correlated with an increased likelihood of both daily and lifetime chronic pain, with a *Cronbach's alpha* of 0.70. For this study, the items yielded a *Cronbach's alpha* of 0.73.

Figure 1

Moderated Mediated Model for the Indirect Effects of Perceived Workplace Discrimination (T1) on Pain Interference (T2) Through Perceived Family Support (T2) Moderated by Work-to-Family Enrichment (T1)



Note. T1 = Time 1; T2 = Time 2.

Table 1
Demographic Characteristics of the Sample Across MIDUS II and MIDUS III (N = 243)

Demographic characteristic	MIDUS II (2004–2006) *N* (%)	MIDUS III (2013–2014) *N* (%)
Age		
Range	34–75	43–84
M (*SD*)	51.9 (8.94)	60.99 (8.91)
Sex		
Male	104 (42.8%)	
Female	139 (57.2%)	
Race/Ethnicity		
White	226 (93%)	
Black	8 (3.3%)	
Native American	3 (1.2%)	
Preferred not to answer	6 (2.5%)	
Employment		
Employed	243 (100%)	182 (74.9%)
Self-employed	—	15 (6.2%)
Looking for work	—	6 (2.5%)
Retired	—	29 (11.9%)
Others	—	11 (4.5%)
Marital status		
Married	175 (72%)	162 (66.7%)
Separated	8 (3.3%)	4 (1.6%)
Divorced	33 (13.6%)	37 (15.2%)
Widowed	9 (3.7%)	26 (10.7%)
Never married	18 (7.4%)	14 (5.8%)

Note. MIDUS II = Midlife in the United States II; MIDUS III = Midlife in the United States III.

Perceived Family Support (T2)

Participants' perceived family support was measured through a combination of nonspousal and spousal family support measures. The Family Support Scale (Schuster et al., 1990) was used to assess nonspousal family support, and the Marital Empathy Scale (Schuster et al., 1990) measured spousal support. The items for nonspousal support were as follows: "Family members really care about you"; "Family members understand way you feel"; "Rely on family for help with problems"; "Open up to family about worries." The following items were used for spousal support: "Spouse/partner really cares about you"; "Spouse/partner understands way you feel"; "Spouse/partner appreciates you"; "Rely on spouse/partner for help with serious problem"; "Open up to spouse/partner about worries"; "Can relax, be yourself around spouse/partner." Both scales were assessed on a 4-point scale (1 = *not at all*, 4 = *a lot*). A higher score on this measure meant that a person experienced high levels of family support. Regarding validity, Family Support Scale were negatively correlated with pain interference in previous samples from MIDUS (Nguyen et al., 2021), with a *Cronbach's alpha* of 0.85. In this study, a total *Cronbach's alpha* of 0.90 was found.

Pain Interference (T2)

Participants' pain interference was assessed using a five-item version of the Brief Pain Inventory's subscale (Cleeland & Ryan, 1994). The scale assessed how pain symptoms interfere with participants' multiple domains in life, including daily activity, sleep, mood, social relationships, and enjoyment of life during the past week. Items (e.g., "During the past week, how much did your pain interfere with your relations with other people?") were assessed on an 11-point scale (0 = *not at all* to 10 = *completely*). Responses were averaged to create an overall score, with higher scores indicating greater interference from pain. Regarding validity, scale scores were positively associated with pain severity, pain catastrophizing, and family strain, with excellent internal validity (Nguyen et al., 2023; Ryan & McGuire, 2016). The current study yielded a total *Cronbach's alpha* of 0.90.

WF Enrichment (T1)

Participants' WF enrichment was measured using the Positive Work-to-Family Spillover four-item subscale in the Work-to-Family and Family-to-Work Spillover Scale in MIDUS (Grzywacz & Marks, 2000). The items (i.e., "Job helps to deal with issues at home"; "Job makes you more interesting at home"; "Job makes you better companion at home"; "Job skills useful at home") were assessed on a 5-point scale (1 = *never*, 5 = *all of the time*). The total score was calculated by obtaining the sum of the values of all the items, with higher scores indicating higher levels of WF enrichment. Thomas et al. (2022) found that higher levels of WF enrichment were associated with lower levels of systemic inflammation, with a *Cronbach's alpha* of 0.72. Grzywacz and Marks (2000) found that WF enrichment significantly predicted well-being, family cohesion, and support, with a Cronbach's alpha of 0.73. The current study yielded an acceptable *Cronbach's alpha* of 0.70.

Covariates

Participants' gender, race, and employment status at T2 were included as covariates.

Statistical Analyses

The correlation analyses were computed using Pearson's R on Statistical Package for the Social Sciences (SPSS; IBM Corp, 2021). The longitudinal serial mediation was analyzed using Hayes' PROCESS (Hayes, 2017) program, Model 7, on SPSS to examine whether WF enrichment at T1 (*W*) would moderate the mediation between workplace discrimination at T1 (*X*) and pain interference at T2 (*Y*) via perceived family support at T2 (*M*) while controlling for the covariates. All variables were treated as continuous and modeled as such in accordance with scale development recommendations. Following established best practices for moderation analyses, to probe the significant interaction, conditional effects were estimated at the mean and at ± 1 *SD* of the moderator (i.e., WF enrichment), such that low, medium, and high levels correspond to -1 *SD*, the mean, and $+1$ *SD*, respectively. Variables were not standardized, as we aimed to preserve the interpretability of the original scales. The mediating effects were tested using sequences of ordinary least square regressions and the bootstrapping method with 5,000 resamples. The results are deemed statistically significant if there is no value of zero in the 95% confidence intervals. Furthermore, the MIDUS data set provides poststratification weights to enhance the representativeness of the U.S. population (Radler & Ryff, 2010). However, the current study did not apply these weights, as our

main primary focus was on testing hypothesized associations within a specific analytic subsample (i.e., working adults with chronic pain), rather than producing nationally representative estimates.

Transparency and Openness

All data, analysis code, and study materials are available on the Open Science Framework (https://osf.io/3mcfd/?view_only=3857da6f10cf4bd6a4e13221d86bd2ec). The study was not preregistered. Analyses were conducted in SPSS (IBM Corp., 2021).

Results

Mean, standard deviation, and bivariate correlation are captured in Table 2, and the proposed moderated mediation model tested in this study is depicted in Figure 1. Correlation analyses indicated that perceived workplace discrimination at T1 was negatively correlated with family support at T2 ($r = -.24$, $p < .05$) and positively correlated with pain interference at T2 ($r = -.24$, $p < .05$). Furthermore, WF enrichment at T1 was positively correlated with family support at T2 ($r = .23$, $p < .05$). Family support at T2 was negatively correlated with pain interference at T2 ($r = -.19$, $p < .05$).

The moderation analyses indicated that WF enrichment at T1 significantly moderated the negative association between perceived workplace discrimination at T1 and perceived family support at T2 ($B = 0.01$, $SE = 0.003$, $p = .002$, 95% confidence interval [CI; .004, .015]). The conditional effects showed that at lower levels of WF enrichment, the negative association between perceived workplace discrimination at T1 and perceived family support at T2 was the strongest ($B = -0.06$, $SE = 0.01$, $p < .001$, 95% CI [−.08, −.03]), whereas at higher levels of the moderator, such association became positive and statistically insignificant ($B = 0.001$, $SE = 0.01$, $p = .91$, 95% CI [−.02, .02]). These results are displayed graphically in Figure 2. As shown, the association between workplace discrimination and family support is significant and negative only at low levels of WF enrichment. In other words, participants reporting low WF enrichment experienced a marked decline in perceived family support as workplace discrimination increased, whereas those with high WF enrichment showed no statistically

Table 2

Correlation and Moderated Mediation Analyses for Perceived Workplace Discrimination at Time 1 (T1; X), Perceived Family Support at Time 2 (T2; M), Pain Severity at T2 (Y), and Work-to-Family Enrichment at T1 (W), While Controlling for Race, Gender, and Employment Status at T2, With N = 243

Correlation analyses

Variable	*M*	*SD*	1	2	3	4
1. Perceived workplace discrimination (T1)	11.74	4.55	—			
2. Work-to-family enrichment (T1)	11.93	2.74	−.08	—		
3. Perceived family support (T2)	3.45	.62	−.24**	.23**	—	
4. Pain interference (T2)	3.41	2.57	.13*	−.12	−.19**	—

Moderated mediation analyses

Path	*B*	*SE*	*p*	LLCI	ULCI
X to M (a path)	−.14	.04	.001	−.21	−.07
M to Y (b path)	−.70	.27	.009	−1.23	−.18
X to Y (c path)	.13	.04	.04	.001	.142

Moderation analysis: Conditional effects of X on M at values of W

Interaction effects: $B = 0.01$, $SE = 0.003$, $p = .002$, 95% CI [0.004, 0.015]

W	Effect	*SE*	*p*	LLCI	ULCI
Low	−.06	.01	<.001	−.079	−.033
Medium	−.03	.01	.002	−.044	−.011
High	.001	.01	.91	−.024	.027

Moderated mediation analysis: Indirect effects of X on Y through M at values of W

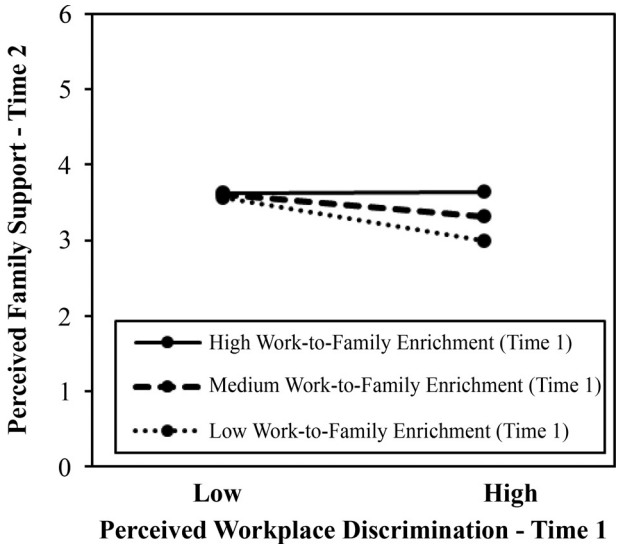
Index of moderated mediation = −0.007, Boot *SE* = 0.004, 95% CI [−0.015, −0.0001]

W	Effect	Boot *SE*	LLCI	ULCI
Low	.04	.02	.002	.08
Medium	.02	.01	.001	.04
High	−.001	.01	−.02	.02

Note. T1 = Time 1; T2 = Time 2; LLCI = lower level confidence interval 95%; ULCI = upper level confidence interval 95%.
* $p < .05$. ** $p < .01$.

Figure 2

Moderation Model for the Effects of Perceived Workplace Discrimination (T1) on Perceived Family Support (T2) at Low and High Levels of Work-to-Family Enrichment



Note. T1 = Time 1; T2 = Time 2.

significant change in family support, consistent with a relatively flat slope across discrimination levels.

The moderated mediation results showed significant results (*index* = −0.01, *SE* = 0.004, 95% CI [−.015, −.001]), indicating that the indirect effects between perceived workplace discrimination at T1 and pain interference at T2 through perceived family support at T2 significantly differed at different levels WF enrichment at T1. Specifically, at lower levels of WF enrichment at T1, the indirect effect was significantly positive (*Effect* = 0.04, *SE* = 0.02, 95% CI [.001, .08]), whereas at higher levels of WF enrichment at T1, the indirect effect was no longer significant (*Effect* = −0.001, *SE* = 0.01, 95% CI [−.02, .02]).

Post Hoc Analyses. To examine the robustness of our proposed directional pathway, a post hoc reverse-pathway analysis was conducted. This analysis was undertaken to address the possibility of an alternative directional model, given that in the proposed model, both the mediator (perceived family support) and the outcome (pain interference) were assessed at the same time point (T2), which limits the ability to establish temporal precedence and warrants consideration of an alternative directional specification of the mediation process. In this alternative model, pain interference at T2 was specified as the mediator, and perceived family support at T2 as the outcome, while workplace discrimination at T1 remained the independent variable. WF enrichment at T1 was retained as the moderator of the path from workplace discrimination (i.e., the independent variable) and pain interference (i.e., the mediator). In this alternative model, none of the primary effects or interaction terms reached significance. The interaction between workplace discrimination and work-to-family enrichment predicting pain interference was nonsignificant (*B* = −0.02, *SE* = 0.01, *p* = .15, 95% CI [−.04, .01]). Similarly, the index of moderated mediation was nonsignificant (*Index* = 0.0007, *SE* = 0.001, 95% CI [–.0003, .0027]). These findings provide no support for the reverse model and offer preliminary evidence that the study's theorized pathway appeared to be more consistent with the observed data and theoretically aligned with established frameworks.

Discussion

Working adults with chronic pain comprise a substantial segment of the workforce, where their health and well-being are continuously shaped by their experiences in both work and family domains. This study examined workplace discrimination, a significant factor for many working adults with chronic pain, and its associations with family support and chronic pain outcomes, as well as the moderating role of WF enrichment. This study's findings highlighted a complex interaction among these domains. First, workplace discrimination was associated with higher levels of pain interference over the span of 10 years. This finding aligns with prior research highlighting the longitudinal and detrimental effects of discrimination, particularly workplace discrimination, on chronic pain outcomes (Okechukwu et al., 2014; Ong et al., 2021). Notably, it underscores the interaction between social pain and physical pain, suggesting that experiences of social pain may intensify the severity of physical pain (Brown et al., 2018).

This dynamic interplay was further illustrated by mediation analyses, which showed that the lack of perceived family support partially mediated the adverse longitudinal association between workplace discrimination and pain interference. Higher levels of workplace discrimination were associated with increased work stress, which may spill over into the family domain, complicating participants' positive family engagement and predicting worsened family support. This aligns with the WF negative spillover framework (Greenhaus & Beutell, 1985) and previous empirical evidence (e.g., Hengstebeck et al., 2018; Riina & McHale, 2010), demonstrating how work stress originating from workplace discrimination can disrupt family cohesion and functioning. Additionally, the study's findings demonstrated that the reduced perceived family support then predicted higher levels of pain interference. This inverse relationship underscores the principles of the biopsychosocial framework, which highlights the dynamic interactions between social and psychological factors in shaping chronic pain outcomes (Bevers et al., 2016). For working adults, these findings also underscored the interconnectedness of work, family, and health, illustrating how stress in one domain can significantly influence functioning and well-being in another. Ultimately, this interplay carries profound implications for overall health and chronic pain outcomes (Gatchel et al., 2007).

However, the interplay between workplace stressors and family dynamics does not have to be solely negative, as positive spillover or WF enrichment was shown in this study to buffer against the adverse association between workplace discrimination and perceived family support. This finding highlights the simultaneous presence of workplace stressors (e.g., discrimination) and resources (e.g., WF enrichment) and how conflict and enrichment can coexist and interact within the work–family interface to influence individuals' family and personal well-being (Jaremka et al., 2014; Nguyen et al., 2023). Moreover, Vieira et al. (2018) also found that working adults with high levels of both work–family conflict and enrichment reported significantly greater satisfaction in both

work and family domains compared with those experiencing high conflict but low enrichment. In the current study, it is possible that some participants were able to draw more resources or positive qualities from work, such as skills, positive emotions, motivation, support, or a sense of fulfillment, and apply them in the family domain. This transfer of resources may have enabled them to counterbalance the harmful effects of workplace discrimination on their family relationships, fostering resilience and maintaining family cohesion despite the challenges and negative spillover posed by such workplace discrimination.

Lastly, the moderated mediation results indicated that WF enrichment moderated the indirect association between workplace discrimination and pain interference via perceived family support. This pattern is consistent with prior research underscoring the psychological and health-related benefits of work-to-family enrichment (Zhang et al., 2018; Thomas et al., 2022). In this study, the indirect effect of workplace discrimination on pain interference through family support was significant only at lower levels of enrichment. These insights tentatively point to the possibility that the protective role of WF enrichment may operate indirectly by helping to preserve family support in the context of workplace discrimination, which in turn may attenuate its indirect association with pain outcomes.

Limitations

The findings of the current study must be interpreted in light of several limitations. First, both the mediator and outcome variable were measured at the same wave in this study. Thus, causal ordering between these variables cannot be definitively established, and mediation results should be interpreted with caution. Moreover, although the study employed a longitudinal design, the analyses did not control prior levels of the outcome variable (i.e., pain interference) or the mediator (i.e., perceived family support), and therefore did not capture changes over time. As such, the findings should be interpreted as reflecting prospective associations across waves rather than intraindividual change. Future studies with more frequent assessments and analytic approaches explicitly designed to model changes over time are needed to more rigorously examine the temporal ordering and dynamic relations among workplace discrimination, family support, and pain outcomes.

Second, all variables in this study were assessed using brief self-report scales, which introduces the possibility of shared method variance and limits the breadth of content that can be captured. Although this is an inherent constraint of large-scale longitudinal surveys such as MIDUS, it reflects a deliberate design choice to balance participant burden with broad construct coverage. Importantly, the measures used here have demonstrated at least adequate psychometric performance in prior MIDUS research and in the current sample. Nonetheless, brief scales may be insufficient to fully capture the multidimensional nature of constructs such as workplace discrimination, WF enrichment, and pain outcomes. Future work would benefit from incorporating multimethod assessments and more comprehensive batteries to better capture the complexity of these domains.

Third, a central challenge across several aspects of the study involves limitations in measurement specificity and timing, which constrain the precision with which mechanisms and temporal processes can be captured. Particularly, the workplace discrimination measure was not specific to chronic pain. Although a general scale captures a range of workplace biases, it limits the ability to isolate discrimination related to chronic pain or health status. More targeted assessments are needed to clarify how pain-related discrimination shapes health, work, and family outcomes. Furthermore, the 9–10-year lag between MIDUS waves enables long-term associations to be examined but introduces potential confounds, such as employment transitions or changing pain outcomes. For some participants, workplace discrimination reported at T1 may reflect a prior job context, reducing precision in predicting T2 outcomes. Similarly, the chronic pain variable was assessed at only two time points approximately a decade apart, limiting the ability to track symptom progression, pain recurrence, or recovery across the intervening years. The model also did not estimate changes in family support over time but treated support as a relatively stable contextual factor through which workplace discrimination might relate to later pain. Detecting meaningful intraindividual change in a construct like family support over a decade-long interval would require more targeted measurement designs, such as more frequent, repeated within-person assessments. Thus, future research should incorporate more granular and time-sensitive measurement designs to better capture dynamic shifts in psychosocial mechanisms and contextual factors across changing life and work contexts.

Finally, the limited racial and ethnic diversity of the sample warrants attention. The underrepresentation of racially and ethnically diverse populations constrains the generalizability of the study's findings to broader communities, particularly those who may face disproportionate exposure to structural and interpersonal discrimination. This is especially important given that experiences of workplace discrimination and access to social and structural resources that enable WF enrichment are likely shaped by systemic inequities across racial and ethnic lines (Perry-Jenkins & Gerstel, 2020). Future research should prioritize recruiting more racially and ethnically diverse samples to enhance the applicability of findings across populations. Furthermore, exploring the intersectionality of various identities, such as race, gender, class, and disability, is critical for advancing more nuanced understandings of how overlapping systems of oppression and privilege shape experiences of work, family, and pain. Despite these limitations, the study offers several noteworthy strengths. It leverages a large, nationally representative data set from the MIDUS study, which allows for robust analyses grounded in a community-based sample. Additionally, the study's integrative approach, examining the intersections of work, family, and pain concurrently, facilitates deeper insights into this understudied area, providing a valuable foundation for future research.

Implications

The findings of this study add to the expanding literature on multidimensional approaches to chronic pain care (Kress et al., 2015; Langford et al., 2018), offering meaningful insights for clinicians and researchers in both pain management and rehabilitation psychology. By highlighting the intricate interplay between biological, psychological, and social factors, this study reinforces the importance of holistic pain assessment, drawing attention to how chronic pain affects not only individuals but also the broader dynamics of their work and family lives. These findings emphasize the value of comprehensive evaluations that account for the

environmental and relational contexts in which pain is experienced (Kress et al., 2015).

The results also highlight the positive role of WF Enrichment in the face of workplace discrimination and pain. Enhancing WF enrichment through strategies that encourage individuals to access available supports, such as flexible scheduling, childcare assistance, reduced work hours, and policies that de-emphasize constant availability, may help alleviate the strain of chronic pain in the workplace (Zhao et al., 2023). Clinicians can play a key role by helping clients identify and access appropriate workplace resources, build supportive relationships with colleagues and supervisors, and develop effective communication strategies. At the organizational level, fostering a culture of work–life balance, encouraging social support, and promoting shared problem-solving within the workplace may further amplify the protective role of WF enrichment, contributing to improved well-being and resilience among those living with chronic pain.

Nevertheless, although WF enrichment offers a promising pathway for managing the impacts of discrimination, it must not be seen as the sole solution. For some individuals, adapting to discriminatory environments may provide short-term relief; however, in many cases, active advocacy and systemic change are more appropriate and necessary responses. Depending on one's circumstances, this may involve empowering employees to voice concerns, advocate for necessary accommodation, understand their legal rights, and engage in broader efforts to promote organizational change. Lastly, efforts to reduce workplace discrimination must go beyond individual adjustment to include structural reforms. Employers should invest in training for human resources and management on the experiences and needs of individuals with chronic pain and disabilities (Kaye et al., 2011). Such initiatives not only support individual coping but also cultivate workplace cultures grounded in empowerment, equity, and justice.

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