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The impact of workplace relationships on employee well-being moderated by age and gender

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Abstract

Workplace well-being is strongly influenced by interpersonal relationships, although less is known about whether the benefits of high-quality workplace ties vary across demographic characteristics. This study examines whether employee age and gender moderate the relationship between the quality of relationships with supervisors and coworkers and affective–relational workplace well-being. Using data from the Sixth European Working Conditions Survey and Partial Least Squares Structural Equation Modeling, the results show that both supervisor and coworker relationships are positively and significantly associated with workplace well-being, with a slightly stronger effect for hierarchical relationships. Moderation analyses indicate that age weakens these associations, suggesting that relational quality is more relevant for younger employees. No significant moderating effect of gender is observed, which may suggest that the relationship under study tends to be similar for men and women in this context. These findings contribute to the literature by integrating relational and lifespan perspectives to explain how workplace relationships influence well-being across the career span. From a practical perspective, the results highlight the importance of designing age-sensitive interventions, particularly at early career stages, while suggesting that core relational conditions such as support, fairness, and cooperation are broadly relevant across gender groups.

Keywords Coworker, Interrelation, Superior, Well-being at work, Age-based differences

1 Introduction

Given that work occupies a substantial portion of adult life, workplace well-being constitutes a key component of overall quality of life, with a close relationship between employees' work experiences and their general life satisfaction [1, 2]. Beyond its individual relevance, workplace well-being has clear strategic implications for organizations, as it has been associated with fundamental outcomes such as performance, talent retention, and long-term sustainability [3, 4]. Among the various determinants of workplace well-being, interpersonal relationships—both with coworkers and supervisors—have consistently been identified as central predictors of employees' psychological health and job



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satisfaction [5, 6]. Supportive and trust-based relationships with supervisors are widely recognized as key drivers of employee well-being, with supervisor support emerging as one of the most influential factors in reducing stress and enhancing job satisfaction [7, 8]. Leadership styles grounded in support, trust, and empowerment further strengthen organizational commitment and contribute to improved mental health outcomes [9]. At the same time, high-quality coworker relationships foster cooperation, social cohesion, and a positive emotional climate, thereby reinforcing satisfaction and psychological well-being [5, 6]. Positive peer interactions and supportive dynamics have also been shown to enhance commitment and overall job satisfaction across organizational contexts [10]. While the positive association between relational quality and workplace well-being is well established, less consensus exists regarding the extent to which this relationship varies across demographic groups. Demographic factors—particularly age and gender—may shape how employees experience and derive benefits from workplace relationships. Prior research suggests that older employees tend to display more stable satisfaction patterns, shaped by greater professional experience, adjusted expectations, and stronger coping resources [11–13]. In contrast, younger employees appear to be more sensitive to feedback, perceived fairness, and opportunities for development within hierarchical and peer relationships [14, 15]. Evidence regarding gender remains inconclusive. While some studies argue that men and women may differ in how they construct and interpret workplace relationships [16, 17], other research suggests that the impact of relational quality on well-being operates similarly across genders, emphasizing the primacy of support, trust, and cooperation over gender-based differences [18, 19]. However, empirical research simultaneously examining the moderating role of both age and gender in the relationship between supervisor and coworker relationships and workplace well-being remains limited, particularly using large cross-national samples. Most studies have focused either on direct relational effects or on single demographic moderators, leaving a gap in understanding how these dynamics interact within a unified analytical framework. Addressing this gap is essential for advancing theoretical clarity and for informing evidence-based organizational practices tailored to a diverse workforce.

To move beyond a descriptive synthesis of prior findings, this study adopts an integrated theoretical framework that combines Social Exchange Theory, Conservation of Resources theory, and lifespan development perspectives. Social Exchange Theory suggests that high-quality workplace relationships generate reciprocity, trust, and mutual obligation through repeated relational exchanges [20]. Conservation of Resources theory complements this view by conceptualizing supportive ties at work as social resources that help individuals protect valued resources, buffer strain, and sustain positive affective functioning [21–23]. Lifespan perspectives further suggest that the meaning and impact of these relational resources may vary across the career span because emotional regulation, accumulated experience, motivational priorities, and future time perspective change with age [24–27]. Taken together, these perspectives provide a coherent explanation for both the positive association between workplace relationships and well-being and the possibility that this association may vary across demographic groups.

Against this backdrop, the aim of this study is to examine whether the relationship between the quality of interpersonal relationships at work—both with supervisors and with coworkers—and workplace well-being is moderated by employees' age and gender. In this study, workplace well-being is examined with a particular focus on its

affective–relational dimension, given the nature of the available indicators. To test these hypotheses, the analysis draws on data from the sixth edition of the European Working Conditions Survey (EWCS), which includes responses from 27,884 employees across 35 European countries. Although more recent Eurofound survey rounds are now available, this study intentionally uses EWCS 2015 as a large, harmonized pre-pandemic benchmark for examining the relationship between workplace relational quality and employee well-being [28]. The article therefore should not be read as an attempt to estimate the current post-pandemic level of employee well-being in Europe. Rather, it investigates whether the quality of relationships with supervisors and coworkers is associated with a bounded affective–relational dimension of workplace well-being, and whether this association varies by age and gender, in a broad cross-national European sample. This focus on underlying relational mechanisms is theoretically grounded in Social Exchange Theory and Conservation of Resources theory, which conceptualize workplace relationships as sources of reciprocity, trust, and socioemotional resources that support employee well-being [20, 21, 23]. These mechanisms are expected to remain relevant across different work contexts, even when structural conditions change. Recent Eurofound evidence from the pandemic and post-pandemic period suggests that, despite substantial transformations in work organization (e.g., the expansion of telework and hybrid work arrangements), the broader association between job quality and worker well-being has remained robust over time [29–31]. The methodological approach relies on Partial Least Squares Structural Equation Modeling (PLS-SEM), allowing for an in-depth examination of moderating effects. Finally, the results are presented, followed by a discussion of their theoretical and practical implications. The paper concludes with the main contributions of the study, its limitations, and suggestions for future research.

2 Theory and hypotheses

2.1 Employee workplace well-being

Research indicates a strong connection between workplace well-being and overall life satisfaction [32], which is why many companies are developing strategies to enhance employee well-being by emphasizing the importance of happiness at work [33]. There is growing consensus that employee well-being goes beyond job satisfaction, encompassing emotional health, social relationships, and social support networks [34]. Organizations can enhance employee well-being by implementing high commitment work systems, improving organizational support, and promoting work-life balance [35].

The concept of workplace well-being has evolved significantly over recent decades, shifting from a focus on emotional balance [36] to a broader, multidimensional perspective. Four key dimensions of well-being—hedonic, eudaimonic, quality of life, and general wellness—have been identified, emphasizing the importance of a comprehensive approach to understanding employee well-being [37]. The Eudaimonic Workplace Well-being Scale (EWWWS) has been introduced, showing that beyond job satisfaction, purpose and social fulfillment play a vital role in enhancing creativity and employee retention [38]. Recent research further supports the relevance of both hedonic and eudaimonic aspects of well-being in the workplace. Psychological well-being, which integrates both dimensions, has been shown to positively influence job satisfaction and performance [3]. Specifically, eudaimonic motivation has been found to predict positive affect and life satisfaction over time, underlining its significance in promoting overall well-being

[39]. In the workplace, eudaimonic well-being—measured using the EWWWS—has been associated with greater employee creativity and retention [3, 6]. Interestingly, the relationship between well-being and work-related outcomes is not always linear. Job insecurity can moderate the link between psychological well-being and affective commitment, which may in turn impact job performance [6]. Furthermore, the quality of work—not merely income—plays a pivotal role in shaping worker well-being, with job satisfaction contributing significantly to both present and future life evaluations [4]. In summary, the multidimensional nature of workplace well-being—incorporating both hedonic and eudaimonic elements—is essential for understanding and fostering employee satisfaction, performance, and retention. Several authors agree that organizations should promote both dimensions of well-being through wellness programs, supportive work environments, and employment security policies to achieve sustainable workplace outcomes [3, 4, 6]. Moreover, fostering high-quality relationships with others is a key pillar of workplace well-being, as it enhances employees' sense of belonging, trust, and overall flourishing [6].

While workplace well-being is widely conceptualized as a multidimensional construct integrating both hedonic and eudaimonic components, empirical studies frequently rely on more focused operationalizations depending on data availability and research design. In applied organizational research, shorter measures are often used to capture specific facets of well-being, although this involves trade-offs in terms of conceptual breadth [40]. Accordingly, the present study focuses on a specific affective–relational dimension of workplace well-being, rather than attempting to capture the construct in its full multidimensional scope, in line with prior research on short-form affective measures [41].

2.2 Workplace social well-being

The literature has consistently identified workplace social relationships as a key determinant of employee well-being, as they reduce stress and strengthen mental health [5, 42], a perspective further reinforced by recent research [6]. Camaraderie, effective communication with supervisors, and the maintenance of strong personal bonds—even beyond the workplace—are key elements for achieving work–life balance [43]. A distinction has also been drawn between the overall social climate of the workplace and individual interactions, with the latter exerting a more direct impact on psychological well-being [44]. Attention has also been drawn to the harmful effects of subtle and persistent forms of social undermining, which deteriorate mental health, reduce productivity, and increase turnover intentions [45]. In contrast, work environments that foster positive relationships and consistent supervisor support tend to produce healthier, more engaged, and resilient employees. From an integrative perspective, social support, respectful leadership, and team collaboration have been identified as among the strongest predictors of workplace well-being [46]. In this context, the concept of Social Resource Crafting has been introduced, illustrating how employees can proactively reshape their workplace interactions to enhance social support and foster engagement [47]. Collectively, empirical evidence confirms that strong, positive interpersonal relationships at work are essential for psychological well-being [48], job satisfaction, and sustained performance. Understanding these dynamics is key to designing organizational policies that support emotional health, productivity, and talent retention. With regard to relationships between employees and supervisors, supervisor support has been identified as the most

influential factor in employee well-being, surpassing even the support received from colleagues or family members [7]. When this support is lacking, levels of stress, burnout, job dissatisfaction, and intention to quit increase significantly. Complementing these findings, supportive and transformational leadership styles play a significant role in enhancing employees' mental health, reducing absenteeism, and increasing job satisfaction, although their direct impact on job performance remains inconclusive [8]. Regarding coworker relationships, numerous studies have demonstrated their critical role in employee well-being. Apparently, coworker undermining—intentional behaviors such as exclusion or withholding information—generates stress, negative emotions, and physical health problems [49]. Although these behaviors often go unnoticed by supervisors, they have a significant impact on the emotional and somatic health of those affected. In contrast, coworker support has been shown to directly reduce job stress and presenteeism [50], while maintaining cooperative and harmonious relationships lowers the likelihood of experiencing workplace stress [51]. Additionally, receiving help does not always translate into lower stress, suggesting that the nature and quality of coworker relationships may be more important than the mere act of receiving support [51]. Thus, it is not only the presence of assistance that matters, but the relational context in which it occurs that determines its effect on well-being. Research also emphasizes the value of workplace friendships, as High-Commitment Work Systems (HCWS) enhance well-being through informal bonds such as friendship, beyond formal interpersonal relationships [52]. Furthermore, coworker support can buffer the negative effects of workplace bullying on health, although this protective effect may depend on the level of supervisor support perceived [53]. Collectively, these findings underscore the importance of fostering positive peer relationships as a pathway to enhancing employees' overall well-being. Drawing on this integrated framework, relationships with supervisors and coworkers can be understood not simply as contextual features of work, but as relational exchanges that provide employees with valued socioemotional resources. When these relationships are characterized by support, fairness, recognition, and cooperation, they are likely to foster trust and reciprocity while also protecting employees from resource loss and reinforcing positive work-related affect [20, 22, 23]. This perspective also helps explain why the effects of relational quality may not be uniform across employees: lifespan research suggests that the salience, interpretation, and use of workplace resources change with age as workers differ in emotional regulation, experience, and motivational priorities [24, 27, 54].

In the following sections, the theoretical arguments and prior empirical evidence are examined through a conceptual model developed in this study, which links the quality of relationships with supervisors and coworkers to employee workplace well-being, while also analyzing the moderating role of age and gender in these relationships (see the theoretical model in Fig. 1).

2.2.1 Age, supervisor relationships, and their impact on employee well-being

Several studies suggest that employee age plays a decisive role in shaping interpersonal relationships with supervisors and in how these relationships influence well-being and job satisfaction. Some studies indicate that older employees experience greater satisfaction when they perceive their contribution to the organization as meaningful, whereas younger employees respond more sensitively to fair monetary rewards, highlighting

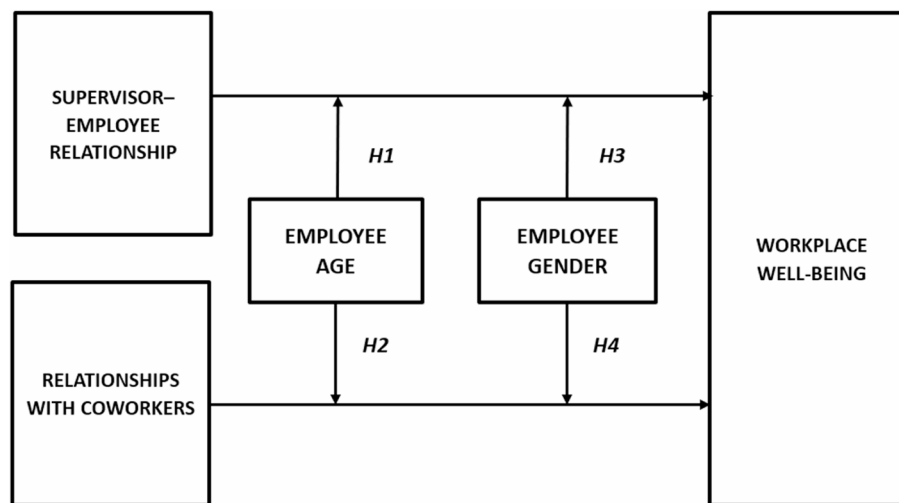


Fig. 1 Conceptual framework. Source: Author's own work

generational differences in how equity is perceived and valued in hierarchical relationships [14]. Other research has found that older employees tend to maintain higher-quality relationships with their supervisors, which enhances both satisfaction and performance [55]. This group may also benefit more from autonomy and feedback, particularly when task variety is low, as they tend to perceive feedback primarily as a means of strengthening social bonds rather than as a mechanism for promotion [56]. This tendency may stem from more realistic expectations and better coping strategies [13]. Supervisor age also appears to be relevant, as some authors report that older employees often exhibit lower satisfaction when managed by significantly younger supervisors [57]. Finally, strong supervisor–employee relationships appear to foster job embeddedness, particularly when there is a strong sense of organizational identification [58]. Other scholars have focused on the specific mechanisms through which age shapes supervisor–employee dynamics. Communication preferences, for instance, vary across generations: younger workers tend to favor more direct and open communication styles, whereas older workers value more formal and structured interactions, influencing how supervisor–employee relationships are built [59]. Experience also plays a key role: employees with longer careers typically receive greater respect and foster more positive interactions, while younger employees tend to benefit from mentorship-oriented relationships [60]. These generational differences are also reflected in job satisfaction priorities: older employees place more value on security and benefits, whereas younger employees emphasize development opportunities, work–life balance, and organizational culture [61]. Support and feedback needs similarly diverge, as younger workers often require more guidance to develop professionally, while older workers prefer greater autonomy [15]. Finally, retention patterns show that older employees tend to display more stable commitment to the organization, which directly affects the nature and strength of their relationships with supervisors [62].

From a lifespan development perspective, age is expected to condition how strongly supervisor relationships influence workplace well-being. Younger employees generally approach work with a more open-ended future time perspective and stronger developmental needs, making supervisory guidance, feedback, recognition, and relational inclusion especially consequential for how they interpret and experience work [24, 26].

Older employees, in contrast, are more likely to rely on accumulated work experience, more stable self-concepts, and more developed emotion-regulation capacities, which can buffer the impact of day-to-day fluctuations in supervisory quality [25]. In addition, age-related changes in motivational priorities suggest that workers differ in how they appraise and use relational resources across the career span [27]. Taken together, these mechanisms suggest that the association between supervisor relationship quality and workplace well-being should be stronger among younger employees than among older employees. These arguments provide the basis for formulating the following hypothesis:

H1. Age weakens the positive association between supervisor relationship quality and workplace well-being, such that the association is stronger among younger employees.

2.2.2 Age, coworker relationships, and their impact on employee well-being

The quality of coworker relationships also appears to constitute a central element of employee well-being, as numerous studies have demonstrated their direct influence on job satisfaction, organizational commitment, and the overall emotional climate of the workplace. Strong workplace friendships and coworker support have consistently been linked to higher levels of satisfaction across different contexts and sectors. For example, a moderate positive relationship between workplace friendship and job satisfaction has been identified in educational settings, highlighting the importance of horizontal bonds in professional environments [63]. This effect has also been observed in remote work contexts, where coworker support plays a crucial role in promoting work–life balance and increasing job satisfaction across age groups [64]. In some cases, coworker support can even outweigh supervisor support in explaining higher levels of satisfaction and commitment, particularly in fields such as healthcare [60]. Furthermore, intergenerational workplace friendships can help overcome interpersonal tensions, reduce negative emotions, and foster more collaborative and harmonious work environments [65].

However, the impact of coworker relationships may not be uniform and could vary significantly depending on age, as younger and older employees experience and manage interpersonal interactions in different ways. Among younger employees, research shows that job satisfaction tends to be initially high, driven by enthusiasm, expectations, and the desire to integrate socially within the workplace [66]. Yet, this satisfaction may decline over time if expectations are unmet or if interpersonal tensions arise—such as envy or ostracism—to which younger workers are particularly vulnerable due to their less established social position [67]. While they value and benefit from coworker support, their limited experience can make it more challenging to navigate complex or competitive relationships. Even so, coworker support can buffer the negative effects of stressors such as abusive supervision, thereby enhancing their career adaptability [68]. In contrast, older employees tend to exhibit more stable and realistic satisfaction patterns, reflecting more established career trajectories and adjusted expectations [11, 12]. They often view coworker support not only as an instrumental resource but also as a means of reinforcing social cohesion and maintaining a positive work environment. Their greater experience allows them to better manage interpersonal conflicts and complex dynamics, mitigating the negative effects of issues such as envy or undermining [67]. Over time, factors such as positive self-evaluations and accumulated social capital further strengthen their well-being [69]. Nonetheless, perceptions of age discrimination can undermine both their job satisfaction and organizational commitment [70].

For younger employees, coworker ties often serve important developmental and identity-related functions by providing social inclusion, informal learning, comparison standards, and everyday feedback, which are particularly relevant during early career stages [26]. Because younger workers are still establishing their role in the organization, variations in coworker support and cooperation may have especially strong implications for their workplace well-being. Older employees, by contrast, are more likely to draw on accumulated relational knowledge, more selective interpersonal goals, and broader coping resources, which may reduce their dependence on day-to-day peer interactions for maintaining well-being [24, 27]. These patterns are consistent with lifespan perspectives suggesting that individuals become more selective in their social interactions and prioritize emotionally meaningful relationships as they age. Therefore, age is expected to weaken the positive relationship between coworker relationship quality and workplace well-being. These arguments provide the basis for formulating the following hypothesis:

H2. Age weakens the positive association between coworker relationship quality and workplace well-being, such that the association is stronger among younger employees.

2.2.3 Gender, supervisor relationships, and their impact on employee well-being

Several studies suggest that employee gender may influence how relationships with supervisors are formed and experienced, as well as how these relationships affect workplace well-being. Some authors point out that although women often report greater satisfaction with key aspects such as pay, they tend to express lower satisfaction with their relationships with supervisors compared to men, a difference that may stem from variations in expectations, priorities, and interpretations of workplace interactions [16]. Supervisor support is widely regarded as a key determinant of workplace well-being, and some researchers argue that its impact varies according to gender-related differences in relational styles and expectations, as women tend to rely on broader social networks and benefit from multiple sources of support, combining supervisory assistance with that of colleagues and peers [7]. However, recent studies indicate that this support tends to be less consistent or of lower quality for women, potentially constraining their professional growth and increasing levels of stress or dissatisfaction [71, 72]. When women perceive relationships characterized by support and recognition, they tend to display higher levels of satisfaction, organizational commitment, and leadership aspirations, whereas men place greater value on hierarchical clarity and individual acknowledgment from supervisors, linking the support received to perceptions of competence and professional status [73, 74]. Conversely, other scholars maintain that while the quality of the supervisor–employee relationship is the primary determinant of job satisfaction and well-being, employee gender does not exert a significant influence. According to Leader–Member Exchange (LMX) theory, relationships grounded in support, trust, and empowerment strengthen organizational commitment and enhance performance, regardless of gender [9]. Similarly, interpersonal trust has been identified as a key mediator between workplace interactions and job satisfaction, even under high-pressure conditions such as the COVID-19 pandemic [75]. High-Performance Work Practices (HPWPs) have also been associated with greater employee health and well-being, with supportive leadership acting as a moderating factor that amplifies these effects without gender-based differences [76]. In line with this, recent research confirms that while supervisory support strongly

influences job satisfaction, there are no significant differences between men and women in how this effect is perceived or experienced [18].

Although prior research has reported gender differences in relational expectations and leadership experiences, a distinct theoretical expectation emerges once the focus shifts from relationship formation to the consequences of relationship quality. Social Exchange Theory suggests that high-quality supervisor relationships foster reciprocity, trust, and mutual obligation [20], while Leader–Member Exchange and organizational trust perspectives conceptualize support, fairness, and respect as general relational mechanisms that promote positive work outcomes across employees. From a Conservation of Resources perspective, these supervisory ties also function as social resources that help protect well-being under work demands [23]. Accordingly, while gender may shape access to or construction of supervisory relationships, the beneficial effect of supervisor relationship quality on workplace well-being is not expected to differ substantially across gender groups. On this basis, the following hypothesis is proposed:

H3. The positive association between supervisor relationship quality and workplace well-being is expected to be comparable across gender groups.

2.2.4 Gender, coworker relationships, and their impact on employee well-being

Among the studies highlighting that employee well-being largely depends on the quality of relationships with coworkers, some authors suggest that the impact of these relationships may vary according to gender. Some authors note that workplaces characterized by balanced and cooperative relationships promote satisfaction and organizational commitment across genders, even if the sources of well-being are not identical [77]. Others argue that women tend to establish work relationships marked by greater emotional closeness and mutual support, which constitute an important social resource that strengthens psychological well-being, reduces stress, and enhances job satisfaction [17]. In contrast, men are more likely to form instrumental, task-oriented relationships, deriving well-being primarily from effective collaboration and the achievement of shared goals. Moreover, men's perception of well-being tends to be more sensitive to social comparisons within the workplace: when they perceive pay inequalities, their job satisfaction decreases, whereas women's satisfaction is more strongly linked to perceptions of equity and the overall quality of the work environment [78, 79]. In general, many authors argue that certain individual traits or social dynamics can lead to rivalry or undermining behaviors that affect well-being differently across genders [80–82]. However, other studies that also acknowledge the significant influence of coworker relationships on well-being and job satisfaction suggest that their impact is similar for men and women, as the effect appears to operate universally, without substantial gender-related differences. In this regard, positive coworker interactions enhance mental health, strengthen commitment, and improve performance, resulting in overall higher job satisfaction for all employees [10]. According to these authors, supportive and collaborative dynamics foster a cohesive and stimulating environment in which well-being stems from belonging and mutual cooperation rather than gender differences. Overall, strong interpersonal relationships and effective coworker support systems appear to be key strategies for improving employee well-being and job satisfaction across the workforce, regardless of gender [19].

That is, high-quality coworker relationships provide employees with cooperation, recognition, and socioemotional support in everyday work interactions. These benefits stem from processes of reciprocity and the availability of social resources rather than from inherently gender-specific mechanisms [20, 23]. Accordingly, although men and women may differ in network patterns or in their experiences of inclusion at work, the positive association between coworker relationship quality and workplace well-being is theoretically expected to be broadly similar across gender groups. On this basis, the following hypothesis is proposed:

H4. The positive association between coworker relationship quality and workplace well-being is expected to be comparable across gender groups.

3 Data and methods

3.1 Data

The data used in this study are drawn from the sixth edition of the European Working Conditions Survey (EWCS) conducted by Eurofound, comprising a sample of 27,884 employees across 35 European countries [28]. EWCS 2015 was selected for two main reasons. First, it provides a large, harmonized, face-to-face, cross-national dataset collected before the major disruptions associated with COVID-19 and the generalized expansion of hybrid and remote work, making it well suited to estimating baseline associations between workplace relationships and employee well-being across countries [28]. Second, the aim of the present study is explanatory rather than descriptive of the current moment: it seeks to identify structural relationships among relational quality, workplace well-being, age, and gender, rather than to provide a contemporaneous prevalence estimate of employee well-being in Europe. This distinction is important for evaluating temporal external validity, as explanatory models grounded in stable theoretical mechanisms are generally less sensitive to short-term contextual fluctuations [20, 23]. While later Eurofound data are highly relevant for assessing whether these relationships remain stable under post-pandemic conditions, they are not perfect substitutes for the 2015 wave. In particular, the pandemic-specific EWCTS 2021 was conducted by telephone after the planned 2020 face-to-face fieldwork became impossible and relied on a substantially shortened questionnaire, which makes direct equivalence with the standard EWCS design imperfect [29]. At the same time, the recent EWCS 2024 restores the face-to-face design and allows comparability for many questions maintained from earlier waves, making it a valuable source for future replication and robustness analyses [31]. Accordingly, the present findings are interpreted as evidence on pre-pandemic European relational mechanisms linked to workplace well-being, while acknowledging that subsequent structural changes in work organization—particularly the expansion of remote and hybrid work—may have affected the magnitude or distribution of these associations [30].

The survey analysed data from all current EU Member States, as well as from the United Kingdom, Albania, the Former Yugoslav Republic of Macedonia, Montenegro, Serbia, Turkey, Switzerland and Norway, with a total of almost 44,000 workers interviewed across all occupations, sectors and age groups. For this study, the sample has been reduced to individuals ($N = 27,884$) who had responded to all selected questions on their perception of well-being at work and their relationships with colleagues and immediate superiors.

3.2 Measures

3.2.1 *Dependent variable: workplace well-being*

Workplace well-being was operationalized using items drawn from the sixth European Working Conditions Survey (EWCS) [28]. Specifically, the construct was measured using three indicators drawn from questions Q89 and Q90 of the survey, designed to capture employees' affective and motivational experiences at work: *"I receive the recognition I deserve for my work"* (Q89), *"At my work I feel full of energy"* (Q90), and *"I am enthusiastic about my job"* (Q90).

These indicators are interpreted as capturing a bounded affective–relational dimension of workplace well-being, rather than the full multidimensional construct. Specifically, recognition reflects perceived social esteem and validation in the workplace, while energy and enthusiasm capture activated positive affect at work. Although workplace well-being is widely conceptualized as a multidimensional construct encompassing hedonic and eudaimonic components [36, 83], empirical research—particularly when using secondary datasets—often relies on more focused operationalizations. In such contexts, shorter measures are commonly employed despite the trade-offs they entail in terms of content coverage [40]. In line with research on short-form affective measures [41], the present operationalization should therefore be understood as capturing a specific affective–relational facet of workplace well-being rather than a comprehensive multidimensional construct.

3.2.2 *Independent variables*

The independent variables in this study capture the quality of employees' interpersonal relationships at work and include two key dimensions: the relationship with the immediate supervisor and relationships with coworkers. The quality of the supervisor–employee relationship was measured using six items from question Q63 of the EWCS [28]. Respondents evaluated whether their immediate supervisor respects them as a person, gives praise and recognition when they perform well, successfully encourages collaboration, is helpful in getting the job done, provides useful feedback, and encourages and supports their development. These items capture core relational dimensions emphasized in Leader–Member Exchange theory and supportive leadership research, including respect, recognition, instrumental support, developmental feedback, and empowerment [7, 9]. This construct reflects perceived relational quality rather than formal hierarchical position. Coworker relationship quality was measured using four items drawn from questions Q70 and Q89 of the EWCS [28]. Specifically, respondents assessed whether they generally get along well with their colleagues, whether conflicts are resolved fairly, whether work is distributed fairly, and whether there is good cooperation among colleagues. These indicators capture both affective and functional dimensions of peer relationships, including interpersonal harmony, perceived fairness, and collaborative climate. Such dimensions have been identified as central predictors of workplace well-being [5, 6].

Both the dependent and independent variables were measured using a five-point Likert scale ranging from 1 = "Strongly agree" to 5 = "Strongly disagree." For analytical clarity and interpretative consistency, items were reverse-coded where necessary so that higher values reflect higher levels of the respective constructs.

3.2.3 Moderating variables

Age and gender were included as moderating variables, based on questions Q2a and Q2b of the EWCS [28]. Age was treated as a continuous variable to capture generational variation in relational sensitivity and coping patterns. Gender was operationalized as a binary categorical variable (male/female), consistent with the survey design. These variables were selected to test the moderating hypotheses derived from prior literature suggesting that age may buffer relational effects on well-being, while gender differences remain theoretically contested.

3.2.4 Control variables

To reduce potential confounding effects, three control variables were included, all drawn from the EWCS [28]: job tenure (Q17), sector of employment (public vs. private; Q14), and organizational size measured by the number of employees (Q16a).

4 Results and discussion

4.1 Measurement Model

The statistical analysis was carried out using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach [84] with Smart PLS 4, which is particularly suitable for combining features of linear regression models and factor analysis [85]. Multi-item variables have been analysed as reflective constructs and examined for reliability, internal consistency, convergent and discriminant validity [86]. All item loadings were significant at $p < 0.01$. The internal consistency of the constructs was assessed by Cronbach's alpha (all above 0.6) and composite reliability (all above 0.7). Convergent validity was measured by the average variance extracted (all above 0.5), as shown in Table 1.

The discriminant validity of the reflective variables was validated by applying the Fornell-Larcker criterion, finding that the square root of the variance extracted is greater than the correlations of the rest of the constructs for each item [87]. As shown in Table 2, the Heterotrait-Monotrait (HTMT) ratios of the correlations have also been evaluated, finding that there are no HTMT ratios above the threshold of 0.85, and none of the corresponding confidence intervals include the value 0.9, which means that this study meets the criteria for establishing adequate discriminant validity [88]. Finally, the Standardised Root Mean Square Residual (SRMR) has been weighted to measure the goodness of fit of our models, which can be used to avoid model misspecification [89]. The SRMR of each model was below 0.08 and may therefore be considered to show a good fit [90].

Given the relatively high correlation between age and work experience ($r = 0.559$), additional collinearity diagnostics were conducted to assess potential multicollinearity in the moderation analyses. Variance inflation factor (VIF) values were examined for the predictor variables and interaction terms included in the moderation models. The VIF values for the continuous main effects ranged from 1.46 to 3.18, while the interaction terms involving age showed VIF values of 1.52. All values were below the commonly accepted threshold of 5.0 recommended in the PLS-SEM literature [86, 91]. These results indicate that multicollinearity is unlikely to have affected the estimation of the coefficients or the interpretation of the moderation effects.

To assess the potential impact of the nested structure of the data (individuals within countries), additional robustness checks were conducted using regression-based models with country-clustered standard errors and country fixed effects. These approaches

Table 1 Measurement scales and psychometric properties. Author's own elaboration

Measurement items	Mean (S.D.)	Factor loadings
Feelings of well-being at work ^a ($\alpha=0.720$, AVE = 0.633, CR = 0.838)		
Indicate your level of agreement with the following statements:		
I receive the recognition I deserve for my work	2.39 (1.16)	0.827**
At my work I feel full of energy	2.20 (0.83)	0.772**
I am enthusiastic about my job	2.18 (0.96)	0.787**
Relationship with supervisors ^a ($\alpha=0.896$, AVE = 0.658, CR = 0.920)		
Indicate your level of agreement with the following sentences:		
Your immediate boss respects you as a person	1.59 (0.86)	0.762**
Your immediate boss gives you praise and recognition when you do a good job	2.12 (1.15)	0.829**
Your immediate boss is successful in getting people to work together	2.05 (1.07)	0.812**
Your immediate boss is helpful in getting the job done	2.26 (1.24)	0.760**
Your immediate boss provides useful feedback on your work	2.11 (1.12)	0.830**
Your immediate boss encourages and supports your development	2.12 (1.14)	0.869**
Relationships with coworkers ^a ($\alpha=0.763$, AVE = 0.584, CR = 0.848)		
Indicate your level of agreement with the following sentences:		
I generally get on well with my work colleagues	1.55 (0.73)	0.677**
Conflicts are resolved in a fair way	2.11 (1.04)	0.800**
The work is distributed fairly	2.11 (1.06)	0.793**
There is good cooperation between you and your colleagues	1.63 (0.77)	0.781**
Age		
Number of years	41.65 (11.76)	-
Work Experience ^b		
How many years have you been in your company or organisation?	9.70 (9.52)	-
Gender ^c		
Male or female	1.51 (0.50)	-
Sector ^d		
Are you working in the private or public sector?	1.31 (0.46)	-
Workplace size. Number of workers ^e		
How many people in total work at your workplace that is at the local site where you work?	4.84 (1.79)	-

^aCronbach's alpha, CR composite reliability, AVE average variance extracted

^a Likert scale ranging from 1 = strongly agree to 5 = strongly disagree

^b Number of years (0, 5 < 1 year, rest = corresponding number)

^c 1 = male; 2 = female

^d 1 = The private sector; 2 = The public sector

^e Scale ranging : 1 = Interviewee works alone, 2 = 2–4 workers, 3 = 5–9 workers, 4 = 10–49 workers, 5 = 50–99 workers, 6 = 100–249 workers, 7 = 250–499 workers and 8 = 500 and over workers

** $p \leq 0.01$. * $p \leq 0.05$

Table 2 Zero-order correlations and discriminant validity. Author's own elaboration

	1	2	3	4	5	6	7	8
1. Feelings of well-being at work		0.796	0.682	0.708	0.031	0.036	0.030	0.058
2. Relationship with supervisors			0.577	0.811	0.696	0.049	0.029	0.022
3. Relationships with coworkers				0.546	0.585	0.764	0.015	0.053
4. Age					-0.004	0.044	-0.000	0.559
5. Work Experience						-0.023	0.014	-0.007
6. Gender							-0.016	-0.016
7. Sector								0.008
8. Workplace size. Number of workers								0.015

allow controlling for within-country dependence and unobserved heterogeneity across national contexts and are widely recommended to obtain consistent statistical inference in the presence of grouped data structures [92, 93]. The results remained substantively unchanged, with the main associations between workplace relationships and employee well-being remaining positive and statistically significant. The moderating effect of age also remained broadly consistent, although some interactions appeared more sensitive to model specification. Finally, it is important to acknowledge the potential influence of common method variance (CMV), given the use of self-reported data collected at a single point in time [94]. However, recent research suggests that the effects of CMV are more nuanced than traditionally assumed, as it does not necessarily introduce systematic bias and may have limited or context-dependent effects in survey-based studies [95, 96]. In addition, prior studies have highlighted that post hoc statistical remedies for CMV may introduce estimation problems or capture substantive variance rather than purely method effects [97]. Given the secondary nature of the EWCS dataset, which does not include specifically designed measures to assess method bias, such approaches were not implemented. Nevertheless, CMV cannot be entirely ruled out. Therefore, the findings of this study should be interpreted with appropriate caution, as evidence of associations rather than definitive causal relationships, in line with established methodological recommendations [98].

4.2 Structural Model and Moderation Effects

To test the proposed hypotheses, hierarchical regression analyses were conducted by sequentially introducing different blocks of variables into the PLS model. Bootstrapping with 5,000 subsamples was applied to generate standard errors and t-statistics [85]. The results are presented in Table 3.

Table 3 Standardized regression coefficients of the testing model. Author's own elaboration

Dep. variable: Feelings of well-being at work	Model 1	Model 2	Model 3	Model 4	Model 5
<i>Control variables</i>					
Age	-0.008	-0.009	-0.009	-0.008	-0.008
Work experience	-0.014*	-0.014*	-0.014*	-0.014*	-0.014*
Gender	-0.010*	-0.009*	-0.009*	-0.010*	-0.010*
Sector	-0.027**	-0.027**	-0.028**	-0.027**	-0.027**
Workplace size. Number of workers	-0.011*	-0.011*	-0.011*	-0.011*	-0.011*
<i>Relationships variables</i>					
Relationship with supervisors	0.391**	0.393**	0.392**	0.392**	0.392**
Relationships with coworkers	0.318**	0.317**	0.317**	0.318**	0.318**
<i>Hypothesized relationships</i>					
Age* Relationship with supervisors $\diamond$ Feelings of well-being at work (H1)		-0.021**			
Age* Relationships with coworkers $\diamond$ Feelings of well-being at work (H2)			-0.015*		
Gender* Relationship with the immediate superior $\diamond$ Feelings of well-being at work (H3)				0.261	
Gender* Relationships with coworkers $\diamond$ Feelings of well-being at work (H4)					-0.009
R ²	0.401	0.402	0.402	0.402	0.402
SRMR	0.062	0.062	0.062	0.062	0.062

* $p \leq 0.05$. ** $p \leq 0.01$

Model 1 presents the effects of the independent variables on employees' feelings of well-being at work. Consistent with literature that conceptualizes interpersonal relationships as key determinants of job satisfaction and workplace well-being [5, 6], the findings indicate that both *Relationship with supervisors* ($\beta = 0.391, p = 0.000$) and *Relationship with coworkers* ($\beta = 0.318, p = 0.000$) are positively and significantly associated with employees' affective-relational workplace well-being. These results align with prior research identifying supervisor support and peer cooperation as central predictors of psychological health and job satisfaction [50, 99]. The slightly stronger effect observed for supervisor relationships is consistent with studies emphasizing the structural and symbolic significance of hierarchical ties [8]. Supervisors represent evaluative authority and regulate access to career development opportunities; therefore, the quality of this relationship carries not only emotional consequences but also professional and identity-related implications [7, 46]. At the same time, horizontal relationships remain highly influential, reinforcing the view that coworker ties shape the emotional climate, daily cooperation, and, ultimately, the overall work experience [52].

The hypotheses of this study are tested in Models 2 to 5. Models 2 and 3 incorporate the moderating effects of age. Hypothesis 1 corresponds to Model 2, which shows a negative and significant coefficient for the moderating effect of age on the impact of *Relationship with supervisors* on *Feelings of well-being at work* ($\beta = -0.021, p = 0.007$). This structural model explains 40.2% of the variance in *Feelings of well-being at work* ($R^2 = 0.402$). A hypothesis testing was also conducted to examine the practical relevance of the significant effect by evaluating the effect size in the relationship between variables (H1: Mean = 0.169, SD = 0.007, t-value = 1.673, p-value = 0.042, $F^2 = 0.036$), resulting in a Weak Effect, as the F^2 value falls between 0.02 and 0.15 [100]. Accordingly, the results support Hypothesis 1. As shown in Fig. 2, employee age moderates the relationship between supervisor-employee interpersonal relationships and workplace well-being,

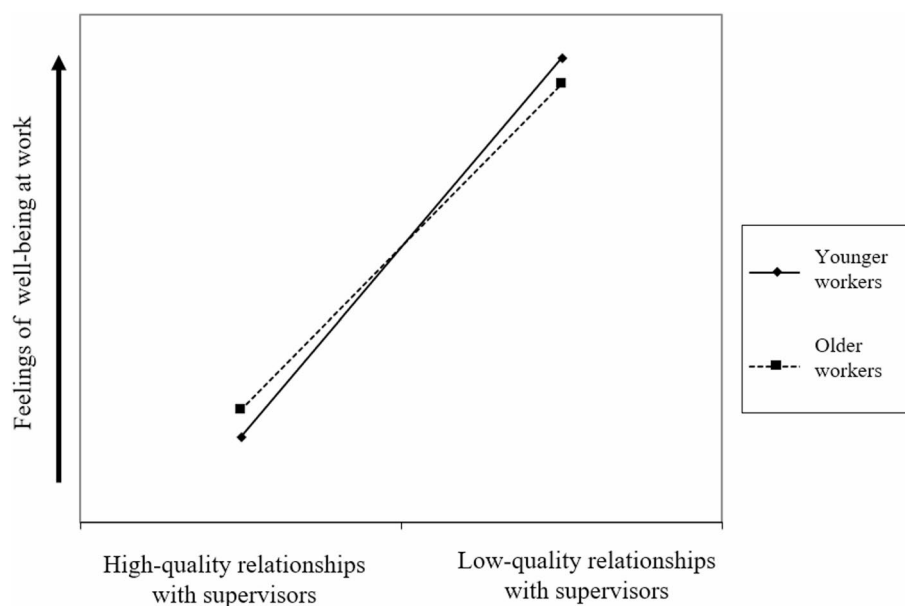


Fig. 2 Moderating effect of employee age on the relationship between supervisor relationships and feelings of well-being at work. Source: Author's own work

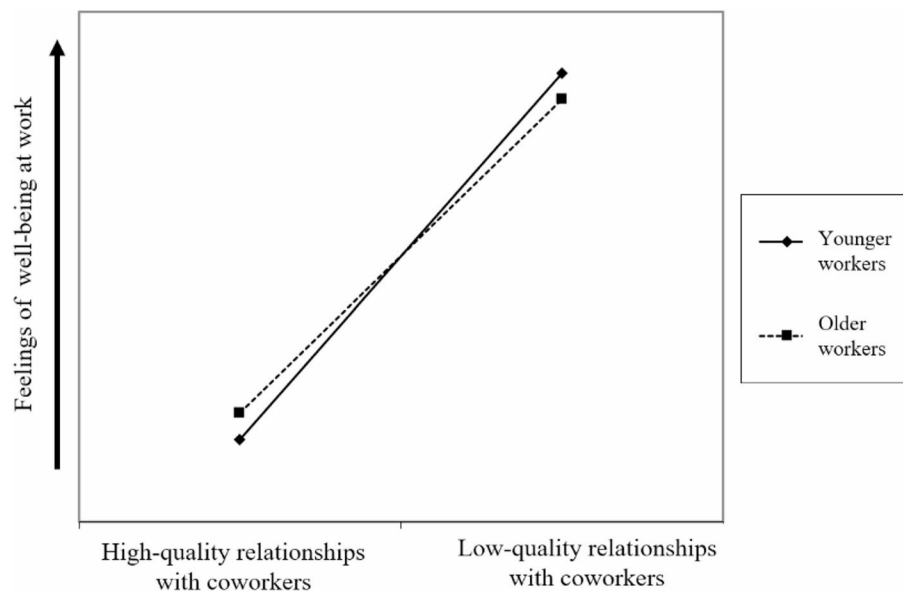


Fig. 3 Moderating effect of employee age on the relationship between coworker relationships and feelings of well-being at work. Source: Author's own work

such that older employees are less affected by these relationships in terms of their well-being at work.

Model 3 also shows a negative and significant moderating effect on the influence between *Relationships with coworkers* and *Feelings of well-being at work* ($\beta = -0.015$, $p = 0.012$). This model explains 40.2% of the variance ($R^2 = 0.402$), with a Weak Effect size (H2: Mean = 0.110, SD = 0.005, t -value = 1.128, p -value = 0.053, $F^2 = 0.047$). In line with the proposed argument, the results support Hypothesis 2. As illustrated in Fig. 3, age exerts a moderating effect on the relationship between coworker relationship quality and workplace well-being, indicating that this association is stronger among younger employees and weaker among older workers.

The findings suggest that although relational quality is important for all employees, younger workers are more sensitive to both positive and negative interpersonal dynamics. In contrast, older employees appear to be less affected in their workplace well-being by variations in relational quality. This result is consistent with life-span and career-stage perspectives, which argue that older workers tend to possess more developed coping strategies, more adjusted expectations, and greater emotional regulation resources [12, 13]. With accumulated experience and higher levels of social capital, interpersonal tensions may be interpreted more balancedly, preventing relational strain from translating into a substantial decline in overall workplace well-being [11, 69]. Conversely, younger employees may rely more heavily on relational validation, feedback, and social integration [14, 15, 60]. Their career trajectories are less consolidated and their organizational identities still under construction, which may amplify the psychological impact of relational quality [66, 67]. In this sense, interpersonal ties may function as particularly salient signals of inclusion, recognition, and professional value for individuals in the early stages of their careers. Although effect sizes are modest, they are consistent, suggesting that age does not radically transform relational dynamics but rather gradually reconfigures the intensity with which they are experienced. Importantly, this does not

imply that older employees are indifferent to relationships; rather, a buffering mechanism linked to maturity, experience, and emotional resilience may be at work.

Finally, Models 4 and 5 show that gender does not exert a statistically significant moderating effect on the relationship between supervisor and coworker relationships and feelings of well-being at work, indicating that no statistically significant differences were observed across gender groups. However, this finding should be interpreted as an absence of evidence rather than definitive evidence of no gender differences, given that interaction effects in field studies are often small and difficult to detect, particularly under measurement and design constraints [101, 102]. This finding contrasts with studies suggesting gender-based differences in relational expectations, support preferences, or interpretations of hierarchical and peer dynamics [7, 16, 17, 78]. At the same time, it is consistent with research grounded in Leader–Member Exchange theory and organizational trust perspectives, which posit that support, respect, and cooperation operate through broadly shared psychological mechanisms [9, 18, 48].

Importantly, several factors may help explain the absence of statistically significant moderation effects. First, the binary measurement of gender may obscure more nuanced patterns of differentiation, as such measures do not adequately capture the complexity of gender identity in survey research [103]. In addition, the absence of an intersectional perspective may further limit the ability to detect meaningful differences across groups, given that gendered experiences are often shaped by multiple, overlapping social categories [104]. Second, the European Working Conditions Survey (EWCS), as a large-scale and harmonized instrument, is designed to provide a broad overview of working conditions rather than to capture subtle, context-specific, or micro-level relational dynamics. In this regard, prior research suggests that contemporary forms of workplace discrimination often manifest through subtle and ambiguous behaviors, such as selective incivility, which may not be fully captured by general survey indicators [105]. Taken together, these considerations suggest that the relationship between relational quality and workplace well-being may be broadly similar across gender groups at an aggregate level, although more nuanced differences could remain undetected. Therefore, the findings should be interpreted with caution, and future research is needed to explore these dynamics using more sensitive and potentially intersectional approaches.

5 Conclusion

This study focused on examining whether the relationship between the quality of interpersonal relationships at work—both with supervisors and with coworkers—and workplace well-being is moderated by employees' age and gender. The findings confirm that high-quality relationships in the workplace are strongly and positively associated with employees' well-being. Both supervisory and coworker ties contribute significantly to how individuals experience their work, with hierarchical relationships showing a slightly stronger influence. This suggests that interactions with supervisors carry particular emotional and professional weight, although peer relationships also play a crucial role in shaping the everyday social and emotional climate of work.

The primary focus of the analysis, however, lies in the moderating effects. Age significantly moderates both relationships, such that the impact of relational quality on well-being is weaker among older employees. By contrast, gender does not exert a significant moderating effect on these associations. The most notable theoretical contribution of

this study concerns the moderating role of age. In particular, the results indicate that younger employees are more sensitive to variations in relational quality, whether positive or negative, whereas older employees appear comparatively less affected. Rather than implying indifference, this pattern suggests a buffering mechanism associated with greater experience, emotional stability, and accumulated coping resources over the career span. Younger workers, whose professional identities and trajectories are still developing, may depend more heavily on feedback, social validation, and relational inclusion. Although the effect sizes are modest, they consistently point to a gradual reconfiguration of relational sensitivity across age groups. In contrast, no statistically significant gender differences were observed in the strength of these relationships. However, this should be interpreted cautiously as an absence of evidence rather than definitive evidence of no differences. It is possible that measurement constraints and the use of broad survey indicators may limit the detection of more subtle or context-specific gendered experiences. Therefore, while the results suggest that relational quality is broadly relevant across gender groups, more nuanced differences cannot be ruled out.

This study presents several theoretical implications. First, it contributes to the literature by examining relational quality within a specific affective–relational dimension of workplace well-being, rather than attempting to capture the construct in its full multidimensional scope. By focusing on employees' subjective experiences of recognition, energy, and enthusiasm, the findings provide insights into how interpersonal relationships shape a core affective component of well-being at work. Second, it contributes to moderation research by showing that age functions as a structural buffering factor in relational dynamics. In other words, age not only affects average levels of well-being but also the strength with which relationships influence it. Third, it clarifies an ongoing debate regarding gender. By not finding statistically significant moderation effects, the results tentatively suggest that relational mechanisms underlying workplace well-being may operate in broadly similar ways across gender groups, although this interpretation should be treated with caution given the limitations of the data. From a practical perspective, the findings suggest that relational interventions should not be designed under a one-size-fits-all logic. Given that younger employees display greater sensitivity to relational quality, organizations may benefit from targeted initiatives for early career stages, such as structured feedback mechanisms, mentoring programs, onboarding support, and social integration initiatives. These strategies could reduce relational vulnerabilities and strengthen psychological resilience. For older employees, maintaining autonomy, recognition of experience, and respectful communication may be more relevant than increasing direct supervision. Furthermore, the absence of gender differences suggests that policies aimed at improving interpersonal relationships do not necessarily need to be differentiated by gender, but rather should focus on universal relational standards such as respect, support, cooperation, and interpersonal justice.

Finally, several limitations should be acknowledged. First, a potential limitation concerns common method variance (CMV), as all variables are based on self-reported data collected at a single point in time. Although prior research suggests that CMV does not necessarily introduce systematic bias [95, 96], it cannot be entirely ruled out. Accordingly, the results should be interpreted as associations rather than causal relationships [98]. Second, the operationalization of workplace well-being is relatively narrow. The construct was measured using a limited number of items capturing a specific

affective–relational dimension, rather than its full multidimensional structure. Although such short-form measures are common in applied organizational research, particularly when using secondary datasets, they necessarily involve trade-offs in terms of content validity [40]. Therefore, the findings should be interpreted within this bounded conceptual scope. Future research should employ more comprehensive multidimensional measures to capture both hedonic and eudaimonic aspects of workplace well-being in greater depth. Third, the nested structure of the data, with individuals clustered within countries, represents another limitation. Although additional robustness checks using country-clustered standard errors and country fixed effects indicate that the main findings are not driven by country-level clustering, unobserved cross-national heterogeneity may still influence the results. Accordingly, the findings should be interpreted as individual-level associations rather than causal relationships. Future research could benefit from adopting multilevel approaches (e.g., HLM or MSEM) to explicitly model cross-level dynamics and better account for country-level influences. Fourth, although the EWCS provides broad European coverage, cultural heterogeneity across countries may introduce contextual variations that are not explicitly modeled. This limitation is closely related to the absence of an explicit cross-level analytical design and reinforces the need for multilevel approaches in future research. Fifth, the measurement of gender reflects the survey design and relies on a binary classification, which does not capture more diverse identities. In addition, the absence of an intersectional perspective may have limited the ability to detect more nuanced forms of gender differentiation. Future research should incorporate more inclusive measures of gender and explicitly consider intersectionality to better capture the complexity of social identities in the workplace. Finally, an important limitation concerns temporal external validity. The data come from 2015 and therefore reflect a pre-pandemic European labour-market context [28]. Although more recent Eurofound evidence indicates that the positive relationship between job quality and worker well-being remains relevant in later survey rounds, structural shifts associated with COVID-19, telework, hybrid work, and digitalization may have altered the magnitude or distribution of some relationships, particularly those linked to the social environment of work [29–31]. Accordingly, the findings should be interpreted as evidence on pre-pandemic structural associations rather than as a direct portrait of current levels of workplace well-being. Future research should replicate the present model using harmonized items from EWCS 2024 and, where appropriate, compare these results with the pandemic-specific EWCTS 2021, taking into account differences in survey mode and questionnaire design [29, 31]. Additionally, future research could employ qualitative approaches to provide a deeper understanding of the mechanisms underlying the age-related buffering effect identified in this study.

Authors' contributions

JB designed the study, performed the analysis, and wrote the manuscript. The author approved the final version.

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Data availability

The data supporting the findings of this study are available from the UK Data Service (European Working Conditions Survey 2015, SN: 8098) at <https://datacatalogue.ukdataservice.ac.uk>.

Declarations

Ethics approval and consent to participate

This study is based on the secondary analysis of anonymized survey data from the European Working Conditions Survey (EWCS 2015), which is publicly available and was collected in accordance with applicable ethical and data protection regulations (Eurofound, 2017). No additional data collection involving human participants was undertaken by the author. Therefore, separate institutional ethical approval was not required.

The EWCS is administered by Eurofound in accordance with standardized procedures for informed consent and data protection. No primary data were collected for the purposes of this study.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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