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ARTICLE

When organizational dehumanization hits home: Short-scale validation and test of a spillover–crossover model

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Abstract

Organizational dehumanization, a concept that has garnered increasing scholarly attention, still faces two significant limitations within the current literature. First, there is a lack of rigorously validated scales in the field. Second, the effects of organizational dehumanization on the family domain have been largely overlooked. In light of these gaps, we embarked on a comprehensive research project comprising five studies ($N_{Total} = 2635$) to address these limitations. Our primary objectives were twofold: (1) to develop and validate a concise five-item scale for measuring organizational dehumanization based on Caesens et al.'s (*Eur. J. Work Org. Psychol.*, *26*, 2017, 527-540) 11-item measure (Studies 1, 2 and 3) and (2) to investigate a novel spillover–crossover model of organizational dehumanization (Studies 4 and 5). Our results indicated that our proposed short scale has a good factorial structure and high reliability indices, correlates strongly with the 11-item full scale, is invariant over time and demonstrates evidence for convergent, discriminant and incremental validity. In addition, using data from both employees and their family members, we showed that organizational dehumanization contributes to an increase in work-to-family conflict among employees, as perceived by their family members. This, in turn, heightens relationship tension within their family members, ultimately leading to a decline in their relationship satisfaction. Theoretical and practical implications and avenues for future research are also discussed.

Florence Stinglhamber and Simon Lloyd D. Restubog contributed equally and are therefore co-second authors.

KEYWORDS
employee–organization relationship, instrumental variable, organizational dehumanization, short-scale validation, spillover–crossover, work-to-family conflict

Practitioner points

- Organizational dehumanization refers to employees' perceptions that their organization treats them as tools or instruments used to attain organizational goals.
- We develop and rigorously validate a concise five-item scale assessing organizational dehumanization, ensuring its robust psychometric properties. This provides managers and policymakers with a practical means to identify instances of organizational dehumanization, enabling them to implement targeted interventions aimed at reducing its occurrence and mitigating its adverse consequences.
- Organizational dehumanization is an adverse and stressful work experience that amplifies work-to-family conflict among employees (i.e. spillover), as perceived by their family members.
- Work-to-family conflict extends its impact to employees' family members, inducing relationship tension in the familial domain (i.e. crossover).
- The relationship tension experienced by family members ultimately translates into a decline in their relationship satisfaction.

BACKGROUND

From a tech giant patenting wristbands to monitor employee movements during parcel preparation (Solon, 2018) to poultry industry workers resorting to wearing diapers to maintain production speed (Gibson, 2016), workplace dehumanization has been a focal point of controversy in recent times. Beyond these headline-grabbing, albeit extreme cases, the pervasive sensation of being reduced to an expendable tool or a mere entry in an Excel spreadsheet is far from rare. It appears to have infiltrated contemporary organizations, leaving an indelible mark on the modern working world (Bell & Khoury, 2011). The prevalence of such organizational practices has prompted scholars to devote increased attention to the concept of organizational dehumanization, which is defined as employees' perceptions that their organization treats them as tools or instruments used to attain organizational goals (Bell & Khoury, 2011). Indeed, since Bell and Khoury's (2011) seminal work, a significant body of research has explored the antecedents and outcomes of organizational dehumanization (Bell & Khoury, 2016; Nguyen et al., 2022; Sainz & Baldissarri, 2021; Sarwar et al., 2021). This line of research showed that organizational dehumanization leads to maladaptive outcomes for employees, including diminished well-being (e.g. increased emotional exhaustion) and more negative attitudes (e.g. decreased affective commitment) and behaviours (e.g. increased deviant behaviours; see Baldissarri & Fourie, 2023 for an overview).

Yet, despite the growing theoretical and empirical interest in organizational dehumanization research, the existing literature faces critical limitations. First, there has been a significant oversight in thoroughly examining the psychometric properties of existing measurement scales. Consequently, the field lacks scales that have undergone a rigorous validation process. In most studies, organizational dehumanization has been operationalized with Caesens et al.'s (2017) 11-item scale. Although this scale

has been widely used across diverse research designs and sample demographics,[1] and has demonstrated high reliability and consistent findings across multiple studies, it nonetheless suffers from psychometric, conceptual and practical shortcomings. In particular, some of its items exhibit weaknesses such as weak loadings (Ariño-Mateo et al., 2022; Brison et al., 2022), grammatical redundancy, overlap with other constructs or limited generalizability across all organizational sectors. In addition, several researchers have begun to use truncated versions of Caesens et al.'s (2017) scale, highlighting the need to have a short measure of organizational dehumanization in the literature. For instance, Sarwar and Muhammad (2020) used five items and Baldissarri and Andrighetto (2021) employed three items. However, these authors provided limited evidence regarding the psychometric robustness of their shortened scales, potentially yielding unreliable and invalid measures in organizational dehumanization research (Cortina et al., 2020; Heggestad et al., 2019; Kruyen et al., 2013; Smith et al., 2000; Stanton et al., 2002). Finally, it is important to note that the other existing scale of organizational dehumanization, Bell and Khoury's (2011) eight-item scale, is not suitable for comprehensive assessment due to its conceptual overlap with related – albeit distinct – constructs, such as bureaucracy and job autonomy (Brison et al., 2022).

The absence of validated scales for measuring organizational dehumanization is a matter of significant concern, raising a multitude of issues that deserve attention. One immediate consequence of employing inadequately validated measurement tools is the inherent risk of inaccurately capturing the very essence of the phenomenon under consideration. This can lead to a distortion of research findings, rendering them unreliable and potentially misleading. Such inaccuracies can have far-reaching implications, as they may guide policy decisions based on flawed or incomplete information. Moreover, the absence of validated scales substantially constrains the ability to rigorously test and refine theories relating to organizational dehumanization. As Heggestad et al. (2019) aptly noted, when the operationalization of a concept falls short, the relationships observed offer limited meaningful insights into the viability of a theory. Thus, shortcomings in measurement scales impede theoretical progress. Overall, having a valid and reliable measure of organizational dehumanization would not only enhance the soundness of academic research but also benefit informed policymaking.

Another limitation of the literature pertains to the empirical distinction of organizational dehumanization from other constructs reflecting the dark side of the employee–organization relationship. Indeed, to date, there remains a paucity of empirical evidence establishing the incremental, convergent and discriminant validity of organizational dehumanization relative to other forms of organizational mistreatment. This oversight is critical because it prevents the development of a coherent knowledge base and perpetuates the 'jangle fallacy' – the erroneous assumption that two similar concepts are distinct solely due to their differing labels (Kelley, 1927). The lack of evidence regarding the empirical distinction between organizational dehumanization and other forms of organizational mistreatment is concerning for at least two reasons. First, it can lead to construct proliferation, such that scholars face the risk of developing multiple, yet disconnected, streams of research that essentially examine the same phenomenon (Shaffer et al., 2016). This is undesirable because it prevents the creation of cumulative research, makes it more difficult to summarize research findings, and limits researchers–practitioners collaborations (Le et al., 2010; Shaffer et al., 2016). In addition, if organizational dehumanization presents an overlap with related constructs, it impedes one from accurately identifying its antecedents, consequences, underlying mechanisms and boundary conditions, thus hindering theoretical progress (Podsakoff et al., 2016).

Moreover, the nomological network of organizational dehumanization remains narrowly focused, with limited attention given to its effect on work–family inter-relationships. Currently, only

[1]Scholars have used Caesens et al.'s (2017) 11-item scale in cross-sectional, longitudinal and experimental research designs (Caesens et al., 2017; Nguyen et al., 2022). The scale has also been used with employees coming from various sectors (e.g. tourism, nursing, education, sales, insurance; Nguyen et al., 2022; Sarwar et al., 2021), status (e.g. white and blue collars; Nguyen et al., 2022; Sainz & Baldissarri, 2021) and cultures (e.g. Belgium [Lagios, Nguyen et al., 2022], Italy [Baldissarri & Andrighetto, 2021], Mexico [Sainz & Baldissarri, 2021], Pakistan [Sarwar & Muhammad, 2020], the Philippines [Lagios et al., 2023], Spain [Ariño-Mateo et al., 2022], the United Kingdom [Nguyen et al., 2022] and Vietnam [Nguyen et al., 2021]).

one study has explored how organizational dehumanization influences family and relationship outcomes by adopting a displaced aggression perspective (Lagios et al., 2023). While this perspective offers valuable insights into the active, affect-driven processes wherein employees redirect their aggression towards innocent others due to their fear of retaliation from the original harm doer, it is unlikely to be the sole explanation for the negative repercussions of organizational dehumanization in the family domain. Indeed, there exist inter-individual variations in displaced aggression (Denson et al., 2006), suggesting that not all employees respond to organizational dehumanization by channelling their aggression in such a manner. Drawing upon the spillover–crossover model (Bakker & Demerouti, 2013), and acknowledging the empathic bonds among family members (Westman, 2001), we propose a passive, strain-based explanation. In this scenario, organizational dehumanization impedes employees from effectively fulfilling their familial obligations, leading to adverse consequences for their family members.

To address these key limitations, and guided by prior approaches (Booth & Matthews, 2012; Hammer et al., 2013), we address two primary objectives. First, we develop and validate a concise five-item short scale of organizational dehumanization building upon Caesens et al.'s (2017) original 11-item measure. Specifically, across three studies, we examine the (1) factorial structure, (2) reliability, (3) convergent, discriminant and incremental validity and (4) longitudinal measurement invariance of our proposed short scale. In doing so, we provide researchers and practitioners with a brief, reliable and valid measure of organizational dehumanization, while establishing it as a distinct and significant form of organizational mistreatment.

Our second objective is to expand the nomological network of organizational dehumanization by testing our proposed short scale within an integrative research model. This model extends beyond the confines of the workplace and explores the spillover–crossover effects of organizational dehumanization on employees' family domain. Specifically, in two additional studies involving employee–family member dyads, we examine employees' work-to-family conflict (as perceived by their family members) as an explanatory mechanism linking employees' perceptions of organizational dehumanization to their family members' relationship tension and subsequent relationship satisfaction. Stated differently, we investigate whether employees' perceptions of organizational dehumanization influence their family members' relationship satisfaction through employees' work-to-family conflict and family members' relationship tension serially linked. That is, we argue that the spillover–crossover effects triggered by organizational dehumanization extend beyond simply heightening tensions among family members; these effects persist and adversely influence the manner in which family members appraise their relationships. By investigating these dynamics, we demonstrate that the detrimental consequences of organizational dehumanization extend beyond the workplace to negatively influence employees' interpersonal relationships with their family. Examining these consequences is important because their occurrence outside the workplace makes them particularly insidious and difficult to identify for managers and policymakers. Crucially, to establish the uniqueness of our proposed spillover–crossover mechanism, we account for employees' displaced aggression alongside work-to-family conflict (Study 4). Our goal is not to replace or discredit existing theoretical explanations such as displaced aggression (Lagios et al., 2023), but rather to offer a complementary theoretical perspective that deepens our understanding of how organizational dehumanization detrimentally impacts family-related outcomes.

By focusing on organizational dehumanization as the trigger of spillover–crossover effects, we also extend the boundaries of previous research on workplace mistreatment and its associated spillover–crossover effects. To date, this line of research has mainly examined interpersonal forms of mistreatment (e.g. abusive supervision [Carlson et al., 2011], interactional injustice [Hoobler & Hu, 2013]), thereby neglecting the fact that organizations can also serve as a source of harm that can entail spillover–crossover effects (Gibney et al., 2009). Yet, the target similarity model (Lavelle et al., 2007) suggests that employees can distinguish between various sources of mistreatment at work – whether it be interpersonal or organizational. Consequently, it underscores the necessity of exploring their distinct effects when examining spillover–crossover phenomena. Unlike interpersonal

mistreatment, which arises from a proximal and tangible source such as one's supervisor, organizational dehumanization represents a mistreatment originating from a more distal and abstract source, namely, the organization itself (Nguyen et al., 2022). Consistent with the idea that the organization is an entity of prime importance for employees (Eisenberger et al., 2019), we broaden the scope of the spillover–crossover literature by showing that mistreatment stemming from an abstract organizational entity, in contrast to that from a supervisor, can also permeate and influence the familial aspects of employees' lives.

The concept of organizational dehumanization and its consequences

Grounded in social psychology, dehumanization is the psychological process by which a person is denied their humanness (Haslam, 2006). Within this framework, Haslam (2006) introduced a dual model that distinguishes between two forms of dehumanization: animalistic and mechanistic dehumanization. Animalistic dehumanization involves denying an individual's uniquely human attributes (e.g. refinement, civility) and equating them with animals. In contrast, mechanistic dehumanization entails the denial of a person's human nature attributes (e.g. agency, interpersonal warmth) and associating them with lifeless objects or machines. While both forms of dehumanization can manifest in the workplace, scholars argued that mechanistic dehumanization tends to be more prevalent (Bell & Khoury, 2011). Therefore, organizational dehumanization has been conceptualized by focusing on employees' perceptions of being mechanistically dehumanized by their organization.

More precisely, organizational dehumanization refers to 'the experience of an employee who feels objectified by his or her organization, denied personal subjectivity, and made to feel like a tool or instrument for the organization's ends' (Bell & Khoury, 2011, p. 170). Stated differently, organizational dehumanization embodies the dark side of the employee–organization relationship and depicts the extent to which employees feel treated as objects by their organization. It is shaped by societal (e.g. capitalism), organizational (e.g. red tape), environmental (e.g. flex desks), work-related (e.g. job autonomy) and interpersonal (e.g. abusive supervision) factors (see Baldissarri & Fourie, 2023 for an overview). Although it may be possible that organizational dehumanization exists at the climate level (Lagios et al., 2023; Nguyen et al., 2022) and/or fluctuates in response to interpersonal treatment, work conditions and organizational experiences, existing research has predominantly framed organizational dehumanization as a relatively stable perception (Baldissarri & Fourie, 2023; Bell & Khoury, 2011).

Even when it takes subtle forms and is commonly experienced, organizational dehumanization is a form of mistreatment that threatens employees' psychological needs (Lagios, Caesens, et al., 2022), resulting in a variety of undesirable consequences for employees, such as poor well-being (e.g. increased emotional exhaustion and strains) and more negative work and organizational attitudes (e.g. decreased affective commitment) and behaviours (e.g. increased turnover intentions and deviant behaviours; Baldissarri & Fourie, 2023). Lagios et al. (2023) further expanded the scope of the consequences of organizational dehumanization and showed that it may trickle out to influence family outcomes. Specifically, the authors found that supervisors who feel dehumanized by their organization displace their aggression towards their subordinates by engaging in undermining behaviours. Undermined subordinates, in turn, displace their own aggression towards their family members through undermining behaviours, ultimately impairing the latter's relationship satisfaction and perceptions of emotional support.

Towards a short scale of organizational dehumanization

Most studies have operationalized organizational dehumanization using Caesens et al.'s (2017) 11-item scale, which was specifically designed to measure the inter-changeability and instrumentality dimensions of Haslam's (2006) mechanistic dehumanization (see Caesens et al., 2017 for more details on the

scale development procedure). While this scale has been shown to yield high reliability and provide consistent results, a shortened, validated measure of organizational dehumanization is urgently needed for psychometric, conceptual and practical reasons. Our primary rationale for shortening an existing measure, as opposed to developing a new one, was to prevent redundancy in measurement scales. Indeed, the proliferation of scales in psychological research carries several drawbacks. For instance, it complicates researchers' decision on which scale to employ and increases the odds of finding spurious relationships among variables of interest. In addition, the content of a psychological construct is unlikely to align precisely across various scales, potentially yielding incompatible or conflicting research findings (Rosenbusch et al., 2020). Overall, as argued by Rosenbusch et al. (2020), scale proliferation leads 'to arbitrariness and disorientation in psychological measurement, weak theories, and confusion among researchers and practitioners' (p. 387).

At a psychometric level, several scholars (Ariño-Mateo et al., 2022; Brison et al., 2022) noted that the first item of the scale (i.e. 'My organization makes me feel that one worker is easily as good as any other') has weak – or inadequate – loadings, 'suggesting that it may be less representative of the organizational dehumanization construct' (Brison et al., 2022, p. 4). Indeed, taken alone, this item rather captures the extent to which employees perceive to be on an equal footing, which is inconsistent with the notion of organizational dehumanization. Keeping these inappropriately loading items is problematic because it threatens the scale's construct validity (Hinkin, 1998). A similar observation was made by Ariño-Mateo et al. (2022) who argued that Caesens et al.'s (2017) first item has 'an ambiguous meaning' as it can be 'interpreted as something positive' (p. 8). Their analyses showed that this item had a weak negative loading, leading the authors to completely remove it from their validated Spanish version of the scale. In addition to this, the fourth ('My organization considers me as a tool to use for its own ends') and fifth ('My organization considers me as a tool devoted to its own success') items of Caesens et al.'s (2017) scale are grammatically redundant. This grammatical redundancy is problematic because it may result in overestimated reliability (i.e. Cronbach's *a* values; Cortina et al., 2020). Consistent with this, several scholars suggested that grammatically redundant items should be removed (Cortina et al., 2020; Stanton et al., 2002). Importantly, doing so allows one to reduce scale length while preserving content coverage.

At a conceptual level, two items of Caesens et al. (2017) appear problematic. Specifically, the second item (i.e. 'If my job could be done by a machine or a robot, my organization would not hesitate to replace me by this new technology') shares a conceptual overlap with occupational insecurity stemming from automation (i.e. employees' perceptions of job loss due to automated processes and technological advancements; Roll et al., 2023; see also Bankins et al., 2023). This conceptual overlap is problematic as it poses a threat to content validity. Moreover, the fifth item ('My organization would not hesitate to replace me if it enabled the company to make more profit') makes little sense for public sector employees as they work for organizations that do not seek to make profit. The limited applicability of this item could potentially result in careless responding (Arthur Jr et al., 2021), ultimately yielding invalid results.

At a practical level, the scale consists of 11 items, which can result in lengthy surveys for participants and pose challenges for researchers. Having a shorter scale would be beneficial for several reasons. First, researchers often face practical constraints that make it difficult to administer longer scales and surveys. Such constraints may include heavy workloads or organizational restrictions that limit the time that respondents can devote to completing surveys (Fisher et al., 2016). By embracing a shorter scale, researchers can overcome these constraints and ensure higher participation rates. Second, short scales (and surveys) have been proven to mitigate respondents' fatigue, boredom and carelessness (Bowling et al., 2021; Heggestad et al., 2019; Stanton et al., 2002). This might lead to increased data quality (Arthur Jr et al., 2021) as respondents are more likely to engage attentively and provide accurate responses. Third, the use of short scales is cost and time efficient (Kruyen et al., 2013; Smith et al., 2000), which is particularly important for multisource and/or intensive longitudinal studies (e.g. diary studies). Indeed, as these study designs involve multiple respondents (e.g. employees and their family members) and/or require surveys to be completed at multiple time points (e.g. once a day or several times a day), it is vital to have shorter scales (i.e. no more than five items; Ohly et al., 2010) to reduce the burden on participants and maximize response rates. As emphasized by Cortina et al. (2020), 'many designs simply

are not possible without shorter scales' (p. 1374). In fact, researchers have already developed shortened versions of existing longer scales (Booth & Matthews, 2012 [from 9 to 6 items]; Schaufeli et al., 2019 [from 9 to 3 items]). These examples highlight the value and feasibility of adopting shorter scales to achieve research objectives effectively and efficiently.

We also believe that the development of a validated short scale for measuring organizational dehumanization holds great potential for advancing theory development and promoting future research in this domain of scholarship. Numerous scholars have emphasized the need for more comprehensive investigations of organizational dehumanization (Baldissarri & Fourie, 2023; Bell & Khoury, 2011) and facilitating its measurement appears to be a necessary first step towards that end. Further, with more empirical research on organizational dehumanization, policymakers would be better equipped to reduce organizational dehumanization and its harmful effects. While we acknowledge that 11 items may not constitute a long scale per se, our view is that using a short measure of organizational dehumanization, alongside other shortened instruments to assess adjacent concepts, is likely to be beneficial in light of the above-mentioned advantages.

With these advantages, however, come several methodological and statistical challenges. Indeed, scale shortening without a rigorous validation process can have serious psychometric implications, especially in terms of reliability and validity (Cortina et al., 2020; Heggestad et al., 2019; Kruyen et al., 2013; Smith et al., 2000; Stanton et al., 2002). For instance, omitting certain items can reduce content coverage, while keeping some others can increase redundancy (Smith et al., 2000; Stanton et al., 2002), leading to sub-optimal measures. Therefore, given the benefits and potential risks associated with scale shortening, it is crucial to devote empirical attention to the development and validation of a short scale with robust psychometric properties.

As part of our validation effort, we also seek to theoretically and empirically delineate organizational dehumanization from three other concepts embodying the dark side of the employee–organization relationship, namely psychological contract breach (i.e. employees' perceptions that their organization has failed to fulfil its promised obligations; Rousseau, 1995), overall organizational injustice (i.e. employees' perceptions that their organization treats them in an unfair manner; Ambrose & Schminke, 2009) and perceived organizational obstruction (i.e. employees' perceptions that the organization obstructs, impedes or disrupts their goal attainment and negatively affects their well-being; Gibney et al., 2009). We decided to examine these three constructs for three reasons. First, akin to organizational dehumanization, psychological contract breach, overall organizational injustice and perceived organizational obstruction all represent mistreatment stemming from an abstract entity that is the organization. Second, extensive research has already delved into these areas, furnishing robust evidence of their detrimental effects on employees (Ambrose et al., 2015; Gibney et al., 2009; Mackey et al., 2018; Zhao et al., 2007). Finally, their scales have been consistently validated psychometrically in prior studies (Ambrose & Schminke, 2009; Gibney et al., 2009; Mackey et al., 2018; Robinson & Morrison, 2000), a critical consideration given our own validation efforts. From a theoretical standpoint, although both organizational dehumanization and psychological contract breach acknowledge that the organization may take advantage of its employees for its own purposes, psychological contract breach is more nuanced. Indeed, the latter occurs not only when employees perceive that they have received less than what they were promised by their organization (i.e. deficiency), but also when they perceive that they have received *more* than what was promised (i.e. excess; Lambert et al., 2003). Thus, psychological contract breach can arise from a positive or negative organizational treatment. Organizational dehumanization, however, only refers to a negative organizational treatment. Organizational dehumanization stands apart from overall organizational injustice primarily because it does not revolve around perceptions of fairness. In the context of organizational dehumanization, employees perceive that the treatment by their organization denies their intrinsic humanity, yet they refrain from passing any judgement on the fairness of this treatment. In other words, employees might feel that they are treated merely as tools or numbers by their organization, without necessarily considering the organizational procedures or resource allocations as unjust. This perspective aligns with the empirical findings of Bell and Khoury (2016), who established that organizational dehumanization and organizational justice are indeed distinct concepts. Finally, even if

both organizational dehumanization and perceived organizational obstruction incorporate the notion of goals and objectives in their conceptualization, their focus differs. In organizational dehumanization, employees perceive that their organization considers them as tools devoted to the realization of the organization's goals and objectives. In perceived organizational obstruction, however, the emphasis is put on the professional goals and objectives of the employees that are thwarted by the organization. In sum, organizational dehumanization distinguishes itself from other constructs that embody the dark side of the employee–organizational relationship. It does so by assessing the degree to which employees perceive their organization as negating their basic humanity.

A spillover–crossover model of organizational dehumanization

The spillover–crossover model (Bakker & Demerouti, 2013) posits that work experiences, whether positive (e.g. work resources) or negative (e.g. work stressors), spill over into the home domain and result in work-to-family enrichment or conflict. In turn, this state of work-to-family enrichment or conflict will have positive or negative effects on other individuals' well-being and interactions. In sum, the spillover–crossover model is a two-stage process that builds on a double transmission of experiences (Westman, 2006), that is an initial spillover effect that is followed by a subsequent crossover effect. Meta-analytical investigation found empirical support for the spillover–crossover model (Steiner & Krings, 2016). Below, we explain the spillover and crossover effects and develop our hypotheses.

Spillover effects refer to the extent to which an individual's participation in one life domain (e.g. work) influences their attitudes, experiences and behaviours in another life domain (e.g. home; Bolger et al., 1989). While spillover effects can manifest in two opposing directions (i.e. from work to family and from family to work) and can yield both positive and negative outcomes (Bakker & Demerouti, 2013), existing research has predominantly focused on examining negative work-to-family spillover effects (Bakker & Demerouti, 2013; Booth-LeDoux et al., 2020). More precisely, to explain how negative work experiences can spill over and detrimentally affect an employee in their family sphere, spillover research builds on role theory (Katz & Kahn, 1978) and the scarcity hypothesis (Goode, 1960) in particular. The fundamental premise of the scarcity hypothesis (Goode, 1960) is that individuals have a finite pool of personal resources (e.g. time, energy) for which the work and family domains compete. Consequently, when employees devote their resources to cope with stressful and adverse work conditions, they have fewer available resources to invest in their family domain (Bakker & Demerouti, 2013; Edwards & Rothbard, 2000). Negative work-to-family spillover often translates in work-to-family conflict, defined as a form of inter-role conflict in which the pressures originating in the work domain hinder the fulfilment of family domain responsibilities (Greenhaus & Beutell, 1985). Supporting the existence of spillover effects, meta-analyses demonstrated that work-related stressors such as role overload and abusive supervision have positive effects on work-to-family conflict (Mackey et al., 2017; Michel et al., 2011).

In this research, we conceptualize organizational dehumanization as an adverse and stressful work experience, characterized by employees perceiving that their fundamental humanity, the very essence of what defines them as human beings, is denied (Baldissarri & Fourie, 2023; Bell & Khoury, 2011). This denial of one's humanity engenders negative self-evaluations (Nguyen & Stinglhamber, 2021), directly threatening one's self-esteem (Demoulin et al., 2021) and self-concept (Nguyen et al., 2022). Coping with such a detrimental treatment depletes valuable resources (Nguyen et al., 2022) and requires a sustained mental effort to cope with it (Caesens & Stinglhamber, 2019). Consequently, employees enduring organizational dehumanization often experience exhaustion (Caesens et al., 2017; Caesens & Stinglhamber, 2019), depleting the resources needed for family-related responsibilities. In this context, employees (or their family members) may perceive that work encroaches on family life and hinders their ability to fulfil family responsibilities (e.g. being a supportive partner, completing household chores), thus resulting in increased perceptions of work-to-family conflict.

Once adverse and stressful work experiences have extended into the family domain, the spillover–crossover model (Bakker & Demerouti, 2013) suggests that they can then cross over to influence other individuals with whom employees interact (e.g. family members). More precisely, crossover effects delineate the process by which an individual's experiences impact another individual within a dyadic relationship (Westman, 2006). Thus, while spillover constitutes an intra-individual, cross-domain phenomenon, crossover represents an inter-individual phenomenon occurring between two individuals, within the same domain or spanning across two different domains (Westman, 2006). Crossover effects can occur through a direct empathic process, where the strains encountered by one member of the dyad (e.g. the employee) directly affect the strains experienced by the other member of the dyad (e.g. the employee's family member; Westman, 2001). Indeed, previous studies showed that an employee's work-to-family conflict, along with the associated strain and distress, lead to increased psychological distress for their family members, including their partner/spouse (Li et al., 2021) and children (Reimann et al., 2022). In our research, we focus on relationship tension, which is a particular strain that is characterized by tension, frustration, irritation and annoyance that one partner harbours towards the other (Matthews et al., 2006). Consistent with crossover effects, employees' work-to-family conflict has been shown to be positively related with their family members' relationship tension (Carlson et al., 2011, 2018; Matthews et al., 2006). Indeed, when employees experience work-to-family conflict, they are unable to effectively attend to the demands in the home domain, which is likely to provoke annoyance and irritation among family members.

Overall, building on the spillover–crossover model (Bakker & Demerouti, 2013), we argue that organizational dehumanization is an adverse and stressful work experience that spills over into the home domain, increasing work-to-family conflict. In turn, this state of work-to-family conflict increases family members' relationship tension.

Hypothesis 1. Organizational dehumanization has a positive indirect effect on relationship tension through work-to-family conflict.

We further expand our proposed spillover–crossover model by examining relationship satisfaction as a resulting outcome of relationship tension. That is, we test whether work-to-family conflict and relationship tension are serial mediators in the relationship between organizational dehumanization and relationship satisfaction. Doing so is important because it enables us to better understand how the spillover–crossover effects engendered by organizational dehumanization affect the family unit. As Orden and Bradburn (1968) explained, relationship tension and relationship satisfaction are distinct constructs, each with its own unique attributes. As noted, relationship tension encompasses the strains experienced by a family member due to the employee's behaviour (Carlson et al., 2011). Conversely, relationship satisfaction reflects a family member's overall subjective assessment of the quality of their relationship with the employee (Norton, 1983). To explain how relationship tension affects relationship satisfaction, we draw from Lewis and Spanier's (1979) research on family dynamics. Their work, applicable to marital relationships and the broader family context alike, revolves around three key aspects: consensus, cohesion and affectional expression. Consensus involves finding common ground in various facets of family life, spanning financial matters, leisure activities, philosophical outlook, time allocation, division of household chores and more. Cohesion captures the level of connection or detachment a family member experiences within the relationship. Affectional expression encompasses the myriad ways in which family members convey their affection to one another.

Relationship tension plays a pivotal role in gauging one's consensus, cohesion and affectional expression within the family unit. It arises from issues like perceived inequities in the division of labour at home or the distress stemming from disputes and disagreements with family members (Matthews et al., 2006; Menaghan, 1982). Importantly, family science research underscores the impact of relationship tension on relationship satisfaction For instance, in a meta-analysis, Wilson and Gottman (1995) showed significant associations between repeated negative social interactions, relational tension and a decline in overall relationship satisfaction among couples. Additionally, Revenstorf et al. (1980) identified that the

tension arising from negative exchanges led to increased distancing behaviours, ultimately resulting in lower levels of relationship satisfaction. Thus, we predict the following:

> **Hypothesis 2.** Organizational dehumanization has a negative indirect effect on relationship satisfaction through work-to-family conflict and relationship tension serially linked.

Overview of the studies

We systematically pursue our research objectives through a programmatic series of studies. In line with prior work (Booth & Matthews, 2012; Hammer et al., 2013), our research consists of two interlinked steps: (1) validating a short scale for organizational dehumanization and (2) testing this concise scale in an integrative research model extending the nomological network of organizational dehumanization. To achieve this, we conducted three studies to assess the psychometric properties of our proposed short scale, using both existing (Study 1) and new (Studies 2 and 3) samples (Cortina et al., 2020; Heggestad et al., 2019; Kruyen et al., 2013; Smith et al., 2000; Stanton et al., 2002). Building upon the validated scale, we proceeded to conduct two additional studies (Studies 4 and 5) aimed at investigating the spillover–crossover effects of organizational dehumanization (Hypotheses 1 and 2) using matched data from employees and family members.

In Study 1 ($N = 1209$), we (re)used Caesens et al.'s (2017; Study 2) original data. First, we selected the items of the short scale based on both empirical and theoretical evidence. Second, we examined the factorial structure and reliability of the short scale, as well as the part–whole correlation (i.e. the correlation between the short and full scales).

Study 2 ($N = 460$) adopted a two-wave design with a 3-week interval and aimed at replicating and extending the findings of Study 1. First, it assessed the psychometric qualities of the short scale for the second time. Particularly, we examined the effects of the short scale of organizational dehumanization on the three main categories of outcomes found in the literature, that is employees' well-being (i.e. emotional exhaustion), attitudes (i.e. affective commitment and job satisfaction) and behaviours (i.e. turnover intentions and organizational citizenship behaviours [OCBs]; see Baldissarri & Fourie, 2023), controlling for two other forms of organizational mistreatment (i.e. psychological contract breach and overall organizational injustice). In doing so, we investigated whether our short scale of organizational dehumanization exhibits a correlation with (i.e. convergent nomological validity), maintains its distinctiveness from (i.e. discriminant validity) and explains additional variance in the prediction of outcomes over and beyond (i.e. incremental validity) other forms of organizational mistreatment. Second, we performed longitudinal measurement invariance analyses to examine the equality of the factor structure of our five-item scale over time.

In Study 3 ($N = 435$), we also relied on a two-wave design but used a somewhat longer time lag (i.e. 5 weeks). Study 3 replicated and extended the results of Studies 1 and 2 in three important ways. First, it examined the factorial structure, reliability, convergent nomological validity[2] and longitudinal measurement invariance of the short scale. Second, it sought to investigate whether our proposed short-scale correlates with another measure of organizational dehumanization (i.e. Bell & Khoury's, 2011 eight-item scale; convergent trait validity[3]), is distinct from psychological contract breach and perceived organizational obstruction (discriminant validity) and explains additional variance in the prediction of outcomes over and beyond psychological contract breach and perceived organizational obstruction (incremental validity).

Study 4 ($N = 323$) was a cross-sectional study testing a spillover–crossover model of organizational dehumanization. Using data from employee–family member dyads recruited in Belgium, we tested the mediating role of work-to-family conflict in the relationship between organizational dehumanization

[2]Convergent nomological validity involves examining correlations among related constructs (Geisinger, 1992).

[3]Convergent trait validity focuses on the correlation between two measures assessing the same construct (Geisinger, 1992).

and relationship tension, controlling for interpersonal mistreatment (i.e. abusive supervision and interpersonal justice) as additional predictors. Doing so enables us to demonstrate that, just like supervisor mistreatment, mistreatment emanating from the organization also has the potential to spill over and cross over to employees' home and family domains. In addition, as prior work showed that organizational dehumanization influences the home domain through a displaced aggression process (Lagios et al., 2023), we also controlled for displaced aggression as an additional mediator. In doing so, we seek to show that our spillover–crossover perspective is an additional relevant framework that explains the family-related consequences of organizational dehumanization. We adopted a broad operationalization of employees' family members and focused on partners/spouses, siblings, children over 18 years old, parents or other live-in members (Booth & Matthews, 2012; Hoobler & Hu, 2013). To address potential endogeneity concerns that may arise from the cross-sectional design of Study 4, we also analysed our mediation model using an instrumental variable (IV) approach (Wooldridge, 2010).

Finally, Study 5 ($N = 208$) replicated and extended the spillover–crossover model of Study 4 in several ways. First, it examined relationship satisfaction as an outcome of the spillover–crossover effects of organizational dehumanization, controlling for dispositional factors such as trait anger and negative affectivity (as additional predictors). Second, it employed a four-wave design (1 month apart) and used a different operationalization of work-to-family conflict and relationship tension, allowing us to strengthen the validity of our findings (i.e. constructive replication; Lykken, 1968). Third, we restricted our operationalization of family members to employees' spouses. Fourth, while the data of Study 4 were collected in an individualistic culture (i.e. Belgium), the data of Study 5 were collected in a collectivist culture (i.e. the Philippines), thereby increasing the generalizability of our findings (Kawas & Ogolsky, 2023).

STUDY 1

Sample and procedure

The sample of Study 1 comes from the database collected by Caesens et al. (2017; Study 2) to develop the initial full version of the organizational dehumanization scale ($N = 1209$; see Caesens et al., 2017 for a detailed description of the sample).

Item selection strategy for the short scale

To determine the number of items for our proposed short scale of organizational dehumanization, we followed the recommendations of Hinkin (1998) who noted that the optimal length of most constructs in applied psychology should be between four and six items. Accordingly, we retained five items from the full scale for inclusion in the short scale. To select these five items, we relied on both empirical and theoretical criteria, while being extremely careful not to narrow the construct of interest (Heggestad et al., 2019; Kruyen et al., 2013; Smith et al., 2000; Stanton et al., 2002). Specifically, we applied two sequential, inter-related strategies. First, we used Cortina et al.'s (2020) R Shiny app which 'empirically derives an optimized shortened scale' (p. 1375) based on a variety of scale quality indices, such as internal consistency reliability, part–whole correlations and general factor loadings. Concretely, the app identifies all five-item scales that can be formed from the original 11-item scale ($N = 462$) and then calculates the scale quality indices of each combination (see Section 1: Appendix S1). Second, we thoroughly identified the five items that best represented the organizational dehumanization construct. In doing so, we paid particular attention not to keep items that were ambiguous (e.g. item 1 ['My organization makes me feel that one worker is easily as good as any other']), specific to certain types of occupations

TABLE 1 Descriptive statistics and correlations among variables for Study 1.

Variables	*M*	*SD*	1.	2.	3.	4.	5.	6.
1. Gender	–	–	–					
2. Age	38.93	11.27	.17***	–				
3. Education	–	–	.12***	.17***	–			
4. Organizational tenure	8.78	8.98	.10*	.74***	.11***	–		
5. Organizational dehumanization (11-item scale)	3.69	1.46	.03	.08**	.01	.10***	–	
6. Organizational dehumanization (5-item scale)	3.71	1.53	.03	.10**	.03	.11**	.97***	–

Note: $N = 1209$ (excepted for gender $N = 1174$, age $N = 1176$, education $N = 1175$ and organizational tenure $N = 1171$). Gender was coded 1 for *male* and 0 for *female*. Education was coded 1 for *bachelor's degree*, 2 for *master's degree* and 3 for *PhD or MBA*.
*$p < .05$. **$p < .01$. ***$p < .001$.

TABLE 2 Five-item short scale of organizational dehumanization.

	Standardized factors loadings (CFA)				
		Study 2		Study 3	
Items	Study 1	Time 1	Time 2	Time 1	Time 2
1. My organization considers me as a tool to use for its own ends	.78	.91	.91	.90	.93
2. My organization is only interested in me when it needs me	.82	.92	.94	.92	.94
3. The only thing that counts for my organization is what I can contribute to it	.78	.85	.90	.85	.89
4. My organization considers me as a number	.81	.93	.92	.89	.89
5. My organization treats me as if I were an object	.81	.90	.90	.89	.88

Note: $N_{Study1} = 1209$; $N_{Study2} = 460$; $N_{Study3} = 435$. CFA = confirmatory factor analysis. Respondents are invited to indicate the extent to which they agree with the above-mentioned statements. All items are assessed using a 7-point Likert agreement scale (1 = *strongly disagree*; 2 = *moderately disagree*; 3 = *slightly disagree*; 4 = *neither agree nor disagree*; 5 = *slightly agree*; 6 = *moderately agree*; 7 = *strongly agree*).

only (e.g. item 2 ['My organization would not hesitate to replace me if it enabled the company to make more profit']), similar to other existing constructs (e.g. item 3 ['If my job could be done by a machine or a robot, my organization would not hesitate to replace me by this new technology']) or grammatically redundant (e.g. item 4 ['My organization considers me as a tool to use for its own ends'] and item 5 ['My organization considers me as a tool devoted to its own success']). Combining both empirical and theoretical evidence, the following five items were retained: 'My organization considers me as a tool to use for its own ends', 'My organization is only interested in me when it needs me', 'The only thing that counts for my organization is what I can contribute to it', 'My organization considers me as a number' and 'My organization treats me as if I were an object' (see Section 2: Appendix S1 for a more in-depth discussion of our item selection process). These five items essentially capture the idea of instrumentality at the core of the organizational dehumanization construct (Bell & Khoury, 2011). We kept Caesens et al.'s (2017) original 7-point Likert agreement response anchor.

Results

Relationships among variables

Means, standard deviations and correlations between the variables are displayed in Table 1.

Confirmatory factor analysis

Results of a confirmatory factor analysis (CFA) performed on the short scale indicated an adequate fit with the data, $\chi^2(5) = 130.92$; SRMR = .03; CFI = .95; TLI = .90. Further, all standardized factor loadings were significant and ranged from .78 to .82 (see Table 2).[4]

Reliability

While reliability has typically been assessed with Cronbach's α, this measure has been criticized for producing biased estimates because it (1) assumes an unrealistic essential tau equivalence and (2) increases with the number of items. Instead, scholars have advocated using McDonald's ω which has been found to be a superior reliability measure (Cortina et al., 2020). As most papers examining organizational dehumanization solely relied on Cronbach's α, we report both Cronbach's α and McDonald's ω. In this study, the short scale yielded very good reliability indices ($\alpha = .90$, $\omega = .90$).[5]

Part–whole correlation

Results indicated a very strong correlation ($r = .97$, $p < .001$). Thus, little information seems to be lost when the short scale is used.[6]

STUDY 2

Sample and procedure

In this two-wave study, participants were invited via Prolific Academic to respond to an online questionnaire on their work life at two time points, 3 weeks apart. We opted for this rather short time lag based on the premise that many important changes at work can be observed over reasonably short periods of time (Dormann & Griffin, 2015). Participants' responses at T1 were matched with their responses at T2 based on anonymous IDs (provided by the Prolific Academic platform). To be eligible to participate, prospective participants had to (1) be at least 18 years old, (2) be native speakers of English, (3) have an approval rate in prior tasks completed on the platform of at least 90% and (4) be currently employed in an organization. Each participant received 1.1£ as a monetary compensation for participating at T1 and 0.56£ at T2. Organizational dehumanization was measured at both time points, psychological contract breach and overall organizational injustice were measured at

[4]Results of a CFA performed on the full scale indicated an adequate fit with the data, $\chi^2(44) = 602.12$; SRMR = .04; CFI = .92; TLI = .90. All standardized factor loadings were significant and ranged from .70 to .81 (see Section 3: Appendix S1). Note that the χ^2 and the incremental fit indices (i.e. CFI and TLI) differ from the ones reported by Caesens et al. (2017). This is because Caesens et al. (2017) analysed their data using LISREL 8.8 with the ML estimator, whose fit indices are based on the reweighted least squares χ^2 statistics. In contrast, the data in the present research were analysed using Mplus 8.8 with the MLR estimator, whose fit indices are based on the maximum likelihood χ^2 statistics. These differences in fitting functions and estimators lead to different estimates (Schmukle & Hardt, 2005).

[5]The full scale also displayed very high reliability indices (Cronbach's $\alpha = .94$, McDonald's $\omega = .94$).

[6]According to Smith et al. (2000), a better strategy to assess the correlation between a full and shortened scale is to administer to the same participants, and during the same testing session, both the full and short scales, separated by fillers. This strategy reduces the odds of systematic error effects and thus yields unbiased correlation estimates. Following Smith et al.'s (2000) recommendations, we collected data from an independent sample composed of 450 employees and assessed organizational dehumanization twice: once with the full scale (at the beginning of the survey) and once with the short scale (at the end of the survey). Results indicated that the full and short scales were highly correlated ($r = .91$, $p < .001$).

T1 only, and the key outcomes were measured at T2 only. At T1, 499 participants took part in the study. Of these participants, 473 fully completed the survey at T2 which took place 3 weeks later (response rate = 94.8%). Participants who changed organizations or jobs between T1 and T2 ($N = 7$) or who failed one or more attentional check questions ($N = 6$) were removed. Thus, the final sample was 460 employees ($M_{age} = 41.83$, $SD_{age} = 10.43$). It comprised 57.8% of women and 42.2% of men. Employees came from the United Kingdom (82%), the United States (13.3%), Canada (2.4%), Ireland (1.5%), Australia (0.7%) and Sweden (0.2%). In most cases, employees who participated in the study held a bachelor's degree (43.5%) and had been employed by their current organization for 9.70 years on average ($SD = 8.04$). Moreover, participants came from various professional environments, but mainly in the area of teaching and education (14.3%), public administration (14.1%) as well as health and social care (11.3%).

Measures

Organizational dehumanization (T1) was assessed using the five-item short scale. Unless otherwise indicated, all items were assessed using 7-point Likert agreement scales.

Psychological contract breach

Psychological contract breach (T1; $\alpha = .96$, $\omega = .96$) was assessed with the five items of Robinson and Morrison (2000). A sample item is 'So far my employer has done an excellent job of fulfilling its promises to me' (reverse coded).

Overall organizational injustice

Overall organizational injustice (T1; $\alpha = .96$, $\omega = .96$) was measured with Ambrose and Schminke's (2009) six-item scale. A sample item is 'Overall, I'm treated fairly by my organization'. All items were reverse-coded to obtain an index of overall organizational injustice.

Emotional exhaustion

Emotional exhaustion (T2; $\alpha = .95$, $\omega = .96$) was measured using the nine items from the Maslach Burnout Inventory (Maslach & Jackson, 1981). Employees indicated how often they experienced the emotional state described in each item on a Likert-type scale ranging from 1 (*never*) to 7 (*every day*). A sample item is 'I feel emotionally drained from my work'.

Job satisfaction

Job satisfaction (T2; $\alpha = .93$, $\omega = .93$) was assessed using the four items of Eisenberger et al. (1997). A sample item is 'All in all, I am very satisfied with my current job'.

Affective commitment

Affective commitment (T2; $\alpha = .90$, $\omega = .90$) was measured with three items adapted from Meyer et al. (1993). A sample item is 'I do feel like 'part of the family' at my organization'.

TABLE 3 Descriptive statistics and correlations among variables for Study 2.

Variables	*M*	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Gender	–	–	–												
2. Age	41.83	10.43	−.14**	–											
3. Education	–	–	.01	−.08	–										
4. Organizational tenure	9.70	8.04	−.11*	.50***	−.16***	–									
5. Organizational dehumanization (5-item scale; Time 1)	3.84	1.76	.06	−.01	−.04	−.02	–								
6. Organizational dehumanization (5-item scale; Time 2)	3.92	1.73	.02	−.01	−.04	.03	.88***	–							
7. Psychological contract breach (Time 1)	3.28	1.59	.07	−.04	.01	−.04	.71***	.68***	–						
8. Overall organizational injustice (Time 1)	3.01	1.42	.08	−.05	−.02	−.03	.78***	.74***	.81***	–					
9. Emotional exhaustion (Time 2)	3.38	1.70	.07	−.13**	.08	−.10*	.53***	.57***	.50***	.57***	–				
10. Job satisfaction (Time 2)	4.83	1.54	.00	−.01	−.00	−.00	−.71***	−.71***	−.76***	−.77***	−.61***	–			
11. Affective commitment (Time 2)	4.35	1.76	.06	.03	−.01	.15**	−.62***	−.61***	−.56***	−.65***	−.43***	.71***	–		
12. Turnover intentions (Time 2)	3.30	2.01	.01	−.12*	.03	−14**	.62***	.63***	.65***	.68***	.62***	−.76***	−.62***	–	
13. Organizational citizenship behaviours (Time 2)	5.04	1.21	.06	.04	.04	.07	−.53***	−.53***	−.46***	−.57***	−.32***	.63***	.63***	−.46***	–

Note: $N = 460$. Gender was coded 0 for *male* and 1 for *female*. Education was coded 1 for *did not complete high school*, 2 for *high school*, 3 for *some college*, 4 for *bachelor's degree*, 5 for *master's degree* and 6 for *PhD*.
*$p < .05$. **$p < .01$. ***$p < .001$.

Turnover intentions

Turnover intentions (T2; $\alpha = .93$, $\omega = .93$) were assessed via Jaros' (1997) three-item scale. A sample item is 'I intend to leave my organization in a near future'.

OCBs

OCBs (T2; $\alpha = .94$, $\omega = .95$) were measured with a slightly adapted version of Eisenberger et al.'s (2010) eight-item scale. Specifically, because we focused on self-reported measures, the items were adapted into employee-rated statements, rather than supervisor-rated statements. A sample item is 'I look for ways to make my organization more successful'.

Results

Relationships among variables

Table 3 displays the means, standard deviations and correlations between the variables.

Confirmatory factor analyses

At T1, the CFA performed on the short scale showed a very good fit with the data, $\chi^2(5) = 42.07$; SRMR = .02; CFI = .97; TLI = .94. All standardized factor loadings were significant, ranging from .84 to .93. Similarly, the CFA at T2 yielded an excellent fit with the data, $\chi^2(5) = 28.59$; SRMR = .01; CFI = .99; TLI = .97. Here again, all standardized factor loadings were significant and ranged between .90 and .94 (see Table 2). A third CFA was conducted on the five-item scale, psychological contract breach, overall organizational injustice and the five outcomes to provide evidence for their distinctiveness. Results indicated that the hypothesized eight-factor model adequately fitted the data, $\chi^2(832) = 2162.07$; SRMR = .07; CFI = .93; TLI = .92, and was superior to all more constrained models (see Section 4: Appendix S1). Accordingly, the eight constructs were treated as distinct constructs in all further analyses, thus providing evidence for discriminant validity.

Reliability

Results indicated excellent reliability for both time points ($\alpha_{T1} = .96$, $\omega_{T1} = .96$; $\alpha_{T2} = .96$, $\omega_{T2} = .96$).

Convergent nomological validity

Results indicated that our five-item short scale of organizational dehumanization correlated strongly with psychological contract breach ($r = .71$, $p < .001$) and overall organizational injustice ($r = .78$, $p < .001$).

Incremental validity

SEM analyses were conducted to examine how the short scale (measured at T1) was related to the outcomes, controlling for psychological contract breach and overall organizational injustice. The overall structural model yielded an adequate fit with the data, $\chi^2(832) = 2162.07$; SRMR = .07; CFI = .93;

TABLE 4 Competing model fits for longitudinal measurement invariance test for Studies 2 and 3.

Measurement invariance	χ^2	*df*	SRMR	CFI	TLI	SCF	Model comparison	$\Delta\chi^2_{SB}$ (Δ_{df})
Study 1								
1. Configural invariance	87.18	29	.02	.99	.98	1.30	–	–
2. Weak invariance	95.73	33	.02	.98	.98	1.22	2 vs. 1	5.70 (4)
3. Strong invariance	99.43	37	.02	.98	.98	1.20	3 vs. 2	2.03 (4)
4. Strict invariance	116.96	42	.02	.98	.98	1.24	4 vs. 3	16.66 (5)**
5. Partial strict invariance[a]	104.99	41	.02	.98	.98	1.22	5 vs. 3	6.53 (4)
Study 2								
1. Configural invariance	149.32	29	.03	.96	.94	1.42	–	–
2. Weak invariance	163.33	33	.03	.96	.95	1.33	2 vs. 1	8.36 (4)
3. Strong invariance	173.72	37	.03	.96	.95	1.29	3 vs. 2	6.91 (4)
4. Strict invariance	178.90	42	.03	.96	.96	1.32	4 vs. 3	7.77 (5)

Note: $N_{Study2} = 460$; $N_{Study3} = 435$.

Abbreviations: $\Delta\chi^2_{SB}$, strictly positive Satorra–Bentler chi-square difference test; CFI, comparative fit index; SCF, scaling correction factor; SRMR, standardized root mean square residual; TLI, Tucker–Lewis index.

[a]Invariance was relaxed on item 3.

**$p < .01$.

TLI = .92. The short scale was significantly related to emotional exhaustion ($\gamma = .32$, $p < .001$), job satisfaction ($\gamma = -.28$, $p < .001$), affective commitment ($\gamma = -.36$, $p < .001$), turnover intentions ($\gamma = .28$, $p < .001$) and OCBs ($\gamma = -.33$, $p < .001$), controlling for psychological contract breach ($\gamma = .23$, $p = .010$; $\gamma = -.48$, $p < .001$; $\gamma = -.17$, $p = .038$; $\gamma = .38$, $p < .001$; $\gamma = -.09$, $p = .348$ respectively) and overall organizational injustice ($\gamma = .07$, $p = .502$; $\gamma = -.15$, $p = .056$; $\gamma = -.22$, $p = .022$; $\gamma = .10$, $p = .265$; $\gamma = -.19$, $p = .100$ respectively).

Longitudinal measurement invariance

Longitudinal measurement invariance was performed by sequentially testing configural, weak, strong and strict factorial invariance[7] (see Table 4). Item residuals were allowed to correlate over time to account for specific item effects (Little et al., 2007).

The configural model, which served as the baseline model, did not impose any constraints on the model parameters and fitted the data very well, $\chi^2(29) = 87.18$; SRMR = .02; CFI = .99; TLI = .99. Next, to test weak factorial invariance, the factor loadings of corresponding indicators were constrained to be equal across time. This weak invariance model also displayed a very good fit with the data, $\chi^2(33) = 95.73$; SRMR = .02; CFI = .98; TLI = .98. Results of the Satorra–Bentler (SB) χ^2 difference test between the configural and weak invariance models indicated a non-significant difference, $\Delta\chi^2(4) = 8.54$, SBc = 5.70, $p = .223$, thus demonstrating full weak invariance. Then, we estimated a

[7]In our analyses, we considered four levels of invariance. The first level, known as configural invariance, involves estimating the same model at each time point simultaneously. At this level, all estimated parameters are left unconstrained, allowing them to vary freely across time points. The second level of invariance is weak invariance. Here, the factor loadings are set to be equal across time points, suggesting that the association between the items and the latent variables of the models remain equal across time points. The third level, referred to as strong invariance, takes it a step further by constraining both the factor loadings and the item intercepts to be equal across time points. This level of invariance ensures not only that the associations between the items and the latent variables are equivalent, but also that the means of the items are similar across time points. Finally, the fourth level of invariance is strict invariance. This level imposes invariance for the factor loadings, the item intercepts and the residual variances. When strict invariance is achieved, it provides confidence that not only the associations between items and latent variables, and item means, are similar across time points, but also that the explained variance for every item remains the same across time points (Wang & Wang, 2020).

strong invariance model by holding, in addition to the factor loadings, the intercepts of corresponding indicators equal across time. This model yielded an excellent fit with the data, $\chi^2(37) = 99.43$; SRMR = .02; CFI = .98; TLI = .98. The SB χ^2 difference test between the weak and strong invariance models was not significant, $\Delta\chi^2(4) = 3.70$, SBc = 2.03, $p = .730$, suggesting full strong invariance. Finally, strict factorial invariance was tested by constraining, in addition to the factor loadings and indicator intercepts, the residual variances of corresponding indicators equal across time. While this strict invariant model fitted the data very well, $\chi^2(42) = 116.96$; SRMR = .02; CFI = .98; TLI = .98, the SB χ^2 difference test between the weak and strong invariance models was significant, $\Delta\chi^2(5) = 17.54$, SBc = 16.66, $p = .005$. Full strict invariance was thus not supported and we therefore tested partial strict invariance using a backward method (Yoon & Kim, 2014). After inspection of the modification indices, we relaxed the equality constraint for item 3 (i.e. 'The only thing that counts for my organization is what I can contribute to it'). This partial strict invariant model demonstrated a good fit with the data, $\chi^2(41) = 104.99$; SRMR = .02; CFI = .98; TLI = .98, and the SB χ^2 difference test between the strong and partial strict invariance models was non-significant, $\Delta\chi^2(4) = 5.56$, SBc = 6.53, $p = .163$. In sum, partial strict invariance was demonstrated.

STUDY 3

For this two-wave study, participants were recruited via the Prolific Academic platform and were invited to complete two online questionnaires, 5 weeks apart. Similar to Study 2, we chose to rely on a relatively short time lag, consistent with the idea that short time lags can capture many important changes at work (Dormann & Griffin, 2015). To take part in this study, participants needed to meet the same criteria as the ones used in Study 2 and we also made sure that participants of Study 2 were not allowed to participate in this third study. At T1, participants received 0.56£ for their participation and 0.79£ at T2. Organizational dehumanization was measured at both time points, psychological contract breach and perceived organizational obstruction were measured at T1 only, and outcomes were measured at T2 only. Four hundred and ninety-six participants completed the survey at T1. Of these participants, 451 fully completed the survey at T2 (response rate = 90.93%). Participants who changed organizations or jobs between T1 and T2 ($N = 8$) or who failed one or more attentional check questions ($N = 8$) were removed. Our final sample size consisted of 435 employees ($M_{age} = 42.76$ $SD_{age} = 9.9$). It comprised 57.2% women and 42.8% men. Employees came from the United Kingdom (75.4%), the United States (18.4%), Canada (2.3%), Ireland (1.8%), Australia (1.4%), Portugal (0.2%), New Zealand (0.2%) and Nigeria (0.2%). Most participants held a bachelor's degree (47.4%) and had on average been working in their organization for 9.76 years ($SD = 8.33$). In addition, they worked in various industries, such as teaching and education (15.6%), health and social care (13.1%) and IT and information service (8%).

Measures

Psychological contract breach (T1; $\alpha = .94$, $\omega = .94$), emotional exhaustion (T2; $\alpha = .96$, $\omega = .96$), job satisfaction (T2; $\alpha = .93$, $\omega = .93$), affective commitment (T2; $\alpha = .90$, $\omega = .90$), turnover intentions (T2; $\alpha = .95$, $\omega = .95$) and OCBs (T2; $\alpha = .92$, $\omega = .92$) were measured with the same scales as the ones used in Study 2.

Organizational dehumanization

Organizational dehumanization (T1) was assessed using the five-item short scale. To demonstrate convergent trait validity, we also included Bell and Khoury's (2011) eight-item scale at T1 ($\alpha = .95$, $\omega = .95$).

TABLE 5 Descriptive statistics and correlations among variables for Study 3.

Variables	*M*	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. Gender (Time 1)	–	–	–													
2. Age (Time 1)	42.76	9.90	−.03	–												
3. Education (Time 1)	–	–	−.01	−.16**	–											
4. Organizational tenure (Time 1)	9.76	8.33	−.05	.47***	−.19***	–										
5. Organizational dehumanization (5-item scale; Time 1)	3.83	1.63	.09	−.03	−.02	.05	–									
6. Perceived organizational obstruction (Time 1)	2.86	1.41	.04	−.03	.05	−.02	.68***	–								
7. Psychological contract breach (Time 1)	3.24	1.46	.07	.02	.03	−.02	.66***	.75***	–							
8. Organizational dehumanization (Bell and Khoury's [2011] scale; Time 1)	−.29	1.53	.12*	.02	−.05	.08	.85***	.69***	.73***	–						
9. Organizational dehumanization (5-item scale; Time 2)	3.87	1.66	.10*	−.08	−.04	.00	.84***	.66***	.61***	.80***	–					
10. Emotional exhaustion (Time 2)	3.38	1.64	.06	−.17***	.08	−.10	.51***	.56***	.47***	.54***	.56***	–				
11. Job satisfaction (Time 2)	5.05	1.47	−.04	−.00	.00	−.04	−.59***	−.65***	−.65***	−.68***	−.66***	−.59***	–			
12. Affective commitment (Time 2)	4.35	1.59	.05	.14**	.03	.14**	−.53***	−.49***	−.49***	−.58***	−.57***	−.36***	.66***	–		
13. Turnover intentions (Time 2)	3.09	1.83	.05	−.14**	.03	−.07	.56***	.63***	.59***	.58***	.58***	.56***	−.70***	−.54***	–	
14. Organizational citizenship behaviours (Time 2)	5.17	1.02	−.09	−.00	.06	.07	−.47***	−.37***	−.39***	−.56***	−.51***	−.29***	.59***	.60***	−.38***	–

Note: $N = 435$. Gender was coded 0 for *male* and 1 for *female*. Education was coded 1 for *did not complete high school*, 2 for *high school*, 3 for *some college*, 4 for *bachelor's degree*, 5 for *master's degree* and 6 for *PhD*.

*$p < .05$. **$p < .01$. ***$p < .001$.

A sample item is 'Does your organization treat you like a person or just another part of a big machine?' Participants indicated their response on a 7-point scale ranging from −3 (*like a person*) to 3 (*like a part of a machine*).

Perceived organizational obstruction

Perceived organizational obstruction (T1; $\alpha = .94$, $\omega = .94$) was measured with the five-item scale developed by Gibney et al. (2009). A sample item is 'My goal attainment is thwarted by the organization'.

Results

Relationships among variables

Table 5 displays the means, standard deviations and correlations between the variables.

Confirmatory factor analyses

The CFA performed on the short scale at T1 indicated a good fit with the data, $\chi^2(5) = 56.49$; SRMR = .02; CFI = .96; TLI = .92. All standardized factor loadings were significant and ranged from .85 to .92. At T2, the CFA indicated an adequate fit with the data, $\chi^2(5) = 76.00$; SRMR = .02; CFI = .95; TLI = .90. All standardized factor loadings were significant, ranging between .88 and .94 (see Table 2). We conducted another CFA on organizational dehumanization, psychological contract breach, perceived organizational obstruction and the six outcomes to demonstrate their distinctiveness. The hypothesized nine-factor model displayed a good fit with the data, $\chi^2(791) = 1817.56$; SRMR = .06; CFI = .93; TLI = .92, and was superior to all more constrained models (see Section 5: Appendix S1). Thus, based on this evidence, the nine constructs were treated as being distinct in all further analyses. These results demonstrated evidence for discriminant validity.

Reliability

Results indicated excellent reliability for both time points (T1: $\alpha = .95$, $\omega = .95$; T2: $\alpha = .96$, $\omega = .96$).

Convergent trait and nomological validity

Results indicated that our five-item short scale of organizational dehumanization correlated strongly with Bell and Khoury's (2011) scale of organizational dehumanization ($r = .85$, $p < .001$; convergent trait validity), and with psychological contract breach ($r = .66$, $p < .001$) and perceived organizational obstruction ($r = .68$, $p < .001$; convergent nomological validity).

Incremental validity

SEM analyses were conducted to examine how the short scale was related to the outcomes, controlling for psychological contract breach and perceived organizational obstruction. The overall structural model fitted the data well, $\chi^2(791) = 1817.56$; SRMR = .06; CFI = .93; TLI = .92. Organizational

dehumanization was significantly related to emotional exhaustion ($\gamma = .24$, $p < .001$), job satisfaction ($\gamma = -.19$, $p = .003$), affective commitment ($\gamma = -.35$, $p < .001$), turnover intentions ($\gamma = .19$, $p = .006$) and OCBs ($\gamma = -.41$, $p < .001$), over and beyond psychological contract breach ($\gamma = .06$, $p = .410$; $\gamma = -.36$, $p < .001$; $\gamma = -.21$, $p = .021$; $\gamma = .24$, $p = .004$; $\gamma = -.19$, $p = .063$ respectively) and perceived organizational obstruction ($\gamma = .34$, $p < .001$; $\gamma = -.27$, $p = .003$; $\gamma = -.11$, $p = .278$; $\gamma = .33$, $p < .001$; $\gamma = .06$, $p = .564$ respectively).

Longitudinal measurement invariance

To test the longitudinal measurement invariance of the short scale, we followed the same strategy as the one described in Study 2 (see Table 4). Both the configural, $\chi^2(29) = 149.32$; SRMR = .03; CFI = .96; TLI = .94, and weak invariance models fitted the data very well, $\chi^2(33) = 163.47$; SRMR = .03; CFI = .96; TLI = .95. The SB χ^2 difference test between the configural and weak invariance models indicated a non-significant difference, $\Delta\chi^2(4) = 14.15$, SBc = 8.36, $p = .079$, thus providing evidence for full weak invariance. Next, the strong invariance model showed an excellent fit with the data, $\chi^2(37) = 173.72$; SRMR = .03; CFI = .96; TLI = .95. The SB χ^2 difference test between the weak and strong invariance models was not significant, $\Delta\chi^2(4) = 10.25$, SBc = 6.91, $p = .141$, indicating full strong invariance. Finally, the strict invariance model also yielded an excellent fit with the data, $\chi^2(42) = 178.90$; SRMR = .03; CFI = .96; TLI = .96, and the SB χ^2 difference test between the weak and strong invariance models was non-significant, $\Delta\chi^2(5) = 5.18$, SBc = 7.77, $p = .169$, which suggested full strict invariance.

STUDY 4

Sample and procedure

We collected cross-sectional employee–family member matched data across various organizations in Belgium, using a snowball sample technique. Following previous research (Booth-LeDoux et al., 2020), we asked undergraduate students who were enrolled in an introductory course in organizational psychology to contact an employee who (1) shares their residence with a family member (such as a partner/spouse, sibling, child over 18 years old [excluding the student], parent or other live-in family member) and (2) engages in daily interactions with them. Students' participation was voluntary and students taking part in the research received an extra point for the course. The contacted employee was then asked to (1) complete a brief survey and (2) invite a family member to complete another brief survey. Each survey was accompanied by an introduction letter summarizing the goal of the research, the instructions of completion and the contact information of the research team. Both employees and family members were informed that their participation was voluntary and that their responses would be anonymous and confidential. Surveys were matched using students' identification number (i.e. a random code provided by the university that is used for clerical purposes) that each respondent indicated in the beginning of their survey. In total, 336 subordinates and 326 family members completed their surveys. Among these surveys, 323 were matched. Thus, our final sample was 323 independently matched employee–family member dyads (see demographic characteristics in Table 6).

Measures

Unless otherwise specified, all items were assessed using seven-point Likert agreement scales. Organizational dehumanization was reported by employees and was measured with the five-item scale ($\alpha = .87$, $\omega = .87$).

TABLE 6 Participants' demographic characteristics for Study 4.

	Employee		Family member	
	***M* (*SD*)**	***N* (%)**	***M* (*SD*)**	***N* (%)**
Age	30.28 (8.98)		30.70 (8.64)	
Gender				
Male		120 (37.2)		168 (52)
Female		203 (62.8)		155 (48)
Other		–		–
Education				
Primary school		2 (.6)		3 (.9)
High school		94 (29.1)		119 (36.8)
Bachelor's degree		121 (37.5)		93 (28.8)
Master's degree		97 (28.6)		93 (28.8)
PhD		4 (3)		7 (2.5)
Other		5 (1.5)		8 (2.5)
Organizational size[a]				
1–9 employees		49 (15.2)		
10–49 employees		67 (20.7)		
50–249 employees		52 (16.1)		
250–499 employees		29 (9)		
500–999 employees		16 (5)		
1000–1999 employees		25 (7.7)		
2000–4999 employees		26 (8)		
5000–9999 employees		18 (5.6)		
More than 10,000 employees		41 (12.7)		
Time				
Full-time		235 (72.8)		
Part-time		71 (22)		
Other		17 (5.3)		
Contract				
Permanent		287 (88.9)		
Fixed term		25 (7.7)		
Other		11 (3.4)		
Organizational sector				
Private sector		209 (64.7)		
Public sector		114 (35.3)		
Industry				
Health and social care		42 (13)		
Retail and sales		35 (10.8)		
Teaching and education		33 (10.2)		
Public administration		33 (10.2)		
Accountancy, banking, finance		25 (7.7)		
Organizational tenure (years)	13.44 (10.49)			
Supervisor tenure (years)	5.93 (6.53)			

TABLE 6 (Continued)

	Employee		Family member	
	M **(*SD*)**	***N*** **(%)**	***M*** **(*SD*)**	***N*** **(%)**
Family member status				
Partner or spouse				205 (63.5)
Sibling				15 (4.6)
Child (over 18 years old)				55 (17)
Parent				34 (10.5)
Other live-in member				14 (4.3)
Employment status				
Working				236 (73.1)
Not working				87 (26.9)
Subordinate-family member tenure of relationship (years)[a]	18.16 (11.97)		18.16 (11.97)	
Subordinate-family member number of hours of interaction per week[a]	36.76 (31.56)		36.76 (31.56)	

Note: $N = 323$. Only the five most frequent industries are displayed.

[a]Reported by the family member.

Family members' perceptions of employees' work-to-family conflict

Family members' perceptions of employees' work-to-family conflict (reported by family members; $\alpha = .77$, $\omega = .79$) were assessed using the three-item scale developed by Carlson (1999). Consistent with prior work (Ferguson et al., 2016; Hoobler & Hu, 2013), we slightly adapted the items by changing the referent to allow the family member to report the employee's behaviour. A sample item is 'When this person gets home from work, they are often too frazzled to participate in home activities/responsibilities'.

Relationship tension

Relationship tension (reported by family members; $\alpha = .80$, $\omega = .81$) was measured with Matthews et al.'s (2006) three-item scale. A sample item is 'During the past month, how often did you feel tense from fighting, arguing, or disagreeing with your family member?' Participants indicated their response on a four-point scale (1 = *never* to 4 = *often*).

Control variables

To rule out alternative explanations, several variables were controlled for. First, to demonstrate the uniqueness of organizational dehumanization in predicting work-to-family conflict and relationship tension, we controlled for employees' perceptions of abusive supervision and interpersonal justice from their supervisor. This is because both abusive supervision and interpersonal justice were shown to influence work-to-family conflict (Carlson et al., 2011; Hoobler & Hu, 2013). Abusive supervision was measured with Mitchell and Ambrose's (2007) five-item scale, using a 5-point Likert scale. Interpersonal justice was measured using the four items of Colquitt (2001). Second, as organizational dehumanization affects relationship outcomes through displaced aggression (Lagios et al., 2023), we controlled for employees' displaced aggression. We measured displaced aggression using the three highest loading items from Denson et al. (2006), consistent with past studies (Webster et al., 2015) and used in prior research (Liu et al., 2015). Third, we controlled for socio-demographic variables that are known to influence spillover–crossover effects (e.g. employees and family members' age, gender, education, tenure of

relationship and weekly number of hours of interaction; Carlson et al., 2018; Ferguson, 2012). Finally, as the data collection took place during the COVID-19 pandemic, we measured several COVID-19-related variables, that is (1) the extent to which the COVID-19 pandemic impacted employees' work (i.e. 'Please indicate the extent to which the COVID-19 pandemic has impacted your work' [1 = *not at all* and 7 = *extremely*]) and (2) employees and family members' level of depression due to the COVID-19 pandemic (i.e. 'Please indicate how depressed you feel because of the COVID-19 pandemic' [1 = *not at all* and 7 = *extremely*]; see Lagios, Lagios, et al., 2023).

In line with Becker's (2005) recommendations, we ran our analyses with and without the socio-demographic and COVID-19-related variables that correlated with the mediating and dependent variables of the model, and contrasted the results. As the results remained similar, we report below the results without the socio-demographic and COVID-19-related variables for parsimony purposes (Becker, 2005).

Results

Table 7 indicates the means, standard deviations and zero-order correlations between the variables.

Measurement model

We conducted CFAs to examine the distinctiveness of the six latent variables included in our model (i.e. organizational dehumanization, abusive supervision, interpersonal justice, work-to-family conflict, displaced aggression and relationship tension). As indicated in Section 6: Appendix S1, the hypothesized six-factor model fitted the data very well, $\chi^2(215) = 308.47$; SRMR = .05; CFI = .96; TLI = .96, and was superior to all more constrained models. All items were significant, with standardized loadings ranging from .41 to .98. In line with these results, all concepts were treated as distinct.

Structural model

We tested a structural model in which organizational dehumanization was related to work-to-family conflict which was, in turn, related to relationship tension. We also controlled for abusive supervision and interpersonal justice (as additional predictors) and displaced aggression (as an additional mediator). As depicted in Section 7: Appendix S1, this hypothesized model displayed a very good fit with the data, $\chi^2(218) = 312.43$; SRMR = .05; CFI = .96; TLI = .96, and was superior to all alternative models adding direct paths.

As shown in Figure 1, organizational dehumanization had a positive effect on work-to-family conflict ($\gamma = .15$, $p = .035$), while abusive supervision and interpersonal justice had no significant effect on it ($\gamma = .13$, $p = .115$ and $\gamma = .10$, $p = .265$ respectively). In turn, work-to-family conflict had a positive effect on relationship tension ($\beta = .40$, $p < .001$). With regard to displaced aggression, only interpersonal justice had a positive effect ($\gamma = .25$, $p = .007$); neither organizational dehumanization nor abusive supervision had a significant effect on it ($\gamma = .12$, $p = .099$ and $\gamma = .17$, $p = .075$ respectively). In turn, displaced aggression was not significantly related to relationship tension ($\beta = .07$, $p = .246$). Consistent with Hypothesis 1, latent mediation analyses with bootstrap (5000 bootstrap samples) indicated that the indirect effect of organizational dehumanization on relationship tension through work-to-family conflict was significant (indirect effect = .05; BC 95% CI = [.01; .11]), controlling for abusive supervision, interpersonal justice and displaced aggression.[8]

[8]Supplementary analyses showed that the interpretation of the results remained similar when the sample was restricted to employee–spouse dyads exclusively ($N = 205$; see Section 12: Appendix S1). Supplementary analyses further showed that the interpretation of the results remained similar when we controlled for relationship type (i.e. partner/spouse, sibling, child over 18 years old, parent or other live-in family member). To account for these different relationship types, we introduced four dummy variables into the analyses. As detailed in Section 13: Appendix S1, the inclusion of these dummy variables did not change the interpretation of the results.

TABLE 7 Descriptive statistics and inter-correlations among variables for Study 4.

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
1. Gender (emp)	–																
2. Age (emp)	.01	–															
3. Education (emp)	−.04	.10	–														
4. COVID-19 work impact (emp)	.10	.00	.16**	–													
5. COVID-19 depression (emp)	.00	−.19**	.01	.26***	–												
6. Gender (fam)	−.65***	.08	.00	−.08	−.02	–											
7. Age (fam)	−.04	.34***	.12*	.09	−.07	−.06	–										
8. Tenure of relationship (fam)	−.04	.42***	.02	.00	−.03	.10	.22**	–									
9. Number of hours of interaction per week (fam)	−.10	.03	.04	.08	.03	.06	.07	−.13*	–								
10. COVID-19 depression (fam)	−.10	−.03	−.04	.03	.23***	.19*	−.13*	−.05	.07	–							
11. Education (fam)	−.01	.10	.24**	.07	−.04	−.04	.22**	.04	.02	−.02	–						
12. Abusive supervision (emp)	.04	−.01	−.19***	−.07	−.02	−.02	−.03	−.03	−.03	.08	−.01	–					
13. Interpersonal justice (emp)	.01	−.02	.11***	.08	−.01	−.05	−.02	.02	.02	−.02	−.02	−.61***	–				
14. Displaced aggression (emp)	.02	−.10	.10	.08	.10	−.06	.03	.01	−.06	−.02	−.04	.08	.03	–			
15. Organizational dehumanization (emp)	−.08	.00	−.12*	−.01	.03	.08	−.02	.07	.07	.06	−.09	.33***	−.47***	.04	–		
16. Family members' perceptions of employees' work-to-family conflict (fam)	−.07	−.09	.10	.04	.11	.05	−.03	−.08	−.04	.12*	.02	.07	−.10	.13*	.12*	–	
17. Relationship tension (fam)	−.17**	.14**	.02	.04	.00	.10	.12*	.08	.07	.04	−.08	.02	.00	.10	.10	.33***	–
Means	–	45.52	–	3.45	3.48	–	41.96	18.16	36.76	3.57	–	1.20	6.26	1.87	2.79	2.80	2.23
SD	–	10.65	–	1.72	1.58	–	14.16	11.07	31.57	1.64	–	.39	.94	1.24	1.39	1.41	.68

Note: $N = 323$. Gender was coded 0 for *male* and 1 for *female*. Education was coded 1 for *did not complete high school*, 2 for *high school*, 3 for *some college*, 4 for *bachelor's degree*, 5 for *master's degree* and 6 for *PhD*. Tenure of relationship is indicated in years. Emp = reported by the employee. Fam = reported by the family member.

*$p < .05$. **$p < .01$. ***$p < .001$.

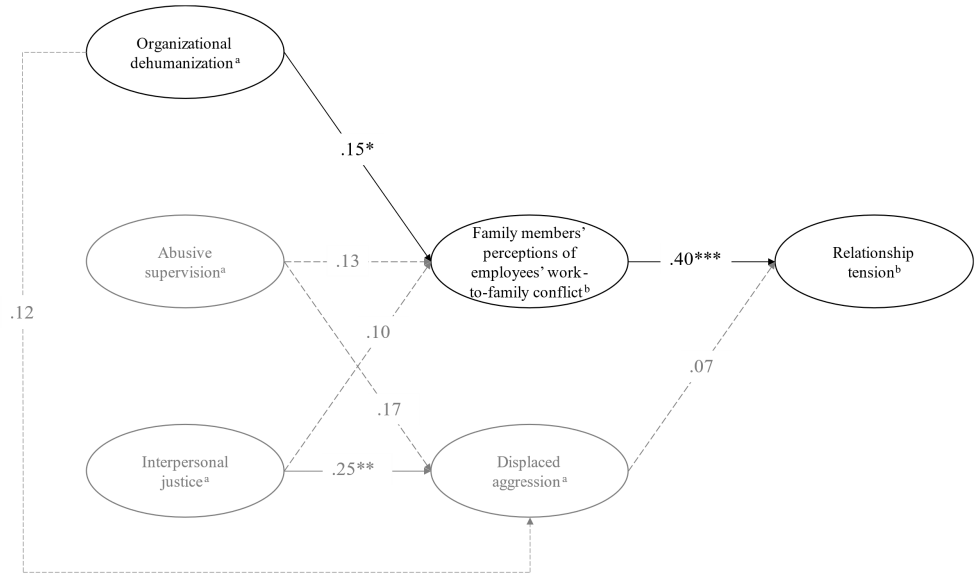

FIGURE 1 Standardized coefficients for the retained structural equation model for Study 4. *Note*: $N = 323$. [a]Reported by the employee; [b]reported by the family member. Dashed arrows represent non-significant paths. *$p < .05$. **$p < .01$. ***$p < .001$.

Addressing endogeneity concerns

To address potential endogeneity concerns that might arise due to the cross-sectional design, we re-estimated our mediation model using an IV approach. The IV method is widely used in economics to obtain causal estimates. Specifically, IVs consist in a two-stage estimation where a third variable, called an instrument, allows the isolation of an exogenous part of the variability from the endogenous predictor, which is then used to identify the relation of interest (Wooldridge, 2010). We estimated our IV using two-stage least squares: in the first stage, the endogenous predictor is regressed on the instrument to obtain its predicted value; in the second stage, the outcome of interest is regressed on the predicted value of the predictor obtained in the first stage (Wooldridge, 2010). To obtain suitable instruments for each path of the mediation model, we implemented Lewbel's (2012) identification strategy which uses the presence of heteroscedasticity in the error term of the first stage to construct a set of instruments from the control variables. We provide in Section 8: Appendix S1 a description of the assumptions under which Lewbel's (2012) heteroscedasticity-based approach leads to consistent estimates. We also show that our results are robust to weak-instrument concerns (see Section 9: Appendix S1).

The IV estimation of our mediation model resulted in very similar results. Specifically, organizational dehumanization had a positive effect on work-to-family conflict ($b = .33$, $p = .031$) which, in turn, had a positive effect on relationship tension ($b = .24$, $p = .013$). Supporting Hypothesis 1, results indicated that the indirect effect (5000 bootstrap samples) of organizational dehumanization on relationship tension through work-to-family conflict was significant (indirect effect = .05; BC 95% CI = [.01; .11]).

STUDY 5

Sample and procedure

Data were collected over four measurement periods (1 month apart) from full-time employees enrolled in various graduate programmes in several universities in the Philippines. Our choice of a 1-month time

TABLE 8 Participants' demographic characteristics for Study 5.

	Employee		Spouse	
	M (*SD*)	*N* (%)	*M* (*SD*)	*N* (%)
Age	45.52 (10.65)		41.96 (14.16)	
Gender				
Male		102 (49)		106 (51)
Female		106 (51)		102 (49)
Other		–		–
Contract				
Permanent		177 (85.1)		
Probationary		30 (14.4)		
Casual		1 (.5)		
Industry				
General management		42 (23.6)		
Customer service		39 (18.8)		
Marketing and public relations		33 (15.9)		
Information technology		24 (11.5)		
Accounting and finance		23 (11.1)		
Organizational tenure (years)				
Less than a year		30 (14.4)		
1–5 years		101 (48.6)		
6–10 years		66 (31.7)		
11–15 years		11 (5.3)		
Tenure or marriage[a]				
1–5 years		128 (61.5)		128 (61.5)
6–10 years		54 (26)		54 (26)
11–15 years		14 (6.7)		14 (6.7)
16–20 years		12 (5.8)		12 (5.8)

Note: $N = 208$. Only the five most frequent industries are displayed.

[a]Reported by the spouse.

lag is guided by research on optimal time lags as well as logistical considerations. We were guided by Dormann and Griffin's (2015) recommendations in that we ensured that our measurement lags are not too short as 'time lags that are too short are more likely than time lags that are too long to yield effect sizes that are very low and not significant' (p. 501). Another key consideration is the practicality between choosing the suitable time gap that is appropriate for our study variables and the requirements imposed on participants and their availability (Cole & Maxwell, 2003).

At T1, we disseminated a survey kit to participants to assess their demographic characteristics and perceptions of organizational dehumanization. They also received a brief survey assessing relationship satisfaction to be passed on to their spouse. Out of 500 surveys disseminated, we received 402 employee surveys (response rate = 80%) and 385 spouse surveys (response rate = 77%). At T2 (1 month after T1 data collection), we once again requested the T1 participants to pass on a brief survey assessing work-to-family conflict to their spouse. We received 312 spouse surveys (response rate = 81.04%). At T3 (1 month after T2) and T4 (1 month after T3), spouses reported their relationship tension and relationship satisfaction with the focal employee respectively. We received 274 (response rate from T2 = 87.83%) and 212 (response rate from T3 = 77.37%) spouse surveys respectively. Upon excluding surveys with incorrect or missing matching codes, the final sample

TABLE 9 Descriptive statistics and inter-correlations among variables for Study 5.

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Gender (Time 1; emp)	–											
2. Age (Time 1; emp)	−.08	–										
3. Gender (Time 1; spouse)	−1.00***	.08	–									
4. Age (Time 1; spouse)	.25***	.61***	−.25***	–								
5. Employee-spouse tenure of marriage (Time 1; spouse)	.17*	.55***	−.168*	.89***	–							
6. Trait anger (Time 1; emp)	−.04	−.11	.04	−.11	−.12	–						
7. Negative affectivity (Time 1; emp)	.02	−.13	−.02	−.07	−.08	.15*	–					
8. Baseline level of relationship satisfaction (Time 1; spouse)	.15*	.09	−.15*	.10	.08	−.15*	−.12	–				
9. Organizational dehumanization (Time 1; emp)	−.03	−.09	.03	−.07	−.09	.04	.35***	−.07	–			
10. Spouses' perceptions of employees' work-to-family conflict (Time 2; spouse)	.05	.01	−.05	.01	−.01	.04	.09	−.12	.42***	–		
11. Relationship tension (Time 3; spouse)	−.04	.06	.04	−.04	−.08	007	.36***	−.15*	.29***	.39***	–	
12. Relationship satisfaction (Time 4; spouse)	−.12	−.05	−.12	.04	.05	−.19**	−.12	.53***	−.10	−.21**	−.28***	–
Means	–	30.28	–	30.70	1.57	3.18	2.66	5.25	2.79	4.49	2.25	4.57
SD	–	8.98	–	8.64	.85	1.15	1.36	1.15	.89	1.54	1.39	1.42

Note: $N = 208$. Gender was coded 0 for *male* and 1 for *female*. Tenure of marriage was coded 1 for *1–5 years*, 2 for *6–10 years*, 3 for *11–15 years* and 4 for *16–20 years*. Emp = reported by the employee. Spouse = reported by the spouse.

*$p < .05$. **$p < .01$. ***$p < .001$.

comprised 208 employee–spouse matched data over four measurement periods (see demographic characteristics in Table 8).

Measures

Unless otherwise specified, all items were assessed using seven-point Likert agreement scales. Organizational dehumanization was reported by employees at T1 and was assessed with the five-item short scale ($\alpha = .74$, $\omega = .75$).

Spouses' perceptions of employees' work-to-family conflict

Spouses' perceptions of employees' work-to-family conflict (reported by spouses at T2; $\alpha = .89$, $\omega = .89$) were assessed with the three-item scale developed by Matthews et al. (2010). A sample item is 'My spouse is often so emotionally drained when they get home from work that it prevents them from contributing to our family'.

Relationship tension

Relationship tension (reported by spouses at T3; $\alpha = .80$, $\omega = .81$) was measured using Menaghan's (1982) four-item scale. A sample item is 'My spouse insists on having their own way' (1 = *never* and 4 = *often*).

Relationship satisfaction

Relationship satisfaction (reported by spouses at T4) was measured with the single-item scale (i.e. 'In general, how satisfied are you with your relationship with your spouse?') validated by Fülöp et al. (2022).

Control variables

We also controlled for several personality variables in order to exclude alternative explanations. In particular, we controlled for employees' trait anger and negative affectivity because those variables have been shown to increase work-to-family conflict, relationship tension and/or spouses' relationship satisfaction (Allen et al., 2012; Renshaw et al., 2010). Trait anger was measured with Spielberger's (1996) four-item scale ($\alpha = .87$, $\omega = .87$), while negative affectivity was measured using the five items from Mackinnon et al. (1999; $\alpha = .92$, $\omega = .92$). Second, and as in Study 4, we controlled for various socio-demographic control variables (e.g. employees and spouses age, gender, education and tenure of marriage) as well as spouses' baseline levels of relationship satisfaction (measured at T1). As in Study 4, analyses were conducted with and without the socio-demographic variables that correlated with the mediator and dependent variables. As their inclusion did not change the interpretation of the results, we present below the results without the socio-demographic variables for parsimony purposes (Becker, 2005).

Results

Means, standard deviations and zero-order correlations between the variables are displayed in Table 9.

Measurement model

Due to the large number of parameters to be estimated relative to our modest sample size, we created three parcels for organizational dehumanization, trait anger, negative affectivity and relationship tension by using Little et al.'s (2002) item-to-construct balance technique. As in Study 4, we conducted CFAs on our study variables (i.e. organizational dehumanization, trait anger, negative affectivity, work-to-family conflict and relationship tension)[9] to assess their distinctiveness. As indicated in Section 10: Appendix S1, the hypothesized five-factor model displayed a very good fit with the data, $\chi^2(80) = 96.24.24$; SRMR = .04; CFI = .99; TLI = .99, and was superior to all more constrained models. All items were significant, with standardized loadings ranging from .57 to .96. All constructs were therefore treated as distinct.

Structural model

We tested a structural model in which organizational dehumanization was related to work-to-family conflict, controlling for trait anger, negative affectivity and baseline relationship satisfaction (as additional predictors). In turn, work-to-family conflict was related to relationship tension and relationship satisfaction serially linked. As depicted in Section 11: Appendix S1, this hypothesized model displayed an acceptable fit with the data, $\chi^2(97) = 145.97$; SRMR = .09; CFI = .97; TLI = .97, albeit for the SRMR which was slightly higher than the suggested cut-off (Hu & Bentler, 1999). This hypothesized model was then compared to alternative models adding direct paths. Results showed that an alternative model adding direct paths between (1) negative affectivity and relationship tension and (2) trait anger and relationship satisfaction fitted the data significantly better than did the hypothesized model, $\Delta\chi^2(2) = 32.78$, SBc = 35.71, $p < .001$; see Section 11: Appendix S1. This alternative model was therefore retained as the final model, $\chi^2(95) = 110.26$; SRMR = .04; CFI = .99; TLI = .99.

As displayed in Figure 2, organizational dehumanization had a positive effect on work-to-family conflict ($\gamma = .58$, $p = .001$), while neither trait anger nor negative affectivity had a significant effect on it ($\gamma = .03$, $p = .667$ and $\gamma = -.14$, $p = .144$ respectively). In turn, work-to-family conflict had a positive effect on relationship tension ($\beta = .38$, $p < .001$), which had a subsequent negative effect on relationship satisfaction ($\beta = -.28$, $p < .001$). As for the direct paths, negative affectivity had a positive effect on work-to-family conflict ($\gamma = .38$, $p < .001$) and trait anger had a negative effect on relationship satisfaction ($\gamma = -.16$, $p = .019$). In support of Hypotheses 1 and 2, latent mediation analyses with bootstrap (5000 bootstrap samples) revealed that the indirect effects of organizational dehumanization on (1) relationship tension through work-to-family conflict (indirect effect = .23; BC 95% CI = [.13; .38]) and (2) relationship satisfaction through work-to-family conflict and relationship tension serially linked (indirect effect = −.04; BC 95% CI = [−.09; −.01]) were significant, controlling for trait anger and negative affectivity.[10]

DISCUSSION

Despite growing theoretical and empirical interest in organizational dehumanization, its research has faced two critical limitations. First, a lack of rigorously validated scales. Second, a disregard for the family domain, hindering a comprehensive understanding of its far-reaching consequences. In response,

[9]Relationship satisfaction (at both T1 and T4) was measured with a single item and was therefore not included in the CFAs.

[10]To strengthen the robustness of our findings, we compared our hypothesized model to two other alternative models. The first alternative model represented a serial mediation model, wherein organizational dehumanization was related to relationship tension through a sequential chain involving work-to-family conflict and relationship satisfaction. The second alternative model depicted a simple mediation model where organizational dehumanization was related to both relationship tension and relationship satisfaction through work-to-family conflict. As indicated in Section 14: Appendix S1, the hypothesized model exhibited a better fit with the data in comparison to the two alternative models.

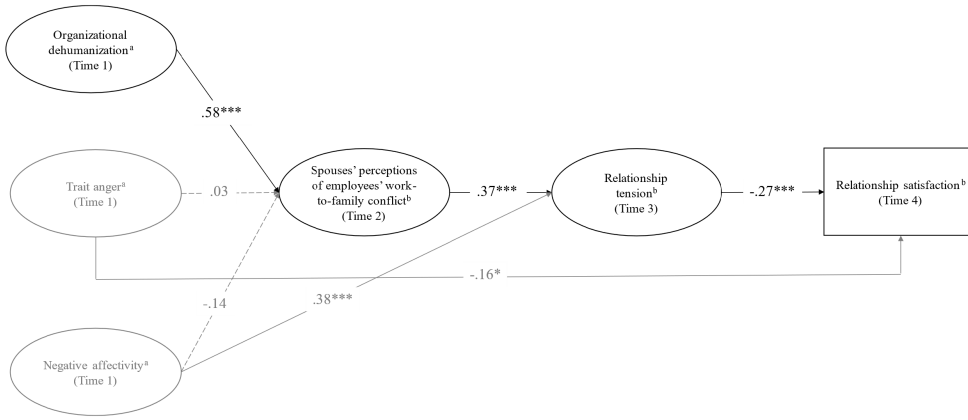

FIGURE 2 Standardized coefficients for the retained structural equation model for Study 5. *Note*: $N = 208$. [a]Reported by the employee; [b]reported by the spouse. Dashed arrows represent non-significant paths. $*p < .05$. $***p < .001$.

our research presents five studies ($N_{Total} = 2635$) to (1) develop and validate a concise five-item scale of organizational dehumanization (Studies 1, 2 and 3) and (2) examine its application in a spillover–crossover model (Studies 4 and 5).

Implications for the measurement of organizational dehumanization

Overcoming the psychometric limitations of Caesens et al.'s (2017) 11-item scale, we presented a concise and validated five-item short scale of organizational dehumanization. Guided by empirical and theoretical criteria, and adhering to best practice recommendations, we demonstrated across three studies the robustness of our proposed five-item short scale. It exhibited sound factorial structure, high reliability and strong correlations with the 11-item full scale. Moreover, longitudinal assessments revealed its stability over time, reinforcing its utility for longitudinal research. Concurrently, our scale displayed strong associations with another measure of organizational dehumanization (convergent trait validity) and three constructs reflecting the dark side of the employee–organization relationship (i.e. perceived contract beach, overall organizational injustice and perceived organizational obstruction; convergent nomological validity), and proved to be significantly linked to employees' well-being, attitudes and behaviours. Importantly, these relationships persisted even when controlling for psychological contract breach, overall organizational injustice and perceived organizational obstruction (incremental validity). In addition, our findings showed that organizational dehumanization is distinct from these three forms of organizational mistreatment (discriminant validity). By showcasing that organizational dehumanization explains additional variance beyond, and is different from, these three constructs, we contribute to the organizational mistreatment literature (Griffin & O'Leary-Kelly, 2004). Our findings overall establish organizational dehumanization as a form of organizational mistreatment of its own, calling for more research on its causes, consequences, underlying mechanisms and boundary conditions.

Implications for the spillover–crossover model of organizational dehumanization

Drawing from the spillover–crossover model (Bakker & Demerouti, 2013), our findings revealed that employees feeling dehumanized by their organization struggle to fulfil their family responsibilities,

leading to a perception that work encroaches upon their family life. This state of work-to-family conflict then crosses over to family members, causing strain and relationship tension. Employing an IV approach to establish causal estimates enabled us to strengthen the robustness of our findings. The observed relationship tension among family members subsequently influenced their relationship satisfaction, aligning with previous research (Carlson et al., 2011; Matthews et al., 2006). In sum, our spillover–crossover model demonstrated that organizational dehumanization transcends the workplace, disrupting employees' ability to find solace at home and participate in family activities, while also adversely affecting their family members. These effects held even when we controlled for supervisor mistreatment (i.e. abusive supervision and interpersonal injustice), which highlights that, despite emanating from an abstract and distal entity, organizational mistreatment can spill over and cross over to deleteriously affect employees' family members. In doing so, we extended the spillover–crossover literature by demonstrating that mistreatment emanating from the organization possesses the capacity to trigger spillover–crossover effects.

By introducing a spillover–crossover perspective to the study of organizational dehumanization, we offer a new theoretical framework that explains how and why it interferes with employees' family lives. In doing so, our research extended the existing literature in two important ways. First, while prior work (Lagios et al., 2023) demonstrated that organizational dehumanization affects relationship outcomes through an active, affect-based process that is guided by aggressive impulses (i.e. displaced aggression), our study sheds light on a more passive, strain-based process (i.e. work-to-family conflict). Notably, the spillover–crossover effects persist even after controlling for displaced aggression, solidifying the role of spillover–crossover effects as an additional underlying mechanism. Second, Lagios et al.'s (2023) trickle-out model suggests an *indirect* effect of organizational dehumanization on family outcomes. Indeed, they showed that organizational dehumanization, as perceived by supervisors, increases supervisors' undermining behaviours towards their subordinates, which in turn increases subordinates' undermining behaviours towards their family members, ultimately impairing the latter's relationship satisfaction and perceptions of emotional support. As such, it is unclear whether organizational dehumanization can impact the family sphere *of the employee who feels dehumanized by their organization*. In our research, we demonstrated that this is the case, as employees experiencing organizational dehumanization were shown to have difficulties fulfilling their family responsibilities, thus negatively impacting their family members. Overall, these results suggest that the family-related consequences of organizational dehumanization are driven by two distinct processes that depend on the relationship that family members hold with the victim of organizational dehumanization. Specifically, the displaced aggression process explains the effects of a victim's perceptions of organizational dehumanization on the family members of *another* individual with whom the victim interacts. Conversely, the spillover–crossover process explains the effects of a victim's perceptions of organizational dehumanization on the victim's *own* family members.

Limitations and future research

This research is subject to several limitations. First, the use of self-reported measures, particularly for outcomes like OCBs, may raise concerns about common method variance bias (Podsakoff et al., 2012). Future studies could incorporate objective indicators or external observers' evaluations, such as those from supervisors or co-workers. However, Carpenter et al.'s (2014) meta-analysis suggests that self-rated OCBs are not only valid but may even be preferred due to the comprehensive nature of individuals' self-perceptions. This finding alleviates some concerns regarding common method variance and social desirability biases. We should note though that we took precautions to mitigate common method variance, including a temporal separation and a Harman-single factor test which yielded poor fit with the data (see Sections 4 and 5: Appendix S1).

A second limitation of our research is the absence of moderators in our conceptual model, preventing us from uncovering the specific conditions that may mitigate or intensify the spillover–crossover consequences of organizational dehumanization. To provide valuable insights for managers and

policymakers in reducing the impact of organizational dehumanization on employees' family life, it is crucial to explore potential moderators. One intriguing moderator to consider is age because as individuals grow older, they often exhibit increased emotional maturity, which may diminish their inclination to react negatively to distressing situations (Carstensen, 1992). Consequently, older employees may possess better coping mechanisms for adverse work experiences, such as organizational dehumanization, potentially preventing its spillage into the home domain. To test this hypothesis, we conducted additional analyses for Studies 4 and 5. However, our findings did not reveal any moderation effect, prompting further investigation into the existence of this effect or its potential dependence on a third variable.

Third, we solely focused on spillover–crossover effects. However, the transmission process may not end with family members at home and may further spill over to influence family members at work. Booth-LeDoux et al. (2020) extended the spillover–crossover model to propose a spillover–crossover–spillover model to show that the resources provided by an employee's organization (i.e. family supportive organization perceptions) spill over to the employee's experience at home (i.e. reduced employee burnout), cross over to the partner at home (i.e. reduced employee's provision of emotional support for the partner's work) and then spill over to the partner's work (i.e. increased partner's relational investment at work). While Booth-Ledoux et al.'s (2020) model pertains to work-related resources, their model could also be invoked to explain the transmission of adverse and stressful work experiences. Thus, future work could apply the spillover–crossover–spillover perspective to examine how an employee's experience of organizational dehumanization may impact their family members' work behaviours (e.g. work performance) or interactions with supervisors, co-workers or customers.

Finally, we did not assess work-to-family conflict from the perspective of the focal employee. However, relying solely on self-reported ratings of work-to-family conflict presents a critical concern. That is, individuals often have a natural inclination to portray themselves more favourably (i.e. socially desirable responding or impression management). This bias has been extensively studied and found to influence constructs commonly used in organizational research (Podsakoff et al., 2012). To mitigate this potential bias, incorporating a family member assessment of the focal employees' work-to-family conflict provides an external perspective. This perspective can draw from recollections of instances when the focal employee could not participate in family activities due to work commitments or direct communication from the employee about feelings related to work-to-family conflict, indicating the intrusion of work demands into family life. Research evidence highlights the high agreement levels between individuals and their family members. For example, prior studies have shown moderate correlations between self-reported and spouse-reported work-to-family conflict (e.g. $r = .42$, $p < .01$ in Grandey et al., 2005; $r = .57$, $p < .01$ in Ilies et al., 2015; $r = .29$, $p < .01$ in Matthews et al., 2006). To further substantiate the relationship between employee-reported and family member-reported ratings of work-to-family conflict, we conducted an independent study with 241 employee–spouse dyads. Employees reported their own work-to-family conflict, while their spouses reported the employees' work-to-family conflict. The results revealed a significant correlation ($r = .46$, $p < .01$), underscoring the connection between these two perspectives. That being said, we acknowledge that using family members' ratings of employees' work-to-family conflict may introduce potential biases. For instance, it is plausible that family members may not discern certain nuances that employees experience concerning their work-to-family conflict. Moreover, since work-to-family conflict, relationship tension and relationship satisfaction were all measured through assessments made by family members, we cannot rule out the possibility of correlations being artificially inflated. To address these limitations, future research could replicate and extend our findings by asking employees to rate their own perceptions of work-to-family conflict.

Practical implications

Our findings carry significant implications for managerial practice. The evidence highlighting the adverse impact of organizational dehumanization on both employees and their familial spheres underscores the imperative to address and mitigate this phenomenon. To address organizational dehumanization, organizations

should actively cultivate a culture where humanness and integrity are not exceptions but the norm. This can be achieved by aligning practices such as hiring, evaluating and promoting leaders and subordinates with these values. Furthermore, establishing a safe and open workplace environment where employees can voice their concerns without fear of retaliation (Lagios et al., 2023) is essential. Supervisor training programmes also play a crucial role in combating organizational dehumanization. These programmes should raise awareness among supervisors that organizational efficiency must be intrinsically linked with humanness. Moreover, they should equip supervisors with essential skills for fostering healthy relationships with their subordinates, including providing constructive feedback and active listening (Nguyen et al., 2022). Finally, by demonstrating the psychometric soundness of our five-item short scale of organizational dehumanization, we facilitate organizational risk assessment. As highlighted by Cox and Griffiths (1996), effective risk assessment necessitates brief, reliable and valid instruments. By providing such an instrument, we equip managers and policymakers with a convenient tool for diagnosing organizational dehumanization. This in turn enables them to implement targeted interventions aimed at reducing its prevalence and mitigating its adverse effects.

CONCLUSION

Overall, this research provides compelling psychometric evidence supporting the utility of a concise five-item version of the organizational dehumanization scale. This shortened scale not only proves useful for academic researchers, but also holds practical value for practitioners. Furthermore, our study elucidates the mechanism through which organizational dehumanization exerts its influence on home and relationship outcomes, underscoring the existence of spillover–crossover effects.

AUTHOR CONTRIBUTIONS

Constantin Lagios: Conceptualization; investigation; writing – original draft; methodology; validation; visualization; writing – review and editing; formal analysis; project administration; data curation. **Florence Stinglhamber:** Resources; project administration; writing – review and editing; conceptualization. **Simon Lloyd D. Restubog:** Writing – original draft; writing – review and editing; project administration; resources; supervision; conceptualization; investigation. **Nicolas Lagios:** Formal analysis; writing – review and editing; data curation; writing – original draft. **Noémie Brison:** Writing – review and editing. **Gaetane Caesens:** Writing – review and editing; project administration; supervision; resources; conceptualization.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to disclose.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

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

Appendix S1.

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