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## PRIVACY REGULATION THEORY

### Redevelopment and application to work privacy

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#### 1 Background

Increasing empirical evidence indicates that the fulfilment of privacy needs in the workplace is important for productive and healthy work (e.g., Kim & de Dear, 2013; Kupritz, 1998; Laurence, Fried, & Slowik, 2013; Sundstrom, 1986; Weber, 2019). However, theoretical perspectives on privacy vary greatly (for reviews see, e.g., Altman, 1975; Bates, 1964; Kupritz, 2000; Margulis, 1977; Newell, 1995; Westin, 1970), making it difficult to come to clear conclusions about its relevance for different groups of workers in different jobs and environmental contexts.

Most privacy definitions relate to an interaction between the person and the socio-physical environment, with varying foci on different elements:

- *The person*: Privacy is seen as a state of being (e.g., being private; Bailey, 1979; Fischer, 1971; Schoeman, 1984);
- *The environment*: Privacy is defined as quality of space (e.g., architectural privacy; Webster, 1979) or an attitude towards the environment (e.g., solitude, anonymity, intimacy; e.g., Pedersen, 1979, 1999; Westin, 1970); or
- *The person–environment transaction*: Privacy is a transactional person–environment regulation process (e.g., Altman, 1975; Kupritz, 1998, 2000; Margulis, 1977). It emphasises the unity of person and environment, rather than regarding both as independent entities which interact (e.g., linearly) with each other.

Despite the variety of definitions, two central themes can be distinguished (Weber, 2019). The first theme is a form of input control: it is the personal control over input from people and stimuli outside the self (including access to the self and being available to others; e.g., Altman, 1975; Bates, 1964; Beardsley, 1971; Ittelson, Proshansky, & Rivlin, 1970; Marshall, 1972; Sundstrom, 1986). The second theme is a form of output control over personal information of varying degrees (Beardsley, 1971; Justa & Golan, 1977; Kelvin, 1973; Margulis, 1977; Shils, 1966; Westin, 1970). The regulation of social interaction, sometimes mentioned as a third theme (e.g., Kupritz, 1998, 2000; Le Poire, Burgoon, & Parrott, 1992), has been conceptualised as a meta-theme by others (e.g., Altman, 1975); in this construction, input control of access and stimuli and output control of information are nested.

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This conceptual structure is largely in line with the prevalent privacy conceptualisation by Altman (1975, 1976), which is widely used within people–environment studies across a range of disciplines. Altman’s privacy regulation framework is grounded in person–environment (P–E) fit theory (cf. Edwards, Caplan, & Harrison, 1998, see also Chapter 2 Person–Environment Fit Theory) that describes a transactional person–environment relationship shaping a person’s subjective appraisal of the environmental condition. Altman (1975, p. 11) defined privacy as “selective control of access to the self or to one’s group . . . an input and output control process; people and groups attempt to regulate contacts coming from others and output they make to others”. Altman did not specify any particular context (e.g., workplace or home environments). Therefore, his framework relates to privacy in general. His framework has six specifications to privacy that in this particular composition are unique to his theory:

- 1 Differentiation between a person’s desired and achieved levels of privacy.
- 2 Level of fit, which describes congruence between levels of desired and achieved privacy.
- 3 Cases of having too much privacy (if achieved > desired) and too little privacy (if achieved < desired).
- 4 Differentiation between levels of input and output that a person desires or can achieve.
- 5 Privacy regulation as an optimisation process as people attempt to achieve optimal fit.
- 6 Dynamic privacy desires that change constantly and are influenced by personal (e.g., mood), interpersonal (e.g., closeness to others), and situational (e.g., work task) factors.

Altman’s model translates to the following ecological P–E fit equation:<sup>1</sup>  $[PRB = f(D, A, D \star A)]$ , where privacy–regulating behaviour ( $PRB$ ) is a function ( $f$ ) of privacy desires ( $D$ ), actual privacy ( $A$ ), and the congruence or *privacy fit* of privacy desires ( $D$ ) with actual privacy ( $A$ ) (represented by the interaction term  $D \star A$ ). In a successful privacy–regulation system, there is congruence or *privacy fit* ( $D \star A$ ) between the actual levels of privacy ( $A$ ) and the desired levels of privacy ( $D$ ). In an unsuccessful privacy–regulation system, there is incongruence or poor *privacy fit* which is thought to motivate privacy–regulating behaviour ( $PRB$ ; such as territorial behaviour).

## 2 Applicability to workplace studies

The following section gives an overview on prior work privacy conceptualisations, highlights some of their limitations (2.1), and presents a new conceptualisation of work privacy by Weber (2019) (2.2). Subsequently, this section argues the applicability and relevance of work privacy theory by providing an overview on empirical evidence on the predictors of work privacy fit (2.3), on the consequences of poor privacy fit (2.4), and on predictors of individual differences in privacy desires resulting in nonuniform requirements to workplace design (2.5).

### 2.1 Prior conceptualisations of work privacy

Overall, prior perspectives and conceptualisations of work privacy vary greatly in their content, depth, and conceptual grounding (cf. Weber, 2019). The following list of work privacy types used across past studies in various combinations indicates their overlap in content and inconsistencies in conceptualisation.

- 1 *Global work privacy* refers to the assessment of privacy by using one global item without further explanation of what work privacy refers to or what the attributes of work privacy are. For example, the assessment might ask participants to rate the degree of general privacy

in their office on a scale ranging from ‘not private’ to ‘private’ (Sundstrom, 1986). Another example is to ask participants to rate their satisfaction level with the privacy provided in their workspace (O’Neill & Carayon, 1993).

- 2 *Speech privacy*, sometimes called conversational or communication privacy, refers to the possibility of having conversations at work without others overhearing them (Cavanaugh, Farrell, & Hirtle, 1962; Oldham, 1988; Sundstrom, 1986). Speech privacy can include the possibility of having conversations without disturbing others (Oldham, 1988; Sundstrom, 1986) as well as not being heard *and* seen while conversing (Crouch & Nimran, 1989).
- 3 *Visual privacy* captures visual exposure, but not only in regard to work processes (Kim & de Dear, 2013; Sundstrom, 1986). Occasionally, visual privacy also includes protection from visual distractions (e.g., people passing by; Zalesny & Farace, 1987). Confusingly, visual privacy has also been referred to as architectural privacy (Rashid & Zimring, 2008), which in turn is often used to describe architectural qualities of space (e.g., solid walls, sound-absorbing partitions; Goodrich, 1982).
- 4 *Acoustical privacy* captures, on the one hand, having conversations that are not overheard, and on the other hand protection from intruding sounds (e.g., Zagreus, Huizenga, Arens, & Lehrer, 2004).
- 5 *Task privacy* encompasses the ability of being able to focus on work. It includes the ability to work with few distractions and interruptions, as well as outcomes of distractions and interruptions such as concentration difficulties or reduced attention; e.g., Oldham, 1988).

## **2.2 New conceptualisation of work privacy by Weber (2019)**

Building on Altman’s (1975) transactional privacy regulation framework, Weber (2019) proposed a four-dimensional conceptualisation of work privacy to overcome the limitations of previous conceptualisations (cf. 2.1.) She defined work privacy as

a control process of input and output of information and social stimuli in the work environment. Workers attempt to regulate stimuli coming from their colleagues and output they make to their colleagues. Workers strive to achieve the best possible fit between their actual and desired levels of input and output.

(Weber, 2019, p. 28)

This new work privacy conceptualisation follows the six principles of Altman’s framework, mentioned earlier. As such, it

- differentiates between work privacy desire, actual work privacy, and work privacy fit;
- includes inputs and outputs in a social work environment system; and
- acknowledges the dynamic nature of privacy desires that can change over time and with different circumstances.

Consequently, it puts forward four distinct work privacy dimensions from the perspective of an individual:

- 1 *distractions* (non-directed stimuli/input from others);
- 2 *interruptions* (directed social stimuli/input from others);
- 3 *task privacy* (visual output to others); and
- 4 *conversation privacy* (acoustical output to others).

Further, Weber (2019) put forward a redevelopment of Altman's privacy framework and applied it to work privacy. In addition to postulating the use of Altman's transactional understanding of privacy fit, she proposed that the conceptualisation and assessment of work privacy fit ought to incorporate an individual's subjective priority of privacy desires (Weber, 2019). This postulation is grounded in Kahana's (1982) empirical P–E work, which informed the assumption that not all aspects of (privacy) desires are equally important within the range of desires and between individuals. Poor privacy fit could be acceptable for some privacy dimensions that are less important to the individual, whereas good or poor privacy fit are expected to be exceptionally important for dimensions that are salient to the individual. This new understanding of privacy fit incorporating subjective priority results in a *weighted work privacy fit*. This translates to the following new ecological equation:  $[PRB = f(D, A, D \star A \star Pr)]$ . Here, privacy regulating–behaviour ( $PRB$ ) is a function ( $f$ ) of privacy desires ( $D$ ), actual privacy ( $A$ ), and the congruence or *privacy fit* of privacy desires ( $D$ ) with actual privacy ( $A$ ) that is relative to subjective priority ( $Pr$ ) (represented by the interaction term  $D \star A \star Pr$ ).  $D \star A \star Pr$  is a composite variable multiplying the individual's assessment of privacy fit ( $D \star A$ ) by the priority of desires ( $Pr$ ) appraised by the individual, comprising a *weighted privacy fit*.

### 2.3 Predictors of work privacy fit

The exploration and testing of predictors of privacy fit, especially architectural predictors, have been a predominant research topic in work privacy research. However, a large quantity of evidence amounts to outdated findings referring to office concepts that have fallen out of fashion, such as open-plan offices with cubicles. Evidence on more recent office concepts, such as activity-based working (ABW), are scarce, yet researchers have speculated that such concepts support privacy regulation in terms of their particular design and cultural makeup (Engelen et al., 2019). In the following, a summary is given on design and social factors, as it has been postulated that both factors have to complement each other for successful workplace design (Weber, 2019).

#### 2.3.1 Design and social factors

Design features that support privacy fit are rooms or stand-alone environmental barriers such as single walls, partitions, planters, and columns (Duvall–Early & Benedict, 1992; Johnson, 1991; Leder, Newsham, Veitch, Mancini, & Charles, 2016; Sundstrom, 1986). Although postulated to be of key importance to privacy fit, findings on numbers of partitions enclosing a workspace are conflicting (Weber, 2019). Single findings concern atmospheric properties (light levels, Goodrich, 1982; olfactory elements, Davis, 1990; calmness, Weber, 2019), the symbolic value of spatial elements that suggest privacy (Johnson, 1991), the shape of rooms (Zeisel, 1984), lines of sight (Mehrabian, 1977), spatial density (Oldham, 1988), workstation size (Leder et al., 2016), and seating arrangements (workspaces located away from the main traffic flow, Johnson, 1991; Weber, 2019).

Evidence on social factors that support privacy regulation at work, while minimal, includes policy support and social support (Kupritz, 2000). Policies at work refer to institutionalised social rules and can include elements that facilitate privacy regulation, such as access policy, autonomy over confidential files (Kupritz, 2000), and policies on working from home. Social support refers to any implicit social rules and norms in the social work environment, for example accepted volume of speech (Justa & Golan, 1977; Steele, 1986). It has been acknowledged that social norms at work can be steered with protocols on how to use different types of office spaces correctly (e.g., Oseland, 2009), and some empirical evidence supports the usefulness of

protocols in decreasing disturbances by colleagues (Brennan, Chugh, & Kline, 2002; Bellingar, Kupritz, & Haworth, 2006; Hedge, 1982; Kupritz & Haworth, 2005).

### *2.3.2 Design and social factors in activity-based working environments*

The design of ABW offices has been suggested to give manifold opportunities to regulate privacy and achieve privacy fit because of the variety of work setting designs provided and the implicit autonomy to use them flexibly (Flynn, 2014; Keeling, Clements-Croome, & Roesch, 2015; Oseland, 2009).<sup>2</sup> However, little empirical evidence supports the usefulness of task-based settings for privacy regulation, as most studies have not specifically investigated the link between the office design and privacy fit (Weber, 2019). The little evidence available suggests that perception of setting variety is a positive predictor for privacy fit (e.g., Flynn, 2014). This was confirmed with Weber's (2019) new privacy fit operationalisation in a field experiment, as a move from a standard open-plan office to an ABW office with increased setting variety predicted increased privacy fit.

Social principles particular to ABW that have been suggested to be supportive of privacy regulation and increased privacy fit include location autonomy and protocols (e.g., Flynn, 2014; Oseland, 2009). However, empirical evidence on their impact is mixed. Location autonomy, which is the choice over work location, has been found to be useful to regulate interpersonal interaction and therewith increase privacy fit in some accounts (Robertson, Huang, O'Neill, & Schleifer, 2008; Weber, 2019), but other accounts have reported an increase in autonomy whilst simultaneously reporting on a decrease in privacy fit in ABW (Medik & Stettina, 2014). The use of protocols has been found to foster helpful social norms, make the different ABW settings more effective, and therewith support privacy regulation and increase privacy fit (e.g., Bellingar et al., 2006; Brennan et al., 2002; Hedge, 1982; Kupritz & Haworth, 2005). This was confirmed with Weber's (2019) new privacy fit operationalisation in a field experiment; an increase in adherence to protocols amongst colleagues predicted increased privacy fit.

## **2.4 Consequences of poor privacy fit**

The following overview gives evidence on the relationship between privacy and work attitudes (satisfaction); cognitive, emotional, and psycho-physical strain or stress; and work behaviour (performance) when work privacy (mis)fits workers' needs.

### *2.4.1 Satisfaction*

There is ample empirical evidence associating privacy fit with job satisfaction and workplace satisfaction. This finding is consistent across studies using different operationalisations of privacy. Examples include general privacy (Sundstrom, 1986); acoustical and visual privacy (Kim & de Dear, 2013; Klitzman & Stellman, 1989; Stokols & Scharf, 1990; Zalesny & Farace, 1987); speech privacy and task privacy (Oldham, 1988); general privacy, speech privacy, and interruptions (Sundstrom, 1986); acoustical privacy, interruptions, and visual privacy (Leder et al., 2016; Veitch, Charles, Farley, & Newsham, 2007); general privacy, speech privacy, and visual privacy (O'Neill & Carayon, 1993); and the new conceptualisation by Weber (2019). Scholars have acknowledged that frequent disturbances, interruptions, and the feeling of being observed can hinder workflow and increase arousal as well as cognitive load, which creates additional demands for the worker, resulting in dissatisfaction (Brennan et al., 2002; Brill, Margulis, Konar, & BOSTI, 1984; Geen & Gange, 1977; Haynes, 2007; Kim & de Dear, 2013; Kupritz, 1998; Laurence et al., 2013; Sundstrom, 1986).

### 2.4.2 Stress, negative affect, and emotional exhaustion

Health-related outcomes of poor privacy fit have been found concerning various forms of stress, negative affect, and emotional exhaustion (e.g., depleted emotional capacities).

As for stress-related consequences, there is qualitative evidence suggesting that perceived work stress can relate to visual privacy (e.g., feeling visually exposed) and to distractions that hinder task completion (Goodrich, 1982). Similarly, quantitative evidence points to associations between psychosomatic stress (distress) and visual privacy ('other people can see into my workspace'; O'Neill & Carayon, 1993), as well as distractions and human noise (e.g., Brennan et al., 2002; Raffaello & Maas, 2002).

As for affect-related consequences, qualitative accounts suggest that noise and interruptions can relate to feelings of anxiety, powerlessness, invasion, annoyance with colleagues (Goodrich, 1982), and other forms of negative affect (Klitzman & Stellman, 1989; Zijlstra, Roe, Leonora, & Krediet, 1999). In addition, it has been reported that aspects of visual privacy (e.g., feeling observed), speech privacy, and task privacy (keeping conversations and work content confidential) relate to feelings of vulnerability (Goodrich, 1982).

As for exhaustion-related consequences, quantitative evidence points to an association between poor privacy fit at work and emotional exhaustion (Laurence et al., 2013), which was confirmed with Weber's (2019) four-dimensional operationalisation of privacy fit.

### 2.4.3 Work performance and mental fatigue

Performance reduction due to hindered work processes and mental fatigue (e.g., depleted cognitive capacities) because of a poor privacy fit has often been suggested (e.g., Cohen, 1978; Laurence et al., 2013; Sundstrom & Sundstrom, 1986). However, empirical evidence which considers multiple dimensions of work privacy is limited, as the majority of evidence concerns the two privacy dimensions *distractions* and *interruptions*.

Some studies have shown that distractions and interruptions can affect work on complex tasks (e.g., Goodrich, 1986; Wallis, Steptoe, & Cole, 2006), lead to concentration difficulties (e.g., Haynes, 2007; Hedge, 1982; Veitch, Bradley, Legault, Norcross, & Svec, 2002), and result in attention reduction and increased task errors (e.g., Cohen & Spacapan, 1978; Goodrich, 1986; Kupritz, 1998). Further, studies have reported on associations between distractions and interruptions and difficulties in decision-making processes (Hedge, 1982) as well as task motivational deficits (Evans & Stecker, 2004). Additionally, self-rated reduction in performance has been reported (e.g., Banbury & Berry, 1997, 1998; Brill et al., 1984; Kupritz, 1998; Wallis et al., 2006). Further, scholars have made the theoretical assumption that *speech and/or task privacy* could create additional attentional demands for workers, resulting in reduced cognitive performance (Geen & Gange, 1977; Laurence et al., 2013; Sundstrom, 1986).

As for evidence that considers multiple dimensions of work privacy, there is first cross-sectional and longitudinal evidence on the association between poor privacy fit and mental exhaustion, as assessed with Weber's (2019) four-dimensional operationalisation of privacy fit.

## 2.5 Predictors of individual differences in privacy desires

As Weber (2019) has pointed out, work privacy fit ought to be relative to an individual's priority of privacy desires (i.e., weighted fit). In fact, empirical evidence indicates significant individual response variance in workplace studies (Hoendervanger, Ernst, Albers, Mobach, & Van Yperen, 2018), leading to nonuniform requirements for workplace design. Various predictors of privacy desires have been suggested that could explain the variance of an individual's priority of desires.

These include personal characteristics (personality, past history and experiences, momentary physiological and psychological state), interpersonal characteristics (relationship to others), and situational factors (job type and role, job task, physical features of settings, and social density; Altman, 1975, Kupritz, 2000; Sundstrom, 1986). The following overview focuses on the most commonly reported predictors of privacy desires, which are job type and task, as well as workers' traits and abilities.

### *2.5.1 Job type and task*

There is ample evidence that the nature of a worker's job informs their desire for privacy. As for job tasks, studies show that those who work on highly complex tasks are more likely to experience distractions, are less likely to be satisfied in dense workplaces, and have an increased requirement for limited visual and acoustical distractions as well as interruptions (Fried, Slowik, Ben-David, & Tieg, 2001; Oldham, Cummings, Mischel, Schmidtke, & Zhou, 1995; Seddigh, Berntson, Bodin Danielsson, & Westerlund, 2014). Further, those who predominantly do group work have been found to experience a better person–environment fit in open–office configurations than those who predominantly do individual work (Haynes, 2008).

As for job types, early research on individuals' privacy needs has significant limitations, as workers' flexibility in being able to regulate privacy at work drastically differed by job type, for example managers were working in private offices whereas administrative staff worked in open-plan areas (Sundstrom, Herbert, & Brown, 1982). The assumption was made that if privacy needs were the same for all job types, they would benefit from the same type of design solution (Kupritz, 2011). However, Kupritz's (2011) newer ethnographic research has indicated that although privacy needs might be shared across job types, the associated environmental solutions can differ significantly. For example, her study showed that managers and technical professionals shared the desire for minimal visual and acoustical distraction as well as minimal interruptions. For managers, the preferred design solution was visual panels for individual work to reduce accessibility and the provision of private rooms for group work ('total enclosure', p. 303); whereas for technical professionals, the preferred design solution was solid walls to reduce sound to a minimum for concentration purposes.

### *2.5.2 Traits and abilities*

Individuals' traits and abilities that have been reported to be associated with types of desired work privacy are introversion or extraversion and sensory–processing sensitivity. There is some evidence on the relationship between introversion or extraversion and human noise, in that introverts appear to be more quickly aroused and disturbed by noise than are extroverts (Belojevic, Slepcevic, & Jakovljevic, 2001; Cassidy & MacDonald, 2007; Dobbs, Furnham, & McClelland, 2011; Geen, 1984). Studies on cognitive abilities have also shown that those with high sensory processing sensitivity (weak screening skills or inhibitory ability) have difficulties in coping with socio–environmental stimuli (Mehrabian, 1977). They have been found to exhibit the lowest self-rated performance, satisfaction, and privacy when working in offices with high social density and with few enclosures; satisfaction and performance were particularly poor when they performed highly complex tasks (Maher & von Hippel, 2005; Oldham, 1988; Oldham, Kulik, & Stepina, 1991).

## **3 Methodology: assessment methods of work privacy**

This methodology section gives an overview on the predominant quantitative and qualitative methods used in work privacy research and highlights the strengths of each approach. Qualitative

studies are concerned with ‘what’ privacy means to people and ‘why’, while quantitative studies tend to be concerned with ‘how much’ privacy fit or desire a person experiences in a given context.

### 3.1 Quantitative methods

Work privacy research appears to favour quantitative methods in the form of surveys. However, most of the employed instruments are conceptually and methodologically weak (cf. 2.1). Points of critique include lack of systematic measure development, lack of theoretical grounding of questionnaire items, scale not matching the theory, assessing work privacy globally with a single item instead of assessing types of work privacy, metric inequivalence, poor item construction (e.g., double-barrel items), and inclusion of correlates (e.g., adjustable workspace) or outcomes of privacy (e.g., concentration difficulties).

Based on her new, transactional conceptualisation of work privacy fit (cf. 2.2), Weber (2019) developed the new four-dimensional ‘privacy at work’ (PAW) measure. PAW uses a weighted fit score ( $D \cdot A \cdot Pr$ ) that reflects subjective prioritisation of privacy requirements. For example, participants’ ratings of how often they *wanted* to ‘work without others seeing what they were working on’ ( $D$ ) was correlated with how often participants were *able* to do so ( $A$ ) when they *wanted* to ( $Pr$ ). Initial empirical tests with workers from the construction industry in standard open-plan and ABW office settings have validated the reliability and validity of these conceptually separated but empirically correlating dimensions (Weber, 2019). An in-depth analysis of PAW’s reliability (internal consistency, construct reliability, and longitudinal stability) and construct validity (convergent, discriminant, criterion, predictive and nomological validity, and cross-population equivalence) supports the psychometric properties of the measure (Weber & Gatersleben, in preparation).

### 3.2 Qualitative methods

Qualitative methods for the study of privacy seem to have fallen out of fashion in recent research, whereas they appear to have been popular in early works (e.g., Altman, 1975, 1977; Goodrich, 1982; Justa & Golan, 1977). The strength of qualitative methods is that because of their in-depth analysis they can be used to discover new knowledge, challenge preconceived assumptions (e.g., uniform workplace requirements, Kupritz, 2011), and explore complex inter-relationships between variables (Flyvbjerg, 2006). Predominant qualitative works in the domain of work privacy are those by Kupritz (e.g., 1998, 2011), who took an ethnographic approach by using data triangulation and heuristic elicitation methodology (HEM). The HEM approach relies on different methods of inquiry staged along elicitation phases (Harding & Livesay, 1984). This process begins with phase 1, *domain definition*, which includes a specific in-depth interview process to elicit participants’ languages and shared meanings as well as gather first data on the research question (e.g., design features facilitation for job tasks, Kupritz, 2011). In phase 2, *beliefs matrix*, employees give answers to questions along a binary matrix (e.g., comparing design features to job activities, Kupritz, 2011); the item wording is informed by results of phase 1. To supplement HEM data, Kupritz (e.g., 1998, 2011) used archival records (floorplans, site plans, and background information), descriptive interviews with staff and HR personnel, and field observations with photo documentation at the studied offices. Apart from increasing validity, the merit of using HEM and triangulating qualitative data lies in its usefulness to investigate complex socio-physical issues, such as privacy, that are particularly influenced by contextual (office design and office culture) as well as individual factors (job type and individual traits of personnel) (e.g., Denzin & Lincoln, 2003).

### 3.3 Research gaps

Person-focused research on privacy fit could be extended by, firstly, investigating predictors of privacy requirements, while differentiating between job-related predictors (such as job tasks) and individual ability-related predictors (such as sensory processing sensitivity). Secondly, after further testing, employing the PAW measure to facilitate comparable research on privacy fit at work (i.e., privacy fit as a personal outcome and as a potential cause of a variety of work-related effects). Thirdly, exploring mediators that relate privacy fit and stress, such as comfort factors in the environment or coping abilities (and the interaction of both).

Context-focused research about privacy fit could be extended by, firstly, systematically comparing work privacy fit in different office concepts using the same, psychometrically validated tool, and drawing on large-scale data sets. Secondly, investigating how workplace design and culture together can create a work environment conducive to both privacy and togetherness (cf. Weber, 2019). Thirdly, employing gold standards in intervention design (e.g., longitudinal intervention testing using control conditions) to advance this field of research methodologically. These insights would aid the development of non-generic, inclusive work environments.

## 4 Limitations

This section first gives an overview of the main limitations of privacy regulation theory in general and on quantitative work privacy research to date. Secondly, limitations of the new model and measure by Weber (2019) are specified.

Predominant limitations of privacy regulation theory concern its transactional and context-specific nature. As such, the specifications and measures of work privacy are bound to the work domain and cannot be readily transferred to other contexts, such as the home; the meaning of privacy varies by context. Further, meanings of privacy cues, such as design elements or behaviours, also differ across contexts, work cultures, and national cultures (e.g., Altman, 1975; Justa & Golan, 1977).

The main limitation in quantitative work privacy research concerns the lack of comparability of results. This is because of the variety of privacy conceptualisations and measures employed (cf. 2.1), the inconsistency in academic standards, and the different terminology used to describe workplaces across different countries and eras (open-plan offices in North America typically include cubicles, but they do not in the EU). Further, most of the present research lacks in-depth understanding of privacy requirements on the individual level (Kupritz, 2011; Weber, 2019).

Limitations of Weber's (2019) new conceptualisation and corresponding measure (PAW) concern the measure's focus on privacy in the life domain of work in distinction to general notions of being private at work (private life in work domain, e.g., making a 'private' phone call to arrange a medical appointment). In addition, the items are cognitive-focused as opposed to affect-focused (e.g., feeling exposed, feeling watched), which focuses but also narrows the scope of assessment. Further, there is a requirement for additional further psychometric testing (e.g., temporal stability or cross-population equivalence using larger samples) and potentially refinement of the measure, for example by adjusting the number of items to achieve conceptual equivalence across the dimensions. In addition, a short version for practice is still in development.

## 5 Theory relevance to practice

Workplace research suffers from comparing apples with oranges because of the lack of theoretically sound, psychometrically valid, and consistently applied measures used for key levers of productive, healthy, and creative work behaviour. Consequently, the decision about an appropriate

workplace design often relies not on the basis of evidence but on anecdotal experiences of architects, office trends triggered by entrepreneurial efforts to save recognisable fixed costs for 'hard' facts (e.g., scope of rental properties, infrastructure of new buildings), product marketing to open up new sales markets (e.g., for office furniture), and so forth.

Individual work privacy needs have been identified as such key levers (cf. 2.3, 2.4) in spite of the applied conglomerate of assessment instruments. In fact, empirical evidence indicates that generic recommendations which do not take the individuals' work privacy needs into account can lead to investment errors with regards to the equipment and organisation of workspaces; workers' task type and mental abilities, amongst other factors, determine their required level of privacy to work productively (cf. 2.5). Whereas participative user-centred approaches in developing workplace concepts should be employed to overcome this problem, these user-centred assessments ought to differentiate between the four privacy dimensions as they result in different workplace strategies.

A broad use of the newly introduced PAW measurement (Weber, 2019) would help to (a) advance our understanding of the relevance of privacy fit on work-relevant parameters such as work engagement, health, or organisational commitment; (b) simplify the quality assessment of various office concepts; and (c) support the planning and design of cost-efficient inclusive work environments for different user groups.

## 6 Further reading

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## Notes

- 1 Lawton and Nahemow's (1973) original equation as well as Lawton's (1987) further development was built on Lewin's (1951) first P – E fit model. Lawton's (1987) ecological equation was  $[B = f(P, E, P^*E)]$ , 'where behaviour (*B*) is a function (*f*) of the personal characteristics (*P*) and environmental characteristics (*E*), together comprising a 'subjective appraisal' by which the individual perceives the life condition not only through the present situation but through future expectations as well as through past experience . . . [The interaction term P\*E represents P – E fit as] 'the congruence of needs with available environmental supports' (Cvitkovich & Wister, 2001, p. 3).
- 2 An environmental principle of ABW environments is the provision of a variety of work settings that differ in their designs to support various work tasks (cf. Keeling et al., 2015). A workplace that supports ABW typically has settings that range from modular project spaces that support interactive collaborative work to sheltered spaces, such as a room-in-room concept, to support highly concentrated individual work. Naturally, these settings vary in their degree of connectedness with people. Often ABW environments are characterised as non-territorial workplaces without, or with only, some allocated seating, but where workers are seated in neighbourhoods allocated to a team (e.g., Engelen et al., 2019). Desks and other work settings are mostly shared among employees (Appel-Meulenbroek, Groenen, & Janssen, 2011; Wyllie, Green, Nagraath, & Town, 2012).

## 7 References

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