International Journal of Public Sector Management

Measuring defensive routines: a tool for identifying dysfunctions in public organizations

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Received 21 February 2024
Revised 3 June 2024
18 October 2024
20 December 2024
Accepted 28 January 2025

Abstract

Purpose – Defensive routines are patterns that describe organizational or individual actions aimed at avoiding embarrassment and threat. They impede organizations from identifying hidden issues and creating new knowledge. Defensive routines are particularly salient in the public sector due to their reliance on procedures and rules. The main objective of this paper is to develop a scale to measure defensive routines as perceived by individuals that can be used for the diagnosis of defensive employee attitudes.

Design/methodology/approach – The manuscript applies standard procedures for scale development (i.e. item generation, item validation, exploratory factor analysis, confirmatory factor analysis and convergent and discriminant validity checks).

Findings – The final scale has two factors: one for the individual and one for the organizational level. The former has two dimensions labeled rigidity and embarrassment avoidance, while the latter has two different dimensions, labeled cover-up and pretense.

Practical implications – The scale can be used as a tool for diagnosis of defensive employee attitudes as part of organizational development initiatives.

Originality/value – By studying the nature of defensive routines, we extend the literature on patterned behavior in the context of psychological safety and blame avoidance, in public sector organizations. Furthermore, understanding the constituents of organizational defensive routines enhances knowledge of the micro-foundations of obstacles to change-related capabilities thus extends theory related to dynamic change capabilities. Ultimately, through the scale development, we provide a tangible output for researchers and practitioners alike, promoting evidence-based practice.

Keywords Defensiveness, Rigidity, Change attitudes, Scale development, Public sector

Paper type Research paper

Organizational routines are the building blocks of competitiveness and a repository of organizational capabilities (Becker *et al*., 2005; Klein *et al*., 2013; Nelson and Winter, 1982) as well as being related to the core activities of administrative work (Tantardini, 2019; Wagenaar, 2004). They are vital for all organizations to accomplish their tasks and limit cognitive load for employees. According to the most widely accepted definition, organizational routines are "a repetitive, recognizable pattern of interdependent actions, involving multiple actors" (see Feldman and Pentland, 2003, p. 96; van Raak *et al*., 2007 for a summary of routine definitions), necessitating the involvement of multiple employees interactively working together (Foldy and Buckley, 2010). New routines emerge from employees' collective reflection on old

International Journal of Public Sector Management
Emerald Publishing Limited
e-ISSN: 1758-6666
p-ISSN: 0951-3558
DOI 10.1108/IJPSM-02-2024-0050

routines via candid talk (Dittrich *et al*., 2016), government intervention (Moynihan and Kroll, 2016; van Raak *et al*., 2007) or other initiatives aimed at triggering change. The people who established old routines can be offended by the initiation of new routines (Hood *et al*., 2016; Comfort *et al*., 2019). Moreover, employees who initiate the change can position themselves at a harmful and risky crossroads if new routines are not well accepted by those in charge. Argyris (1993) describes such situations as characterized by defensive routines and defines them as "any action and policy that individuals and segments of organizations use to avoid embarrassment and threats to themselves or others," which simultaneously "prevents the actors from identifying and reducing the causes of the embarrassment or threat" (p. 15).

Organizational defensive routines (ODRs) are well acknowledged by academics as barriers to organizational learning (Argyris, 1986; Sales *et al*., 2013; Tsang, 1997; Yang *et al*., 2022) and have recently also received attention in the field of public administration (Artinger *et al*., 2019; Comfort *et al*., 2019; Eppel, 2017). For example, Comfort *et al*. (2019), in their analysis of pressures in public healthcare organizations, found that ODRs "inhibit the transfer of information and the organization's ability to adapt" (p. 168), and they underscore the role of ODRs in creating dysfunctional communication patterns in the organizations studied. Similarly, research conducted by Christiansen and Wellendorf (2021) illustrates how the presence of defensive routines hinders an IT infrastructure change process in several municipalities and even prevents change in some of the studied units. Furthermore, defensive routines are commonly argued to be a threat to public sector accountability (Greiling and Halachmi, 2013), public sector benchmarking (Ki, 2021), innovation (Demircioglu and van der Wal, 2021) and prevent learning during organizational change in hospitals (Muller *et al.*, 2019).

Hence, the discussion about defensive routines is particularly important for public sector organizations for two reasons. First, simply being aware of ODRs allows managers to identify appropriate countermeasures to limit their negative influence on organizational learning and decision-making (Artinger *et al*., 2019; Yang *et al*., 2018), thereby leveraging the positive consequences of knowledge sharing (Fischer and Döring, 2022). Second, learning can only occur when ODRs can be reduced to a low level, which allows enabling routines to prevail (Tranfield *et al*., 2000; Hedlund *et al*., 2015). Aside from being an impediment to learning, ODRs are barriers to change, suffocate innovative ideas and facilitate the development of silence-and-blame avoidance cultures in organizations with detrimental effects on the psychological safety of their members (Hood *et al*., 2016; Wynen *et al*., 2020; Edmonstone, 2022). The issue of ODRs is also particularly salient in the public sector due to its reliance on procedures and rules, which makes it easier for ODRs to become entrenched in the organization. In the healthcare sector, evidence suggests that staff engage in defensive medicine to shield themselves and others from potential patient complaints (Gigerenzer, 2014; He, 2014; Whittaker and Havard, 2016). Additionally, Edmonstone (2022) noted that healthcare employees often adopt defensive mechanisms to cope with anxiety and ensure personal safety.

Knowledge on ODRs to date is built on case studies (Comfort *et al*., 2019) and consulting experience (Argyris, 1993; Noonan, 2007), which contributed significantly to defining their conceptual backbone. However, quantitative research on ODRs has been lacking thus far. Given the relevance that quantitative measurement of ODR may have for researchers and practitioners alike, this paper aims at developing a scale with the intention of an enhanced understanding of ODR's nomological network.

The contributions of this study are threefold. First, it deepens the understanding of ODRs by examining them through the lens of individual employees' psycho-cognitive dispositions and their perceptions of organizational operations. As this perspective focuses on social interactions and reactions to embarrassment, it becomes visible that employees use ODRs to foster psychological safety and blame avoidance in environments where constructive criticism is suppressed by burdensome and bureaucratic rules as well as behavioral norms (Adler and Borys, 1996; Hood *et al*., 2016). Additionally, understanding the constituents of ODRs

enhances knowledge of the micro-foundations of obstacles to change-related capabilities in public organizations. Reducing ODRs enables organizational change and innovation in public sector organizations (Demircioglu, 2020), making it a dynamic change capability (Homberg *et al*., 2019). Second, from an instrumental perspective, a validated scale would allow organizations to assess the phenomenon of ODRs, thus facilitating evidence-based decisions (Vogel *et al*., 2020). Resistance to change remains one of the most prominent triggers of change failure (Burke, 2017; Buick *et al*., 2018) and prevents public sector organizations from innovating. Hence, a tool for identifying ODRs is valuable for designing successful change initiatives that are inclusive and supported by the workforce.

Characteristics of organizational defensive routines

The existing literature shows that ODRs are powerful sets of individual and organizational phenomena that are connected and mutually reinforcing (Noonan, 2007). More specifically, while Argyris (1985) emphasizes that individuals initiate ODRs, he also admits that it is the organizational culture and the system that rewards and reinforces ODRs (Argyris, 1985). We address both of these two coordinates since they work together to isolate this type of routine. One coordinate is about individuals' perceptions of how the organization operates. Here we attempt to understand avoidance behavior that takes place during social interactions in organizations. This is because defensive routines are normally intangibly entrenched in organizations. Individuals are aware of the existence of ODRs, and they may not frame them explicitly or call them differently. Hence, measuring ODRs through the lens of the individual, we consider this study as the first step toward a more complex measurement that is applicable to teams and/or organizational units. The other coordinate deals with the study of individual psycho-cognitive dispositions to react to embarrassment and threat in a working environment. This is because routines become alive through individuals.

The literature (Ashforth and Lee, 1990; Noonan, 2007; Ammons and Roenigk, 2015) emphasizes at least five characteristics that constituted ODRs. Two characteristics of ODRs relate to individuals: (1) *resistance to change* and (2) *embarrassment avoidance*. The other three reflect an organizational component, i.e. (3) *dysfunctional communication*, (4) *risk aversion* and (5) *conflict avoidance*. We now briefly discuss these constituents.

Resistance to change. Some scholars suggest that defensiveness becomes more prevalent during organizational change because individuals tend to adopt defensive mechanisms to resist change (Edmonstone, 2022; Yang *et al*., 2022). Such changes can generate uncertainties and stress, particularly when employee job security is at risk (Oreg, 2006). Those resistant to change are more likely to withhold information that could prompt further changes (Cegarra Navarro *et al*., 2021). Resistance often stems from fears of retaliation and threats to professional development (Malhotra *et al*., 2021). To avoid having to adopt such change, they become suspicious toward learning and the implementation of any new routines. Giangreco and Peccei (2005) posited that people with high levels of resistance to change tend to withhold information when facing uncertainty; therefore, they are more likely to conceal their genuine opinions about an embarrassing or threatening situation. Resistance to change could have a positive aspect (Ford and Ford, 2010; Waddell and Sohal, 1998), and it contributes to ODRs by maintaining old routines, withholding valuable information and discarding or reluctantly accepting new ideas or, expressed differently, as seen in a qualitative study of change in municipalities, "defensive routines can hinder a productive conversation from happening, so participants do not engage in a shared solution search" (Christiansen and Wellendorf, 2021, p. 32). Hence, resistance to change is a core dimension of ODRs.

Embarrassment avoidance. Another core aspect of ODRs relates to embarrassment, "a self-presentational difficulty resulting from a concern with our observable behaviour and a desire to conform and to please others" (Edelmann and McCusker, 1986, p. 133). This understanding of embarrassment aligns with Noonan's (2011) reasoning on the role of embarrassment in ODRs: "The experience of embarrassment does not depend on whether or not I care about what

others think of me. Instead, the awkwardness of embarrassment comes when others see or hear what I would have preferred they did not" (p. 43). From Noonan's explanation of embarrassment, we can see that embarrassment avoidance is an avoidance behavior occurring after self-evaluation of what other people's potential response to one's genuine and forthright remarks or behavior might be.

The threat of embarrassment is one core reason for ambiguity in a social relationship. This ambiguity is strategically adopted by people who minimize or put away potentially embarrassing issues (Argyris, 1993). Therefore, these people would censor their feelings and follow social rules, such as being polite, respecting others' views and avoiding making other people embarrassed. People performing defensive routines think that they are being rational, as their motivation is to care about other people and protect them from embarrassment. However, such behavior reinforces an organizational culture that discourages employees from unlearning established decisions and strategies (Cegarra-Navarro *et al*., 2021). One such example is that employees block or distort unpleasant customers' feedback from middle managers to protect their shop managers. Consequently, this embarrassment avoidance leads to self-reinforcing defensive routines. If interactions in organizations display a tendency for encouraging employees to adopt defensive actions, such as scapegoating and avoiding blame, employees are more likely to reinforce their psycho-cognitive disposition to employ routines to avoid embarrassment and change, i.e. ODRs (Secchi and Bardone, 2013). Thus, it emerges that ODRs are heavily rooted in the individual through their psycho-cognitive dispositions regarding embarrassment avoidance and resistance to change. This defensive behavior is evident in the public sector, as demonstrated by Artinger *et al*. (2019) in their study of 950 managers from a large public administration. The study concluded that defensive decision-making should be a central concern for the public organizations. Similarly, Ki (2021) highlights the reluctance of local government officials to benchmark practices, attributing this to their engagement in defensive routines and public service motivation.

Dysfunctional communication. From the definition of ODRs, "bypass" and "cover-up" are identified as typical actions employees take to avoid embarrassment and threat. The way of creating avoidance is to give inconsistent, illogical and ambiguous messages (Noonan, 2007); such communications are called "mixed" messages (Argyris, 1990). Valid information gets diluted or ignored during the flux of incoming mixed messages, and blame is shifted tactfully to somebody else. Dysfunctional communication means that employees self-censor their feedback or advocate their opinions without explaining and exposing their inferences. Employees implicitly believe that exposing their genuine ideas can embarrass themselves or others. Such dysfunctional communication creates only a temporary solution to the problem, while the core underlying problems are hidden away. Thus, ODRs make organizations places void of constructive dialog for problem solving.

Risk aversion. Apart from dysfunctional communication, employees subject to ODRs also try to avoid taking risks. When employees feel that speaking up is risky and could attract retaliation, they tend to cover up their opinions. Some organizations may adopt rigid rules and procedures to prevent employees from taking risks to experiment with innovative methods of completing their task. In turn, employees refer to the rules to avoid taking risks and responsibility. To avoid risk, employees attempt to transfer responsibilities up or down hierarchies to avoid negative results (Tranfield *et al*., 2000).

Conflict avoidance. Conflict avoidance is found to be prevalent in many organizations (Ting-Toomey *et al.*, 1991; Tjosvold, 2008). Whether individuals decide to pursue or avoid conflict depends on the gauged potential loss or gain from the conflict. The way people deal with conflict can take the form of avoiding disagreement (Ting-Toomey *et al.*, 1991). Delivering negative feedback and criticism may become a tricky issue to handle; therefore, using ambiguous discourse softens issues. Alternatively, individuals may elect to remain silent and to distance themselves from organizational problems. Noonan (2007) uses a case showing conflict avoidance in a meeting: while two managers argued fiercely over an organizational problem on the stance of their own departments' interests, other members remained silent and

withdrew from the conflict. They are "playing safe" to protect themselves from the risks of being criticized by choosing one side or the other. This conflict avoidance strategy most likely leads to bad decision-making, and it wastes time. Conflict, particularly with authority, can embarrass both parties. In summary, dysfunctional communication, risk aversion and conflict avoidance have the potential to demonstrate that some organizations may have a culture to mask employee and management incompetence to avoid threat and embarrassment, thus constituting defensive routines.

Scale development

Table 1 shows the steps followed to develop the scale presented in this paper, which are aligned with the recommendations for scale development provided by DeVellis (2012) and Hinkin (1998). The first four steps mainly follow the suggestions presented in DeVellis (2012). We subsequently integrated these initial steps with two additional ones, following Hinkin (1998). The same process has been used to develop scales for policy alienation (Tummers, 2012) and public leadership roles (Tummers and Knies, 2016) and most recently in approach-avoidance job crafting (Lopper *et al*., 2023) and also for a concept such as work vitality (Op den Kamp *et al*., 2018).

We measure ODRs via individual perceptions. Not only is it normal practice to use individuals' perceptions to measure organizational phenomena (Schnake and Dumler, 2003), but our scale also emphasizes the individual bases of ODRs. Thus, there appears to be a good fit between this approach and our theoretical underpinnings. We use mixed public-private sector samples throughout the scale development process. ODRs are of special relevance for the public sector but are simultaneously a general phenomenon. Hence, we include

Table 1. Overview of the scale development process

Steps	Steps of scale development	Sample	Results
Study 1	Development of a preliminary pool of items, starting from the definition and supplemented by a literature review	Discussion of retrieved items with $N = 7$; three academics working in the area of organizational behaviour and four managers working in the private sector	Preliminary item pool (103 items) reduced to 40 items
Study 2	Item generation and content validity	$N = 9$ experts in the field of organizational behaviour, managers, and administrators	Item pool defined and consisting of 32 items
Study 3	Exploratory factor analysis (EFA), dimensionality and reliability	$N = 207$ respondents from both public and private sectors (UK, 2016): 42% male; 64% public sector	Items reduced to 6 (individual-level) and 8 (organization-level) based on the EFA
Study 4	Confirmatory factor analysis (CFA)	$N = 288$ respondents from both public and private sectors (UK, 2016): 52% male; average age of 38.5 years; 78% full-time employees; 30% worked more than 10 years; 43% public sector	Further validation of the factors extracted from the EFA
Study 5	Discriminant, convergent and predictive validity	$N = 151$ (UK, 2016) respondents from various industries: 52% men; 76% full-time employees; 48% public sector; mean organization tenure of 11 years	ODRs' scales further validated; ODRs discriminated from other similar concepts; ODRs predict outcomes

participants from various sectors to ensure the robustness and validity of the measurement tool for ODRs. In fact, the statistics do not show meaningful differences when the analysis considers subsample splits related to the sectors. This cross-sector validation ensures that the tool is not overly specific to one sector's nuances. In addition, this choice of data collection reinforces the tool's credibility when applied to the public sector. All study participants have given informed consent.

Study 1: item pool generation

An initial pool of 103 items was derived from interviews, case studies and theoretical papers found in the literature (Argyris, 1990; Ashforth and Lee, 1990; Noonan, 2007). An iterative process of discussing the items was carried out with three experts in the field of organizational behavior and four people from industry, holding positions as managers and administrators in a selection of local private and public sector organizations in the UK. The definitions of the concept and the constituents of ODRs were provided.

Next, the authors adopted a seven-point Likert scale to rate each item to assess content adequacy and asked academics who are active in the field of organizational behavior to check for relevance, clarity and conciseness. This allowed us to discard less relevant and badly formulated items. By the end of this process, we had refined the reported constituents for ODRs to 40 items.

Study 2: item reduction

For the item generation and content validity step to be meaningful to the development of the scale, we recruited people who were currently working full-time at the time of the study as our target participants. As part of a research workshop activity held at a university, nine participants examined the initial item pool to identify ambiguous wording, double-barreled items and redundant items. As a result, eight items were discarded and five items were reworded, reducing the item pool to 32 (15 for the individual and 17 for the organizational dimension). All the items were formatted using a seven-point Likert scale, which ranges from 1 (strongly disagree) to 7 (strongly agree).

Study 3: exploratory factor analysis

EFA was adopted to identify the underlying constructs for ODRs. We distributed the survey using a traditional paper-and-pencil collection strategy and undertook online dissemination through Qualtrics. The advantages and disadvantages of panel service providers are well known and discussed (Schoenherr *et al.*, 2015), but recent work by Zack *et al.* (2019) attributes a higher quality to Qualtrics samples as for example compared to Amazon Turk samples. While our main interest is in ODR in the public sector, ODRs are a sector-spanning phenomenon, and thus, we sampled individuals from both the private and public sector. In the traditional paper and pencil sampling method, 106 respondents participated and 114 completed the survey on Qualtrics. Both subsamples were collected in the UK. A total sample of 220 respondents took part in the study, but the final useable data were $N = 207$. Public sector employees with a minimum of one year of work experience constituted 64% of participants (see Table 1, study 3). Prior to performing EFA, we carried out an analysis of intercorrelations among the items. Any item that correlated less than 0.30 with all other items was eliminated from the analysis (Hair *et al.*, 2010). As a result, seven items were excluded.

For the ODR scale, EFA's principal axis factoring and direct oblique rotation were employed, as seen in Table 2, because it seeks the least number of factors and only considers common variance. The eigenvalues from the scree plot match the theoretical framework with 2.68 for the first factor and 1.30 for the second factor. The first factor consists of three items after deleting the highly cross-loaded items. These three items reflect what we refer to as *rigidity* and represent a particular dimension of resistance to change ODRs. Rigidity here

Table 2. Organizational defensive routines factor loading (individual component)

	Factor	
	Rigidity	Embarrassment avoidance
RG4: I only change the way of doing things under pressure from the organization	0.89	
RG2: When dealing with work-related procedures and processes, I do not like changes	0.70	
RG3: In my job, I usually do not change the way I do things	0.65	
EMBA4: I feel embarrassed if my opinions are challenged by my colleagues		0.74
EMBA5: I feel embarrassed to challenge my superiors' opinions		0.71
EMBA3: I avoid speaking to the point if this would embarrass my colleagues		0.44
Cronbach's alpha	0.80	0.66

Note(s): $N = 207$. Principle axis factor and Oblimin rotation were used. Loadings lower than 0.30 were omitted. RG: rigidity and EMBA: embarrassment avoidance

represents individuals playing it safe to avoid changes and showing insecure feelings under the support of an organizational defensive context.

After deleting cross-loadings, the second factor contains three items related to *embarrassment avoidance*, where individuals avoid challenges from or to other people to prevent awkwardness. Theoretically, these two factors should be correlated, since the disposition of resistance to change often stems from embarrassment prevention. The factor correlation is 0.40, aligning with this statement. Cronbach's alpha for *rigidity at work* is 0.80 and 0.66 for *embarrassment avoidance*[1]. Given this is a new scale, the small shortfall on Cronbach's alpha on one of the dimensions can be accepted. Overall, the results support proceeding to confirmatory factor analysis (CFA).

The EFA for the organizational component resulted in two factors (Table 3), differing slightly from our theoretical model that included three factors (dysfunctional communication, risk aversion and conflict avoidance). The reason for this result probably relates to a theoretical

Table 3. Organizational defensive routine factor loading (organizational component)

	Factor	
	Organizational cover-up	Organizational pretense
CU13: When things go wrong in my organization, nobody stands up to take responsibility	0.79	
CU15: My organization gives mixed messages	0.74	
CU14: My organization has too many rigid rules and regulations	0.54	
CU3: The majority of our meetings last a long time and deal with trivial issues	0.44	
OPRET7: Playing it safe seems to be a common activity in my organization		0.68
OPRET4: Most of my organization's decisions are not influenced by the discussion during meetings		0.59
OPRET1: Most of the time the major decisions in my organization are already made before a meeting actually takes place		0.53
OPRET9: Subtle and covert controlling actions are typically taken in my organization		0.47
Cronbach's alpha	*0.72*	*0.67*

Note(s): $N = 207$. Principle Axis Factor and Oblimin rotation were used. Loadings lower than 0.30 were omitted

distinction that is only partially reflected in the perception and practice of ODRs. The two factors resulting from the EFA represent the commonality of the three dimensions from different angles. For example, "My organization has too many rigid rules and regulations" and "Playing it safe seems to be a common activity in my organization" are both about risk aversion, from the perspective of authority suppression vs maintaining the status quo. Similarly, "the majority of our meetings last a long time and deal with trivial issues" is about conflict avoidance, and the item "my organization gives mixed messages" is about dysfunctional communication. Nevertheless, these two items are both about "covering up," the underlying core issues, achieved by using different tactics.

From the above, it is apparent that the theoretical distinction does not align with our findings. Hence, we relabeled the factors to reflect these newly defined common themes. The first, organizational cover-up includes four items and reflects the tendency to hide existing issues whose exposure could cause embarrassment or threat. This factor is related to the theoretical review on dysfunctional communication and risk aversion. The second, organizational pretense (four items) captures how organizations disguise themselves as appearing competent by avoiding taking risks and suppressing employees from expressing different opinions. This factor reflects theories on risk aversion and conflict avoidance. The first factor had an eigenvalue of 2.4 with a Cronbach's alpha of 0.72, and the second factor had an eigenvalue of 1.6 with a Cronbach's alpha of 0.67.

Study 4: confirmatory factor analysis

A CFA was applied to a different sample with $N = 288$ useable responses to validate the scale structure obtained from the EFA. Data were collected by Qualtrics again, according to the demographics we specified: UK workers from private, public, and not-for-profit sectors (see Table 1, Study 4). We used CFA to assess the fit of the data to the hypothesized factor structure (Kline, 1993). We performed maximum likelihood estimations with IBM's SPSS Amos 23.

We applied CFA to confirm the two-factor structure from the EFA, consisting of *rigidity* and *embarrassment avoidance*. The CFA results, $\chi^2/\text{df} = 3.68$, comparative fit index (CFI) = 0.96, root mean square error of approximation (RMSEA) = 0.09 and standardized root mean square residual (SRMR) = 0.04 meet the cut-off criteria suggested by Hu and Bentler (1999) and Hair *et al*. (2010). The two-factor model deduced from EFA is thus confirmed by the CFA. The average variance extracted (AVE) is 0.49 for rigidity at work and 0.53 for embarrassment avoidance, with composite reliabilities of 0.77 and 0.74, respectively. Although AVE for rigidity is 0.01 short of the 0.5 reference benchmark, the factor is retained given the acceptable composite reliability (CR) and AVE (Tummers and Knies, 2016). The final scale for ODRs at the individual level is six items (Table 2 for wording of items).

We applied the same procedure to the *organizational cover-up* and *pretense* factors. The goodness-of-fit indices are as follows: $\chi^2/df = 2.45$; CFI = 0.96, RMSEA = 0.07 and SRMR = 0.05. The model deduced from EFA is thus confirmed by the CFA, which indicates that the organizational component of ODRs can be measured by two sub-constructs, *organizational cover-up* and *organizational pretense*. AVE for *organizational cover-up* is 0.50 and 0.51 for *organizational pretense*. The cumulative AVE is 0.50. CR for *organizational cover-up* is 0.79 and 0.81 for *organizational pretense*. The cumulative CR for ODRs is 0.80.

Study 5: convergent, discriminant and predictive validity

We expect ODRs to positively relate to defensive silence (actively holding back information due to fear of retaliation) and to employee silence behavior but differ from them because of the different conceptual underpinnings. This concept was drawn from research around silence based on individuals' fear of uncertainty and insecurity (Brinsfield, 2013; Dahle, 2022, Zampetakis, 2023). When employees feel that speaking up is risky and could attract retaliation, they tend to cover their opinions up. Such self-censorship is also reflected in research about

ODRs. Nonetheless, silence studies treat speaking up as a risky activity or a waste of effort (Morrison and Milliken, 2000). Thus, it is a form of consciously chosen self-protection from external threats (Van Dyne, Ang and Botero, 2003) that encourages people to suppress their negative feedback (Morrison and Milliken, 2000). It is mainly motivated by fear (van Dyne *et al.*, 2003), while ODRs are mainly driven by avoidance sentiments. Unlike defensive silence, ODRs not only occur when employees are facing superiors in decision-making but also take place in a variety of settings and interactions (e.g. among peers; Artinger *et al.*, 2019). According to Wynen *et al.* (2020), defensive silence is a proactive behavior. In contrast, we have conceptualized ODR as patterned behavior (van Raak *et al.*, 2007) that maintains its core element in repetition that reflects organizational requirements and operations. Therefore, we predict that employee silence will be related to but empirically distinct from ODRs.

We obtained a sample of $N = 151$ UK employees, of which 66% work in the public sector and 34% in the private sector (see Table 1, study 5). CFA was used to test convergent validity and discriminant validity, using the same sample (Hair *et al.*, 2010). Table 4 displays the findings.

Individual defensive silence is measured by six items from Brinsfield (2013) (Cronbach's alpha = 0.96) and employee silence behavior with three items from Vakola and Bouradas (2005) (Cronbach's alpha = 0.94). These constructs were used to test discriminant validity. The CR of ODRs is 0.81, indicating good reliability. Discriminant validity was assessed using three criteria: (1) the maximum shared variance (MSV, 0.41) was less than the average variance extracted (AVE, 0.68); (2) the average shared variance (ASV, 0.37) was less than the AVE (0.68); (3) the square root of the AVE (0.82) exceeded the inter-construct correlation between ODRs and both employee silence behavior (0.58) and defensive silence (0.64). Hence, discriminant validity is confirmed for ODRs at the individual level.

To test convergent validity, AVE (i.e. 0.68) is higher than the threshold of 0.5 (Hair *et al.*, 2010). The correlation analysis among the three variables shows that ODRs are significantly correlated with individual organizational silence ($r = 0.64$, $p < 0.01$) and employees' silence behavior ($r = 0.58$, $p < 0.01$). Thus, individual-level ODRs have good reliability and discriminant and convergent validities. The model tested above displayed good fit, with $\chi^2/df = 1.41$, CFI = 0.99, RMSEA = 0.05 and SRMR = 0.04.

We applied similar procedures for the organizational component, expecting the dimensions of cover-up and pretense to be positively related to organizational silence and red tape. Organizational silence, a collective phenomenon in organizations, treats speaking up as a risky

Table 4. Factor correlation matrix with square root of the AVE on the diagonal

Convergent and discriminant validity test of ODRs for the organizational component

	CR	AVE	MSV	ASV	ODR	Red tape	Orgsi
ODR_o	0.89	0.81	0.64	0.56	*0.9*		
Red tape	0.95	0.9	0.48	0.46	0.7	*0.95*	
Orgsi	0.92	0.71	0.64	0.53	0.8	0.66	*0.84*

Convergent and discriminant validity test of ODRs for the individual component

	CR	AVE	MSV	ASV	ODR_i	Defensive silence	Silence behavior
ODR_i	0.81	0.68	0.41	0.37	*0.82*		
Defensive silence	0.96	0.81	0.41	0.34	0.64	*0.90*	
Silence behavior	0.95	0.85	0.34	0.31	0.58	0.52	*0.92*

Note(s): $N = 151$, Psy = psychological safety; ODRs = organizational defensive routines; Orgsi = organizational silence. ODR_i = organizational defensive routines for the individual component and ODR_o = organizational component. The square root of AVE for each variable is highlighted in italic at diagonal

activity or a waste of effort (Morrison and Milliken, 2000). It overlaps with ODRs' element of covering up issues; thus, it is suitable to assess discriminant validity. We predict that organizational silence will be related to but empirically distinct from ODRs, measured using three items from Vakola and Bouradas (2005). The Cronbach's alpha is 0.92.

Red tape is conceptualized as "burdensome administrative rules and procedures that have negative effects on the organizations" effectiveness' (Bozeman and Feeney, 2011, p. 84). It is like ODRs in that it exists in organizations as a set of rules to avoid a candid discussion of negative organizational issues. We used a two-item measure of rule enforcement red tape from Bozeman and Feeney (2011). The Cronbach's alpha is 0.94. In summary, Table 4 confirms convergent and discriminant validity for our ODR scale at the organizational level.

We used job satisfaction to assess the predictive validity of ODRs, because previous studies (e.g. Artinger *et al*., 2019) suggest that defensive routines and defensive decision-making could reduce job satisfaction among employees. Thus, we predict ODRs will negatively relate to job satisfaction. Job satisfaction is measured by a single global item (Wanous *et al*., 1997), commonly used in large-scale panel datasets, such as the British Household Survey Panel. Respondents were asked, "Overall, how satisfied or unsatisfied are you with your current job?" After controlling for gender, tenure, employment status and sector, Table 5 shows results from a regression analysis where ODRs negatively affect job satisfaction (ß = −0.47 and $p < 0.001$), supporting the predictive validity of the ODRs construct.

Finally, in terms of the predictive validity of ODRs for the organizational component, we used *psychological safety* as an outcome variable. Edmonstone (2022) proposed that psychological safety is a shared belief in a team that members feel safe to take interpersonal risks to share critical issues in organizations. When ODRs exist in organizations, people tend to feel insecure about discussing negative issues with their colleagues for fear of being perceived as "troublemakers." We claim that ODRs is negatively associated with psychological safety. Psychological safety is measured by four items from Baer and Frese (2003), with the Cronbach's alpha value of 0.84. Table 5 shows that ODRs are negatively and significantly associated with psychological safety (ß = −0.67, $p < 0.001$). Findings support the claim that this component of ODRs has predictive validity.

Table 5. Regression analysis of ODRs on job satisfaction

	Model 1 DV: Psych. safety	Model 2 DV: Psych. safety	Model 3 DV: Job satisf	Model 4 DV: Job satisf
Intercept	3.71*** (0.50)	7.08*** (0.46)	4.32*** (0.68)	5.98*** (0.76)
Gender	0.32 (0.24)	0.09 (0.17)	−0.23 (0.33)	−0.18 (0.31)
Tenure	0.00 (0.01)	0.00 (0.01)	0.01 (0.01)	0.00 (0.01)
Employment status	−0.25 (0.29)	−0.23 (0.20)	0.26 (0.39)	0.41 (0.37)
Public sector	0.50* (0.22)	0.16 (0.15)	0.36 (0.29)	0.35 (0.28)
Org-ODR		−0.67*** (0.06)		
Ind-ODR				−0.47*** (0.11)
R-squared	0.05	0.54	0.02	0.14
F-test [df]	1.746* [4, 125]	28.790*** [5, 124]	0.570 [4, 125]	3.895** [5, 124]

Note(s): Standard errors in parentheses, $N = 151$. *$p < 0.05$, **$p < 0.01$ and ***$p < 0.001$. DV: dependent variable.; Psych. safety = psychological safety; Job satisf. = job satisfaction; Org-ODR = organizational defensive routines for the organizational component and Ind-ODR = organizational defensive routines for the individual component

Discussion

The study aims at developing a scale for measuring ODRs (Argyris, 1990; Noonan, 2007). We identified the construct's structure and developed a scale for measuring ODRs. The two-scale components of ODRs at individual level include *rigidity* and *embarrassment avoidance*, each measured by three items (see Table 2), thereby offering a pragmatic short scale capturing the essence of individually perceived defensive routines. The perception of ODRs at an organizational level includes two sub-components as well: *organizational cover-up* and *organizational presence*, with four items each. The study confirms reliability and validity of the constructs. Measuring ODRs through the lens of individual perceptions, we consider this study provides a foundation for future measurement at teams and organizational levels.

Our research involved multiple studies to develop and refine a scale for measuring ODRs, ensuring both the reliability and validity of the construct. Through a comprehensive review of existing studies, we identified two primary sub-components of ODRs. However, we acknowledge the potential for additional components, given the complexity of ODRs and their relatively limited exploration through quantitative methods.

In line with DeVellis' (2012) guidelines, we conducted these studies to affirm the validity and reliability of our scale. We believe that incorporating data from diverse sectors not only enhances the robustness and generalizability of our tool but also improves its applicability across various organizational contexts. Nevertheless, a focused application of this scale exclusively within public sector organizations would be recommended. Such a targeted approach would enable a more precise understanding of ODRs in public management settings, potentially revealing sector-specific dynamics and informing more effective organizational strategies.

There are several potential implications of the defensive routines scale. First, the study brings individuals' psycho-cognitive tendencies into consideration, advancing the understanding of micro-level defensiveness. Individuals are prone to making assumptions on the rationality of disguising their true opinion toward negative issues (Noonan, 2011). The unexposed cognitive framework related to the causes of embarrassment and threat reinforces employees' cognitive dissonance. As a result, the opportunities for designing new routines to solve organizational problems are not identified, and the old routines remain in place. Ultimately, this situation creates a severe obstacle to reforming and innovating public sector organizations, especially considering that innovations arising bottom-up from the employees (Demircioglu, 2020) are suffocated. Additionally, such conditions fuel cultures of threat aversion, which may also distort the decision-making preferences of policymakers (Kuehnhanss *et al*., 2017). Therefore, pointing attention to how ODRs are identified brings a novel perspective on how individuals can contribute to the emergence of new routines by reducing ODRs, thereby facilitating innovation in public sector organizations.

Second, this study establishes the micro-level foundational components of defensive routines. The study also indicates that not all routines are building blocks for organizational capabilities. Instead, just like ODRs, they can be impediments to organizational progress and a severe obstacle to learning and change (Pope and Burnes, 2013; Yang *et al*., 2018). The scale can be used as a tool to measure defensive routines among employees who are censoring important information to avoid possible repercussions. Thus, it helps to develop an enhanced understanding of the micro-foundations that prevent public sector organizations from becoming healthy learning organizations (Saraf *et al*., 2022).

Finally, the ODRs measurement instrument can be used as a tool for consultants to identify ODRs at the early stage of examining organizational problems or confirming their findings from case studies. Previous case studies conducted by Argyris (1990) and Noonan (2007) showed that identifying ODRs is time-consuming, so these instruments could be beneficial for them to recognize ODRs more efficiently. Other research underscored the issues arising from long scales in public administration research and the benefits of the use of validated scales for explorations of a construct's associated nomological network (van Engen, 2017; Vogel *et al*., 2020). Hence, using the ODR scale facilitates the constructive uncovering of employees' genuine feelings about negative issues. This approach enables them to recognize sources of

embarrassment and threat early on, allowing for timely resolution of these problems. This is very important for institutions in the public sector, as their service also plays a vital role, for example, in public health and the quality of people's lives generally.

Limitations and future research directions

This study inevitably has some limitations. First, focus groups are an alternative way to generate items in the initial stage of scale development. As the use of focus groups is a good method to generate rich information and assess initial ideas about items (Kline, 1993), this might have limited the researchers' understanding of the concept. The advice received from these groups could have increased the robustness of item generation and also led to a larger item pool to start our research with. Large item pools potentially capture more facets of the focal construct and, especially, multi-item constructs might require longer scales. However, we added an iteration of consultation with both academics and practitioners to assure the robustness of item generation. We also started from a comparably large pool of items (i.e. 103). Hence, we believe we have presented a conceptually robust and pragmatically sound scale.

Second, this study focuses on developing a scale to measure ODRs, and it does not present a case study on its application in one specific organization. Nonetheless, all psychometric scales have a practical implication. For example, a consultant can use the scale to assist a client organization in extracting a snapshot on identifying the presence of ODRs in the organization as perceived by its employees. This would be a first attempt to diagnose whether the client organization suffers from such dysfunctional behavior. We encourage future research to document such work.

Finally, this research could be applied at multiple levels. Our focus on the individual might be considered a limitation in the context of organizational routines. However, individuals enact routine behaviors (Feldman and Pentland, 2003), and thus, focusing on individual-level manifestations allows us to capture the most direct expressions of defensive routines, providing clear, observable and measurable insights into these complex phenomena. Nonetheless, the individual perceptions of defensive routines could be tested at the individual and the group, team or departmental level. This allows one to understand whether there are commonalities in the way employees frame aspects of ODRs. This would also necessitate a different methodological approach, specifically the use of multi-level analysis.

Notes

1. Following a suggestion from an anonymous reviewer, we tried an alternative configuration that led to the inclusion of one more item in the rigidity scale ("I like exploring different ways of doing my job rather than sticking to certain ways (R)"). One may decide to include it to have a wider coverage of facets. In our inclusion of this item, however, it leads to a drop in reliability to 0.66. For pragmatic reasons we present the shorter version of the scale

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