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ARTICLE

Gender quotas influence the appointment of women to precarious leadership positions: A signalling approach

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Abstract

In this research we address the ongoing debate about the existence of the glass-cliff phenomenon by investigating boundary conditions and mechanisms influencing its persistence and decline. Drawing on signalling theory, we hypothesize that the glass-cliff's presence fluctuates with the clarity of signals associated with appointing women board members at various stages of quota policy implementation. In Study 1, we analyzed a dataset of 258 board appointments in German-listed companies from 2003 to 2020. We found that women executives were more likely to be appointed following periods of declining performance during Stage 1 (pre-quota announcement) and Stage 3 (post-quota enforcement), but not in Stage 2 (post-announcement, pre-enforcement). In Study 2, an experiment with 476 respondents, we tested for changes in signal clarity as an underlying mechanism. Results indicate that signal clarity associated with appointing women following performance decline is influenced by quota policies. Signal clarity was highest during stages 1 and 3, but diminished in Stage 2. These findings support the signalling explanation for the glass-cliff, highlighting that its occurrence is influenced by country-level policies and emphasizing that the symbolic value of appointing women to board positions as indicators of change depends on the clarity of these signals.

KEYWORDS

glass cliff, leadership, quotas, signalling gender

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Practitioner points

- The implementation of gender quotas can influence the likelihood of women being appointed to precarious leadership positions, a phenomenon known as the ‘glass cliff’.
- While gender quotas initially reduce the risk of women facing precarious leadership roles (the glass cliff), this effect may fade over time. Policymakers and organizations should explore ways to maintain the quota's benefits by implementing measures that go beyond achieving numerical targets. This includes tracking and reporting the conditions under which male and female leaders are appointed. This transparency helps maintain the positive impact of gender quotas and prevents potential glass cliff situations.
- Organizations should clearly communicate the strategic reasons for appointing women to leadership roles, especially during tough times, to avoid perceptions of glass cliffs and support trust in leadership decisions.

INTRODUCTION

The glass cliff denotes a phenomenon whereby women are more likely than men to be appointed to precarious top-management positions (Ryan & Haslam, 2005, 2007). Initial evidence for this phenomenon stems from an archival study by Ryan and Haslam (2005) which examined the stock-market performance of FTSE100 companies in the United Kingdom. This study and later glass cliff research have deepened our understanding of women's underrepresentation in senior management by examining not only barriers to their advancement but also the nature of the top-level roles they assume (Reinwald et al., 2022).

Evidence of the existence of the glass cliff is mixed. While several field studies examining the phenomenon have found supportive evidence (e.g., Cook & Glass, 2014a; Mulcahy & Linehan, 2014), others have reported contradicting findings (e.g., Adams et al., 2009; Bechtoldt et al., 2019). For instance, a recent meta-analysis (Morgenroth et al., 2020) revealed significant variation in effect sizes, while several literature reviews reported inconsistent findings on the existence of the glass cliff and gaps in understanding this phenomenon (Bruckmüller et al., 2014; Ryan et al., 2016).

These inconsistencies have fuelled a heated debate, resulting in research that aims to uncover factors that determine the presence of the glass cliff phenomenon. For instance, previous research highlighted the role that methodological considerations (Cook & Glass, 2014a, 2014b; Haslam et al., 2010), crisis types (Adams et al., 2009; Haslam et al., 2010; Mulcahy & Linehan, 2014) and firm characteristics (Ihmels et al., 2023) play in determining whether the glass cliff exists in organizations. In this study, we aim to contribute to this line of research and the ongoing debate about the existence of the glass cliff by examining boundary conditions and mechanisms that influence whether the glass cliff phenomenon diminishes or persists over time.

To do so, we draw on the signalling rationale of the glass cliff (Reinwald et al., 2022; Ryan & Haslam, 2007) which denotes that, when a company is performing poorly, it has a strong incentive to signal to its external stakeholders that it is committed to changing course. Since management is typically associated with ‘think manager—think male’ (Ryan et al., 2011), appointing women to senior roles signals a departure from the traditional choice and represents change. Although it has received little attention, we contend that this signalling perspective can advance the debate on the glass cliff by enhancing our understanding of its boundary conditions. We test this signalling rationale of the glass cliff, arguing – based on signalling theory (Spence, 2002) – that the glass cliff is more likely when appointing women to senior roles is clearly perceived by external stakeholders (e.g., investors, auditors, the stock market) as a symbolic signal of organizational change. Conversely, we argue that the glass cliff is less likely to manifest when such appointments lack the same signal value.

Further, we suggest that the value of appointing women to board positions as a symbolic signal of change may be influenced by the extent to which those appointments can be attributed to intra-organizational considerations instead of to external factors. The external factor we focus on is country-level gender quotas for firms' management boards. This type of diversity policy is likely to influence the signal clarity of appointing women to board positions because quotas are designed to restrict the decision-making latitude of firms regarding such positions (Harrison et al., 2006; Morgenroth & Ryan, 2018). In other words, a quota policy offers external stakeholders alternative interpretations regarding senior leadership appointments, potentially weakening the link between appointing women and signalling change.

In the first study, we test the influence of gender quotas on the glass cliff in Germany across three implementation periods. In the second study, we conduct an experiment to test the proposed mechanism that country-level gender quotas may influence the clarity of the signal when firms appoint women to management boards. Together, these studies contribute to the glass cliff research in three notable ways. First, by integrating signalling theory (Spence, 2002) into the field of glass cliff research, we advance understanding of why and when the phenomenon occurs. By doing so, we heed calls for greater context-sensitivity in glass cliff research (Morgenroth et al., 2020) and pay empirical attention to one of the core theoretical explanations – the signalling rationale – of the phenomenon that so far has been underdeveloped (Ryan & Haslam, 2007). Second, we investigate an external, country-level factor and argue that the glass cliff should be examined within the broader context of the socio-political processes and policies regarding gender diversity. By demonstrating the importance of such high-level factors, we open the door to theoretical explanations that go beyond organizational processes and provide initial insights about policy interventions that can shape the glass cliff phenomenon. This gap is critical to fill since the socio-political context has been found to play a crucial role in strategic organizational decisions (e.g., Minichilli et al., 2012). Finally, by asking not only whether the glass cliff exists but rather under which conditions it persists or ceases, we aim to reframe the debate in the glass cliff field by inspiring more context- and time-sensitive research of the phenomenon.

THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

The glass cliff

The term the glass cliff pertains to the observable trend wherein women find themselves disproportionately placed in precarious leadership roles characterized by a heightened risk of failure due to organizational circumstances (Ryan & Haslam, 2005). This phenomenon sheds light on a critical set of challenges that organizations encounter on the journey towards achieving gender equality in the workplace. As more women break through the glass ceiling and reach top leadership roles (Eagly & Carli, 2007), glass cliff research suggests that their experiences differ significantly from those of men in similar positions (Bruckmüller et al., 2014).

Prior research on the glass cliff has mostly paid attention to theoretical accounts that focus on gender stereotypes and their association with leadership beliefs, discrimination and differences in career-related decisions between men and women (Bruckmüller & Branscombe, 2010; Cook & Glass, 2014a; Ryan et al., 2011). Building on research on gender and leadership stereotypes and role congruency theory (Heilman, 2001), this line of glass cliff research has focused on the argument that stereotypical men's traits are compatible with general beliefs about successful leadership, whereas presumed women's traits tend to be more compatible with attributes of effective leaders under crisis (Ryan et al., 2011). For instance, Ryan et al. (2011) suggested that women leaders are appointed to precarious positions particularly in situations that require good people management.

The stereotypes-focused interpretation of the glass cliff also lays the ground for an alternative perspective known as the signalling rationale (Kulich et al., 2015; Reinwald et al., 2022; Ryan & Haslam, 2007).

This perspective attributes the appointment of women to board positions amid declining performance to the symbolic signalling of organizational change to external stakeholders. According to this explanation, appointing women to board positions is deemed an effective signal of change due to the relative scarcity of women in senior leadership roles and the prevalent stereotypes associating women executives with a distinctive set of leadership capabilities. Despite receiving limited attention in the existing literature, we contend that this account holds the potential to contribute to the debate about the existence of the glass cliff by enriching our understanding of the boundary condition of this phenomenon and by shedding light on when does the glass cliff persist and cease over time.

The signalling rationale of the glass cliff

Signalling theory maintains that signals emanated from organizational actions and announcements convey information about the organization's intentions and abilities (Musteen et al., 2010; Spence, 1973). Given the information asymmetry between the organization and external stakeholders, who may lack clear insights into the future intentions of top management, stakeholders often rely on those signals that are *observable and costly to imitate* (Higgins & Gulati, 2006). For example, previous research has shown that board attributes, such as the proportion of outside directors and board size, significantly influence the assessment of firm reputation by the business community (Musteen et al., 2010) and that top management backgrounds influence perceived organizational legitimacy as well as investment decisions (Higgins & Gulati, 2006). Thus, it can be argued that since board demographic information is easily accessible to stakeholders, it serves as a valuable signal that conveys the organization's intended direction.

Due to the rarity of women board appointments and stereotypes associating women with distinct leadership capabilities (Heilman, 2001; Ryan et al., 2011), we argue that appointing women to boards can serve as a strong signal of change, based on the principles of signal observability and cost. First, an executive's gender can be readily observed, and women executive appointments more often receive media coverage than men executive appointments do (Smith & Gaughan, 2021). Second, as Reinwald et al. (2022) argued, appointing a woman board member may be more costly for firms that want to keep the status quo than for firms committed to change. This is further substantiated by research showing that for companies unwilling to break entrenched status structures, a woman appointment is particularly costly as it counters the internal norm of status quo preservation (Dezső et al., 2016; Knippen et al., 2019). Thus, the signalling rationale of the glass cliff denotes that appointing a woman executive can be seen as a credible signal to investors that the company is actively dealing with the crisis and radically deviating from the status quo (Kulich et al., 2015; Ryan & Haslam, 2007). External stakeholders are likely to interpret such appointments as the organization's intent to depart from the status quo and implement substantial changes to better align with prevailing organizational circumstances.

Gender quotas and the signalling clarity of the glass cliff

According to signalling theory (Gomulya & Mishina, 2017; Reinwald et al., 2022), the clarity of a signal and the motivation of a firm to signal are determined by the nature of the *signaller*, the quality of the *signal* and the attention of the *receiver*. We theorize that the presence of a strong alternative signal, in the form of a country-level quota policy, may decrease the signal clarity of glass cliff appointments as an indication of firm's commitment for change.

Gender quota is a policy that is increasing in its popularity as a governmental intervention designed to stimulate an increase of gender diversity in corporates' boardrooms (Dobbin & Kalev, 2022; Nishii et al., 2018). This policy, and especially its 'hard' version that enforces sanctions in case of noncompliance, was found to successfully increase women's representation in management boards (Sojo et al., 2016) but was also linked to unintended consequences such as reduced self-evaluated and objective performance (Leslie et al., 2014) and increased stigma of incompetence among women leaders (Unzueta et al., 2010).

Quotas restrict the decision-making latitude of firms regarding the appointment of board members (Harrison et al., 2006) by presenting strong incentives and sanctions that influence the firm's spontaneous and common decision-making processes relating to selection of board members and thus influence the quality of the signal. Gender quota policies also provide an alternative explanation to the appointment of women to board positions. Indeed, ample evidence suggests that, in the presence of gender quota policies, followers and colleagues of newly appointed executives – as well as the beneficiary appointed executives themselves – may attribute the appointment to the presence of gender quotas (e.g., Leslie et al., 2014). Thus, gender quotas provide an alternative explanation to the appointment of women to board positions under time of declining performance: one that would compromise the quality of the change signal, reduce its clarity to external receivers and therefore demotivate investors to consider this as an informative indicator of a firm's intentions.

Three stages of quota policy enforcement

Thus far, we have contended that gender quota policies could disrupt the internal motivation and capability of the firm to use appointments as a public signal, diminishing the clarity of the signal and consequently reducing the attention of receivers to this specific signal. However, we further posit that the persistence or cessation of glass cliffs may vary across different stages of diversity policy enforcement, contingent on the signal clarity associated with appointing women board members at each of these stages. Drawing on research on the implementation of gender quotas (e.g., Hoel, 2008; Seierstad & Opsahl, 2011; Teigen, 2012), we delineate three key stages: (1) the period without a country-level gender quota policy, (2) the period between the initial announcement of the gender quota policy and the legal onset of its enforcement and (3) the period after the gender quota policy is enforced and companies are held accountable for complying with its targets. Extant literature has associated each of these periods with unique attributes concerning the demographic composition of boards (Seierstad & Opsahl, 2011), organizations' commitment to diversification efforts (Bertrand et al., 2014), and public discourse and media coverage of gender inequality in boardrooms (Terjesen et al., 2009; Terjesen & Sealy, 2016). Accordingly, we argue that each of these stages will uniquely influence the conditions under which women's appointments to board positions occur.

In the initial stage, in the absence of any country-level gender quota policy influencing firms' board appointment decisions, we propose that women executives are more likely to be appointed after a period of declining firm performance than their men counterparts. During this stage, appointing women executives sends a distinct signal regarding the firm's intent to change direction. The appointment of a woman to the board is a strong indicator of impending change, given its rarity and the clear link to the firm's internal decision-making, which allows external stakeholders to form clear conclusions about the reasons for selecting a woman executive (Kulich et al., 2015; Ryan & Haslam, 2007). The second stage commences with the public announcement of an impending gender quota policy. Typically, this announcement triggers a period of several years before the policy is legally enforced, during which firms actively strive to meet the targets. The public discourse surrounding gender quota policies, often intensified by media coverage of gender inequality in boardrooms (Terjesen et al., 2009; Terjesen & Sealy, 2016), increases normative pressure on firms for institutional change (Sheridan et al., 2014). This heightened awareness prompts many firms to appoint a relatively high number of women executives in anticipation of policy enforcement. Examining gender quotas in various European countries, it was found that the effects on women's board representation are noticeable especially during this stage, before legal compliance is required (Isidro & Sobral, 2015; Lending & Vähämaa, 2017; Wang & Kelan, 2013). In this context, as women board appointments become more frequent and potentially shift from strategic decisions to legal compliance, the signal clarity of appointing women executives may diminish. This compromise in signal clarity is likely to impede the firm's ability to use appointments as an effective signal for change and reduce receiver attention to this signal. Therefore, during this second stage, we anticipate that the glass cliff is less likely to manifest.

The commencement of the third stage is indicated by the deadline for firms to comply with the gender quota or face sanctions. In this stage, we posit that the glass cliff will resurface because the signal linked to the appointment of women executives will regain its value and clarity for three reasons. Firstly, as most firms have already achieved the mandated targets set by the quota policy by the onset of the third stage (Isidro & Sobral, 2015; Lending & Vähämaa, 2017), they regain decision-making autonomy regarding board appointments. The fading public focus on gender inequality in boardrooms, along with reduced external pressure in this stage (Hoel, 2008), increases the likelihood that executive appointments are seen as internal decisions, thus enhancing the clarity of the signal. Secondly, research suggests that once companies meet the required quota, efforts to further enhance women's representation in senior positions diminish, making such appointments rarer and the signal clearer (Bertrand et al., 2014). Lastly, even though firms are likely to meet the gender diversity quota on the board by the beginning of the third stage, this change is unlikely to significantly alter gender stereotypes associated with men and women leaders, preserving the change signal carried by the appointment of women board members. While increasing women's representation in senior roles can alter gender stereotypes, such changes are less likely when attributed to formal quotas, especially when the increase is limited to the management level subjected to quotas (Dezső et al., 2016; Kaiser et al., 2013; Unzueta et al., 2010). Indeed, prior research has suggested that an unintended consequence of gender diversity policies in organizations is the increase of gender salience and the reinforcement of gender stereotypes (Dover et al., 2020).

In sum, we argue that one potential explanation for fluctuations in the presence or absence of the glass cliff over time is the impact of gender quotas. The clarity of the signal conveyed by women's appointments to boards fluctuates across the three stages of quota implementation, thereby influencing the distinct impact of each stage on the circumstances surrounding the appointment of women to these positions. We predict:

Hypothesis 1. Country-level gender board quota policy will influence the impact of company performance leading up to women vs. men board appointments. Specifically, glass cliff appointments are *less likely* to take place in Stage 2 (the period between the announcement of women board quota policy and the onset of its enforcement) than in Stages 1 (the periods prior to the announcement) and 3 (following the legal onset of the gender quota policy).

Hypothesis 2. The signal clarity of appointing women executives following a period of decreasing company performance will be influenced by the presence of country-level gender quota policies. Specifically, we expect to find weaker signal clarity in Stage 2 (the period between the announcement of women board quota policy and the onset of its enforcement), compared with Stage 1 (the period prior to the announcement) and Stage 3 (the period following the legal onset of the gender quotas policy).

INTRODUCTION OF STUDIES

To test our hypotheses, we conducted two studies. In Study 1, we employed an archival dataset that includes 238 board appointments in companies listed in the German stock exchange from 2003 to 2020. Germany is a particularly interesting country in which to test the impact of quotas policy on the glass cliff as this policy played a dominant role in increasing the number of women supervisory board members from less than 5% in 2000 to 29.9% in 2020 (Kirsch & Wrohlich, 2021). Furthermore, considering recent research revealing no evidence of the glass cliff in Germany (Bechtoldt et al., 2019), the German context offers an opportunity to reframe the central glass cliff question. Instead of probing the existence of the glass cliff, the focus can shift to investigating when and under which conditions it emerges or declines. Finally, the implementation of gender quota policy in Germany reflects the three

stages we described here and thus offer a relevant test for our first hypothesis. *Between 2003 and 2010*, Germany had no country-level gender quotas, nor any other significant country-level gender diversity policy targeting firms' boards. We will therefore categorize this period as an example of *Stage 1*. At the end of 2010 and the beginning of 2011, there were several significant and highly visible initiatives to advance country-level gender quotas in Germany (FidAR, 2011; GCGC, 2010; Ziegler et al., 2011). These efforts culminated in a formal legislation for quotas in corporate boards being submitted in 2011 (SPD, 2011), followed by heated public debate. We therefore identify 2011 as the onset of the *second stage*. Formal deadline to comply with this legislation took place in 2016, and we therefore adopted this year as the beginning of the *third stage* in our model.

While Study 1 allows us to test the hypothesis that country-level quota policy will influence the likelihood of glass cliff appointments, this archival dataset does not allow for a direct test of the proposed signalling mechanism. Therefore, in Study 2 we conducted an experiment to test our second hypothesis, namely the expectation that signal clarity of appointing women executives following a period of decreasing company will be influenced by the presence of country-level gender quotas policies. The conceptual model is summarized in Figure 1.

STUDY 1: THE GLASS CLIFF IN GERMANY

Method

Sample

To examine the glass cliff in the German context, we conducted a search on all women board member appointments in companies listed in the German stock exchange from 2003 to 2020. The German stock exchange at any given year comprises 160 companies publicly listed in the DAX, MDAX, SDAX and TecDAX stock indices representing large-cap, mid-cap, small-cap and technology-based companies, respectively. We excluded 20 companies from our analysis that were listed only temporarily at the stock exchange in the period under investigation (e.g., due to dropouts, mergers and acquisitions), as well as financial institutions as they are known to differ in their accounting practices (Haslam et al., 2010). To compose our dataset, we used information obtained from annual reports, company homepages, and financial databases and websites. In total, in the time period under review, we have identified 129

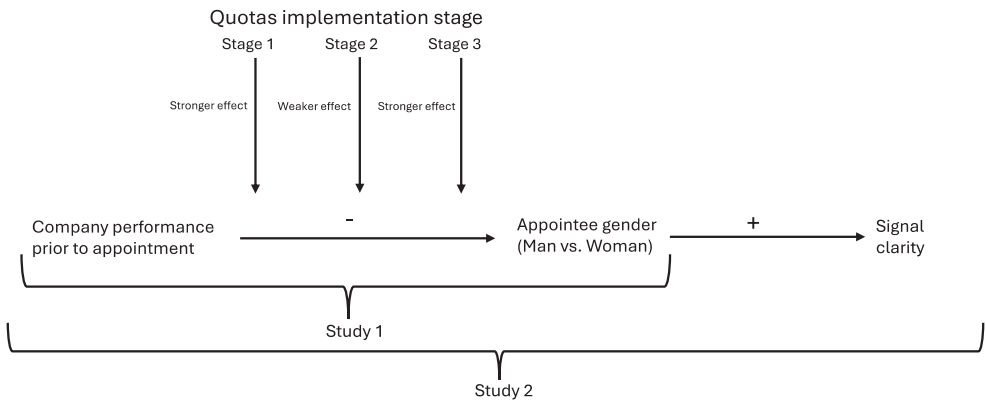


FIGURE 1 Conceptual model, Studies 1 and 2. *Appointee Gender: 0 = Man, 1 = Woman*. This figure illustrates the conceptual model tested in Studies 1 and 2. Study 1 tests the relationship between company performance and appointee gender across three quota implementation stages. Study 2 tests the relationship among these three variables and their combined effect on signal clarity.

appointments of women board members. As the selection of men and women board members is not random, our findings may be susceptible to endogeneity issues stemming from selection bias. To address these concerns (Antonakis et al., 2010), we formed a matched sample by pairing newly appointed women board members with their men counterparts using the propensity score matching procedure. Propensity score matching involves matching treated and untreated observations on the estimated probability of being treated. The propensity score was determined as a function of our control variables, including stock index, company size measured by market capitalization and time of appointment. Employing a probit regression with these control variables as predictors, we calculated propensity scores reflecting the estimated probability of a firm appointing a woman board member based solely on the control variables. With the propensity scores in place, each newly appointed woman board member was then matched with a newly appointed man board member with the closest propensity score. Our resulting matched sample consisted of 258 appointments, evenly split between 129 women and 129 men board members.

Measures

Firm performance

Past glass cliff studies have measured firm performance with a single market- or accounting-based measure (e.g., Cook & Glass, 2014a, 2014b) and found that the occurrence of the glass cliff seems to be more strongly associated with the former since it more closely captures the public *perception* of organizational performance. Public perception is also in line with our focus in this work, namely firm's signals to its external stakeholders. We therefore computed a performance measure by calculating the slope of the monthly stock price trend from 12 months leading up to the appointment. A negative value represents a loss in stock price, a positive value represents an increase in stock price, and a value of zero represents no change of the stock price for the period of 12 months preceding an appointment.

Country-level gender quota policy

To operationalize the socio-political context in which board appointments took place, we created a dummy variable that distinguished between three stages relating to the country-level gender quota policy in Germany. The first stage refers to appointments in the years between 2003 and 2010. During this period, there was no country-level gender quota policy. The second stage, between the years 2011 and 2015, refers to the period after which the gender quota has been formally announced, but not yet enforced. The last stage, in the years 2016–2020, refers to the period after which companies were expected to comply with the quota.

Gender of board member appointed

The dependent variable in our analyses is the gender of appointed board members that is dummy-coded as *woman* (1 = yes, 0 = no). In total, in the time period under review our matched sample included 258 appointments, of which 129 were women and 129 were men board members.

Controls

As done in previous glass cliff studies that focused on subjective measure of firm performance, we controlled for the following variables in the analysis: stock index, market capitalization, size of management/supervisory boards and women's presence on board. The company size and board composition measures were assessed for the calendar year preceding the appointment. We aimed at controlling different aspects of company size (Elsaid & Ursel, 2011, 2018; Haslam et al., 2010; Main & Gregory-Smith, 2018) and included a dichotomous measure of women's presence on board as companies often cease efforts to increase the number of women above a minimum (Dezső et al., 2016).

Results

Descriptives of the German sample are shown in Table 1, and correlations are shown in Table 2. We used this sample to test the hypothesis that country-level gender board quota policy will influence the impact of company performance leading up to women vs. men board appointments. Specifically, we expected that in the absence of gender board quota policy (Stage 1) and in the stage after the onset of its enforcement (Stage 3), the appointment of women to company board is likely to follow a period of decreasing company performance. In contrast, in the period that starts with the announcement of the gender quota and ends with the onset of its enforcement (Stage 2), we do not expect to find this relationship.

To test Hypothesis 1, we conducted an ANCOVA with the performance measure as the dependent variable and the matched samples and stages of gender quotas implantation as factors. As covariates, we included stock index, industry sector, company size, size of management board, size of supervisory board and presence of women board members on the management board. ANCOVA results are summarized in Table 3. Results show a significant interaction effect, $F(2, 246) = 5.90, p = .001, \eta_p^2 = .05$, of gender matched sample and quota implementation stage on company performance. Based on these findings, we calculated the observed power for this interaction effect using G*Power (Faul et al., 2007). Given the sample size ($N = 258$), the actual effect size of $\eta^2 = .05$ and alpha level of .05, the post-hoc power was .92.

To further probe the shape of this interaction, we conducted a simple effects analysis. We found that, for men board members, the relationship between company performance and their appointment was insignificant and, as shown in Table 4, the performance conditions under which they were appointed did not vary among the three stages $F(2, 246) = .39, p = .67, \eta_p^2 = .00$. In contrast, the appointment of women board members had a significant relationship with company performance, which significantly varied among the three stages $F(2, 246) = 7.74, p = .001, \eta_p^2 = .06$. Whereas in the first and third stages, appointment of women board members followed, on average, a trend of declining performance ($M = -.11, SE = .36$ and $M = -.32, SE = .14$, respectively), during the second stage the appointment of women board members followed a trend of increasing performance ($M = .37, SE = .19$). Finally, when directly comparing the conditions leading up to the appointment of men and women board members in each of the stages, we find that in Stages 1 and 3, there were significant differences between men and women board members in terms of the performance leading up to their appointments, Stage 1: $F(1, 246) = 8.65, p = .004, \eta_p^2 = .04$; Stage 3: $F(1, 246) = 10.61,$

TABLE 1 Descriptive statistics across the entire sample and by the three quota policy implementation stages (Study 1).

Variables ^a	Whole sample		Stage 1		Stage 2		Stage 3	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
1. Stock index	2.96	1.06	3.03	1.06	2.93	1.16	3.04	.94
2. Market capitalization	21,711.46	32,414.84	19,854.51	24,542.98	13,891.11	23,328.28	24,493.18	38,528.44
3. Size of management board	5.46	2.32	5.41	1.91	5.20	2.23	5.51	2.36
4. Size of supervisory board	12.84	6.21	14.22	5.62	12.58	7.21	12.94	5.74
5. Women representation on management board	.54	.49	.38	.80	.51	.65	.87	.76
6. Gender matched sample	.50	.50	.50	.50	.50	.50	.50	.50
7. Performance	.83	1.55	−.39	1.81	.38	1.34	−.04	1.82

Note: $n = 258$.

^aCoding was as follows: *Stock index*: 1 = ‘TecDAX’, 2 = ‘SDAX’, 3 = ‘MDAX’, 4 = ‘DAX’; *market capitalization*: in Million Euro; *women representation on management board*: 0 = ‘no’, 1 = ‘yes’; *gender matched sample*: 0 = ‘Man’, 1 = ‘Woman’; *Stage*: 1 = ‘until 2011’, 2 = ‘between 2011 and 2015’, 3 = ‘between 2016 and 2020’.

TABLE 2 Correlations (Study 1).

Variables ^a	1	2	3	4	5	6
1. Stock index	—					
2. Market capitalization	.31**	—				
3. Size of management board	.25**	.65**	—			
4. Size of supervisory board	.44**	.49**	.50**	—		
5. Women representation on management board	.04	.28**	.31**	.16*	—	
6. Gender matched sample	.00	.11	.12	.08	.49**	—
7. Performance	.07	.02	−.12	−.06	−.02	−.07

Note: $n = 258$.

^aCoding was as follows: *Stock index*: 1 = ‘TecDAX’, 2 = ‘SDAX’, 3 = ‘MDAX’, 4 = ‘DAX’; *market capitalization*: in Million Euro; *Women representation on management board*: 0 = ‘no’, 1 = ‘yes’; *gender matched sample*: 0 = ‘Man’, 1 = ‘Woman’.

* $p < .05$; ** $p < .01$.

TABLE 3 Results of ANCOVA, predicting company performance (Study 1).

Variables ^a	<i>F</i> -statistic	df	<i>p</i> -Value	η_p^2
Overall model	32.94	10, 246	.001	.59
Control variables				
Stock index	.59	1, 246	.44	.00
Market capitalization	2.41	1, 246	.12	.01
Size of management board	6.43	1, 246	.01	.02
Size of supervisory board	1.84	1, 246	.17	.01
Women representation on management board	.59	1, 246	.44	.00
Independent variables				
Gender matched sample	9.08	1, 246	.03	.03
Stage	2.50	2, 246	.08	.02
Interaction terms				
Gender \times Stage	5.90	2, 246	.001	.05

Note: $n = 258$.

^aCoding was as follows: *Stock index*: 1 = ‘TecDAX’, 2 = ‘SDAX’, 3 = ‘MDAX’, 4 = ‘DAX’; *Stage*: 1 = ‘until 2011’, 2 = ‘between 2011 and 2015’, 3 = ‘between 2016 and 2020’. *Women representation on board*: 0 = ‘no’, 1 = ‘yes’; *gender matched sample*: 0 = ‘Man’, 1 = ‘Woman’.

TABLE 4 The effect of gender of appointed board member and stage of policy implementation on performance (Study 1).

Stage of policy implementation ^a	Man				Woman			
	Mean	SE	CI – Lower	CI – Upper	Mean	Std. error	CI – Lower	CI – Upper
Stage 1	.40	.37	−.32	1.13	−1.1	.36	−1.8	−.38
Stage 2	.24	.20	−.26	.53	.37	.19	−.01	.77
Stage 3	.33	.12	−.08	.58	−.32	.14	−.60	−.05

^aStage: 1 = ‘until 2011’, 2 = ‘between 2011 and 2015’, 3 = ‘between 2016 and 2020’.

$p = .001$, $\eta_p^2 = .04$. In Stage 2, we found no significant differences, $F(1, 246) = .70$, $p = .40$, $\eta_p^2 = .00$. In sum, the results provide support for the first hypothesis, suggesting that the impact of company performance on appointment of women board members is influenced by the stage of gender quota policy implementation.

STUDY 2: EXPERIMENTAL TEST OF THE SIGNALLING MECHANISM

Method

Participants and design

Participants were 480 individuals who are members of a popular stock trading online forum and who regularly participate in stock trading. We chose to focus on this sample since the purpose of this study was to measure whether different stages of quota policies implementation affect how stakeholders (e.g., investors) perceive the signal carried out through glass cliff appointments about the intention of the firm to change course of action and its commitment to improving financial results. Participants, all experienced in stock trading, were recruited through an advertisement posted on an online stock trading forum and were not financially compensated for their participation. The mean age of participants was 39.38 years ($SD = 14.65$); 55% were men, and 45% were women; and 67.2% had full-time positions, 17.6% were working part-time, and 15.1% were unemployed. Majority of participants were from North America (36.73%) and Western Europe (24.28%), 7.10% were from South American countries, 19.98% were from the Middle East, and 11.91% were from Australia and New Zealand.

Participants received information about a company that was described as experiencing an increase or a decrease in its financial performance, information about a recently appointed board member who was either man or woman, and information about governmental regulation relating to diversity quotas that this company is subjected to. Thus, the study design was a 2 (company performance: increasing vs. decreasing; between-participant factor) by 2 (new board member's gender: woman vs. man; between-participant factor) by 3 (quotas implementation stage: pre-quota announcement, announcement-enforcement deadline stage, post-quota enforcement deadline stage; between-participant factor). Following an a-priori power analysis using G*Power (Faul et al., 2007), a total sample of $N = 420$ is needed to detect a medium three-way interaction effect, $f = .25$ ($\alpha = .05$, power = .95), that is, 35 participants per group.

Materials and procedure

At the start of the study, participants were randomly provided with one of the versions of a fictitious newspaper article about a European-based electronics firm (see also Haslam & Ryan, 2008 for a similar procedure). The article first described the company's financial results over the last 6 months (increasing vs. decreasing). In the increasing results condition, the participants received an article entitled 'From Strength to Strength: L&K Electronics Outstanding Financial Results'. The article described a steady increase in the firm's financial performance and included a graph depicting an increase in the EBIT of the company over the previous 6 months. In contrast, participants assigned to the declining performance conditions were presented with an article entitled 'Going Down: L&K Electronics' Disastrous Financial Results'. The article described a steady and significant drop in the firm's financial performance and was illustrated with reference to a graph showing a dramatic decrease in the company's EBIT over the past 6 months.

The article then included a short description of a newly appointed board member (man vs. woman). The description consisted of the new member's name, age (51), picture and a note about their prior experience as an executive director with 26 years of experience in the electronics industry. The photographs were chosen after pilot testing. Other than gender, the pictures of the newly appointed members were rated similarly in terms of the following dimensions: they were both Caucasian, of equivalent age, attractiveness and perceived competence. The article also stated that, that this recent appointment would 'strengthen the company's ability to respond to the fierce competition and strategic changes in the sector'.

Finally, the last section of the article reviewed the context in which the company operates, including statements about governmental regulations relating to gender diversity on boards (Stage 1: no mentioning of governmental regulation vs. Stage 2: a gender quota was announced in 2021 and will be enforced by 2025 vs. Stage 3: a gender quota was announced in 2018 and was enforced by 2022). Since, typically, firms already meet the required gender quota ahead of the legally binding enforcement date (Isidro & Sobral, 2015; Lending & Vähämaa, 2017; Wang & Kelan, 2013), in our manipulation of Stage 3 we also added a remark that L&K has complied with the quotas regulation in time.

Manipulation checks

We employed checks to assess the effectiveness of our manipulation of board member gender, firm performance and gender quota implementation stage. All but two participants correctly identified the gender of the newly appointed board member. To rule out the possibility that the gender manipulation generated different perceptions of board member's leadership ability, participants rated agreement with three statements (e.g., 'The newly appointed board member has excellent leadership credentials') adapted from Haslam and Ryan (2008). We found no significant differences in perceived leadership ability between the woman and man board members (M Woman = 4.23, M Man = 4.19), $F(1, 477) = 1.82, p = .28$.

Participants also assessed the firm's financial performance. Respondents in the increasing performance conditions rated the firm's financial results as significantly higher than those assigned to the decreasing conditions (M Increasing = 4.70, M Decreasing = 1.10), $F(1, 477) = 34.41, p < .001$.

Finally, participants also accurately identified the gender quota policy implementation stage corresponding to their assigned condition. To rule out the possibility that different implementation stages could impact gender stereotypes, and thus muddy the signals associated with the board appointments, we measured perceived gender stereotypes. Participants evaluated the board members along 12 traits. The traits encompassed six characteristics traditionally associated with masculinity and six with femininity (Eagly & Steffen, 1984; Deaux & Lewis, 1984). The masculine traits included assertiveness, emotional resilience, a high need for power, adventurousness, vigour and forcefulness ($\alpha = .85$). The feminine traits consisted of tactfulness, neatness, gratitude, understanding, talkativeness and courtesy ($\alpha = .67$). No significant differences were found among quota implementation stages for either masculinity or femininity traits.

Dependent variable

Our dependent variable is signal clarity. We hypothesized that the key signal that is carried out by glass cliff appointments is related to the company's intent to change course of action. Participants were therefore asked to complete a measure designed to assess the clarity of this signal. They were required to rate the extent to which the new board member appointment is perceived to signal firm's commitment to changing course and improving financial results. We measured this dependent variable using four adapted items from Jago and Laurin (2019). Participants indicated their agreement with four statements on a scale from 1 ('strongly disagree') to 5 ('strongly agree'): 'L&K is strongly committed to increasing its financial results', 'L&K doesn't really care about improving its financial results' (reverse-scored), 'L&K is committed to changing strategy in order to improve financial performance', and 'L&K will do what it takes to improve its financial performance' ($\alpha = .84$).

Results

Descriptives for this study is found in Table 5. This study was used to test Hypothesis 2, the claim that the signal clarity of appointing women executives following a period of decreasing company will be influenced by the presence of country-level gender quotas policies. Specifically, we expect to find weaker signal clarity in Stage 2 (the period between the announcement of women board quota policy and the onset of its enforcement), compared with Stage 1 (the period prior to the announcement) and Stage 3 (the period following the legal onset of the gender quota policy).

TABLE 5 Means, standard deviations and correlations among variables (Study 2).

Variables ^a	Mean	SD	1	2	3	4	5	6	7
1. Firm performance	—	—	—						
2. Board member gender	—	—	.10*	—					
3. Quota stage	—	—	-.09*	.06	—				
4. Signal clarity	4.06	.69	-.21**	.06	.07	—			
5. Leadership ability	4.19	.71	.09*	.06	-.00	.26**	—		
6. Masculine traits	3.38	.74	.39**	.28**	-.08	-.10*	.21**	—	
7. Feminine traits	3.1	.49	.21**	.09*	-.07	-.05	-.04	.32**	—
8. Respondent gender	.45	.49	.16**	.07	.08	.12**	.31**	.12**	.14**

Note: $n = 480$.

^aCoding was as follows: *Firm Performance*: 1 = Decreasing, 2 = Increasing; *Board member gender*: 0 = Man, 1 = Woman; *Quotas Stage*: 1 = Stage 1, 2 = Stage 2, 3 = Stage 3; *Respondent Gender*: 0 = Man, 1 = Woman.

* $p < .05$; ** $p < .001$.

To test this hypothesis, we conducted an ANOVA analysis with signal clarity as the dependent variable and board members' gender, company performance and quota stage as factors. As a first step, we tested whether the appointment of a woman board member following a period of decreasing firm performance is more likely to be associated with signalling change, compared with such an appointment following a period of increasing performance, or with the appointment of men board members. Our analysis indicates that the interaction between these two factors has significant impact on signal clarity, $F(3, 476) = 9.78, p < .001, \eta_p^2 = .06$. Simple effects tests revealed that the appointment of a woman board member following a period of performance decline ($M = 4.34, SD = .55$) was associated significantly more strongly with signal clarity compared to the appointment of a woman board member following a period of performance increase ($M = 3.93, SD = .68, p < .001$). Further, the appointment of a woman board member following a period of performance decline was also more strongly associated with signal clarity in comparison with the appointments of man board members following increasing ($M = 3.91, SD = .64, p < .001$) as well as decreasing performance ($M = 4.02, SD = .64, p = .01$) (Table 6).

These results indicate that the appointment of a woman board member in a period of declining performance is perceived to signal change. We then examined whether quota stage impacts the effect of board member gender and performance on signal clarity. Our results indicate that the interaction among these three factors has a significant influence, $F(2, 468) = 7.73, p < .001, \eta_p^2 = .03$. These results were not impacted by participants' gender, $F(1, 459) = 3.23, p = .07, \eta_p^2 = .01$. We ran simple effects analysis to further probe this effect. First, we compared the signal clarity associated with the appointment of a woman board member in declining performance across the three stages, $F(2, 468) = 7.33, p < .001, \eta_p^2 = .03$. The participants reported weaker signal clarity following the appointment of a woman board member in a period of decline during Stage 2 ($M = 3.91, SD = .43$) compared with Stage 1 ($M = 4.62, SD = .40, p < .001$) and Stage 3 ($M = 4.47, SD = .58, p = .01$). In contrast, signal clarity did not vary significantly across the three stages following the appointment of a man board member in period of decline, $F(2, 468) = 2.53, p = .24, \eta_p^2 = .01$. To complement these analyses, we also tested whether there were any differences in perceived signal clarity following the appointment of men and women board members at each stage of the quota implementation. We found no significant differences in signal clarity following the appointment of men and women board members in a period of increasing performance (Stage 1: $F(1, 468) = 1.36, p = .24, \eta_p^2 = .00$; Stage 2: $F(1, 468) = .001, p = .97, \eta_p^2 = .00$; Stage 3: $F(1, 468) = 3.48, p = .06, \eta_p^2 = .01$). However, as expected, we found differences in perceived signal clarity under decreasing performance (Stage 1: $F(1, 468) = 17.57, p = .001, \eta_p^2 = .04$; Stage 2: $F(1, 468) = 3.47, p = .06, \eta_p^2 = .00$; Stage 3: $F(1, 468) = 8.01, p = .005, \eta_p^2 = .02$). In sum, our results provide support to Hypothesis 2.

TABLE 6 Results of ANOVA, predicting signal clarity (Study 2).

Variables ^a	F-statistic	df	p-Value	η_p^2
Overall model	5.70	11, 468	.001	.12
Independent variables				
Firm performance	27.81	1, 468	.001	.06
Board member gender	7.74	1, 468	.001	.02
Quota stage	.03	2, 468	.97	.00
Interaction terms				
Gender × Stage	7.38	2, 468	.001	.03
Gender × Firm performance	9.78	1, 468	.001	.06
Firm performance × Stage	1.58	2, 468	.20	.00
Gender × Stage × Firm Performance	7.73	2, 468	.001	.03

Note: n = 480.

^a Coding was as follows: Firm Performance: 1 = Decreasing, 2 = Increasing; Board Member Gender: 0 = Man, 1 = Woman; Quota Stage: 1 = Before Announcement, 2 = After Announcement and Before Enforcement, 3 = After Enforcement.

DISCUSSION

Our objective was to test the impact of country-level gender quota policies on the glass cliff phenomenon. Our findings indicate that the presence of the glass cliff fluctuates over time, depending on the influence of gender quota policies on the signal clarity of appointing women executives following a period of declining company performance. The results of Study 1 reveal that the glass cliff was present during Stages 1 (absence of gender board quota policy) and 3 (post-enforcement of the policy) of policy implementation. Conversely, the association between declining firm performance and women's appointments was not apparent in Stage 2 (period after policy announcement and before legal enforcement). In Study 2, we conducted an experiment to test whether these results could be accounted by the proposed signalling mechanism. Our findings indeed reveal that the signal clarity of appointing women executives following a period of decreasing company performance is influenced by the presence of country-level gender quota policies. Consistent with Study 1, participants informed of glass cliff appointments during Stages 1 and 3 of gender quota implementation were more likely to view them as signals of the company's intent to change course, compared to those in Stage 2.

Our findings contribute to existing literature in several ways. First, we provide evidence for the signalling explanation of the glass cliff. Prior research has mostly paid attention to accounts that focus on gender stereotypes and their association with leadership beliefs, discrimination and differences in career-related decisions between men and women. For example, Ryan et al. (2011) suggested that women leaders are appointed to precarious roles when good people-management skills are needed, while Rink et al. (2012) focused on resource availability in candidates' decisions to accept glass cliff positions, showing that men view a lack of financial (vs. social) resources more negatively than women. These accounts are not mutually exclusive with, but rather fit with the signalling explanation. In particular, the appointment of women to board positions is an effective change signal because of the prevalence of the stereotypes that associate women executives with a unique set of leadership capabilities. However, paying more attention to the signalling rationale of the glass cliff is of theoretical and practical importance.

First, this perspective mandates a broader understanding of the phenomenon that transcends intra-organizational processes related to stereotypes and discrimination. The signalling rationale emphasizes the influence of external stakeholders, including investors, policymakers and the media, in shaping this phenomenon. Our findings add to earlier evidence (Kulich et al., 2015; Reinwald et al., 2022), illustrating that glass cliff appointments serve as signals for firms, occurring only when the signal is distinctly discernible. Additionally, we expand on previous research regarding the signalling rationale of the glass cliff by focusing on the signal clarity of attributing the appointment to a strategic choice of the firm

rather than the need to comply with external policies. This contrasts with the predominant focus in most signalling research on the glass cliff (Kulich et al., 2015; Reinwald et al., 2022) on the quality of the signaller, appointment type and the clarity of attributing past crisis performance to the leader.

Second, the signalling perspective offers a valuable framework for understanding the dynamics of the glass cliff that cannot be fully accounted by the stereotypes view of the glass cliff. For instance, contrary to the stereotype-based view of gender differences in leadership – where more women on boards are expected to reduce the likelihood of glass cliffs – both studies found a resurgence of the glass cliff in the third stage of policy implementation, following its cessation in the second stage. This view received some support from previous research, demonstrating that an increased percentage of women on corporate boards alter gendered leadership expectations and that increased contact between men and women executives weakens the association of masculinity and effective leadership (e.g., van Quaquebeke & Schmerling, 2010). Nevertheless, we found that the glass cliff resumed in Stage 3, despite increase in the representation of women board members. According to the signalling rationale, firms may have strong incentives to use such signals to influence stakeholders, potentially outweighing the process of stereotypes change (Kulich et al., 2015). Alternatively, shifts in gender stereotypes within the organization may not equally affect external stakeholders, like investors, implying that the receivers' motivation also influences the value of the glass cliff signal and may encourage the firm to sustain this phenomenon.

Finally, our findings also hold practical implications. Primarily, while boardroom gender quotas aim to increase women's representation, our research reveals that they also affect the circumstances of women's appointments by obscuring the clarity of such signals. Although gender quota policies can promote gender equality in organizations by influencing the likelihood of appointing men and women leaders under varying circumstances, our study suggests that their positive effects are temporary, fading in the third stage of implementation and allowing the glass cliff phenomenon to resurface. Consequently, policymakers should contemplate strategies to sustain and extend the positive effects of these policies beyond numerical targets. For instance, ensuring firms measure and report the conditions under which men and women senior leaders are appointed could be a means to perpetuate the positive impact of gender quotas. Relatedly, in line with our findings emphasizing the signalling role of the glass cliff, organizations should carefully assess how senior leadership appointments act as important signalling mechanisms. Top executive decisions, often made in nonroutine settings, heighten the risk of compromising the selection process through signalling decisions (Glass & Cook, 2016). Those involved in executive staffing should be aware of the potential glass cliff phenomenon and its signalling implications, empowering them to actively counter the tendency to use women leadership appointments as signals during crises. Companies can address the glass cliff by improving transparency and formalizing senior leader appointments, prioritizing the selection of the most competent candidate over one chosen primarily for signalling purposes.

Limitations and future research

Despite yielding clear patterns of support for our hypotheses, the present studies are not without limitations. First, our focus on gender differences in the appointment of board members overlooks the potential influence of other diversity attributes. The nature, strength and relevance of signals associated with appointing a woman board member may be impacted by the interplay of gender with attributes like ethnicity, race and age, each carrying its own set of stereotypes and associations with leadership capabilities (Hall et al., 2019; Rosette et al., 2016; Thatcher et al., 2023). We concentrated solely on gender due to the focus of the quota policy in our first study, which exclusively considered the representation of men and women on boards. Nevertheless, advancing glass cliff research can involve exploring how the combination of various diversity attributes shapes the underlying mechanism of this phenomenon. Examining how the interplay of attributes affects the perceived signal of senior leadership appointments and the impact of considering multiple attributes on signal clarity can offer valuable insights into the signalling function of this phenomenon.

Another potential limitation of our study relates to the possible constraints on the generalizability of our findings. Specifically, our first study focused on a specific type of gender quota policy, one accompanied by legal sanctions, applicable only to company boards, and relevant to a select number of publicly traded and highly visible firms. The impact of quotas on the likelihood of the glass cliff phenomenon may vary based on factors such as target ambition, voluntariness, severity of sanctions, inclusion of other diversity attributes beyond gender and the national culture related to gender roles and stereotypes. However, the fact that our second study, an experiment that is broadly vague regarding these features, exhibits a similar pattern of results to our German study provides some confidence in the generalizability of our findings. Nonetheless, future research should conduct archival analyses using larger and more diverse samples to achieve a more robust test of our hypotheses.

Finally, in this research we focused on the motivation of firms to signal and the clarity of the signal associated with women board appointments through the lens of signal quality. However, according to signalling theory (Gomulya & Mishina, 2017; Reinwald et al., 2022), the clarity of a signal and a firm's motivation to signal are influenced by the nature of the *signaller*, the quality of the *signal* and the attention of the *receiver*. Thus, a comprehensive account of the signalling approach should also examine how factors related to both signallers and the receivers further shape the impact of quota stages on the glass cliff. For instance, one potential factor related to the nature of the signaller that future research could consider is the firm's visibility. Given that the impact of a signal is moderated by the degree to which it is observable (Higgins & Gulati, 2006), organizations that are more visible by the public will be more likely to be affected by the presence of external policies such as quotas.

CONCLUSION

In our research, we aimed to understand how country-level gender quota policies influence the occurrence of glass cliffs in organizations. Using signalling rationale as our theoretical framework, we conducted two studies: one analysing an archival dataset of board member appointments in German firms across three stages of gender quota implementation and another employing an experimental approach. Our objective was to evaluate how country-level gender quota policies influence the signal clarity of appointing women executives following a period of declining company performance. Our findings reveal that the signal clarity of such appointments is indeed influenced by the presence of country-level gender quota policies and that this influence varies across three distinct implementation stages of the policy. These results offer empirical support for the signalling explanation of the glass cliff phenomenon, highlighting that the value of appointing women to board positions as a symbolic signal of change depends on the extent to which these appointments are attributed to internal organizational considerations rather than external factors. Specifically, the signal clarity of glass cliff appointments is intricately linked to socio-political factors that dictate the degree to which these appointments can be ascribed to intra-organizational considerations rather than external factors.

AUTHOR CONTRIBUTIONS

Meir Shemla: Conceptualization; investigation; funding acquisition; writing – original draft; writing – review and editing; methodology; validation; supervision; data curation. **Anika Ihmels:** Data curation; supervision; writing – original draft; funding acquisition; investigation; conceptualization; methodology; validation; writing – review and editing. **Juergen Wegge:** Data curation; supervision; resources; writing – review and editing; methodology; validation; writing – original draft; funding acquisition; investigation; conceptualization.

CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest to declare.

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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