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# Pay or nudge employees into change? A theoretical and experimental investigation of the effect of nudging for organizational change

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## Abstract

Organizational change often fails due to employees' resistance to change resulting in unforeseen expenses, delays, or other disruptions in organizations. In our experiment, we compare behavioral interventions—a pro-change default rule and a pro-change recommendation—with a costly pay raise to foster supportive behavior. In regard to the pure nudge used (default), we support its effectiveness in enhancing change-related success. In line with our model and based on the assumption of low decision confidence in change settings, we find that a preference nudge (recommendation) lacks a corresponding effect. In addition, we find that a pay raise has a positive effect that is likely to be triggered by positive reciprocity. If this pay raise fails to materialize, we report supporting evidence for negative reciprocity. We compare the effect sizes for these nudges and the pay raise and provide insights for the relative cost-effectiveness of such nudges compared to a pay raise for organizational change. We conclude with managerial implications.

## 1 | INTRODUCTION

Due to dynamic customer preferences and market environments, companies have to adapt their products or services and change the underlying processes and structures consistently (Moran & Brightman, 2000). This is often accompanied by increased cost pressure due to intensified competition and leads companies to restructure their departments, introduce new technologies, or restaff as part of their change strategies (Woodward & Hendry, 2004). Findings on success and failure rates of change projects are mixed (Cândido & Santos, 2015; Gilley et al., 2009; Hughes, 2011). Evidence from management practice indicates a pessimistic view of the relative success of change projects related to predefined time, budget, or quality goals (Jørgensen et al., 2014, 2008). A crucial reason for failed organizational change is the employee's resistance to change (Burnes, 2015; Pardo del Val & Fuentes, 2003). This dispositional resistance causes opposing thoughts, feelings, or behavior against the organizational change and can thus lead to the delay or failure of such projects (Erwin & Garman, 2010; Oreg, 2006; Piderit, 2000), although both employers and employees usually benefit from its success (Oreg et al., 2011; Young, 2009). For organizational change to succeed, the projects have to be supported by a critical mass of employees (Moran & Brightman, 2000). Therefore, while some supporters may still bring a small benefit, only if the critical threshold of support is exceeded, organizational change can be successful (Nadler, 1981; Torchia et al., 2011).

With regard to change management and the need to achieve a critical threshold of support, recent research focuses on the effect of a pay raise for overcoming resistance to change (Krügel & Traub, 2018) and is built on research investigating an increased salary as a deliberate choice made by employers to elicit positive reciprocity (e.g., Akerlof, 1982; Charness, 2004; Charness & Haruvy, 2002;

Gneezy & List, 2006; Maximiano et al., 2007; Rigdon, 2002). However, in view of the increased cost pressure on companies, it seems implausible to assume that employers will motivate their staff with a pay raise so that employees invest time and effort in supporting an organizational change. One might also think about using other methods besides financial benefits, such as training, negotiation, or even coercion, to stimulate behavioral traits that support change (Dent & Goldberg, 1999; Heidenreich & Talke, 2020). These change methods have in common that they are either not based on voluntary efforts or can become costly due to financial expenditures or a high level of resource intensity. Although it seems necessary to investigate more cost-effective options, no previous study investigated the effectiveness of cost-efficient behavioral approaches for inducing organizational change.

We argue that a cost-efficient option for implementing organizational change is to use nudges. Nudges are "any aspect of the choice architecture that alters people's behavior …without forbidding any options or significantly changing their economic incentives" (Thaler & Sunstein, 2008, p. 6). While nudge research has its origins in the political and public health domain (Halpern & Sanders, 2016; Hummel & Maedche, 2019; Szaszi et al., 2018), more recent research and application of nudging has expanded to organizational settings (Ruggeri, 2019; Soman & Yeung, 2020). In a field experiment at a Chinese workplace, for example, Wu and Paluck (2021) show how decal nudges linked to cultural beliefs can be used to reduce floor waste in a factory. A field experiment by Kalil et al. (2021) demonstrated that sending personalized text messages including goal settings, feedback on own behavior, or planning prompts to parents led to increased attendance and reduced chronic absenteeism in preschool programs in the United States. Feng et al. (2020) find that activating a heuristic to consider diverse groups leads to the selection of more diverse job candidates. For nudges in general, the context in which a nudge is used has a large impact on its effectiveness (Hauser et al., 2018). Although the nudge literature is extensive, research lacks insights into the use of nudges in the context of organizational change in randomized experiments to date.

Our study aims to answer whether the positive effect of a pay raise can be reproduced by applying cost-efficient nudges to foster pro-change, supportive behavior by employees. To do so, we simulate a situation of organizational change depending on a critical threshold of support by using an experimental setting building on a framed discrete threshold public good game (e.g., Palfrey & Rosenthal, 1984). This type of game includes the essential characteristics of organizational change (Kotter, 1995; Kotter & Schlesinger, 1979), including but not limited to a threshold for success based on employees' support, uncertainty about future payoffs, and the consequent low decision confidence of employees. In this experimental setting, we investigate the effect of two distinct nudges: (a) a default setting in favor of the organizational change from which subjects can opt-out if they prefer and (b) a recommendation for supportive behavior based on the average monetary outcomes for completely supportive behavior versus completely unsupportive behavior. Furthermore, we test the effectiveness of a pay raise based on the employer's decision. This design allows us to contribute to the existing literature in two ways: (a) We investigate the effectiveness of a pure and preference nudge (Löfgren & Nordblom, 2020), which are easy to implement in a real change management setting for fostering supportive behavior and (b) we are able to compare the nudges' effectiveness with a deliberate salary increase.

We find an effect of a default rule in favor of supporting organizational change. In contrast, our results indicate the lack of such an effect if a recommendation nudge is implemented. This contrast between the pure and the preference nudge is in line with what our model suggested in regard to the decision confidence of the employees. Additionally, we find a positive effect of a higher payment in regard to the employee's willingness to support. In the same way, a relatively lower payment decreases this willingness accordingly. Our results indicate both positive and negative reciprocity shown by employees based on the employer's decision and her underlying intention. Our work contributes to the existing literature both with regard to the pay raise as well as to using nudges to influence the behavior of employees in a change environment. To the best of our knowledge, we are the first to test nudges in an organizational change setting and differentiate between preference and pure nudges within such a change context. Moreover, with our analysis, we are able to compare the willingness of employees to support change under different institutions. Lastly, our work shows how much a nudge is allowed to cost compared to a pay raise.

## 2 | THEORY

We develop a theoretical model to gain insights into the employee's behavior in the context of organizational change.[1] First, we focus only on employee's strategic thoughts about maximizing their individual profit. Second, we will include behavioral features that also drive the decision and allow for nudges.

### 2.1 | General discrete threshold public good game

The basis of the model is a discrete threshold public good game with no refund. In this type of game, a binary public good is provided to all players when a sufficiently large amount of players contribute to the public good in a binary decision. That is, each player faces a decision situation where the player can choose to contribute or not contribute. The public good is discrete; that is, it is either provided, which leads to a fixed additional utility distributed to the players, or is not provided. The players will not be refunded either for contributing more than the threshold or contributing insufficiently for the threshold to be reached (for the basic model, see Palfrey & Rosenthal, 1984; for a continuous threshold public good game, see, for example, Andreoni, 1998; Chamberlin, 1974; McGuire, 1974). We assume that the consumption of the public good is worth more to the players than the costs of

[1] A list of symbols can be found in Appendix B1.

contributing, but since there is an incentive to free-ride, we face a social dilemma.[2] To model the concept of an organizational change, we present the following theoretical approach.[3] To do so, we apply three major deviations compared to the classical discrete threshold public good game. First, if the public good is provided, a share of the players will randomly receive less than when it is not provided. Although a share of players receives less, it is still beneficial for the average player when the public good is provided. Second, in addition to the standard players (mentioned above), the model includes an additional role that profits from the public good, has a different payoff function, and no possibility to contribute. Third, we differ from the classical notation, for example, in that we use "support" and "no support" instead of "contributing" and "not contributing" and "successful organizational change" instead of "provided public good" throughout the following work. The model is presented in the following subsections.

## 2.2 | Profit-orientated model

We consider a firm with one employer $j$ and $n$ employees. The set of employees will be denoted by $N$ and the set of the firm's members by $F = N \cup \{j\}$. The strategy set $S_j$ of the employer $j$ is limited to paying a fixed wage $w$, that is, $S_j = \{w\}$. Therefore, we will disregard the employer's decision in the following analysis. The employer starts an organizational change and the success depends on the level of effort $e_i$ chosen by the employees. Each employee can choose $s_i \in S_i$ between *support* and *no support*, that is, $S_i = \{support, no\ support\}$, $\forall i \in N$, where

$$e_i(s_i) = \begin{cases} E, & \text{if } s_i = support \\ 0, & \text{if } s_i = no\ support \end{cases} \tag{1}$$

is at the same time equal to the costs each employee has to pay with $E \geq 0$. The payment of the employer is directly influenced by the decision of an individual employee in that the employer receives a different amount from the high (low) productivity, that is, $\sigma_h$ ($\sigma_l$) if $s_i = support$ ($s_i = no\ support$) with $\sigma_h \geq \sigma_l$. The number of employees playing *support* (*no support*) is denoted by $n_h$ ($n_l$). Similarly, $n_{h_{-i}}$ ($n_{l_{-i}}$) denotes the number of employees playing *support* (*no support*) excluding employee $i$. This is a sequential game since the employer has to play first followed by all employees playing simultaneously. An organizational change is successful when the overall effort provided by the employees exceeds a certain threshold $\theta$, that is $\sum_{i \in N} e_i \geq \theta$. We define $m = \lceil (\theta / E) \rceil$ as the number of employees who have to play *support* to reach the threshold exactly. For the remainder of the analysis, we assume $0 < m < n$ to exclude the cases where the employees have a dominant strategy. A successful organizational change leads to (a) a share of $\rho \in ]0,1[$ of the employees being laid off and (b) an additional revenue $\Delta R \geq 0$ for the employer who keeps a share of $\lambda \in [0,1]$ and distributes $(1-\lambda)$ of the additional revenue equally among the remaining employees in form of a bonus payment $b$.

We divide the chronology of an organizational change[4] into two parts: the implementation phase and the realization phase.[5] The length of the implementation phase relative to both phases' length is denoted by $\tau$. We make the distinction between the phases to differentiate the wage paid to the laid-off employee from the wage paid to the employees not laid off. At the beginning of the implementation phase, the employees choose whether to support the organizational change or not and work with the corresponding effort during the whole phase. For this work, each employee $i \in N$ receives a wage of $\tau \cdot w$ and pays costs of $e_i$. At the end of the implementation phase and the beginning of the realization phase, it is determined whether the organizational change is successful and takes place. If it is successful, the share $\rho$ of the employees will be laid off and receive no further wage. The others continue working at an effort level of zero[6] and receive an additional wage of $(1-\tau) \cdot w$ and the bonus payment $b$. If it is not successful, all employees will receive the additional wage. Figure 1 illustrates the chronology for the case in which the organizational change is successful.

This leads to the following expected profit function for the employees and the profit function for the employer:

$$E[\pi_i(s_i, s_{-i})] = \begin{cases} (1-\rho) \cdot (w+b) + \rho \cdot \tau \cdot w - e_i(s_i), & \text{if } \sum_{i \in N} e_i(s_i) \geq \theta \\ w - e_i(s_i), & \text{if } \sum_{i \in N} e_i(s_i) < \theta \end{cases}, \quad \forall i \in N, \tag{2}$$

$$\pi_j(n_h) = \begin{cases} R_c + \sigma_h \cdot n_h + \sigma_l \cdot n_l - [(1-\rho) \cdot n \cdot w + \rho \cdot n \cdot \tau \cdot w], & \text{if } n_h \geq m \\ R_0 + \sigma_h \cdot n_h + \sigma_l \cdot n_l - n \cdot w, & \text{if } n_h < m \end{cases} \tag{3}$$

$R_c$ denotes the employer's revenue if the organizational change is successful and $R_0$ if it is not. $R_c, R_0$, and the bonus payment $b$ of the employees are linked to the previously mentioned additional revenue $\Delta R$ of the successful organizational change by the following equations:

$$R_c = R_0 + \lambda \cdot \Delta R, \tag{4}$$

[2] In the literature on social dilemmas, our game could also be described as an $n$-player chicken game or as a fixed stag hunt game (Pacheco et al., 2009; Taylor & Ward, 1982; Ward, 1990).

[3] In doing so, we extend the work presented by Krügel and Traub (2018). They define their game as a "gift exchange game." For our experiment, this is only true for one of our tested institutions and we therefore choose a different approach for our model.

[4] The chronology of an organizational change comprises its planning horizon. It includes the time of investment costs as well as the time when the firm profits from a successful organizational change. One could alternatively model this with future discounted values, but we do not think that this is a realistic approach.

[5] We deviate from Krügel and Traub (2018) regarding the payment of the laid-off employees. They suggest not paying them any wage, although their supportive behavior was used to make the organizational change successful in some circumstances. From our perspective, this causes a reasoning problem, and we, therefore, introduce a more realistic chronology of an organizational change.

[6] The term "effort" refers to the additional effort that is necessary to make an organizational change successful. To continue working at an effort level of zero is exclusively related to the organizational change and says nothing about the work attitude in general. Zero effort can be interpreted as the standard working effort.

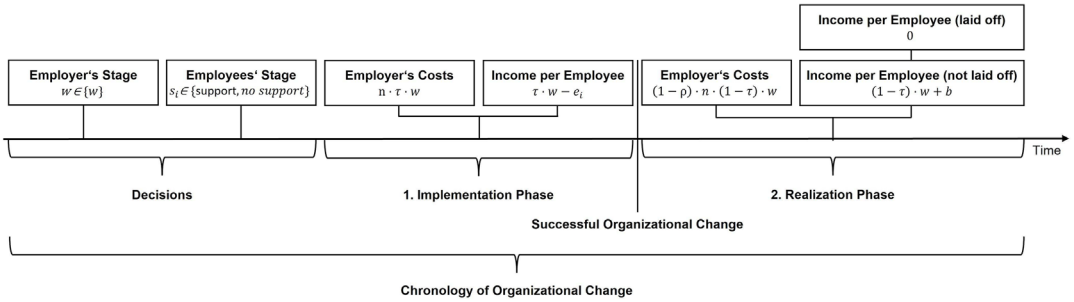


**FIGURE 1** Relevant characteristics of an organizational change for employees' income.

$$b = \frac{1-\lambda}{(1-\rho)\cdot n}\cdot \Delta R \tag{5}$$

An organizational change is always positive for the employer since the labor costs are reduced due to the share of laid-off employees while the revenue at least stays the same.[7] To make an organizational change welfare-enhancing for the employees as well, we assume

$$b \geq (1-\tau)\cdot \frac{\rho}{1-\rho}\cdot w + \frac{E}{1-\rho}, \tag{6}$$

which makes playing *support* potentially rewarding.[8]

This game has two types of Nash equilibria in pure strategies.[9] The first one is the no-coordination equilibrium where all employees play *no support*, that is, $s_i = no\ support, \forall i \in N$. The second one is the coordination equilibrium where the threshold that is necessary for a successful organizational change is reached exactly, that is, $\sum_{i\in N} e_i = \theta$ or $n_h = m$, respectively. There are $\binom{n}{m}$ equilibria of this second type.

## 2.3 | Including behavioral features

The employees' decision in this game is driven by more than just monetary incentives. We follow the literature of, for example, Kahneman and Sugden (2005) and distinguish between expected profit and decision utility.[10] The former is given by (2) while the employee makes the decision based on the latter. In the following, we will derive the decision utility function $V_i : S_i \to \mathbb{R}$ for an employee $i \in N$. To do so, we modify the model of Löfgren and Nordblom (2020) of an inattentive choice[11] by introducing behavioral features that explain employee's choices better and also allow for nudging.

Building on Kahneman and Tversky (1979) and Kahneman et al. (1997), we additionally differentiate between the expected profit and the agent's perception of what a choice will yield: the perceived (expected) profit.[12] The experienced profit differs from the perceived profit if a preference-relevant bias is present. Therefore, the expected profit as described in (2) is the profit that is materialized on average depending on the other employees' decisions, while the perceived profit is what the employee perceives to get on average by choosing a specific option. This difference is modeled by $\eta_{i,s_i}$, which captures preference-relevant biases. These are defined as biases changing the individual-specific perception of the expected profit that a specific option yields without changing the actual expected profit. A simple example is individual risk aversion (see, for example, Farhi & Gabaix, 2020; Gerster & Kramm, 2019; Mullainathan et al., 2012).

Following Löfgren and Nordblom (2020), we differentiate between two sources for decision utility $V_i$ that are weighted by the individual confidence in decision-making in a specific decision domain. We model these weights with the confidence parameter $\phi_i \in [0,1]$. If the decision confidence is very high ($\phi_i = 1$), the decision utility is completely determined by the perceived profit, that is, the expected profit $(E[\pi_i(s_i, n_{h_{-i}})])$[13] and potential preference-relevant biases (modeled as $\eta_{i,s_i}$). The lower the confidence, the more the employee's decision is influenced by the preference-irrelevant biases (modeled as $\mu_{i,s_i}$). This category of biases captures effects that influence the decision by changing the decision utility but not the perceived profit. Examples are the arrangement of products, ordering of options, use of colors in the decision environment, or a default rule. All of these examples do not change the expected profit or the agent's perception

[7] Note that an organizational change would also be positive for an employer if the additional revenue of the successful change would be slightly negative, that is, as long as $\Delta R \geq -\rho \cdot n \cdot (1-\tau)\cdot w/\lambda$ holds.

[8] See Appendix B1 for the derivation.

[9] Note that we do not consider mixed strategy Nash equilibria because they do not exist with the parametrization used in our experiment (Palfrey & Rosenthal, 1984). For more information on this, see Appendix B1.

[10] Note that the original distinction is between experienced utility and decision utility. For reasons of simplification, we assume that experienced utility only comes from profit since other behavioral factors yielding experienced utility, like, for example, altruism or fairness (see, e.g., Fehr & Schmidt, 2003), are not important enough in this experiment. This does not mean that they cannot influence the decision utility. The model also works with any extension of the profit/utility function. Since we want to look at the decision itself, we modify this post-decision concept to the expected profit by allowing for uncertainty.

[11] Note that an attentive choice as defined by Löfgren and Nordblom (2020) is impossible in our game since an employee would have to be able to identify the option yielding the highest outcome before making the decision.

[12] To avoid confusion, we use "perceived profit" as an equivalent for "perceived expected profit."

[13] For more information on the notation of the function's argument, see Appendix B1.

of it (perceived profit), but they still have a potential influence on the individual decision-making.

Therefore, we distinguish between two different categories of behavioral biases that both have an impact on an employee's decision: preference-relevant biases (captured by $\eta_{i,s_i}$) and preference-irrelevant biases (captured by $\mu_{i,s_i}$). A preference-relevant bias changes the perceived profit and thus influences the decision utility. A preference-irrelevant bias influences the decision utility without changing the expected or perceived profit. The relative impact of the preference-relevant and preference-irrelevant biases on the decision utility is moderated by the decision confidence. Following Löfgren and Nordblom (2020), weighting the perceived profit with the confidence and the preference-irrelevant bias with the lack of confidence results in the new behavioral decision utility function[14] for all $i \in N$:

$$V_i(s_i, n_{h_{-i}}) = \phi_i \cdot \{E[\pi_i(s_i, n_{h_{-i}})] + \eta_{i,s_i}\} + (1-\phi_i)\cdot \mu_{i,s_i}, \quad s_i \in \{sup, nosup\} \tag{7}$$

Since the strategy set of the employee only consists of two elements, the decision depends on the difference in utility between both strategies. According to (2) and (7), we define the difference function[15] $\Delta V_i(n_{h_{-i}}) := V_i(sup, n_{h_{-i}}) - V_i(nosup, n_{h_{-i}})$ as:

$$\begin{aligned}\Delta V_i(n_{h_{-i}}) &= \phi_i \cdot \Bigg\{ \underbrace{E\left[\pi_i\left(sup, n_{h_{-i}}\right)\right] - E\left[\pi_i\left(nosup, n_{h_{-i}}\right)\right]}_{\Delta E\left[\pi_i\left(n_{h_{-i}}\right)\right]} \\ &\quad + \underbrace{\eta_{i,sup} - \eta_{i,nosup}}_{\Delta\eta_i} \Bigg\} + (1-\phi_i)\cdot \left( \underbrace{\mu_{i,sup} - \mu_{i,nosup}}_{\Delta\mu_i} \right) \\ &= \phi_i \cdot \Delta\eta_i + (1-\phi_i)\cdot\Delta\mu_i + \phi_i \cdot \\ &\quad \begin{cases} (1-\rho)\cdot b - (1-\tau)\cdot\rho\cdot w - E, & \text{if } n_{h_{-i}} = m-1 \\ -E, & \text{if } n_{h_{-i}} \neq m-1 \end{cases}\end{aligned} \tag{8}$$

Including preference-relevant and preference-irrelevant biases opens up the possibility of dominant strategies for specific employees and, in turn, also allows for new types of Nash equilibria. An employee without a dominant strategy would have to anticipate the other employees' behavior by forming a reliable belief about their biases. The participants of our experiment do not know each other at all, which is why we do not believe that a Nash equilibrium can successfully be played in this situation in general. However, as the analysis of equilibria is not the subject of this paper, we focus on the effect of nudging in the following. Independent of how exactly the employees build beliefs about each others' behavior, the decision of an employee depends on the sign of the difference function in (8), that is, if $\Delta V_i(n_{h_{-i}}) \geq 0$, employee $i$ will play *support* and vice versa.

[14]We use *sup* and *nosup* as abbreviations for *support* and *no support*.

[15]See Appendix B1 for the derivation.

## 2.4 | Influence of nudges on decisions

We now define two types of nudges that can influence the employee's choice. The first type, the pure nudge, influences $\mu_{i,s_i}$ (or $\Delta\mu_i$, respectively), which can be the implementation of a default option. In general, a nudge is defined as something that influences an individual's behavior without changing the incentives. For our model, we interpret this in such a way that a nudge effects $V_i$ but not the expected profit $E[\pi_i(s_i, n_{h_{-i}})]$ of an employee. Therefore, we define the second type of nudge, the preference nudge, as something that influences the perceived profit but not the expected profit, that is, as something that changes $\eta_{i,s_i}$ (or $\Delta\eta_i$, respectively).[16] An example of a preference nudge is a recommendation.

## 2.5 | Extension to a model with a deliberate wage choice

Our study aims to answer whether implementing nudges can reproduce the potential effect of a pay raise to increase the chance of observing supportive behavior in employees. To do so, in addition to the investigation of the potential effectiveness of a pure and a preference nudge, we take a look at the effect on employee's behavior when we give the employer the choice of a potential pay raise. For this, we extend the employer's strategy set such that the employer can choose between a low wage $w_l$ and a high wage $w_h$, that is, $S_j = \{w_l, w_h\}$. The employees learn about the employer's decision prior to their own choice. This is defined as a gift exchange game in the literature (e.g., Charness & Haruvy, 2002; Rabin, 1993).[17] In our model, we focus on two effects of this extension.[18] The first effect comes directly from the higher or lower wage. This influences the expected profit $E[\pi_i(s_i, n_{h_{-i}}, s_j)]$ according to (2). The second effect is defined as reciprocity that can be distinguished into positive and negative reciprocity. Positive reciprocity means that selfless behavior will be rewarded with selfless behavior. Analogously, selfish behavior will be punished. We follow the idea of Krügel and Traub (2018) and model reciprocity in a change context by adding additional (experienced) utility to the expected profit function. We denote the effect of positive (negative) reciprocity by $R_{i_h} \geq 0$ ($R_{i_l} \geq 0$). These will be passed onto to the employees if they react with playing *support* (*no support*) to $s_j = w_h$ ($s_j = w_l$).[19] We assume that the employee's perception of

[16]Note that we assume that a nudge is subtle and does therefore not influence an employee's belief about the other employees' behavior. We know that this is quite restrictive, but the crucial factor here is that the effect on the belief can be neglected concerning the effect on $\eta_{i,s_i}$.

[17]For work considering a labor market framing, see, for example, Charness (2004), Fehr et al. (1998), Gneezy and List (2006), Krügel and Traub (2018), Maximiano et al. (2007), and Rigdon (2002).

[18]There might be more behavioral channels. For example, a potential third effect is the general wealth effect of an increased salary, which, in turn, might increase a person's willingness to take risks (Kahneman & Tversky, 1979). However, due to a relatively low amount of payoff between the high and the low wage—given the person's overall wealth—we argue that the wealth effect is not relevant here.

[19]Note that $w_l$ equals the baseline wage, $w$, and so the potential effect of the employer choosing $w_l$ has to come from negative reciprocity.

the reciprocity equals the experienced value making $\eta_{i,s_j}$ unchanged by the modification. This results in the following expected experienced utility function that replaces (2) if the deliberate choice is available to the employer:

$$E[u_i(sup, n_{h_{-i}}, s_j)] = \begin{cases} E[\pi_i(sup, n_{h_{-i}}, w_h)] + R_{i_h}, & \text{if } s_j = w_h \\ E[\pi_i(sup, n_{h_{-i}}, w_l)], & \text{if } s_j = w_l \end{cases}, \quad (9)$$

$$E[u_i(nosup, n_{h_{-i}}, s_j)] = \begin{cases} E[\pi_i(nosup, n_{h_{-i}}, w_h)], & \text{if } s_j = w_h \\ E[\pi_i(nosup, n_{h_{-i}}, w_l)] + R_{i_l}, & \text{if } s_j = w_l \end{cases} \quad (10)$$

## 3 | HYPOTHESES DEVELOPMENT

### 3.1 | Default nudge

In this section, we develop four hypotheses that we test in our experiment. With regard to nudging, we first focus on pure nudges. One example is a default rule for change support. Existing research essentially points to three effects of defaults. First, the choice of a default minimizes mental or physical effort for the individual. Second, there is a kind of implied agreement with the pre-selection of the choice architect and its inherent preferences. Third, the default creates a reference point, the status quo, from which any deviation can create a sense of loss, which decision-makers are generally averse to (Dinner et al., 2011; Jachimowicz et al., 2019; Johnson et al., 2012; McKenzie et al., 2006). When considering the effect of defaults in organizational research, Venema et al. (2018) show in a longitudinal field study that defaults in an organization's transition to different work practices, that is, reducing sedentary behaviors by switching height adjustable desks from sitting to standing height, help to create sustainable behavior change. Thaler and Benartzi (2004), for instance, find that automatic enrollment in a retirement savings program raises employee savings. We argue that a default in an organizational context (e.g., being in a training program by default) cannot be as subtle as, for example, an opt-out option on a marketing newsletter. It would be unrealistic to assume that organizational changes can be implemented unobtrusively with employees. Therefore, the change must have some level of transparency because individuals are still making an autonomous decision to support or oppose organizational change. Although often the effect of a subtle nudge can be more effective than that of a more obvious nudge (Beshears & Kosowsky, 2020), various studies have shown that transparency in a default nudge does not diminish its effectiveness (Bruns et al., 2018; Loewenstein et al., 2015; Steffel et al., 2016). As our view of an organizational change implies a version of the public good game, it is interesting to consider what Fosgaard and Piovesan (2015) find in their experimental work. They show that a mental state manipulated toward cooperation (the default state) can be used to nudge people's decision-making so that they become more cooperative in a standard public good game. Building on the findings on defaults research, we involve individuals by default in a pro-change decision to achieve the critical threshold, as we assume that the default serves as a point of reference during an organizational change with an uncertain outcome. In so doing, in the upcoming organizational change individuals can decide against change support at any time and at their own discretion without additional costs or disadvantages. Regarding our model, we increase $\mu_{i,\text{sup}}$ to $\mu'_{i,\text{sup}}$ in (7) compared to the situation without default option. This means $\Delta V_i(n_{h_{-i}})'$ in (8) is more likely to be positive because $\Delta V_i(n_{h_{-i}})' - \Delta V_i(n_{h_{-i}}) = (1-\phi_i)\cdot(\mu'_{i,sup} - \mu_{i,sup}) \geq 0$.[20] The assumed effect is covered in Hypothesis 1:

> **Hypothesis 1.** Supportive behavior for organizational change is higher when a default nudge is in place compared to an institution in which this nudge is not being implemented.

### 3.2 | Recommendation nudge

In addition to a pure nudge, we test a preference nudge, that is, a recommendation that can in general be classified as a descriptive and/or evaluative label, which has also proven to be a nudge with effective guidance (Cadario & Chandon, 2020). Descriptive labels provide additional information that would otherwise have to be self-obtained; evaluative labels help to interpret information by means of additional symbols or notes. The former is a feature of a preference nudge while the latter is attributed to a pure nudge. For our experiment, we choose a descriptive label and thus, refer to the recommendation as a preference nudge. Comparable literature has, for instance, shown positive effects for highlighting positive product features (e.g., Newell & Siikamäki, 2014), emphasizing losses against gains in enrollment programs (e.g., Keller et al., 2011), information disclosure when lending money (Bertrand & Morse, 2011), or—limited to evaluative labeling—fostering cooperation in a standard public good game (Barron & Nurminen, 2020). By using the recommendation, we increase $\eta_{i,sup}$ to $\eta''_{i,sup}$ in (7), resulting in a higher utility for choosing *support* compared to the situation without a nudge. As with the default nudge, this increases the likelihood of $\Delta V_i(n_{h_{-i}})''$ being positive because $\Delta V_i(n_{h_{-i}})'' - \Delta V_i(n_{h_{-i}}) = \phi_i \cdot (\eta''_{i,sup} - \eta_{i,sup}) \geq 0$.[21] We therefore assume in Hypothesis 2:

> **Hypothesis 2.** Supportive behavior for organizational change is higher when a recommendation nudge is in place compared to an institution in which this nudge is not being implemented.

[20] For an individual employee to change the choice from *no support* to *support*, the effect of the default nudge $(\mu'_{i,sup} - \mu_{i,sup})$ has to be greater than $|\phi_i/(1-\phi_i)\cdot(\Delta E[\pi_i(n_{h_{-i}})] + \Delta\eta_i) + \Delta\mu_i|$.

[21] For an individual employee to change the choice from *no support* to *support*, the effect of the recommendation nudge $(\eta''_{i,sup} - \eta_{i,sup})$ has to be greater than $|\Delta E[\pi_i(n_{h_{-i}})] + \Delta\eta_i + (1-\phi_i)/\phi_i \cdot \Delta\mu_i|$.

### 3.3 | Deliberate wage choice

Our study aims to answer whether the potential effect of a pay raise can be reproduced by using nudges to increase the chance of observing supportive behavior in employees. To do so, in addition to the investigation of the potential effectiveness of a pro-change default rule and a pro-change recommendation, we take a look at the effect on employee's behavior when we give the employer the choice of a potential pay raise. We assume that when the employer makes a deliberate choice to pay a higher or lower compensation for the work at hand, a higher wage fosters more supportive behavior as a result of eliciting positive reciprocity (e.g., Akerlof, 1982; Charness, 2004; Gneezy & List, 2006). However, there might also be a drawback from such a choice. Ockenfels et al. (2015) point out that falling behind a reference point that is perceived as the fair payment is likely to reduce the performance. This finding is in line with experimental results in regard to reference points and potential negative reciprocity based on these points (e.g., Brandts & Solà, 2001). Pereira et al. (2006) and Engelmann and Ortmann (2009) find corresponding results in modified gift-exchange games, showing that negative reciprocity is not only easy to trigger, but also a relevant force in such interactions. We consider this effect to be based on the underlying intention rather than the payoff consequences following Gächter and Thöni (2010) and their experimental work regarding the fair-wage hypothesis. Therefore, given this deliberate choice by the employer, a lower wage may also elicit negative reciprocity compared to a situation without a choice and the low wage being the only option. In total, the employees' response may depend on the respective wage provided by the employer, regardless of the actual value, but in comparison to the alternative option. In regard to our model, an employee experiences reciprocity independent of the other employees' choices. From (9) and (10) follows that

$$\Delta V_i(n_{h_{-i}}, s_j) = \phi_i \cdot \Delta\eta_i + (1-\phi_i)\cdot\Delta\mu_i + \phi_i \cdot \begin{cases} \Delta E[\pi_i(n_{h_{-i}}, w_h)] + R_{i_h}, & \text{if } s_j = w_h \\ \Delta E[\pi_i(n_{h_{-i}}, w_l)] - R_{i_l}, & \text{if } s_j = w_l \end{cases} \tag{11}$$

To measure the effect of allowing the employer to make a deliberate choice on the supportive behavior of the employees, we compare this function with (8). Recalling that it is $w_l = w$ in our experiment, it follows:

$$\Delta V_i(n_{h_{-i}}, s_j) - \Delta V_i(n_{h_{-i}}) = \phi_i \cdot \begin{cases} (1-\tau)\cdot\rho\cdot(w - w_h) + R_{i_h}, & \text{if } (s_j = w_h) \wedge (n_{h_{-i}} = m-1) \\ R_{i_h}, & \text{if } (s_j = w_h) \wedge (n_{h_{-i}} \neq m-1) \\ -R_{i_l}, & \text{if } s_j = w_l \end{cases} \tag{12}$$

A *high wage* definitely has a positive effect if and only if $R_{i_h} \geq (1-\tau)\cdot\rho\cdot(w_h - w)$, but depending on how an employee forms the belief about the other employees' decisions, this threshold could be even lower. In line with what Krügel and Traub (2018) find in their experiment, we assume that this condition holds for a representative employee such that a *high wage* has a positive effect on supportive behavior. A *low wage* has a negative effect on the supportive behavior as the reference point is higher compared to the setting where no deliberate choice and the same low-level compensation is implemented. Hypothesis 3a and Hypothesis 3b capture these points and aim to provide new insights into how a deliberate wage choice affects the willingness of employees to support an organizational change.

> **Hypothesis 3a.** Supportive behavior for change is higher when the employer decides to offer a higher wage compared to an institution with no deliberate choice by the employer.

> **Hypothesis 3b.** Supportive behavior for change is lower when the employer decides to offer a lower wage compared to an institution with no deliberate choice by the employer.

### 3.4 | Comparing pure and preference nudges

We further argue that employees experience a feeling of uncertainty in change-related projects due to complexity, interdependencies, and other factors (Schweiger & Denisi, 1991). This implies that in change-related decisions, people might have low levels of confidence in their own decision (Ellen et al., 1991; Seltzer, 1983). Therefore, we expect the confidence $\phi_i$ in (7) to be low, resulting in a stronger impact of the preference-irrelevant biases.[22] Based on this consequence, Hypothesis 4 argues for a higher effect of a pure nudge, for example, a default rule, compared to a preference nudge, for example, a recommendation.[23]

> **Hypothesis 4.** The effect of a pure nudge is higher compared to a preference nudge in an organizational change context with a low decision confidence.

## 4 | EXPERIMENTAL DESIGN AND PROCEDURE

To test our hypotheses of a pro-change default, a pro-change recommendation, and a deliberate wage choice and their effect on organizational change/supportive behavior in organizations, we utilize a

[22] The effect of the preference nudge on the decision utility decreases in a lower confidence while the effect of a pure nudge increases, that is, $\partial(\phi_i \cdot (\eta'_{i,sup} - \eta_{i,sup}))/\partial(-\phi_i) \leq 0$ and $\partial((1-\phi_i)\cdot(\mu''_{i,sup} - \mu_{i,sup}))/\partial(-\phi_i) \geq 0$.

[23] In particular, the effect of the pure nudge is higher if $(\mu'_i - \mu_i) \geq \phi_i/(1-\phi_i)\cdot(\eta''_i - \eta_i)$. Because of the low $\phi_i$, we expect this inequation to hold. As with the comparison of the two nudges, we could compare one nudge with a pay raise. A pure nudge would have a larger effect than a larger wage if $(\mu'_i - \mu_i) \geq \phi_i/(1-\phi_i)\cdot R_{i_h}$. A preference nudge would have a larger effect than a higher wage if $(\eta''_i - \eta_i) \geq R_{i_h}$. Depending on how an employee builds the belief about the other employees' decisions, the threshold for the nudges being more effective could be even lower. Since we cannot say anything about the values of $\mu'_i$ and $\eta''_i$ relative to $R_{i_h}$, we will not set up a hypothesis.

change-framed, modified discrete threshold public good game. In our experiment,[24] we follow Maximiano et al. (2007) by introducing groups of six participants modeling organizational units as multi-worker firms with an employer and five employees ($n = 5$) each. With this experimental setup, we implement the situation of an organizational change with all relevant characteristics, as discussed above. One of the six participants is randomly chosen to be the employer, and five are employees. The roles (employer/employee) remain the same over the course of 20 repetitions. Between periods, group compositions are randomly re-arranged using a random re-matching protocol. Participants are informed about their payoff and the decisions of other participants in their group after each period. Before the experiment starts, all participants are informed about the group size, their individual roles, the payoffs of both roles, the matching protocol, and the feedback procedure. The aforementioned organizational change is based on the supportive behavior of employees. In addition to the labor market framing, we use a frame in which we describe change in general, organizational change, and support of change to enhance participants' immersion in the context of organizational change. We test four distinct institutions, which are explained in the following subsections: BASELINE, DEFAULT, RECOMMENDATION, and CHOICE.

## 4.1 | General design

### 4.1.1 | Employee payoff

We start by describing the BASELINE institution. For the calculation of payoffs in our experiment, we assume that each period is divided into two parts of equal size ($\tau = 0.5$, see Figure 1 for more details of the implementation and realization phase). Each of the 20 periods starts with the employer accepting the fixed wage $w = 60$ first. Thus, a wage of $w/2 = 30$ is paid in each of the two parts. This is only relevant for the calculation and corresponding payoffs. Second, the employees are informed about $w$. Third, each employee anonymously and simultaneously selects whether to support the organizational change or not, resulting in the level of additional work effort $e_i \in \{0,20\}$.[25] Fourth, the organizational change takes place and is decided on by a simple majority "vote," that is, at least $m = 3$ out of 5 employees have to choose to support the organizational change ($\theta = 60$). Fifth, if the organizational change was successful, one of the five employees is laid off randomly ($\rho = 0.2$). The laid-off employee receives half of the wage reduced by the decision-depending effort.[26] The other employees receive their wages minus decision-depending effort plus the bonus payment $b = 50$. This bonus payment is utilized to include an efficiency enhancement of the organizational change and lets employees benefit from it.[27] This financial benefit might also be interpreted as long-term job security. If the organizational change is not successful, no employee is laid off, and all employees receive their wage minus decision-depending effort. Table 1 gives an overview of the payoffs for an employee based on his support decision and the outcome of the organizational change.

### 4.1.2 | Employer payoff

The employer's payoff depends on the success of the organizational change and the number of employees who support the organizational change. We set the revenue in the case of an unsuccessful organizational change to $R_0 = 85$ and the additional revenue in the case of a successful organizational change to $\Delta R = 265$.[28] In the case of a successful organizational change, the employer receives a share of $\lambda \approx 0.25$ of the additional revenue, and the remainder is equally distributed among the four remaining employees ($b = 50$).[29] The high productivity resulting from an employee playing *support* is given by $\sigma_h = 15$ and the low productivity by $\sigma_l = 5$. The following formula is based on (3), and the corresponding parameters are inserted. Therefore, this formula describes the employer's payoff[30] in the BASELINE institution:

$$\pi_j(n_h) = \begin{cases} 107.5 + 10 \cdot n_h, & \text{if } n_h \geq 3 \\ 35 + 10 \cdot n_h, & \text{if } n_h < 3 \end{cases} \tag{13}$$

All relevant parameters are common knowledge for the participants. After each period, participants are informed about the realization of the organizational change, the potential lay-off, and their individual points. Five of 20 periods are randomly chosen to be payoff-relevant for each participant; this is also common knowledge among all participants.[31] We use a conversion rate of 30 points to 1.00 £ (approx. US$ 1.10 at the time of the data collection).

[24] The translated instructions are presented in Appendix B1 and relevant screenshots in Appendix B1.

[25] As stated before, the effort depending on the decision represents the employee's additional effort for coping with the change-induced workload. Therefore, it is only relevant for the implementation phase and is completely "paid" by the employee in the first part.

[26] This employee receives his wage only for the first part of the period, $w/2 = 30$ due to $\tau = 0.5$. Note that the lay-off is designed as a random chance and therefore abstractly simulates the feeling of many employees when facing an organizational change.

[27] Note that the welfare-enhancing condition (6) is fulfilled:
$b = 50 \geq 32.5 = 0.5 \cdot 0.2/0.8 \cdot 60 + 20/0.8 = (1-\tau) \cdot \rho/(1-\rho) \cdot w + E/(1-\rho)$.

[28] As with employees' effort $e_i(s_i)$ in regard to supporting or not supporting the organizational change, the revenues only capture the relevant part in regard to the organizational change. In addition to this, the firm might generate revenues that are not modeled here.

[29] Note that an exact value of $\lambda = 25\%$ would result in odd payoffs for the participants. Therefore we calculated $R_c$ and $b$ with $\lambda = 25\%$, rounded the two outcomes (to $R_c = 150$ and $b = 50$), and recalculated $\lambda$ based on the rounded outcomes. Therefore, $\lambda \approx 0.25$.

[30] Please note that for the employer's payoff, the wage payments are divided by four to ensure approximately equal payoff opportunities for employers and employees. This does not change the fundamentals of the presented theory, for example, the organizational change is still welfare-enhancing for the employer. It might lead to a different $\eta_i$ for the employees, but since the preference biases are not specifically defined, this does not change the model. Appendix B1 shows the derivation of (13) from (3). One also finds a graphical representation of the different possible payoffs in the instructions in Appendix B1.

[31] This random incentive system uses a within-subject randomization (for a discussion, see, for example, Baltussen et al., 2012). The smaller the number of paid periods, the more a single period tends to be unimportant. The larger the number of paid periods, the more a participant can estimate the payoff of past periods. Both can lead to biases in participants' behavior. There is no optimal solution to the question of how many periods should be paid in the literature. We decided to pay five.

**TABLE 1** Earnings of employees in BASELINE.

| At a wage of **60 points** … | …the payment for *no support* is … | …the payment for *support* is … |
|---|---|---|
| **Successful change** and **not** dismissed (4 of 5 employees) | 110 points | 90 points |
| **Successful change** and dismissed (1 in 5 employees) | 30 points | 10 points |
| **Unsuccessful change** (5 of 5 employees) | 60 points | 40 points |

## 4.2 | Nudge institutions design

In the DEFAULT institution, we investigate the effect of a pro-change default rule, which is one example of a pure nudge. This is implemented by using a pre-selection of "supportive behavior" on the employees' decision screen. In addition, participants are informed about this pre-selection in the instructions. In the RECOMMENDATION institution, we investigate the effect of pro-change recommendation nudge, which is a type of preference nudging. We descriptively inform subjects about the average payoff when all employees support the change compared to the payoff when all employees decide not to support the change.[32] In both institutions involving a nudge, all other features are exactly as in the BASELINE institution.

## 4.3 | Choice institution design

In the CHOICE institution, the employer makes a deliberate choice between two wage levels. In particular, the employer starts the round by choosing a wage $w \in \{60,80\}$ that is either low or high. The low wage in the CHOICE institution is equal to the fixed wage level in the BASELINE institution. Therefore, a high wage increases the payoff of all employees by 20 points if the organizational change is not successful or it increases the payoff of the laid off employee by 10 points and for the remaining employees by 20 points if the organizational change is successful. In contrast, if the employer chooses the low wage, there is no difference in regard to the employee's payoffs compared to the BASELINE institution.[33] For the employer, the high wage comes with increased costs. Therefore, the payoff for the same level of supportive employees is decreased compared to what is formalized in (13) (see (3) or Appendix B1 for more details). The corresponding payoffs of the employer based on his wage decision and the employees' support decisions are represented in the following formula:[34]

$$\pi_j(s_j, n_h) = \begin{cases} 107.5 + 10 \cdot n_h, & \text{if } s_j = 60 \wedge n_h \geq 3 \\ 35 + 10 \cdot n_h, & \text{if } s_j = 60 \wedge n_h < 3 \\ 85 + 10 \cdot n_h, & \text{if } s_j = 80 \wedge n_h \geq 3 \\ 10 + 10 \cdot n_h, & \text{if } s_j = 80 \wedge n_h < 3 \end{cases} \quad (14)$$

[32]In addition to this descriptive label—for a better participants' understanding of the experiment—we also add the evaluative label "recommended" for supportive behavior on the decision screen. We argue that, since the evaluative label is subtle compared to the descriptive label, its effect is negligible.

[33]For a formal representation, see also (2).

[34]You will also find a graphical representation of the different possible payoffs in the instructions in Appendix B1.

**TABLE 2** Institutions and key features.

| Institution | Key features |
|---|---|
| BASELINE | — |
| DEFAULT | Pre-selection of supportive behavior |
| RECOMMENDATION | Recommendation for showing supportive behavior |
| CHOICE | Deliberate choice by employer between two wage levels $w \in \{w_l, w_h\}$ |

Table 2 presents the institutions and their key features. We understand each institution as a distinct work environment.

## 4.4 | Additional controls

In addition to the above described main experiment, we also use pre-experimental and post-experimental control measures. Similar to Krügel and Traub (2018), we use the Equality Equivalence Test (Kerschbamer, 2015) to elicit the subjects' inequality preferences prior to the main experiment. After the main experiment, we elicit the subjects' risk attitudes by using the multiple price list compiled by Holt and Laury (2002) in its simplified version by Balafoutas et al. (2012). Both of these measures are payoff relevant. Participants are informed about the outcomes at the end of the session. We also use the following non-incentivized questionnaires as additional controls: the dispositional resistance to change scale (Oreg, 2003; Oreg et al., 2008), positive and negative reciprocity scale (Dohmen et al., 2008; 2009), general risk aversion scale (Dohmen et al., 2011; Richter et al., 2017), and a set of sociodemographic questions.

## 4.5 | Participants and setting

The experiment was conducted at a laboratory in Germany. Eight sessions with 192 participants (55% female) took place. All participants were undergraduate or graduate students with different majors (40% Economics, 11% Humanities, 10% Sciences, 39% Mixed others). The average participant was 26 years old. For recruitment, ORSEE (Greiner, 2015) was used. Participants earned an average payoff of 13.44 £. The minimum payoff was 7.70 £, while the maximum was 25.00 £. The sessions lasted about 75 to 90 min. The experiment was computerized using z-Tree (Fischbacher, 2007).

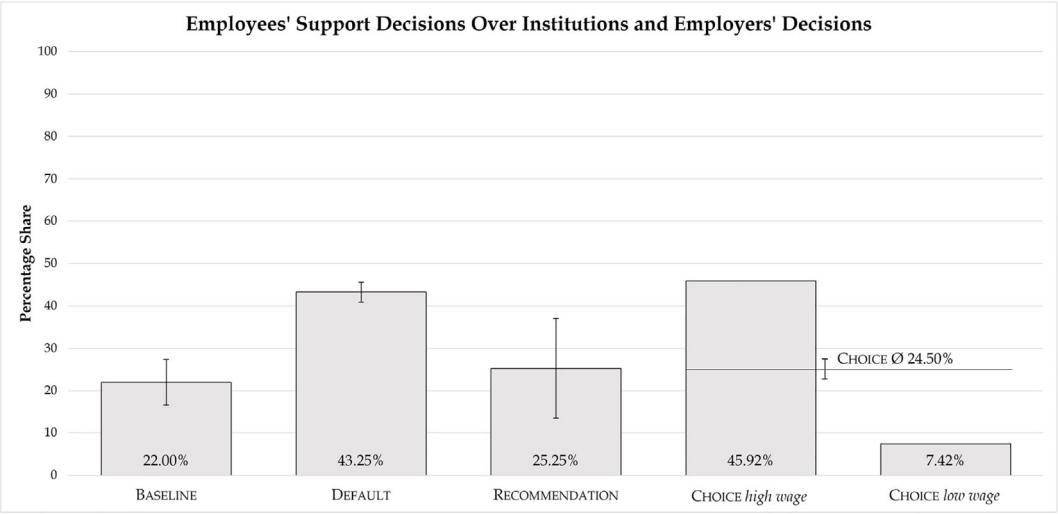


**FIGURE 2** Percentage share of employees' supportive behavior *Note*: Error bars represent the standard error of mean based on the four matching groups within each institution.

## 5 | RESULTS

We test four distinct institutions in regard to the employee's willingness to support the organizational change: BASELINE, DEFAULT, RECOMMENDATION, and CHOICE. BASELINE has no additional features other than the support-depending organizational change. We test two different types of nudges: a pure nudge, that is, pro-change DEFAULT, and a preference nudge, that is, pro-change RECOMMENDATION. In CHOICE, we are testing for the potential effect of a pay raise and, in addition, for the potential negative effect of a lack of this pay raise. We find a varying rate of support between these institutions. Figure 2 shows the rate of costly supportive behavior of employees. In the BASELINE institution, 22.00% of employee's decisions are in favor of supporting the organizational change implying a costly investment in support.[35]

### 5.1 | Impact of the default rule

First, we investigate the effectiveness of a pro-change DEFAULT rule. Under this pure nudge, the support rate rises to 43.25% and is higher than under any other institution. It is statistically significantly different from BASELINE (exact Mann-Whitney test: $p = .029$) and CHOICE (exact Mann-Whitney test: $p = .029$), but not from RECOMMENDATION (exact Mann-Whitney test: $p = .343$). In addition, we find a significant difference between DEFAULT and BASELINE in all models of our parametric analysis presented in Table 3. Following-up with additional Wald tests, we find a significant difference between DEFAULT and RECOMMENDATION (Model 1 Wald test: $p = .004$) as well as CHOICE *low wage* (Model 1 Wald test: $p < .001$). However, there is no evidence for a significant difference between the pure nudge (DEFAULT) and a *high wage* case in the CHOICE institution (Model 1 Wald test: $p = .853$). Overall, we find evidence that a pro-change DEFAULT rule is indeed effective in fostering supportive behavior. Therefore, Hypothesis 1 is supported. This result extends previous findings on effective default rules in a standard public good game (Fosgaard & Piovesan, 2015) and in other domains (for vaccination, see Chapman et al., 2010; for financial products, see Brune et al., 2017; for consumer choice, see Steffel et al., 2016). Moreover, our result makes previous findings more credible in terms of their validity in a change management situation.

> **Result 1.** A pro-change default fosters support for organizational change.

### 5.2 | Impact of the recommendation

Second, we take a look at the preference nudge. With the RECOMMENDATION in place, the support rate is 25.25%. We find no evidence of the support rate under the RECOMMENDATION differing from BASELINE in our non-parametric analysis (exact Mann-Whitney test: $p = .886$) or any model of our parametric analysis. As stated before, we find no significant difference between RECOMMENDATION and DEFAULT in our non-parametric analysis, but we do find a statistically significant difference using the parametric analysis (Model 1 Wald test: $p = .004$). Overall, we find no support for the effectiveness of this preference nudge for change-management-related applications. Therefore, Hypothesis 2 is not supported. This result is in contrast to a previous

[35]For our non-parametric analysis, we use the average support rate of a matching group (12 participants with random re-matching in groups of six and fixed roles) over all 20 periods. This leads to a total number of observations for this analysis of 16. Therefore, we conduct the exact Mann-Whitney test (Harris & Hardin, 2013). All of our results are also supported when using the standard Mann-Whitney test. For our parametric analysis, we use the employee's individual decision to support or not support the organizational change in each period. Therefore, the total number of observations for this analysis is 3200. Table 3 shows the results using random effects logistic regressions. We use the interaction between the institution CHOICE and its wage level to test for CHOICE *low wage* and CHOICE *high wage* separately. Appendix B1 presents the same results without this interaction. To check for further robustness, we also performed mixed effects logistic regression for all estimations presented. All findings presented here are supported. In Models 4 and 8, the constant turns out to be insignificant. To check for further robustness, we estimated these models without the constant. All results hold.

**TABLE 3** Employee's supportive behavior.

| | (1) Model 1 | (2) Model 2 | (3) Model 3 | (4) Model 4 |
|---|---|---|---|---|
| DEFAULT | 1.597*** | 1.668*** | 1.652*** | 1.600** |
| | (0.450) | (0.470) | (0.476) | (0.501) |
| RECOMMENDATION | 0.234 | 0.246 | 0.142 | 0.085 |
| | (0.482) | (0.501) | (0.513) | (0.560) |
| CHOICE *high wage* | 1.677*** | 1.847*** | 1.882*** | 1.722*** |
| | (0.441) | (0.461) | (0.469) | (0.503) |
| CHOICE *low wage* | −1.310** | −1.427** | −1.460** | −1.580** |
| | (0.437) | (0.454) | (0.485) | (0.567) |
| Period | | −0.086*** | −0.079*** | −0.084*** |
| | | (0.012) | (0.013) | (0.013) |
| Successful CI (in preceding period) | | | 0.340* | 0.421* |
| | | | (0.173) | (0.187) |
| Being laid off (in preceding period) | | | 0.177 | 0.248 |
| | | | (0.278) | (0.310) |
| Constant | −1.891** | −1.070** | −1.252** | −3.454 |
| | (0.322) | (0.356) | (0.361) | (2.564) |
| Additional controls | NO | NO | NO | YES |
| Wald-$\chi^2$ | 59.3 | 93.59 | 101.43 | 114.88 |
| $p(\chi^2)$ | .000 | .000 | .000 | .000 |
| Number of observations | 3200 | 3200 | 3040 | 2641 |
| Number of groups | 160 | 160 | 160 | 139 |

*Note*: In all models, the dependent variable is employee's supportive behavior (*organizational change supported = 1/not supported = 0*), and BASELINE is the reference group. Results of random effects logistic regression with standard error clustering at the individual level are reported. Standard errors are in parenthesis. Model 3 includes a reduced number of observations due to lagged variables ("Successful CI (in preceding period)" and "Being laid off (in preceding period)"). In addition, Model 4 includes a reduced number of observations due to excluding twenty-one participants for either showing inconsistent behavior in the inequality measure, showing inconsistent behavior in the risk measure, or reporting unreasonable values (age below 18, number of semesters above 36) in our sociodemographic controls. *$p < .05$, **$p < .01$, and ***$p < .001$.

finding on the effectiveness of descriptive labels (Newell & Siikamäki, 2014; Keller et al., 2011). With respect to the discussion of Hauser et al. (2018) about the failure and success of nudging interventions, this can be explained by the different context. Therefore, it seems plausible that the recommendation nudge is not unfolding in a change management scenario. Our result is valid for a specific setting that includes, but is not limited to, features of a public good game.

> **Result 2.** A pro-change recommendation seems to foster no support for organizational change.

## 5.3 | Impact of the deliberate wage choice

Third, in the CHOICE institution, the employer can choose to provide a higher or lower wage. While the higher wage is higher than the wage provided in other institutions without an employer's decision, the lower wage is the same wage level provided as the standard in other institutions (BASELINE, DEFAULT, and RECOMMENDATION). The support rate in the CHOICE institution (24.50%) does not significantly differ from BASELINE (exact Mann-Whitney test: $p = .886$). We find that with a *high wage*, the supportive behavior is increased significantly (45.92%) compared to BASELINE (22.00%; see Table 3). We attribute this effect to positive reciprocity: employees are willing to engage in costly effort as a response to the kind decision of the employer.[36] In a similar

[36]Technically speaking, there are two differences between CHOICE *high wage* and BASELINE. First, there is a deliberate wage decision by the employer in CHOICE, resulting in a wage that is based on this decision. Second, in CHOICE *high wage*, there is a higher wage than in BASELINE. We conclude that the difference between CHOICE *high wage* and BASELINE is based on positive reciprocity triggered by the employer's decision that is perceived by the employees as featuring kind intentions. However, a higher wage might have an effect due to the higher amount instead of being a result of the employer's decision. However, Blount (1995) finds that participants adapt their response on the active decision of another participant rather than the numerical value associated with a specific outcome. This is in line with what previous research reports for the effect of a pay raise in a reform task (Krügel & Traub, 2018). The higher wage might have caused concerns in risk-averse participants as it is associated with a higher risk because a successful organizational change includes the possibility of being laid off. Therefore, if anything, our results for CHOICE *high wage* might be underestimated.

fashion, if the employer decides against implementing the higher wage but opts instead for the relatively lower wage, the supportive behavior is significantly reduced (7.42%) compared to BASELINE. We attribute this effect to negative reciprocity: employees refrain from supporting in response to the perceived unkind action by the employer. This result is in line with the fair-wage hypothesis and the adaption of reference points (Brandts & Solà, 2001; Gächter & Thöni, 2010; Ockenfels et al., 2015). Using additional Wald tests, we find that CHOICE *low wage* is significantly worse at stimulating support than any other institution (Model 1 Wald tests, compared to DEFAULT: $p < .001$; RECOMMENDATION: $p = .001$; CHOICE *high wage*: $p < .001$). Therefore, Hypothesis 3a and Hypothesis 3b are supported for positive and negative reciprocity based on a higher or lower wage, respectively. These findings support previous results by Pereira et al. (2006) and Engelmann and Ortmann (2009) regarding positive and negative reciprocity in gift-exchange games.

**Result 3a.** The realization of a pay raise stimulates support for organizational change.

**Result 3b.** If a potential pay raise fails to materialize, support for organizational change is reduced.

## 5.4 | Comparison between pure and preference nudges

Lastly, regarding the relative effects of pure and preference nudges, we find some evidence that a pure nudge works better than a preference nudge. As stated above, while the two nudge institutions do not differ significantly using non-parametric analysis (exact Mann-Whitney test: $p = .343$), we find support for a difference in our parametric analysis (Model 1 Wald test: $p = .004$). In addition, we find no significant difference between DEFAULT and CHOICE *high wage* (Model 1 Wald test: $p = .853$), but we find a difference between RECOMMENDATION and the *high wage* case in CHOICE (Model 1 Wald test: $p = .002$). Therefore, we find limited support for Hypothesis 4. This is to be expected because a change-management setting entails a low decision confidence for employees (Schweiger & Denisi, 1991; Maurer, 2001; Gist & Mitchell, 1992). Based on our model and previous work by Löfgren and Nordblom (2020), a low decision confidence yields higher effectiveness of pure nudges compared to preference nudges.

**Result 4.** A pure nudge is better suited than a preference nudge for change-management applications.

We present a summarizing table with all hypotheses and matching results in Appendix B1.[37]

## 5.5 | Cost analysis of nudging

To focus on the implications for the potential practical implementation of the two types of nudges compared to a pay raise, we take a look at the efficiency. Benartzi et al. (2017) report a high cost-efficiency of nudging. The pay raise in the CHOICE institution is the only situation in which the employer faces additional costs compared to the BASELINE institution. For a pay raise, the employer has to pay a quarter of the employees' wage.[38] To make the necessary adjustments, we can recalculate the average payoff of the employer in CHOICE *high wage* assuming no additional costs as it is implemented for institutions with no additional features (BASELINE), the pure nudge (DEFAULT), and the preference nudge (RECOMMENDATION). The resulting average payoffs per round can be found in Table 4.

Depending on the cost situation in the BASELINE institution, an employer invests on average 23.91 points (SD = 1.25 points) in additional wage costs for an additional income of 36.36 points in CHOICE *high wage*. This yields a net profit of 12.45 points. Based on our results, the employer is better off using a DEFAULT nudge, which has zero costs in our experimental setup. The employer's average net profit from this intervention is 28.75 points. To answer the question of how much a default nudge is allowed to cost to still be an efficient option compared to a pay raise, we use the following approach: first, to make both institutions (CHOICE *high wage* and DEFAULT) comparable—there is still a difference between paid wage and received wage—we assume that the allowed costs of a DEFAULT are paid similarly to the costs of the pay raise. Second, within this process, we are correcting by the share of successful organizational changes ("Share of success"). We conclude that a DEFAULT nudge can cost up to 67.55% of the costs of a pay raise to be still as efficient as the pay raise. The same procedure can be used to calculate the potential cost allowance for a RECOMMENDATION nudge. However, as we find no evidence of its effectiveness and the average payoff of the employer is lower in the RECOMMENDATION institution than in the CHOICE *high wage* case, we do not report this value here.[39] Overall, this analysis supports the high cost-efficiency of default rules, which is in line with what Benartzi et al. (2017) report for nudging in general.

[37] In Model 2 of our parametric analysis, we control for the period in the game. Significantly less supportive behavior is found in later periods. This negative effect is found over all institutions. In addition, we test two lagged variables for Model 3: being laid off in the preceding period and being part of a group that successfully generated change in the preceding period. Being laid off has no effect while being part of a group with a successful organizational change increases supportive behavior significantly in the succeeding round. Lastly, Model 4 supports all above-mentioned results when controlling for a number of additional factors: dispositional resistance to change (self-reported Oreg, 2003), positive and negative reciprocity (self reported Dohmen et al., 2008; 2009), general risk aversion (self reported Dohmen et al., 2011), risk aversion (MPL Balafoutas et al., 2012; Holt & Laury, 2002), inequality preferences (Kerschbamer, 2015), gender, experience with experiments, final math grade in high school, number of semesters, and being a German native speaker. Of these, previous experience with experiments ($p = .070$) and a preference for efficiency ($p = .009$), measured by the willingness to pay to reduce an advantageous inequality ($p = .030$), affect the support decision positively. In addition, negative reciprocity affects the support decision negatively.

[38] In particular, the employer has to pay $(5 \cdot 20 \cdot 0.25)$ if the organizational change is unsuccessful and $(4.5 \cdot 20 \cdot 0.25)$ if the organizational change is successful.

[39] To extend this discussion, the calculated cost allowance of the recommendation nudge is −12.77%. This supports our results so far that the pure nudge is more efficient than the preference nudge. However, as stated in the main text, this analysis is for academic purposes only. A practical implication is not to be derived from this negative value or the difference in the cost allowance between these two nudges.

**TABLE 4** Average payoff of the employer and relative cost allowance of the nudges.

| Institution | Average payoff of employer | Average payoff of employer w/o costs | Share of success | Relative cost allowance (to pay raise) |
|---|---|---|---|---|
| BASELINE | 53.25 points (29.80 points) | 53.25 points (29.80 points) | 10.00% | |
| CHOICE *low wage* | 39.52 points (12.29 points) | 39.52 points (12.29 points) | 1.12% | |
| CHOICE *high wage* | 65.70 points (46.91 points) | 89.61 points (52.73 points) | 43.66% | 100% |
| DEFAULT | 82.00 points (43.24 points) | 82.00 points (43.24 points) | 35.00% | 67.55% |
| RECOMMENDATION | 62.58 points (41.24 points) | 62.58 points (41.24 points) | 20.63% | n/a |

*Note*: Standard deviations are in parentheses.

## 6 | CONCLUSIONS

Our results indicate that nudging can be a tool with an economically relevant and significant effect in change management scenarios. Thus, we contribute to the nudging and change management literature as previous research on organizational change mostly lacks the focus on nudging and experimental testing of its effects, while previous research on nudges lacks the specific focus on organizational change. As discussed above, organizational change has a fairly specific set of characteristics. It is important to investigate nudges in a particular context due to the mediating (e.g., heuristics and biases) or moderating effects (e.g., specific conditions such as the level of involvement in a task or individual traits) introduced by the environment in which nudges are used (Hauser et al., 2018; van Kleef & van Trijp, 2018). In regard to a change management setting, we find strong supporting evidence for the effectiveness of implementing a pro-change default rule. We infer from our results that the default was perceived as a suggested reference point that led to the reduction of mental effort and to a match with the employer's pre-selection. In contrast, the more cognitive-oriented recommendation with its additional information about the implications of a change had no effect. We explain these opposite results in light of the fact that nudges perform better for behaviorally-oriented changes that target automatic action than for cognitive-oriented changes that involve information processing (Mertens et al., 2022). In practical situations, such a default rule can be implemented by automatically registering employees for a kick-off meeting for an organizational change, setting up accounts for employees in new software systems, or changing the default software system used by employees. Ebert and Freibichler (2017), for instance, discuss nudging as an integral part of management practice to increase knowledge worker productivity. They illustrate how default nudges can lead to more focused work time and condensed meeting time. Furthermore, our results support the findings by Benartzi et al. (2017) regarding the cost-effectiveness of nudging compared to traditional interventions. In our experiment, a default would have been allowed to cost approximately 70% of what a pay raise costs. The pro-change recommendation nudge turns out to be not effective in fostering supportive behavior, implying that this nudge is not a valid option for organizational change.

Our experimental results also provide support that—in situations involving change—a pay raise works as intended by triggering positive reciprocity and fostering supportive behavior. This is in line with what Krügel and Traub (2018) report for their findings on a deliberate pay raise in a reform task, which, however, lacks a specific change management context. In addition and in contrast to Krügel and Traub (2018), our analysis of employees' reactions on a deliberate choice by the employer also shows that negative reciprocity is triggered when the pay raise fails to materialize. This is in line with Gächter and Thöni (2010), Ockenfels et al. (2015), and Pereira et al. (2006). Therefore, if a pay raise fails to materialize, the negative effect might be much more severe for organizational change than previously thought. For example, if a public crisis occurs and a potential bonus payment for specific jobs is discussed, the subsequent lack of materialization might trigger an unavoidable failure of any organizational change based on the updated reference point. It remains unclear whether additional measures can counteract such a lack of materialization.

Change in both private and professional situations is often perceived as being personal, exciting, sometimes even intimidating (Oreg & Goldenberg, 2015). As such, individual traits—both on the individual and the group level—are a potential source to look at when a manager wants to improve the chances of success for the organizational change. In regard to individual traits, our experimental results indicate that risk preferences play no role in deciding in favor of or against supporting an organizational change, although one might argue that organizational changes are a risky endeavor, both for the employer and the employees. In contrast, employees with a preference for efficiency seem to support change significantly more. Managers might be best off hiring or including employees with a high preference for efficiency in change-related tasks or to communicate the relevance of the change for efficiency (Oakland & Tanner, 2007).

Beyond that, today's working reality is also driven by group work, interpersonal relationships, and creative processes. We did not focus on personal relationships between the manager and her staff or between staff members. Such dynamics might be relevant for the success rate (Amiot et al., 2006; Coch & French, 1948; Lewin, 1948; Pearce & Sims, 2002; Schoenberg et al., 2016). Further research can build on our experimental work to enhance the understanding of intragroup dynamics as a potential moderator of nudging in organizational change settings.

Overall, our paper is the first to examine and compare the effectiveness of a pure and a preference nudge in an organizational change situation with a presumably low level of decision confidence of the participating employees. Our results suggest that a pure nudge is superior to a preference nudge in an organizational change setting. This is in accordance with the model of Löfgren and Nordblom (2020). However, further research is needed actually to test their theory. A limitation of our experiment is that the tested pure and preference nudge do not necessarily have the same effectiveness level, regardless of the decision-maker's confidence. For a theory-testing experiment, the general effect should be matched while the confidence level is manipulated. Our results provide a starting point for additional work.

To sum up, our results support the effectiveness of defaults and provide novel insights into how different types of nudges, that is, pure and preference nudges, work given a specific context in which we find low decision confidence. In practical terms, managers tasked with delivering organizational change are best served to apply a pro-change default rule if pay raises are not feasible due to increased cost pressure or its materialization is uncertain.

## CONFLICT OF INTEREST STATEMENT

None.

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## DATA AVAILABILITY STATEMENT

The datasets generated by the experimental research during and/or analyzed during the current study are available in the OSF repository, https://osf.io/dwrtu/.

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## APPENDIX A: LIST OF SYMBOLS

| | |
|---|---|
| $b$ | Bonus payment |
| $e_i$ | Effort of employee $i$ |
| $E$ | Effort for supporting |
| $F$ | Set of firm's members |
| $j$ | Employer |
| $m$ | Employees to play *support* to reach the threshold $\theta$ exactly |
| $n$ | Number of employees |
| $n_h$ | Number of employees playing *support* |
| $n_l$ | Number of employees playing *no support* |
| $n_{h\_i}$ | Number of employees playing *support* excluding employee $i$ |
| $n_{l\_i}$ | Number of employees playing *no support* excluding employee $i$ |
| $N$ | Set of employees |
| $R_0$ | Employer's revenue if the organizational change is not successful |
| $R_c$ | Employer's revenue if the organizational change is successful |
| $\Delta R$ | Additional revenue from successful organizational change |
| $R_{i_h}$ | Positive reciprocity |
| $R_{i_l}$ | Negative reciprocity |
| $s_i$ | Strategy of employee $i$ |
| $s_j$ | Strategy of employer |
| $S_i$ | Strategy set of employee $i$ |
| $S_j$ | Strategy set of employer |
| $T$ | Periods in the experiment |
| $V_i$ | Decision utility of employee $i$ |
| $\Delta V_i$ | Difference in decision utility $V_i$ between playing *support* and *no support* for employee $i$ |
| $w$ | Wage |
| $w_h$ | High wage |
| $w_l$ | Low wage |
| $\eta_{i,s_i}$ | Preference-relevant bias of employee $i$ and decision $s_i$ |
| $\Delta\eta_i$ | Difference in $\eta_{i,s_i}$ between playing *support* and *no support* for employee $i$ |
| $\phi_i$ | Decision confidence of employee $i$ |
| $\lambda$ | Share of $\Delta R$ to be kept by the employer |
| $\mu_{i,s_i}$ | Preference-irrelevant bias of employee $i$ and decision $s_i$ |
| $\Delta\mu_i$ | Difference in $\mu_{i,s_i}$ between playing *support* and *no support* for employee $i$ |
| $\pi_i$ | Profit of employee $i$ |
| $\pi_j$ | Profit of employer |
| $\Delta E[\pi_i]$ | Difference in expected profit $E[\pi_i]$ between playing *support* and *no support* for employee $i$ |
| $\rho$ | Share of laid-off employees |
| $\sigma_h$ | High productivity |
| $\sigma_l$ | Low productivity |
| $\tau$ | Length of implementation phase relative to the total length of the organizational change |
| $\theta$ | Threshold of aggregated effort to be needed for a successful organizational change |

## APPENDIX B: WELFARE-ENHANCING CONDITION

**Derivation of (6).** To take a look at whether a successful organizational change is welfare-enhancing for the employees, we have to compare the expected profit for the two scenarios where an employee either supports the successful organizational change or doesn't support the unsuccessful organizational change. If the former one is larger, we call the organizational change welfare-enhancing, that is, from (2) follows:

$$\begin{aligned}
&(1-\rho)\cdot(w+b)+\rho\cdot\tau\cdot w-E \overset{!}{\geq} w\\
\Leftrightarrow\ &(1-\rho)\cdot b \geq w-\rho\cdot\tau\cdot w-(1-\rho)\cdot w+E\\
\Leftrightarrow\ &(1-\rho)\cdot b \geq (1-\rho\cdot\tau-(1-\rho))\cdot w+E\\
\Leftrightarrow\ &b \geq (1-\tau)\cdot\frac{\rho}{1-\rho}\cdot w+\frac{E}{1-\rho}
\end{aligned}$$

## APPENDIX C: MIXED STRATEGY NASH EQUILIBRIA

*Proof of non-existence of mixed strategy Nash equilibria.* Given the mixed strategy $\sigma$ of the other employees, where the probability $q$ is assigned to the pure strategy *support* and $(1-q)$ to *no support*, each employee $i$ has to be indifferent between both pure strategies. For a better illustration, we first calculate with some probability function $P$ that represents the from aggregating individual decisions resulting binomial distribution and plug in the dependent $q$ at the end:

$$\begin{aligned}
&E[\pi_i(sup,\sigma)] \overset{!}{=} E[\pi_i(nosup,\sigma)]\\
\Rightarrow\ &P(k<m)\cdot w+P(k\geq m)\cdot[(1-\rho)\cdot(w+b)+\rho\cdot\tau\cdot w]\\
&\quad =P(k<m-1)\cdot(w-E)+P(k\geq m-1)\cdot[(1-\rho)\cdot(w+b)+\rho\cdot\tau\cdot w-E]\\
\Leftrightarrow\ &P(k=m-1)\cdot w=P(k=m-1)\cdot[(1-\rho)\cdot(w+b)+\rho\cdot\tau\cdot w]-E\\
\Leftrightarrow\ &E=P(k=m-1)\cdot[(1-\rho)\cdot(w+b)+\rho\cdot\tau\cdot w-w]\\
\Leftrightarrow\ &P(k=m-1)=\frac{E}{(1-\rho)\cdot b-(1-\tau)\cdot\rho\cdot w}\\
\Rightarrow\ &\binom{n-1}{m-1}\cdot q^{m-1}\cdot(1-q)^{n-m}=\frac{E}{(1-\rho)\cdot b-(1-\tau)\cdot\rho\cdot w}
\end{aligned}$$

We know from Palfrey and Rosenthal (1984) that an equilibrium in mixed strategies can exist if and only if the right hand side of the equation above is smaller or equal to the expression in the following inequation:

$$\binom{n-1}{m-1}\cdot\frac{(m-1)^{(m-1)}\cdot(n-m)^{(n-m)}}{(n-1)^{n-1}}\geq\frac{E}{(1-\rho)\cdot b-(1-\tau)\cdot\rho\cdot w}$$

With our parametrization, it follows:

$$\begin{aligned}
\binom{4}{2}\cdot\frac{2^2\cdot 2^2}{4^4} &\geq \frac{20}{(1-0.2)\cdot 50-(1-0.5)\cdot 0.2\cdot 60}\\
\frac{6}{16} &\geq \frac{10}{17} \qquad \lightning
\end{aligned}$$

□

## APPENDIX D: DIFFERENCE FUNCTION

**Derivation of (8).** The expected profit of an employee does not really depend on the individual decisions of the other employees but rather on the aggregated number of other employees playing $support n_{h_{-i}}$. Therefore instead of (2), we formulate:

$$E[\pi_i(s_i,s_{-i})]=E[\pi_i(s_i,n_{h_{-i}})]=\begin{cases}(1-\rho)\cdot(w+b)+\rho\cdot\tau\cdot w-E, & \text{if } (s_i=sup)\wedge(n_{h_{-i}}\geq m-1)\\ w-E, & \text{if } (s_i=sup)\wedge(n_{h_{-i}}<m-1)\\ (1-\rho)\cdot(w+b)+\rho\cdot\tau\cdot w, & \text{if } (s_i=nosup)\wedge(n_{h_{-i}}\geq m)\\ w, & \text{if } (s_i=nosup)\wedge(n_{h_{-i}}<m)\end{cases}$$

Then, it follows:

$$\begin{aligned}&E[\pi_i(sup,n_{h_{-i}})]-E[\pi_i(nosup,n_{h_{-i}})]\\ &=\begin{cases}(1-\rho)\cdot(w+b)+\rho\cdot\tau\cdot w-E, & \text{if } n_{h_{-i}}\geq m-1\\ w-E, & \text{if } n_{h_{-i}}<m-1\end{cases}-\begin{cases}(1-\rho)\cdot(w+b)+\rho\cdot\tau\cdot w, & \text{if } n_{h_{-i}}\geq m\\ w, & \text{if } n_{h_{-i}}<m\end{cases}\\ &=\begin{cases}(1-\rho)\cdot(w+b)+\rho\cdot\tau\cdot w-E-[(1-\rho)\cdot(w+b)+\rho\cdot\tau\cdot w], & \text{if } n_{h_{-i}}\geq m\\ (1-\rho)\cdot(w+b)+\rho\cdot\tau\cdot w-E-w, & \text{if } n_{h_{-i}}=m-1\\ w-E-w, & \text{if } n_{h_{-i}}<m-1\end{cases}\\ &=\begin{cases}-E, & \text{if } n_{h_{-i}}\geq m\\ (1-\rho)\cdot b-(1-\tau)\cdot\rho\cdot w-E, & \text{if } n_{h_{-i}}=m-1\\ -E, & \text{if } n_{h_{-i}}<m-1\end{cases}\\ &=\begin{cases}(1-\rho)\cdot b-(1-\tau)\cdot\rho\cdot w-E, & \text{if } n_{h_{-i}}=m-1\\ -E, & \text{if } n_{h_{-i}}\neq m-1\end{cases}\\ &\Rightarrow\Delta V_i(n_{h_{-i}})=\phi_i\cdot\Delta\eta_i+(1-\phi_i)\cdot\Delta\mu_i+\phi_i\cdot\begin{cases}(1-\rho)\cdot b-(1-\tau)\cdot\rho\cdot w-E, & \text{if } n_{h_{-i}}=m-1\\ -E, & \text{if } n_{h_{-i}}\neq m-1\end{cases}\end{aligned}$$

## APPENDIX E: EMPLOYER'S PAYOFF

**Derivation of (13).** To ensure an approximately equal payoff of employer and employees, we divide the wage costs of the employer by four. Therefore, (3) changes into

$$\pi_j(n_h)=\begin{cases}R_c+\sigma_h\cdot n_h+\sigma_l\cdot n_l-[(1-\rho)\cdot n\cdot\frac{w}{4}+\rho\cdot n\cdot\tau\cdot\frac{w}{4}], & \text{if } n_h\geq m\\ R_0+\sigma_h\cdot n_h+\sigma_l\cdot n_l-n\cdot\frac{w}{4}, & \text{if } n_h<m\end{cases}$$

With the plugged in parameters of $n=5,\tau=0.5,\rho=0.2,w=60,m=3,R_0=85,R_c=150,\sigma_h=15$, and $\sigma_l=5$, it follows

$$\begin{aligned}\pi_j(n_h)&=\begin{cases}150+15\cdot n_h+5\cdot n_l-[(1-0.2)\cdot 5\cdot\frac{60}{4}+0.2\cdot 5\cdot 0.5\cdot\frac{60}{4}], & \text{if } n_h\geq 3\\ 85+15\cdot n_h+5\cdot n_l-5\cdot\frac{60}{4}, & \text{if } n_h<3\end{cases}\\ &\overset{n_h+n_l=n}{=}\begin{cases}150+15\cdot n_h+5\cdot(5-n_h)-[(1-0.2)\cdot 5\cdot\frac{60}{4}+0.2\cdot 5\cdot 0.5\cdot\frac{60}{4}], & \text{if } n_h\geq 3\\ 85+15\cdot n_h+5\cdot(5-n_h)-5\cdot\frac{60}{4}, & \text{if } n_h<3\end{cases}\\ &=\begin{cases}107.5+10\cdot n_h, & \text{if } n_h\geq 3\\ 35+10\cdot n_h, & \text{if } n_h<3\end{cases}\end{aligned}$$

## APPENDIX F: REGRESSION WITH NOT SEPARATED INSTITUTIONS

| | (1) Model 5 | (2) Model 6 | (3) Model 7 | (4) Model 8 |
|---|---|---|---|---|
| DEFAULT | 1.573*** | 1.618*** | 1.573*** | 1.583** |
| | (0.444) | (0.455) | (0.461) | (0.484) |
| RECOMMENDATION | 0.228 | 0.236 | 0.123 | 0.130 |
| | (0.475) | (0.488) | (0.497) | (0.542) |
| CHOICE | 0.435 | 0.446 | 0.528 | 0.436 |
| | (0.363) | (0.372) | (0.377) | (0.433) |
| Period | | −0.069*** | −0.064*** | −0.069*** |
| | | (0.011) | (0.012) | (0.012) |
| Successful CI (in preceding period) | | | 0.450** | 0.517** |
| | | | (0.164) | (0.179) |
| Being laid off (in preceding period) | | | 0.177 | 0.272 |
| | | | (0.278) | (0.306) |
| Constant | −1.868*** | −1.203*** | −1.370** | −3.022 |
| | (0.317) | (0.348) | (0.352) | (2.400) |
| Additional controls | NO | NO | NO | YES |
| Wald-$\chi^2$ | 15.27 | 50.43 | 60.61 | 81.47 |
| $p(\chi^2)$ | .002 | .000 | .000 | .000 |
| Number of observations | 3200 | 3200 | 3040 | 2641 |
| Number of groups | 160 | 160 | 160 | 139 |

*Note*: In all models, the dependent variable is employee's supportive behavior (*organizational change supported = 1/not supported = 0*), and BASELINE is the reference group. Results of random effects logistic regression with standard error clustering at the individual level are reported. Standard errors are in parenthesis. Model 7 includes a reduced number of observations due to lagged variables ("Successful CI (in preceding period)" and "Being laid off (in preceding period)"). In addition, Model 8 includes a reduced number of observations due to excluding 21 participants for either showing inconsistent behavior in the inequality measure, showing inconsistent behavior in the risk measure, or reporting unreasonable values (age below 18, number of semesters above 36) in our sociodemographic controls.
*$p$ < :05, **$p$ < :01, and ***$p$ < :001.

## APPENDIX G: SUMMARY HYPOTHESES AND RESULTS

| Number | Hypothesis | Result | Support |
|---|---|---|---|
| 1 | Supportive behavior for organizational change is higher when a default nudge is in place compared to an institution in which this nudge is not being implemented. | A pro-change default fosters support for organizational change. | YES |
| 2 | Supportive behavior for organizational change is higher when a recommendation nudge is in place compared to an institution in which this nudge is not being implemented. | A pro-change recommendation seems to foster no support for organizational change. | NO |
| 3a | Supportive behavior for change is higher when the employer decides to offer a higher wage compared to an institution with no deliberate choice by the employer. | The realization of a pay raise stimulates support for organizational change. | YES |
| 3b | Supportive behavior for change is lower when the employer decides to offer a lower wage compared to an institution with no deliberate choice by the employer. | If a potential pay raise fails to materialize, support for organizational change is reduced. | YES |
| 4 | The effect of a pure nudge is higher compared to a preference nudge in an organizational change context with a low decision confidence. | A pure nudge is better suited than a preference nudge for change-management applications. | YES |

## APPENDIX H: INSTRUCTIONS

We present the translated instructions of our experiment. The "General Information" was provided at the beginning of the experiment and was the same for all institutions. The "Instructions for Part 2" were provided after the Equality Equivalence Test (Kerschbamer, 2015). We point out differences between the four institutions BASELINE, DEFAULT, RECOMMENDATION, and CHOICE with footnotes. Note that we retain the line spacing of the original instructions because the appearance would be misleading otherwise.

### General Information

Welcome to the experiment. Read the instructions carefully and follow the rules to make money. Payment is made in cash immediately after participation in the experiment. In total, the experiment will last about 60 minutes.

During the experiment, the term "points" is used instead of Euros. Points will be converted to Euro according to the following scheme: **30 points = 1 Euro**.

The experiment consists of **three separate parts**. Each part is explained separately. The instructions for the 1st and 3rd part are displayed on the screen. The instructions for the 2nd part are given out when all participants have completed the 1st part. You can earn money in each part. The payout from each part depends only on your decisions in that part. **At the end of the experiment you will receive information about your earnings from the three separate parts**. The sum of your earnings is rounded to two decimal places and paid to you in cash. You will first be asked to answer a few questions.

Do not talk to the other participants during the experiment. If you have a question, raise your hand and wait until a member of staff approaches you. We will then answer your question. It is of utmost importance to follow the rules; otherwise the results of the experiment may be distorted or unusable.

### Instructions for Part 2

#### General Description

Your decisions in the 1st and 2nd part have no effect on the payouts from the 3rd part of the experiment, just as your decision from the 1st part of the experiment has no effect on the payout in the 2nd part.

The 2nd part consists of **20 periods**, i.e., the same decisions are repeated 20 times. At the beginning of the 2nd part, you are randomly assigned to a **role** (**"employee" or "employer"**) and informed about your role on the screen. Your role remains the same during the 20 periods.

In each period, you will be randomly assigned to a **group of 6 people** consisting of **1 employer** and **5 employees**. The composition of the group is **determined randomly in each period** and therefore changes. Participants in your group in Period 1 may be different from participants in your group in Period 2, etc.

In this experiment, companies are faced with the **situation of an organizational change** (from here on referred to as "change"). If a majority (3, 4 or 5) of the employees in the group support the change, the change is successful and leads to a wage bonus for a part of the employees as well as to higher profits for the employer; at the same time, one out of five employees is laid off.

The employer starts the period with a fixed wage (60 points) that its employees receive. After the employer has started the round, the employees are informed about the wage.[40] The employees then choose their effort ("support" or "no support"). If the majority (3, 4 or 5) of the employees choose "support," the change is successful.[41,42]

Two examples illustrate this:

- **Successful change: 3, 4 or 5 employees choose "support"**
  and 2, 1 or 0 employees choose "no support".
- **Unsuccessful change: 0, 1 or 2 employees choose "support"**
  and 5, 4, or 3 employees choose "no support".

The following two pages explain how the earnings in the 2nd part of the experiment are obtained for employees. Then the earnings for employers are explained.

[40]Different in CHOICE: The employer starts the period by choosing the wage (60 or 80 points) that its employees receive. After the employer has decided on a wage, the employees are informed about the wage.

[41]Additionally in DEFAULT: "Support" is pre-selected on the employees' screen.

[42]Additionally in RECOMMENDATION: **"Support" is marked as recommended on the employee's screen. This recommendation is based on the average earnings of the group: if all five employees choose "support," each participant earns an average of around 88 points. If, on the other hand, all five employees choose "no support," each participant earns on average about 56 points, i.e., about 32 points less.**

**Earnings of Employees I/II**

If you are in the "employee" role and choose "support," you will be charged 20 points, which will be deducted from your earnings. If you choose "no support," there will be no costs for you:

- Costs for **"support": 20 points**
- Costs for **"no support": 0 points**

If the **change is unsuccessful** (see above), **all 5 employees receive their full wage** (60 points)[43] **minus the cost of the chosen effort** (20 points for "support" or 0 points for "no support").

If the **change is successful**, …

**1 employee is "laid off"** (1 in 5 employees, 20 percent chance). This employee receives only the 1st half of its wage (30 points)[44] **minus the costs for the chosen effort** (20 points for "support" or 0 points for "no support"). Half results from the fact that the employee only receives the first half of the wage before the layoff.

The other **4 employees** receive their **full wage** (60 points)[45] and a wage bonus (50 points) **minus the cost of the chosen effort** (20 points for "support" or 0 points for "no support").

The following rules relate to the earnings of employees:

- **Unsuccessful change:**
  → All **5 employees receive: wage − costs**

- **Successful change:**
  → **1 randomly selected employee receives:** $\frac{wage}{2}$ **− costs**
  → **4 employees receive: wage + wage bonus − costs**

Table H1 on the next page shows the corresponding earnings based on your effort, the outcome of the change, and the layoff. This table is displayed on the screen when you make your decision as an employee.[46]

**Earnings of Employees II/II**

**TABLE H1** Earnings of employees.[a]

| At the wage of 60 points … | …the payment for "no support" is … | …the payment for "support" is … |
|---|---|---|
| for a **successful change** and **not** laid off (4 of 5 employees) | 110 points | 90 points |
| for a **successful change** and laid off (1 in 5 employees) | 30 points | 10 points |
| for an **unsuccessful change** (5 of 5 employees) | 60 points | 40 points |

[a]Table caption in CHOICE: Earnings of Employees ($wage = 60$).

**TABLE H2** Earnings of employees ($wage = 80$).[a]

| At the wage of 80 points … | …the payment for "no support" is … | …the payment for "support" is … |
|---|---|---|
| for a **successful change** and **not** laid off (4 of 5 employees) | 130 points | 110 points |
| for a **successful change** and laid off (1 in 5 employees) | 40 points | 20 points |
| for an **unsuccessful change** (5 of 5 employees) | 80 points | 60 points |

[a]This table is only shown in CHOICE.

[43]Different in CHOICE: 60 or 80 points
[44]Different in CHOICE: 30 or 40 points
[45]Different in CHOICE: 60 or 80 points
[46]Different in CHOICE: Tables H1 and H2 on the next page show the corresponding earnings based on the chosen employer wage, your effort, the outcome of the change, and the layoff. These tables are displayed on the screen when you make your decision as an employee.

**Earnings of Employers I/II**

If you are in the "employer" role, your earnings are calculated based on[47] the number of employees who have chosen "support" or "no support," and the outcome of the change.

If the **change is unsuccessful** (see above), the employer receives 85 points plus 15 points for each employee who chooses "support," 5 points for each employee who chooses "no support," minus the wage divided by four (15 points)[48] for each of the 5 employees in the group.

If the **change is successful** (see above), the employer receives 150 points plus 15 points for each employee who chooses "support," 5 points for each employee who chooses "no support," minus the wage divided by four (15 points)[49] for 4.5 employees in the group. 4.5 results from the fact that an employee is "laid off" and receives only the first half of its wage. The employee's wage bonus is not deducted from the employer's earnings.

The following rules relate to the earnings of employers:

- **Unsuccessful change:**

**85 points**
**+ (15 points · number of "support")**
**+ (5 points · number of "no support")** $-$ **(5** $\cdot \frac{wage}{4}$**)**

- **Successful change:**

**150 points**
**+ (15 points · number of "support")**
**+ (5 points · number of "no support")** $-$ **(4.5** $\cdot \frac{wage}{4}$**)**

Figure H1 on the next page shows the corresponding earnings based on the outcome of the change, and the number of employees who chose "support" or "no support." The employer earns more if more employees choose 'support' and if the change is successful.[50]

**Earnings of Employers II/II**

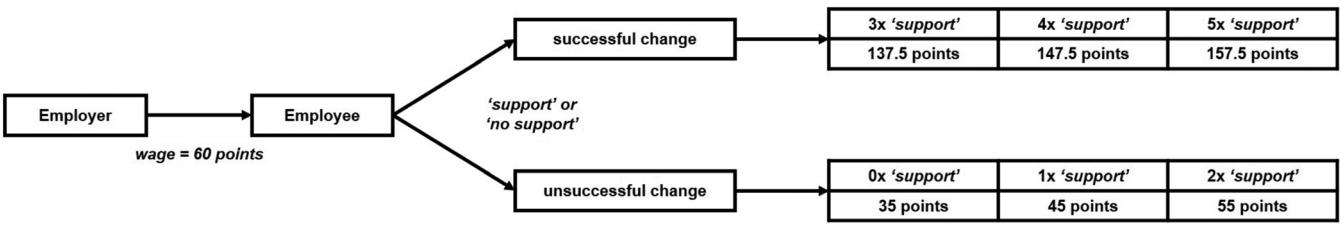



**FIGURE H1** Earnings of employers.[51]

**Information per Period for Both Roles (Employees and Employers)**

After each period you will know…

- the **number of employees** in your group, **who have chosen "support" or "no support"**,
- the **outcome of the change**,
- the **outcome of layoff** (only for employees and only if the change is successful),
- as well as **your earnings in this period**.

[47]CHOICE additionally: the chosen wage,
[48]CHOICE: 15 or 20 points
[49]CHOICE: 15 or 20 points
[50]Different in CHOICE: Table H2 on the next page shows the corresponding earnings based on the chosen wage, the outcome of the change, and the number of employees who chose "support" or "no support." The employer chooses a wage (60 or 80 points) and earns more if more employees choose 'support' and if the change is successful.
[51]This table is not shown in CHOICE.

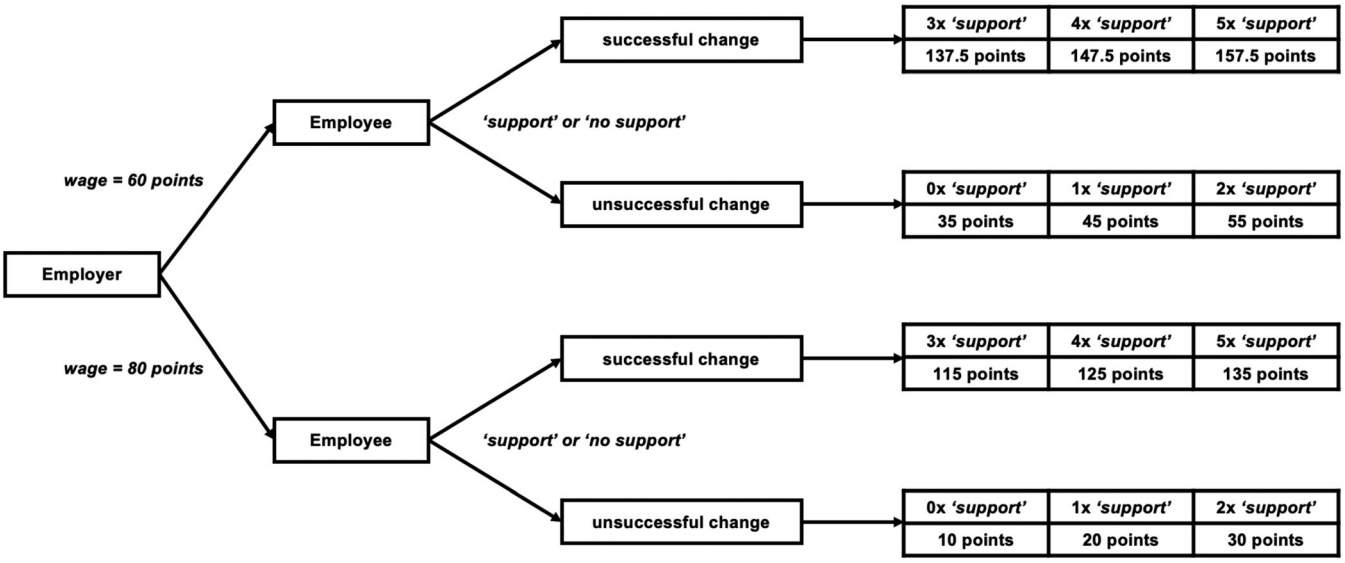



**FIGURE H2** Earnings of employers.[52]

**Payment for Both Roles (Employee and Employer)**

At the end of Part 2 of this experiment, the computer randomly selects

**5 out of 20 periods**.

The sum of your earnings during these 5 periods will be paid to you. Reminder: Points will be converted into Euros according to the following exchange rate:

**30 points= 1 Euro**.

Just as for the 1st part of this experiment, you will only receive your payout from the 2nd part after the 3rd part and the answering of some questions at the very end of the experiment. The sum of the payout is rounded to two decimal places.

You will now find some questions on the screen to help you understand the 2nd part. As soon as all participants have answered all questions correctly, the 1st period of the 2nd part begins.

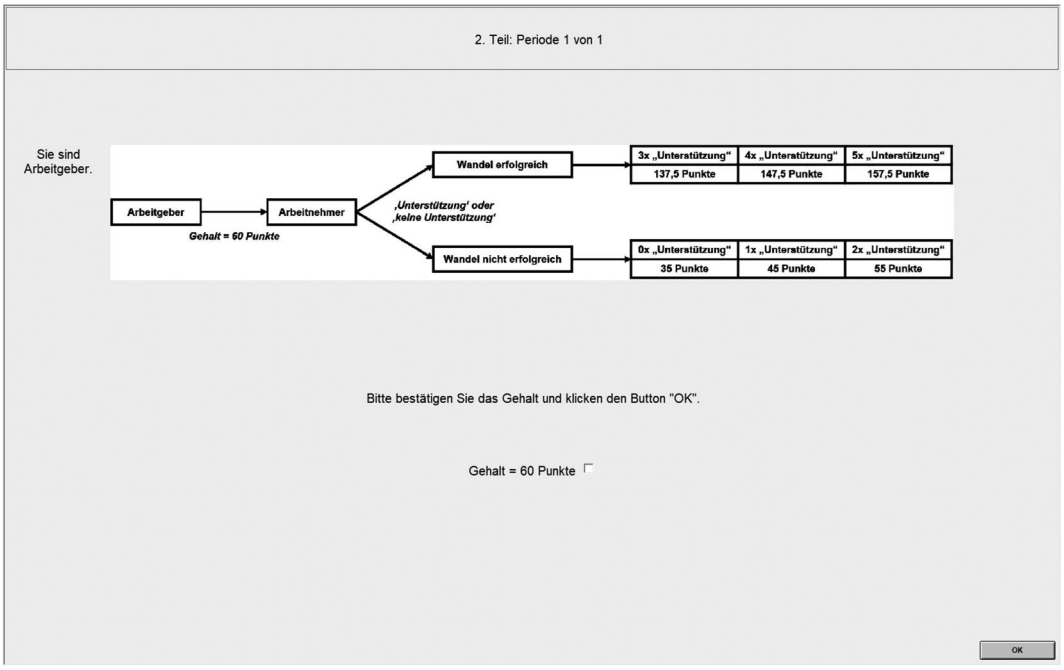
## APPENDIX I: EXPERIMENTAL SCREENS

We present screenshots of the participants' screens in the main experiment for BASELINE. For the other institutions, we only provide a screenshot if it differs from the corresponding screen in BASELINE.

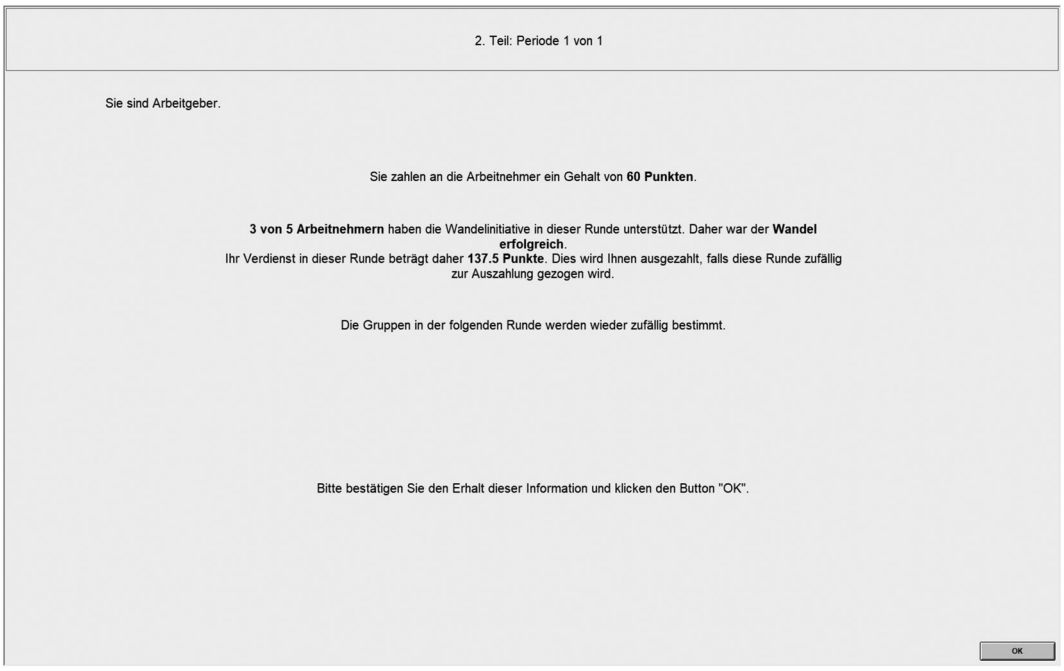
[52]This table is only shown in CHOICE.

**Baseline institution**


BASELINE employer introduction.

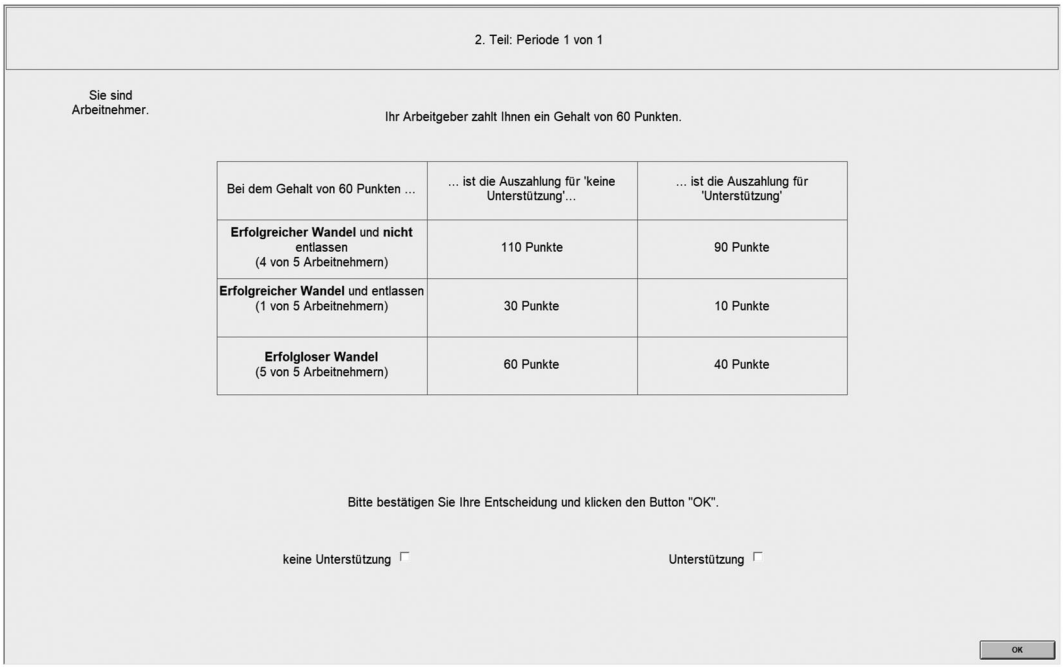



BASELINE employer decision.

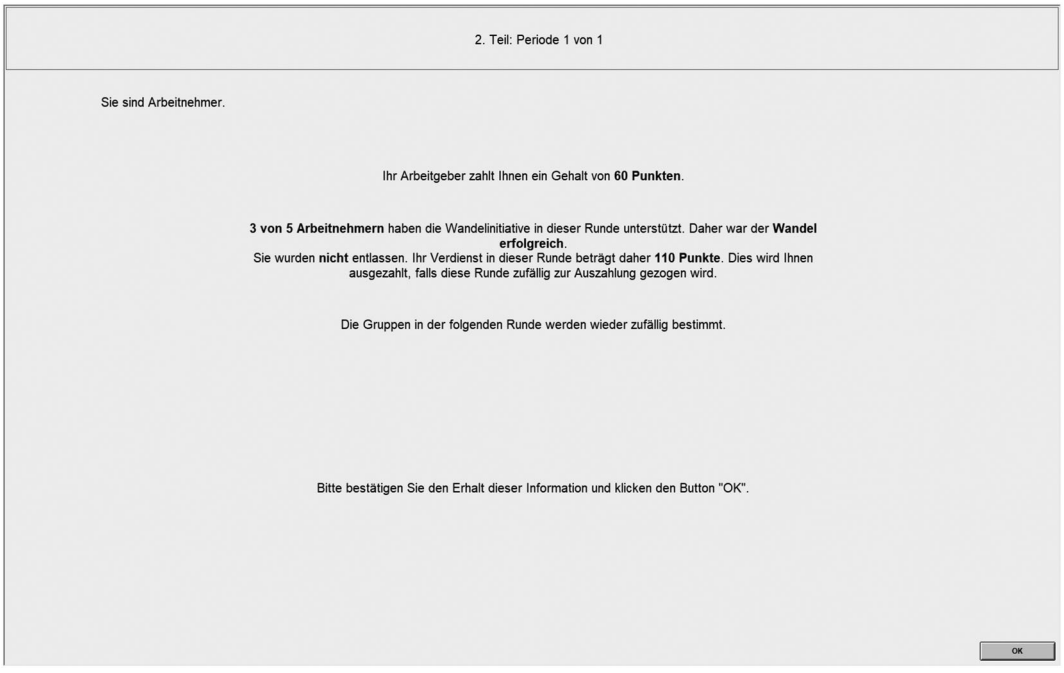



BASELINE employer feedback.

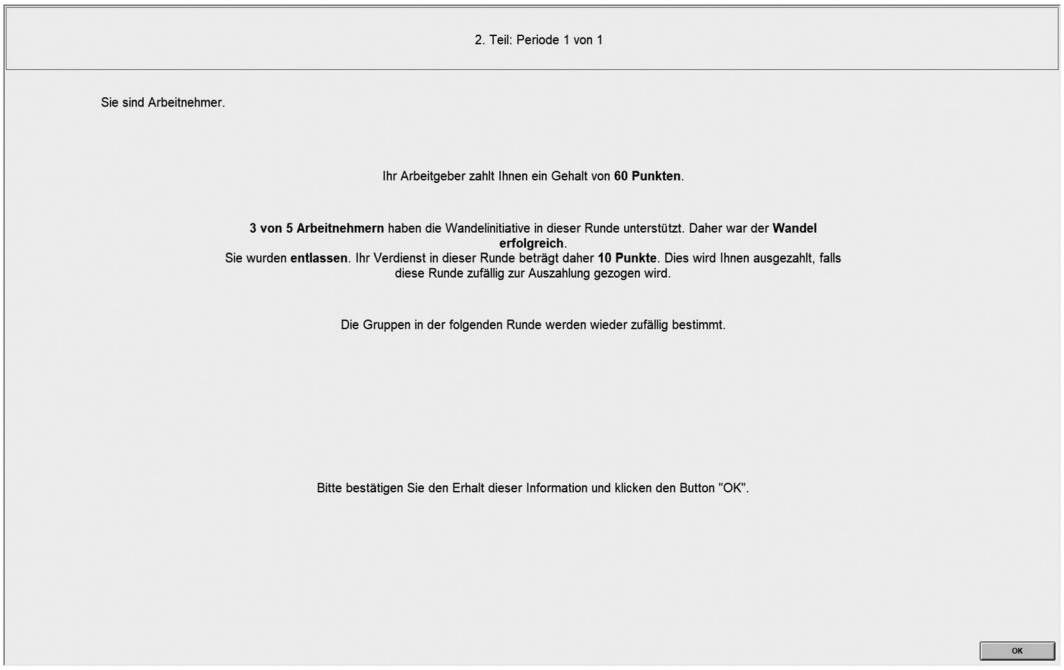

BASELINE employee introduction.




BASELINE employee decision.

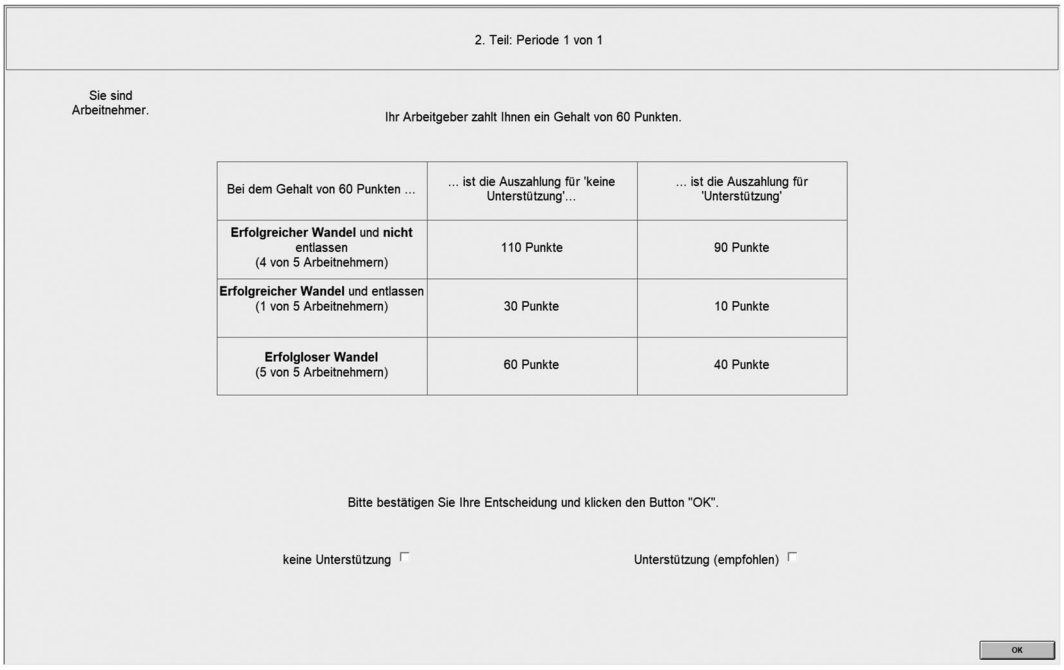



BASELINE employee feedback not laid off.



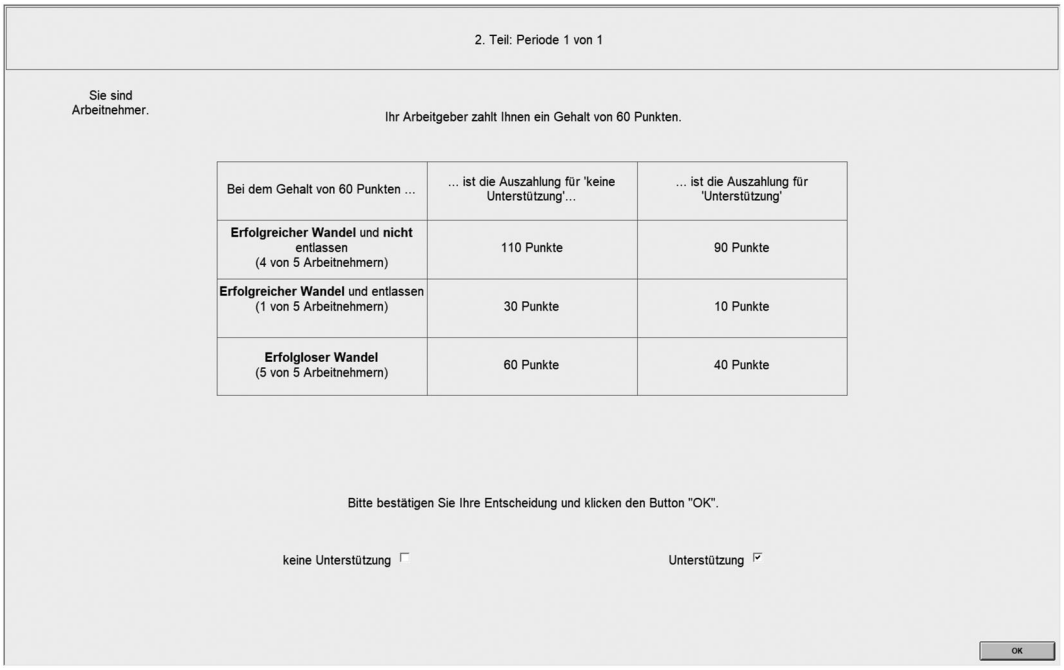

BASELINE employee feedback laid off.

**Default institution**



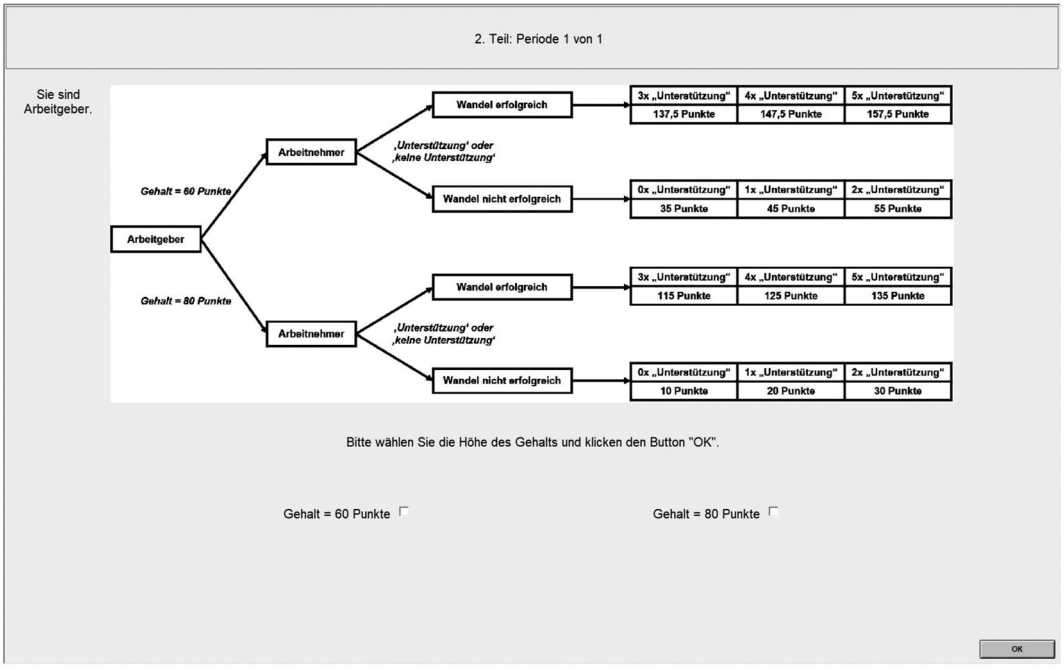

DEFAULT employee decision.

### Recommendation institution

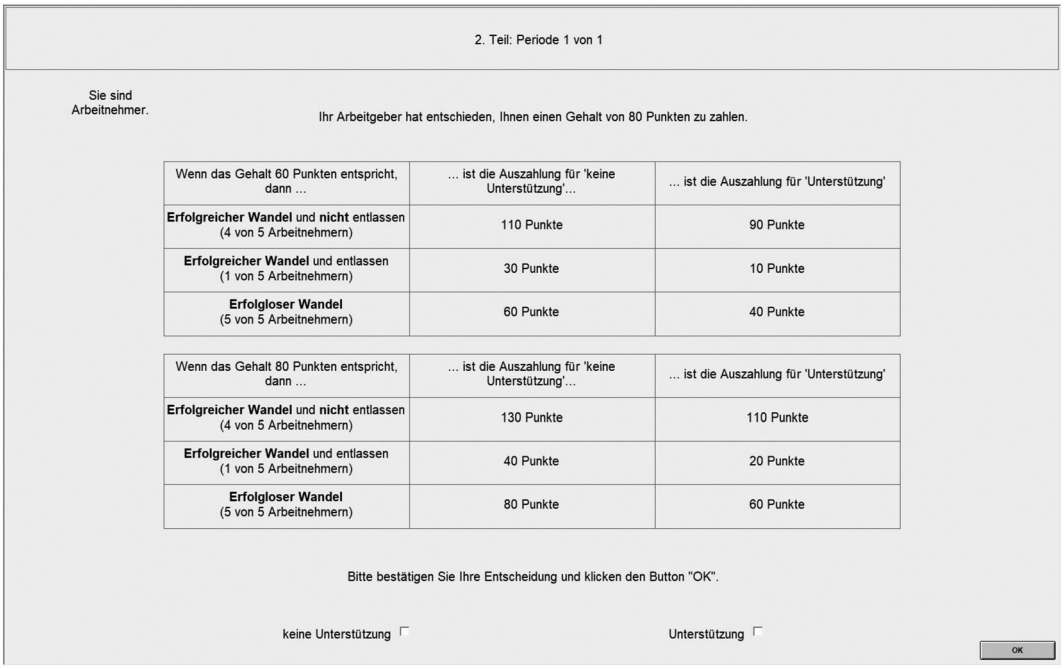



RECOMMENDATION employee decision.

### Choice institution




CHOICE employer decision.




CHOICE employee decision.