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Nudging in the Workplace: Increasing Attendance at Employee Socialisation Events

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Abstract: Organisations often invest significant resources in promoting employee well-being, yet attendance at well-being events is typically low. Using a randomised control trial, we test whether four behaviourally informed nudges targeting event registrations – simplification, simplification plus changing the messenger, simplification plus social proof, and setting a default – influence the decision of 6,998 public sector employees in Ireland to register for, and attend, three virtual worker well-being events. We find evidence that nudges are effective at increasing the registration rate. The default nudge is the most effective – automatically pre-registering employees increases registration rates by 90 percentage points versus the control. Combining simplification with the provision of either a social proof nudge or a changing the messenger nudge increases registration rates by 2.2 and 2.7 percentage points respectively. The results also reveal a large intention-behaviour gap, with the majority of registrations failing to translate into attendance. Only the simplification plus messenger nudge and the default nudge were effective at boosting attendance at the events conditional on registration. These results caution against organisations relying exclusively on nudges to boost attendance at worker well-being events.

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I INTRODUCTION

The importance of social connections in the workplace are well documented (Baumeister and Leary, 2017), with informal interactions, gossip, and 'water cooler' encounters deemed crucial for cementing trust and improving well-being (De Jong Gierveld *et al.*, 2016). Working from home (WFH) has been linked with increased isolation and reduced opportunities for social interaction (Wood *et al*., 2021), such that employees feel excluded from an organisation's social and professional networks (Ha, 2021; Marshall *et al.*, 2007). Social exclusion is associated with multiple adverse outcomes including diminished worker well-being (WWB) (Meseguer de Pedro *et al*., 2021) and increased mortality (Holt-Lunstad *et al*., 2015).[1]

Given the global shift towards WFH in the aftermath of the COVID-19 pandemic, organisations are increasingly seeking to foster social connections by running informal events structured around particular themes. These differ from traditional WWB initiatives which are highly structured and focus on specific health-related goals. Whilst the impact of these events on WWB will depend on their content and delivery, assuming these two requirements are adequately met, the cost effectiveness and reach of these events rests on their ability to attract sufficient numbers of employees to attend. This study focuses on the first phase of the attendance chain by testing the effectiveness of a variety of nudge interventions at increasing registrations for WWB events, and thus (by extension), attendance at these events. While we do not measure the ultimate outcome – the ability of the events to improve isolation and boost well-being – the results of the study have implications for the broader nudge literature which addresses the ability of nudges to increase attendance at medical, dental, and vaccination appointments (e.g. Mehta *et al*., 2018; Milkman *et al*., 2021).

Participation rates in WWB initiatives are typically low, averaging 20-40 per cent (Mattke *et al*., 2015). While there is some evidence that monetary incentives are moderately effective at increasing registrations/attendance, a more nuanced understanding of the psychological and behavioural antecedents of attendance is required. The decision to register for WWB events is a function of individual (gender, age, personality, preferences, beliefs around benefits, ability to attend, opportunity cost, motivation etc.) and organisation-level factors (perceived organisational support, incentives, event accessibility, organisational culture and norms, communication strategy, and contextual factors such as timing) (Robroek *et al*., 2009). Given that many of these antecedents are psychological, it is conceivable that behaviourally informed interventions, in particular 'nudges' which change behaviour without changing incentives or precluding options (Thaler and Sunstein, 2009; 2022), may prove effective. Nudge interventions appeal to

[1] See Sahai *et al.* (2020) for a comprehensive review of workplace isolation.

organisations as they are light-touch, low-cost, and relatively quick to implement, and have been shown to work in multiple contexts (DellaVigna and Linos, 2022; Jachimowicz *et al*., 2019; Mertens *et al*., 2022). While nudges are often used by organisations to influence client behaviour, they are less frequently used to modify employee behaviour, with the notable exception of pension/savings-plan enrolment (Thaler and Benartzi, 2004).

The aim of this study is to explore whether nudges can be used to boost registrations (and by extension, attendance) for WWB events. We use a Randomised Control Trial (RCT) design to test the impact of four nudges on employee attendance at three virtual WWB events aimed at combatting social isolation in one of Ireland's largest public-sector organisations. The three lunchtime events were organised as part of their 'Diversity and Inclusion' week and included a "cook-along", an Irish sign language class, and a workshop on how to create a more inclusive workplace from a human rights perspective. They aimed to bring employees from different parts of the organisation together in an informal virtual setting to foster social connectedness.

The nudges were chosen for their potential to address the behavioural barriers to non-registration/non-attendance identified in a needs analysis (discussed below), and their feasibility. They comprised: 1) 'pure' simplification: providing an embedded registration link to the event in the email invitation to overcome the pre-existing clunky registration process; 2) simplification + messenger (SM): simplification combined with changing the messenger (the sender of the email invitation) to address a perceived lack of commitment by management to WWB; 3) simplification + social proof (SP): simplification combined with providing social proof (information on the number of employees already registered) to frame attendance as a normative behaviour, and 4) harnessing defaults (automatically pre-registering employees for one of the three events whilst giving them the option to opt out) to overcome inertia and procrastination.

We address four research questions. First, can nudges increase registrations for WWB events? Second, which nudges are most effective? Third, are some employees more susceptible to nudges? Fourth, are nudges which target registration effective at increasing attendance? Despite the well-documented under-utilisation of costly WWB programmes, researchers have only recently examined whether, and how, participation rates might be increased. Most of these studies focus on incentives, rely on pre-post survey designs, and/or typically involve formal, structured programmes. We measure, for the first time, the impact of nudges which specifically target registration rates in the expectation that this will lead to an increase in attendance. Nudges are, by definition, context dependent. Repeated testing of nudges in different contexts is thus essential for the construction of a solid evidence base on their effectiveness (Soman and Hossain, 2021). This study is helpful for organisations who are seeking to identify effective, low-cost, and light-touch ways to extend the reach and economic returns of WWB events.

II STUDY DESIGN

2.1 Needs Analysis

The study was designed and implemented in partnership with a large public sector organisation in Ireland. Given the well-documented potential for nudges to increase attendance in other domains, the authors were invited by the WWB committee to collaborate on the design and implementation of an RCT which would test the impact of nudges aimed at increasing registrations (and by extension, attendance) at virtual WWB events. Prior to designing the intervention, we conducted a needs analysis.

2.1.1 Baseline survey

As part of the annual employee survey conducted in May 2021, respondents (n=5,327) were asked whether they were aware of the organisation's WWB initiatives and whether they had attended any live or recorded WWB webinars during the previous year. Respective proportional responses were "*Aware of WWB initiatives*" (90 per cent), "*Have not attended a live webinar*" (85 per cent), and "*Have not attended a recorded webinar*" (81 per cent). Only 1 per cent of respondents reported accessing live or recorded webinars "*frequently*". Attendance data revealed an average attendance of 200 employees (1.5 per cent of the workforce) across the seven wellness events previously held. Respondents were also asked *"In a remote working environment what wellness initiatives/events would you like to see organised?".* Respondents expressed a desire for a greater prioritisation of WWB, as well as more collaboration, social interaction, and team-bonding events. They requested more virtual coffee mornings, social events, and informal get togethers *"where talk is not about work*". They were keen to "*connect more with colleagues*" over joint challenges etc. Several respondents expressed concerns about the potential for remote staff to become isolated. Overall, the responses revealed a desire for more social events.

2.1.2 Focus Groups

A follow-up focus-group workshop was held in July 2021 (n=25) in which the results of the baseline survey were discussed. A strong desire for social interaction was highlighted once again. In particular, respondents emphasised the need for "*interaction with colleagues*", "*connection*", "*co-operation*", "*collaboration*", and "*feeling included*". A lack of social interaction was highlighted as a negative feature of WFH in terms of "*lack of communication*" and "*can't just talk in pods/office etc*.". Workload pressure was the most commonly cited barrier to attending webinars. Respondents also highlighted difficulties in navigating the WWB website, commenting that "*accessing the site is not easy*". Respondents cited "*better communication"* and "*connection*" as one of the factors that would most improve

their day-day working experience. Respondents also desired WWB to be afforded higher priority.

2.2 WWB Events

Based on these findings, three virtual events were developed by the WWB committee to address the identified need for more informal social interaction. The events coincided with the organisation's annual Diversity and Inclusion week. The aim was to decrease WFH-induced social isolation and break down internal silos by encouraging employees to bond over the acquisition of new (non-work-related) skills. All events were held at lunchtime during the week 16-19 November 2021. The first event comprised a 30-minute interactive "*Introduction to Irish Sign Language (ISL)"* workshop provided by an employee. The second was a 60-minute interactive *"Cook-along"* with an external chef, accompanied by a sign-language interpreter. The final event comprised a 30-minute *"Lunch 'n Learn"* interactive workshop delivered by employees, the purpose of which was to encourage employees to share practical tips on how to create a more inclusive organisational climate.

2.3 Intervention Design

Nudging is an umbrella term coined by Thaler and Sunstein (2009; 2022) to describe techniques which can be used to change behaviour in a welfare-enhancing way, without prohibiting options or significantly changing the costs associated with that behaviour. These techniques modify the social and physical environment of the decision-maker and/or the way in which the choice is presented or framed. Multiple studies demonstrate that re-framing a message by altering/re-formatting text, changing the order of presentation, making one option the default, providing planning prompts and/or feedback can change behaviour (e.g. Choudhary *et al*., 2022; Robitaille *et al.*, 2021).

The effectiveness of nudges is, however, not guaranteed. Hummel and Maedche (2019) find that only 62 per cent of nudges result in significant behavioural change. They may be more effective in some contexts, for example when motivation to perform the targeted behaviour is very low (Grüne-Yanoff *et al.*, 2018), or when preferences are not well-defined (Venema *et al*., 2020). Their effects may dissipate over time with repeated use (Sunstein, 2017). In addition, they may have unintended consequences or 'boomerang effects' (Bolton *et al.*, 2020; Osman *et al*., 2020). Nudges may backfire due to psychological reactance (Steindl *et al*., 2015), the tendency to resist nudges which are perceived as a threat to autonomy or an attempt to manipulate behaviour. Similarly, using a social proof nudge which highlights how many others behave in a socially harmful way, may make the behaviour seem 'natural', thus inadvertently encouraging it (Bicchieri and Dimant, 2022). In addition, poorly designed nudges may inadvertently crowd-out intrinsic motivation (Damgaard, 2020). All this points to the need to test nudges in different contexts.

As voluntary WWB initiatives are relatively low stake events which do not require significant changes in behaviour, and which are unlikely to be associated with strong underlying preferences, we hypothesise that they may be particularly susceptible to nudges. Thus, we designed a series of nudges based on the existing evidence base.

2.3.1 Simplification

The starting point for most nudge interventions is simplification. Research shows that even small frictions can impede behaviour. For example, Bhargava and Manoli (2015) showed that reducing the small hassles associated with registering for social welfare increased uptake levels by 9 percentage points. Simplification reduces the cognitive load and psychological cost of information processing by emphasising key information and reducing noise (Sunstein, 2014), thus making the target behaviour easier to perform. It often uses formatting changes (streamlining text, changing the colour scheme etc.), and/or "digital nudges" such as enhanced user interfaces or embedded electronic links (Meske *et al*., 2019). Simplification nudges have been used to reduce court no-shows (Fishbane *et al.*, 2020) and increase attendance at cervical screening appointments (Cuesta *et al*., 2021).

Given this evidence, as well as feedback from employees that the current registration process for WWB events was overly cumbersome, we adopted simplification as the cornerstone of our intervention design. Prior to the experiment, employees were invited to participate in events using a standard email from the WWB committee which provided a summary of the timing and content of the event. They were instructed to register their interest by clicking on a link to a return email address, which took them to their MS Outlook email page, from where they would compose and send an email indicating that they would like to attend. Once their email had been received, they were emailed a Teams link to the event.

In this experiment, employees in the Control condition continued to receive this standard invitation. Participants in the pure simplification treatment group received an email which was identical in wording and format to the Control invitation. However, instead of the embedded link taking them to their email outbox, participants in this group were taken directly to a Qualtrics page which allowed them to avail of 'one click registration' by ticking the box next to the event they were interested in.

2.3.2 Simplification plus Changing the Messenger

Research demonstrates that the choice of 'messenger', the person who delivers a call to action, can influence choices (Maclean *et al.*, 2019). Source Credibility Theory (Hovland and Weiss, 1951) posits that information is given more credence when provided by someone who is perceived as believable and trustworthy. While Source Attractiveness Theory (McGuire, 1968) contends that messages delivered by someone who is perceived as likeable or similar to the recipient are processed

more positively. Conversely, using the wrong messenger may result in the information being irrationally ignored or discarded, particularly if the messenger subconsciously triggers negative emotions (Dolan *et al*., 2012). In the context of employee participation, Chohan *et al.* (2019) find that employees who receive an email from an authority source encouraging them to complete an e-learning course are 80 percentage points more likely to comply than employees who received an email with no attributed source.

Based on this evidence, we combined simplification with a messenger nudge (SM). The SM condition aimed to capture the tendency on the part of recipients to recall, positively evaluate, and act on messages which are delivered by someone who the recipient admires or respects or who they can personally identify with. Participants in this condition received an email which was electronically signed by a senior manager.[2] It also contained supplementary text in which she personally endorsed the events and urged her colleagues to join her in supporting the events.[3]

2.3.3 Simplification plus Social Proof

People care about what others think and "*like to do what most people actually do*" (Thaler and Sunstein, 2009 p.191). There is a long history of using descriptive norms, which describe what most people are doing, to encourage desired behaviour through social learning and/or a desire to conform to group behavioural expectations. With respect to registrations, providing social proof may help correct for misconceptions or ignorance as to the number of people who typically register for similar events by providing a reference point, which may in turn trigger participation if the number exceeds expectations (Von Wagner *et al*., 2019). In the context of workplace events, Belle and Cantarelli (2021) show that employees are significantly more likely to attend workplace vaccination clinics when informed that the majority of their colleagues typically get vaccinated.

Thus, our third nudge combined simplification and a social proof nudge (SP). The SP condition aimed to exploit social norms and peer effects, in particular the human desire to conform to the behaviour of the majority. Participants in this condition received an identical initial email to the pure simplification group. However, they received a customised version of a reminder email with up-to-date information on the number of colleagues who had already registered for an event (n=231 as of November 15) and urged the recipients to do likewise.

[2] The messenger was of Assistant Secretary grade. As it was not possible to send the messenger group emails directly from the messenger's email address, the emails were sent by the WWB committee. However, the text made it clear that the emails were from the messenger and contained her electronic signature.

[3] The 'endorsement' wording used was as follows: *"Diversity and Inclusion Week is taking place November 15th-19th. I'm sure you'll agree that this is an important initiative that I, for one, am really looking forward to. I am excited to announce our live events planned for the week…If you would like to join me in supporting this important initiative by registering your interest for any of these webinars, please click on the link below."*

2.3.4 Defaults

Defaults represent the most prominent category of nudges (Loewenstein and Chater, 2017). They assign individuals to a pre-selected option, while preserving their right to opt out if desired. Default choices have been shown to be 'sticky' in a wide range of contexts (Beshears and Kosowsky, 2020) due to their ability to exploit cognitive biases such as inertia (Samuelson and Zeckhauser, 1988), loss aversion (Tversky and Kahneman, 1991), present bias (O'Donoghue and Rabin, 1999), and procrastination. The stickiness will depend on the perceived level of effort that individuals must incur in order to switch options (Bar-Gill and Ben-Shahar, 2021); whether the default is interpreted as an implicit recommendation (McKenzie *et al.*, 2006); and/or whether it is congruent with underlying preferences (Banerjee and John, 2021). Defaults have been found to increase attendance. For example, Mehta *et al*. (2018) show that opt-out messaging increased participation in colorectal screening by 19.5 percentage points.

The final treatment aimed to exploit the power of defaults by automatically pre-registering employees for an event. They received the same email as the pure simplification group but with the inclusion of additional wording[4] which informed them they that they had been selected to attend one of the three events and that, if they wished to attend the selected event, no further action was required as they would be emailed a Teams link to the event 24 hours in advance. If they wished to switch to another event, or to opt out entirely, they were informed that they could do so, however it required additional effort in the form of clicking on the embedded link which took them to a Qualtrics page in which they then had to untick the pre-selected event box to opt out completely or tick a different box to switch to an alternative event.

2.3.5 Intention-behaviour gap

Participation in voluntary events often involves two distinct, but closely linked, behaviours: registration and attendance. On the assumption that registering for an event indicates an intention to actually attend, more registrations should produce higher attendance based on theoretical (e.g. Theory of Planned Behaviour, Ajzen, 1991) and empirical (Sheeran and Webb, 2016) evidence in support of intentions as a precursor to actual behaviour. Sheeran's (2002) meta-analysis found a large correlation between intentions and subsequent behaviour ($\rho = 0.53$) across 422 studies. However, there is also experimental evidence that changing intentions alone may not necessarily change behaviour (Hassan *et al.*, 2016). Good intentions may fail to be enacted due to human failings such as procrastination (Steel, 2007),

[4] The wording comprised *"We are pleased to inform you that you have been specially selected to attend the Introduction to Irish Sign Language event. You will be sent a link to the live event 24 hours before it commences. Alternatively, if you would prefer to switch to one of the other two events, or to not attend any of the events, then please click on the link below".*

forgetfulness (O'Carroll *et al*., 2014), and failure to plan (Sniehotta *et al.*, 2005). For example, Rongen *et al*. (2014) found that while participation intentions predicted attendance at a wellness programme six months later, only one-in-five of employees who intended to participate actually attended.

Thus, in addition to measuring the registration rate, we also analysed how many registered employees actually attended the events in an effort to test the intention-behaviour gap.

III EXPERIMENT DESIGN AND IMPLEMENTATION

3.1 Sample Size and Randomisation

A power analysis was conducted to determine the minimum sample size required to identify significant differences between the treatment and control groups, assuming α = 5 per cent, power = 0.8, and a minimum detectable effect size of 2 percentage points, which lies in the range of the average effect sizes of 1.4-8.3 per cent reported in DellaVigna and Linos' (2022) review of 126 nudge RCTs. This resulted in a required minimum sample size for each condition of 1,400. All 6,998 employees were assigned in equal proportions to one of five conditions. Random assignment was completed using an individual probability randomisation strategy into one of five groups using employees' work email addresses. The 1,403 employees in the default condition were 'opted in' (i.e. pre-registered), at random, and in equal proportions, to attend one of the three events. Figure 1 sets out the randomisation process.

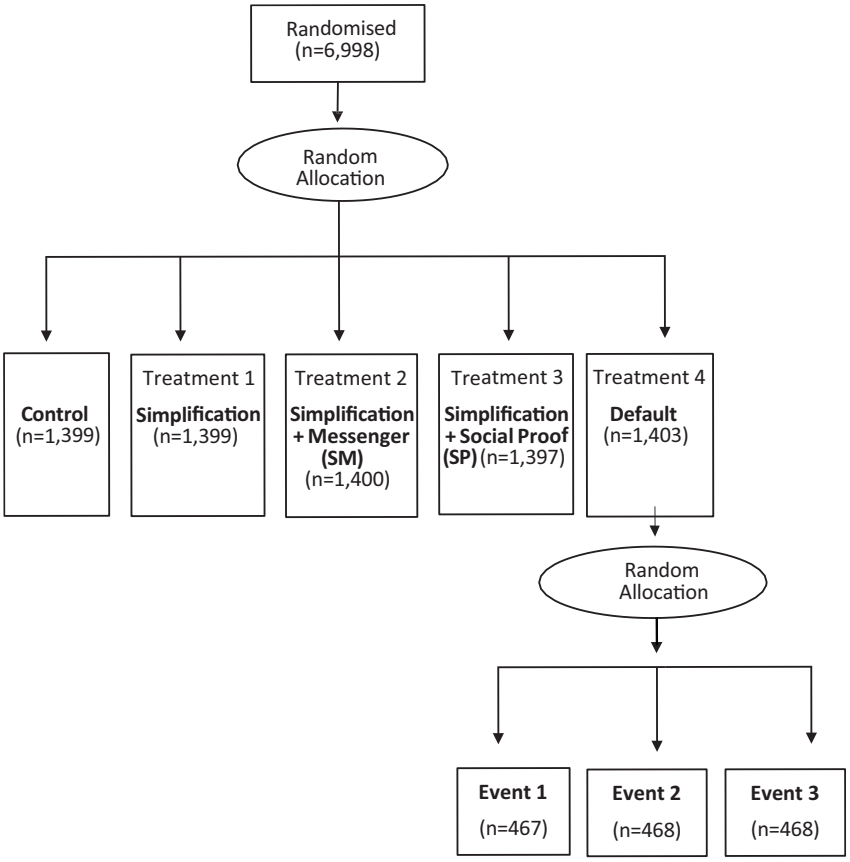
3.2 Study Sample

Among the 6,998 participants, the majority were female (62 per cent) and aged between 30 and 60 years (83 per cent). While the organisation operates nationally across multiple worksites, at the time of the study, 90 per cent of employees were WFH. Most of the employees were engaged in office-type work. Similar to other public sector bodies, the organisational structure is hierarchical (see Figure A.1 in the Appendix). All employees were invited to participate in three virtual events in November 2021. Staff who were on sick- or maternity leave were excluded. Random assignment at the individual employee level was used to create one control group and four treatment groups. The groups were balanced on gender, division, and occupational grade. Table A.1 in the Appendix provides sample descriptives.

3.3 Outcome Measures

We employ two outcome measures. Firstly, registrations – the number of employees who voluntarily self-registered (control, simplification, SM, and SP conditions) or were automatically pre-registered (default condition) for one or more events. Registrations for the default group comprise total pre-registrations (n = 1,403) less

Figure 1: Randomisation Process



Source: Authors' own.

any employees who opted out. Secondly, attendance, i.e. the number of employees who choose to attend one or more events. Employees were required to pre-register in order to receive the live attendance link, thus registration was a pre-condition for attendance.

Registration data were collected by the WWB committee using the registration emails (control) and the Qualtrics webpage registrations (simplification, SM, and SP conditions). Whilst all employees in the default condition were automatically registered for the event, switches or opt-outs were tracked on the Qualtrics webpage to produce a 'net' registration rate. Attendance data were collected by recording the number of registered employees who logged into the event using their work email addresses. However, this was not universally adhered to, resulting in a failure to identify 39 attendees who were excluded. Registration and attendance data were matched to the treatment conditions, anonymised, and sent to the research team.

3.4 Implementation

The experiment was conducted between 4-19 November 2021. All five groups received an initial invitation email from the WWB committee on 4 November. In line with best practice (see Halpern, 2015), participants were not explicitly made aware that they were part of a study.[5] Employees who self-registered (or who were pre-registered) were sent a Teams link to the event 24 hours beforehand.[6] The invitation emails informed recipients that the events would be recorded and would be made available for them to watch later.[7]

Given evidence that forgetfulness has been identified as a key barrier to participation in WWB initiatives (Bardus *et al*., 2014) and that timely reminders have proved effective at increasing participation in other contexts (e.g. Beshears and Kosowsky, 2020; Camilloni *et al*., 2013; Milkman *et al*., 2021), all employees received a second email on November 15, one day prior to the first event, reminding them to register. The reminder emails mirrored the language and format of the original invitations, except for the SP nudge. The full text of all the initial and follow-up reminder emails is provided in Figures A.2 and A.3 in the Appendix.

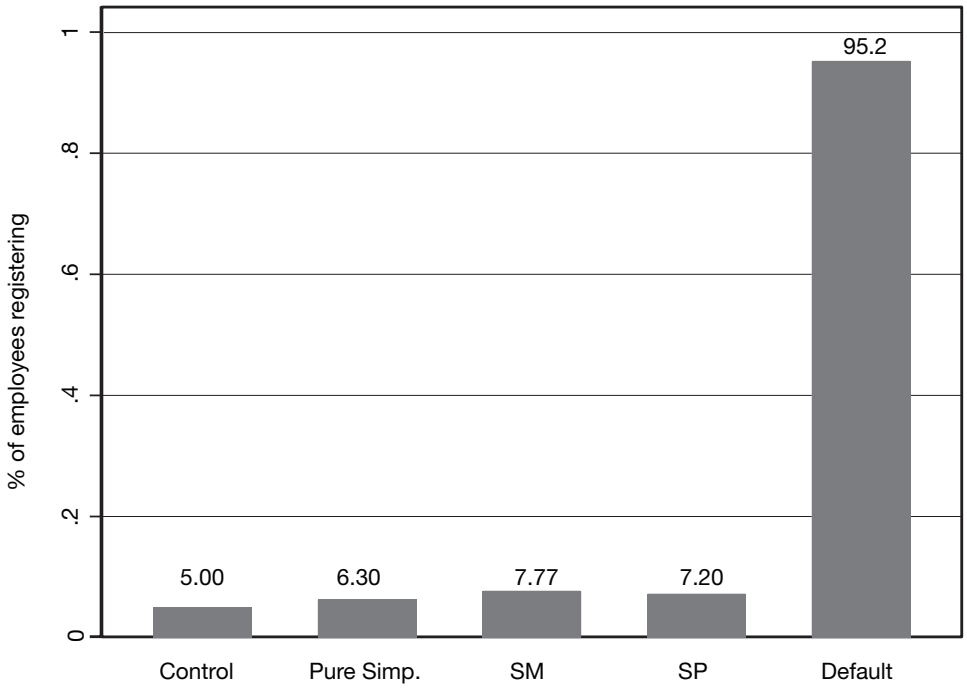
IV RESULTS

4.1 Registrations

The nudges were designed to increase the proportion of employees who registered for one or more events. In total, 24.3 per cent of employees (1,703) self-registered (control, pure simplification, SM, and SP conditions) or were automatically registered (default). Figure 2 depicts registrations by condition. On average, 6.6 per cent of non-default-condition employees (367) self-registered. All employees in the default condition (1,403) were pre-registered, and of these 86 elected to opt out, of which 19 registered for another event and 67 opted out entirely, resulting in a net registration rate of 95.2 per cent. At the event level, excluding defaulted employees, the cook-along event attracted the highest number of self-registrations (228), followed by sign-language (193), with the inclusivity event proving the least popular (145).

[5] In adherence with ethics committee requirements, the emails included additional text at the end which informed the recipients that the WWB committee would be reviewing the registration and participation rates associated with the events in order to improve engagement and advised them to email the committee if they wished to participate without having their registration status recorded. Only two employees did this.
[6] Unfortunately, it was not feasible to embed a placeholder or reminder for the event in registered employees' calendars.
[7] Assuming that recipients actually read this section of the email, it is possible that this may have influenced 'live' attendance rates. Employees did not have to register to watch the recordings which were posted on the organisation's website. As of 4/2/2022, however, only six employees had accessed the recorded events.

Figure 2: Registration Rates by Condition (n = 6,998)



Source: Authors' own.

Table 1 examines the impact of being randomly assigned to each of the five conditions on registrations using an OLS linear probability model (LPM).[8] The dependent variable ("registered for one or more events") is coded 0 for "No" and 1 for "Yes". We control for heteroskedasticity using the Huber-White-Sandwich method. The results show that being randomly assigned to any treatment group significantly increases the likelihood of registration relative to the control by 24.1 percentage points. By design, being assigned to the default group produces the largest effect, increasing registrations by 90.2 percentage points versus the control. Whilst being exposed to pure simplification increases registrations, as demonstrated by the positive coefficient, the effect is not significant at conventional levels. Being assigned to the SM and SP groups however increases registrations significantly relative to the control, by 2.7 and 2.2 percentage points respectively.

[8] We tested the robustness of the results using a probit regression model and found very similar results. The marginal effects are reported in Table A.2 in the Appendix.

Table 1: Impact of Treatment on Registrations

	All Treatment Groups v Control	*Pure Simplification v Control*	*SM v Control*	*SP v Control*	*Default v Control*
Registration rate	.241***	.012	.027***	.022**	.902***
	(.008)	(.008)	(.009)	(.009)	(.008)

Source: Authors' own.
Note: *** p<0.01, ** p<0.05. * p<0.1. Robust standard errors in parentheses. LPM using OLS regression. Dependent variable is registrations where 0 = No and 1 = Yes (registered for one or more events). SM = simplification + messenger. SP = simplification + social proof. Column 1 uses the entire sample (n=6,998). Columns 3-6 restrict the sample to the groups being analysed (n = 2,796).

4.2 Penalised Logistic Regression Results

One issue which may impact these results is that a small proportion of employees registered for an event. Thus, by way of robustness check, we re-estimate the results in Table 1 using a penalised logistic model to control for the small-sample bias associated with using maximum likelihood to estimate the probability of rare events, namely binary outcomes in which the rarer of two outcomes (in our case, registering) contains a large number of zeros (King and Zeng, 2001). The marginal effects are depicted in Table A.3 in the Appendix and show that the penalised logistic results are consistent with the main results reported in Table 1.

4.3 Impact of Individual Nudges on Registrations

Simplification serves as the cornerstone of our intervention design. As three of the nudges involve simplification, we examine whether the type of simplification exposure matters. We use the whole sample and a so-called dummy variable regression to examine the impact of being exposed to simplification either in isolation (pure simplification) or in combination with an additional nudge (SM and SP). The "any form of simplification" dummy variable (column 2) is coded 1 if the participant is in the simplification, SM, or SP groups and 0 if they are in the control group. Similarly, to test the impact of the messenger nudge (column 3), participants are coded 1 if they receive the SM nudge and 0 if they receive the control, pure simplification, or SP nudge. And finally, to test the social proof nudge, participants are given a 1 if they receive the SP nudge, and 0 if they receive the control, pure simplification, or SM nudge. As the default treatment automatically registered participants, we excluded the default treatment from this analysis on the basis that it relies on the psychological mechanism of 'opting out', rather than 'opting in', and including it might skew the results.

The results are depicted in Table 2. Column 2 shows that being treated with any form of simplification significantly increases the probability of registering for

an event by 2 percentage points. When taken with the result for pure simplification in Table 1 (+.012; p=0.141), this suggests that layering any additional nudge on top of pure simplification may increase registrations. Comparing columns 3 and 4 suggests that the choice of additional nudge may also matter, with simplification + messenger appearing (1.5 percentage points) to have a larger impact than simplification + social proof (.09 percentage points).

Table 2: Impact of Exposure to the Simplification Nudge on Registrations

Nudge	*ANY FORM OF SIMPLIFICATION Pure Simplification or SM or SP v Control*	*MESSENGER + SIMPLIFICATION v Control or Pure Simplification or SP*	*SOCIAL PROOF + SIMPLIFICATION v Control or Pure Simplification or SM*
Registration rate	.020*** (.007)	.015* (.008)	.009 (.008)

Source: Authors' own.

Note: *** p<0.01, ** p<0.05. *p<0.1. Robust standard errors in parentheses. OLS LPM. Dependent variable is whether an employee self-registered for one or more events (0 = No and 1 = Yes). Dummy variables in columns 2-4 are coded 1 if an employee received the nudge in question and 0 if not. The reference category constitutes all employees not treated with the nudge being l. The default group is omitted from this analysis, resulting in n = 5,595.

4.4 Heterogeneity Analysis

In order for a nudge to be effective there must be a scope for improvement, the presence of a behavioural barrier, or a motivation to change (Damgaard, 2020). As these conditions vary across groups, the effectiveness of nudges may also vary. However, the evidence in relation to age or gender-based heterogeneity in relation to nudge susceptibility is scant and mixed. There is some evidence that heterogeneity in 'nudgeability' may be driven by diverging underlying preferences for the target behaviour (Vetter and Kutzner, 2016). De Ridder *et al.* (2022) argue that nudges are more likely to be ineffective for individuals with incongruent preferences (they will ignore it) and for individuals who already have strong preferences in line with the nudge (they will perform the target behaviour regardless). Our needs analysis provides some support for diverging baseline preferences for WWB events, with more senior employees and women reporting higher levels of engagement. Given these differences, we test for heterogeneity in nudge susceptibility across gender and seniority.[9]

[9] We use a binary seniority variable, which codes employees of CO/EO/Other grades = 0 ("Junior"; 72.4 per cent) and all other employees = 1 ("Senior"; 27.6 per cent).

4.4.1 Gender

We re-estimate the LPM model above, with 'registered' as the dependent variable, and 'treated', 'gender', and a 'treatment*gender' interaction term as independent variables. The results are depicted in Table 3. The interaction coefficient for male employees in the simplification treatment is negative and significant, suggesting that simplification may be more effective at boosting registrations amongst women despite women displaying a higher baseline level of engagement with prior WWB events.

Table 3: Gender Heterogeneity – Registrations

Registration	*All Treatment Groups v Control*	*Simplification v Control*	*SM v Control*	*SP v Control*	*Default v Control*
Treated	.250***	.023*	.037***	.031**	.896***
	(.011)	(.012)	(.012)	(.012)	(.010)
Male	–.021*	–.021*	–.021*	–.021*	–.021*
	(.011)	(.011)	(.011)	(.011)	(.011)
Treated*male	–.024	–.029*	–.027	–.024	.013
	(.016)	(.016)	(.017)	(.017)	(.016)

Source: Authors' own.

Note: *** p<0.01, ** p<0.05. Robust standard errors in parentheses. Dependent variables are binary registrations for one or more events, where 0 = No and 1 = Yes. Gender is a binary variable where 0 = women and 1 = men / other.

4.4.2 Seniority

We re-estimate the LPM regression with 'registered' as the dependent variable, and 'treated', 'seniority', and a 'treatment*seniority' interaction term as independent variables. The results are depicted in Table 4. The interaction coefficient for senior employees in the default treatment is negative and significant, suggesting that defaults may be more effective at increasing registrations amongst junior employees, a group who report a lower baseline preference for online WWB events in our sample.

4.5 Attendance

Next, we examine the intention-behaviour gap, and whether increased registrations translated into increased attendance. In total, 4.1 per cent of employees (289) attended one or more event. This compares to an average baseline attendance rate of 1.5 per cent for previous webinars held by the organisation. Figure 3 sets out attendance (conditional on registration) by condition (n=1,703). The results support an intention-behaviour gap with just 42.2 per cent of self-registered employees on

Table 4: Seniority Heterogeneity – LPM Regression

Registration	*All Treatment Groups v Control*	*Simplification v Control*	*SM v Control*	*SP v Control*	*Default v Control*
Treated	.243***	.016*	.026***	.016*	.915***
	(.009)	(.009)	(.010)	(.009)	(.008)
Senior	.031**	.031**	.031**	.031**	.031**
	(.014)	(.014)	(.014)	(.014)	(.014)
Treated*Senior	–.006	–.014	.001	.019	–.046**
	(.019)	(.021)	(.022)	(.022)	(.019)

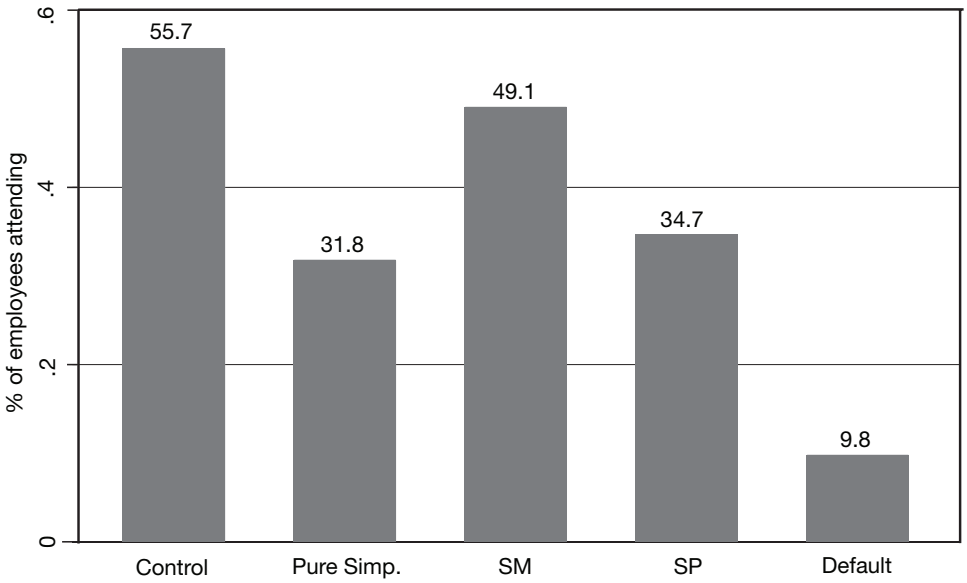
Source: Authors' own.
Note: *** p<0.01, ** p<0.05. Robust standard errors in parentheses. Dependent variables are binary registration for one or more events, where 0 = No and 1 = Yes. Seniority is a binary variable where 0 = junior and 1 = senior. Senior employees are grade AO/ HEO or higher.

average attending one or more events, with the distribution across conditions as follows: control (55.7 per cent), pure simplification (31.8 per cent), SM (49.0 per cent), and SP (34.6 per cent). Just 9.8 per cent of pre-registered employees in the default condition attended. The cook-along event attracted the highest attendance (158), followed by the sign language event (121), with the inclusivity themed event proving least popular (70).

The nudges were designed to increase registrations, in the expectation that an increase in the number of employees registering for an event would ultimately lead to an increase the number of employees attending. Attendance is a two-step process – in order to attend an event employees must first register. While the nudges may increase registrations, they should therefore have no direct impact on attendance except via their impact on registrations. It is thus not appropriate to estimate the impact of the nudges on attendance directly. Instead, we estimate a two-stage least squares (2SLS) model where we instrument registration using the treatment indicator. This follows Muralidharan *et al*. (2019) based on Angrist and Imbens (1995). It addresses the potential endogeneity of self-registrations due to omitted variable bias (e.g. employees who are more sociable may be more likely to self-register and attend independent of treatment) or simultaneity, thus violating OLS assumptions. The 2SLS estimates are based on the assumptions of monotonicity and the exclusion restriction which assumes that participants respond to the treatment itself and not assignment to treatment. If these assumptions hold, the 2SLS models provide an unbiased estimate of the impact of registering on attending, conditional on being exposed to different nudges.

As shown in Table 1, the instrument, being randomly assigned to a treatment condition, is significantly positively associated with registrations. This holds also

Figure 3: Attendance Rates Conditional on Registration by Condition (n=1,703)



Source: Authors' own.

for the default group as all pre-registered employees had the option of opting out completely or switching to another event, with 86 employees availing. The second stage results are set out in Table 5.

Table 5: Impact of Registration on Attendance

Attendance	*Any treatment*	*Simplification*	*SM*	*SP*	*Default*
Registration (2SLS: Second stage)	.069*** (.020)	–0.611 (0.78)	0.368** (.018)	–0.126 (.308)	.074*** (.009)
No. Obs	6,998	2,798	2,799	2,796	2,802

Source: Authors' own.
Note: *** p<0.01, ** p<0.05. *p<0.1. Robust standard errors in parentheses. 2-stage IV model instrumenting treatment assignment (binary, 1=Yes and 0=No) for registrations. Dependent variable is binary attendance at one or more events, where 0 = No and 1 = Yes.

Column 2 shows that registering for an event after being assigned to any treatment group significantly increases the probability of attending the event by 6.9 percentage points. Being exposed to either the pure simplification nudge or the SP nudge does

not affect the impact of registering on attending. However, being exposed to the SM nudge increases the impact of registering on attending by 36.8 percentage points. In addition, being exposed to the default nudge increases the impact of registering on attending by 7.4 percentage points.

In combination, the results show that all nudges (apart from pure simplification) were effective in increasing registrations. However, the overall conversion rate of registrations to attendance was low. This most likely reflects the well documented intention-behaviour gap which predicts the failure of many employees to convert their intention to attend into action. Alternatively, the low conversion rate may simply reflect a lack of engagement with these particular events, or with workplace events as a whole.

VI DISCUSSION

This study examines the effectiveness of registration nudges in increasing attendance at employee-focused virtual WWB events. We find that all nudges except for pure simplification were effective in increasing registrations. In terms of increasing attendance conditional on registering, the simplification plus messenger (SM) and default nudges were most effective. However, a large intention-behaviour gap was identified with most registrations failing to result in attendance. The results caution against relying exclusively on nudges which target behavioural intentions to secure behavioural change.

The fact that the SM treatment significantly increased attendance conditional on registrations by 36.9 percentage points suggests that the decision to select a senior manager as messenger may have been effective in terms of addressing the perceived lack of prioritisation of WWB within the organisation, as highlighted in the needs analysis. However, the true effect may have been diluted by our inability to send the invitation or reminder emails directly from the messenger's email address (for logistics reasons the email was sent by WWB committee but was electronically signed by the messenger). Although the WWB committee attested to the messenger being well-known and well-liked, it is also possible that a different messenger may have produced a different result. For example, the selection of a female messenger may have reduced her perceived similarity to male employees, or disproportionately increased her appeal to female employees. Alternatively, her seniority may have diminished her appeal by diluting potential peer effects.

We attribute the effectiveness of the default nudge to its stickiness. Only 4.4 per cent of pre-registered employees elected to completely opt out of their assigned event, despite the low barriers to doing so. While further research is required to fully understand the mechanisms underlying these results, we speculate that the default's effectiveness may derive from employees having interpreted it as an implicit recommendation from their employer, or as a signal that they 'should'

attend the event. Tentative support for this is provided by the fact that senior employees in the default group were more likely to opt out, suggesting that junior employees may have felt more pressure to remain in. The fact that the SM nudge had the largest impact on actual attendance (conditional on registration) further supports this hypothesis as the 'messenger' was a senior manager. The results suggest that junior employees may be more susceptible to registration nudges, which raises ethical questions around the suitability of using defaults in hierarchical organisations. Alternatively, the stickiness of the default may relate to the high workloads and time pressure as these are associated with higher levels of inertia and procrastination, which in turn may increase susceptibility to the power of defaults.

The fact that pure simplification did not increase attendance conditional on registration might be explained by the experimental design inadvertently triggering a self-selection effect, with employees who were already highly intrinsically motivated and/or interested in the events more likely to complete the original cumbersome registration process. Indeed, that the control group had the highest registration-to-attendance conversion rate provides some support for this. Reducing the barriers to registration for the pure simplification group may have reduced their sunk-cost investment in the events, thus making them less likely to follow through on their initial intentions.

Our results suggest that the evidence for any impact associated with the SP nudge intervention is weak. We speculate that the failure of the SP nudge to increase attendance conditional on registration may be attributed to the low absolute magnitude of the social proof provided, particularly given needs analysis data which suggest that a norm of non-attendance had already been established. While the figure included in the follow-up email ('231 employees already registered') was higher than the average attendance rate at previous events, employees may have systematically over-estimated the number of colleagues who typically attend these events. Disclosing that only 231 out of 7,000 co-workers had registered, may have contravened their prior beliefs, inadvertently producing a boomerang effect by providing proof that *not* attending was, in fact, the norm. A dynamic social norm, which positions employee participation as small, but trending upwards relative to previous events, may have proved more effective as recently evidenced in Milkman *et al*.'s (2021) mega-study.

Like all research, this study has limitations, including the generalisability of the findings to other organisational contexts. In particular, 93 per cent of participants were WFH full-time. This may have affected attendance rates positively (increased isolation) or negatively (screen-fatigue) relative to 'normal' working conditions. The results may also be event specific. The events were atypical WWB events, in that they specifically targeted social isolation. More traditional WWB events might be more susceptible to nudging. Furthermore, it is possible that employees failed to see the benefit or appeal of these particular events and instead viewed them as

additional 'work'. More obviously social and fun events may have proved more appealing. A further limitation is that combining simplification with the messenger and social proof nudges, and sending all groups the reminder email, precluded us from isolating pure messenger and pure social proof effects. Future large-scale, multi-arm RCT designs could shed light on the effects of combining nudges by including pure nudge versus combined nudge arms in the same study. Future research could also examine the impact of using different messengers and/or social norms (for example dynamic or personalised norms) and collect survey data on employees' baseline preferences, expectations, and motivation profiles, which might shed light on the diverging baseline propensities of employees to respond to different nudges.

Using nudges in the workplace raises important ethical questions. Nudges should, by definition, be welfare enhancing. However, whilst most workplace WWB events are well-intentioned, welfare gains are not inevitable. This study only measures the impact of nudges on registrations and attendance. It does not measure the direct impact of attending these events on employees' well-being. Although the SM and default nudges increased attendance, whether or not this can be judged a success depends on how attendees experienced and evaluated these events and their impact on their perceived levels of social isolation and inclusion. Whilst the sole aim of this experiment was to test the impact of nudges on registrations and attendance, future research would benefit from the collection of well-being data.

In conclusion, this study demonstrates that nudges which target registration may help organisations increase attendance rates at workplace WWB events. Although the effect sizes for the registration outcome were moderate to large (default), overall post-treatment attendance rates were low, albeit double the baseline level. While our findings suggest that further work on registration and attendance nudges should be explored, this should not detract from organisations' ongoing obligation to ensure that the accessibility, content, and timing of WWB events meet employees' needs and preferences, and are welfare-enhancing as judged by the employees' themselves. We thus share the view of Benartzi *et al*. (2017) that nudges should be viewed, not as panaceas, but as cost-effective complements to more structural initiatives which target WWB directly.

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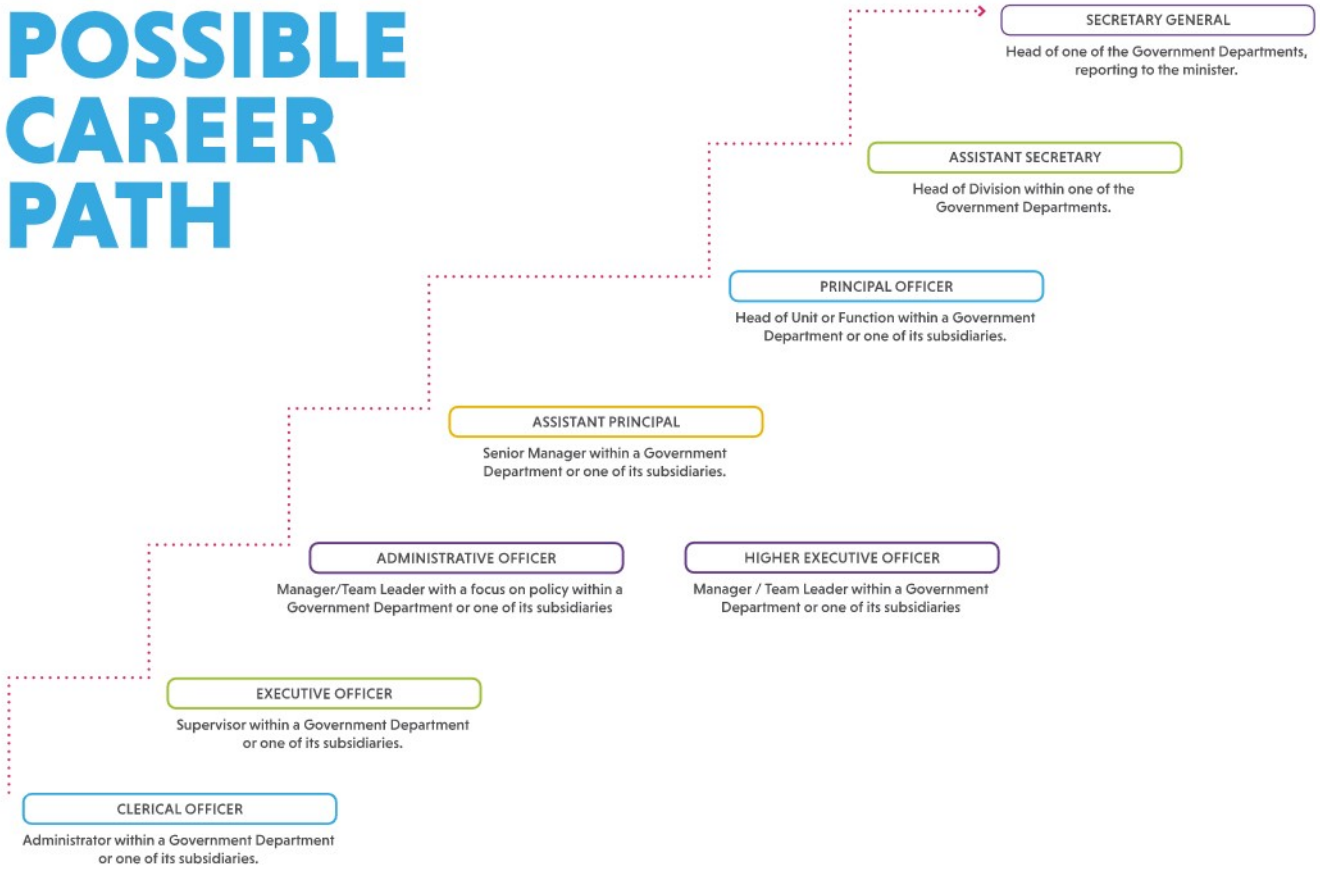
Figure A.1: Grade Structure in the Irish Civil Service



Source: www.publicjobs.ie.

Figure A.2: Initial Email Invitations for each Condition

Control Group

Colleagues,

XX Diversity and Inclusion Week is taking place **November 15th -19th**. We are excited to announce our live events planned for the week:

Date	Time	Event	Description
Tuesday 16th	**12.30–13.00**	**Introduction to Irish Sign Language**	A 30-minute introduction to sign language with our XX colleagues
Wednesday 17th	**12.00–13.00**	**Cooking Demonstration**	Join XX from Healthy Workforce Ireland and learn how to prepare some quick easy and tasty meals with everyday ingredients. Accompanied by ISL interpreter.
Friday 19th	**12.30–13.00**	**Lunch and Learn – Human Rights and Equality**	A 30-minute lunchtime talk from XX Training Branch on Public Sector Equality and Human Rights Duty with XXX

If you would like to register your interest for any of these webinars, please click on **here**.

If you have any questions relating to diversity and inclusion week please email the committee XXXX

Regards,

The Equality, Diversity and Inclusion Committee.

XX will review the registration and participation rates in these events to improve engagement with XX initiatives. If you do not wish your registration status to be recorded, please email XX indicating that you wish to attend the event, but do not wish to have your registration status recorded. The webinars will be recorded, and the video will be made available to watch back at a time convenient to you.

Figure A.2: Initial Email Invitations for each Condition (Contd.)

Treatment Group 1 (Simplification)

Colleagues,

XX Diversity and Inclusion Week is taking place **November 15th -19th**. We are excited to announce our live events planned for the week:

Date	Time	Event	Description
Tuesday 16th	**12.30–13.00**	**Introduction to Irish Sign Language**	A 30-minute introduction to sign language with our colleagues XX and ISL user, XX and XX
Wednesday 17th	**12.00–13.00**	**Cooking Demonstration**	Join XX from Healthy Workforce Ireland and learn how to prepare some quick easy and tasty meals with everyday ingredients. Accompanied by ISL interpreter.
Friday 19th	**12.30–13.00**	**Lunch and Learn – Human Rights and Equality**	A 30-minute lunchtime talk from XX Training Branch on Public Sector Equality and Human Rights Duty with XX and XX

If you would like to register your interest for any of these webinars, please click on the link below:

If you have any questions relating to diversity and inclusion week please email the committee XX

Regards,

The Equality, Diversity and Inclusion Committee.

XX will review the registration and participation rates in these events to improve engagement with XX initiatives. If you do not wish your registration status to be recorded, please email XX indicating that you wish to attend the event, but do not wish to have your registration status recorded. The webinars will be recorded, and the video will be made available to watch back at a time convenient to you.

Figure A.2: Initial Email Invitations for Each Condition (Contd.)

Treatment Group 2 (Messenger)

Colleagues,

XXX Diversity and Inclusion Week is taking place November 15th -19th. I'm sure you'll agree that this is an important initiative that I, for one, am really looking forward to. I am excited to announce our live events planned for the week:

Date	Time	Event	Description
Tuesday 16th	**12.30–13.00**	**Introduction to Irish Sign Language**	A 30-minute introduction to sign language with our colleagues XX and ISL user, XX and XX
Wednesday 17th	**12.00 13.00**	**Cooking Demonstration**	Join XX from Healthy Workforce Ireland and learn how to prepare some quick easy and tasty meals with everyday ingredients. Accompanied by ISL interpreter.
Friday 19th	**12.30–13.00**	**Lunch and Learn – Human Rights and Equality**	A 30-minute lunchtime talk from XX Training Branch on Public Sector Equality and Human Rights Duty with XX and XX

If you would like to join me in supporting this important initiative by registering your interest for any of these webinars, please click on the link below:

If you have any questions relating to diversity and inclusion week. please email the committee at XX.

Hope to see you there!

Regards,
XX Assistant Secretary

XX will review the registration and participation rates in these events to improve engagement with XX initiatives. If you do not wish your registration status to be recorded, please email XX indicating that you wish to attend the event, but do not wish to have your registration status recorded. The webinars will be recorded, and the video will be made available to watch back at a time convenient to you.

Figure A.2: Initial Email Invitations for Each Condition (Contd.)

Treatment Group 3 (Social Proof)

Colleagues,

XX Diversity and Inclusion Week is taking place **November 15th -19th**. We are excited to announce our live events planned for the week:

Date	Time	Event	Description
Tuesday 16th	**12.30–13.00**	**Introduction to Irish Sign Language**	A 30-minute introduction to sign language with our colleagues XX and ISL user, XX and XX
Wednesday 17th	**12.00–13.00**	**Cooking Demonstration**	Join XX from Healthy Workforce Ireland and learn how to prepare some quick easy and tasty meals with everyday ingredients. Accompanied by ISL interpreter.
Friday 19th	**12.30–13.00**	**Lunch and Learn – Human Rights and Equality**	A 30-minute lunchtime talk from XX Training Branch on Public Sector Equality and Human Rights Duty with XX and XX

If you would like to register your interest for any of these webinars, please click on the link below:

If you have any questions relating to diversity and inclusion week please email the committee XX.

Regards,

The Equality, Diversity and Inclusion Committee.

XX will review the registration and participation rates in these events to improve engagement with XX initiatives. If you do not wish your registration status to be recorded, please email XX indicating that you wish to attend the event, but do not wish to have your registration status recorded. The webinars will be recorded, and the video will be made available to watch back at a time convenient to you.

Figure A.2: Initial Email Invitations for Each Condition (Contd.)

Treatment Group 4 (Default)

Colleagues,

XX Diversity and Inclusion Week is taking place **November 15th -19th**. We are excited to announce our live events planned for the week:

Date	Time	Event	Description
Tuesday 16th	**12.30–13.00**	**Introduction to Irish Sign Language**	A 30-minute introduction to sign language with our colleagues XX and ISL user, XX and XX
Wednesday 17th	**12.00–13.00**	**Cooking Demonstration**	Join XX from Healthy Workforce Ireland and learn how to prepare some quick easy and tasty meals with everyday ingredients. Accompanied by ISL interpreter.
Friday 19th	**12.30–13.00**	**Lunch and Learn – Human Rights and Equality**	A 30-minute lunchtime talk from XX Training Branch on Public Sector Equality and Human Rights Duty with XX and XX

We are pleased to inform you that you have been specially selected to attend the **Introduction to Irish Sign Language** event. You will be sent a link to the live event 24 hours before it commences. Alternatively, if you would prefer to switch to one of the other two events, or to not attend any of the events, then please click on the link below:
If you have any questions relating to diversity and inclusion week, please email the committee at XX.

We hope you enjoy your event!

Regards,
The Equality, Diversity and Inclusion Committee.

XX will review the registration and participation rates in these events to improve engagement with XX initiatives. If you do not wish your registration status to be recorded, please email XX indicating that you wish to attend the event, but do not wish to have your registration status recorded. The webinars will be recorded, and the video will be made available to watch back at a time convenient to you.

Figure A.3. Follow-up Reminder Emails for Each Condition

Control and Simplification Groups

Colleagues,
XX Diversity and Inclusion Week is taking place November 15th -19th. We have three great events planned. It's not too late to sign-up if you have not already done so!

Date	Time	Event	Description
Tuesday 16th	**12.30–13.00**	**Introduction to Irish Sign Language**	A 30-minute introduction to sign language with our colleagues XX and ISL user, XX and XX
Wednesday 17th	**12.00–13.00**	**Cooking Demonstration**	Join XX from Healthy Workforce Ireland and learn how to prepare some quick easy and tasty meals with everyday ingredients. Accompanied by ISL interpreter.
Friday 19th	**12.30–13.00**	**Lunch and Learn – Human Rights and Equality**	A 30-minute lunchtime talk from XX Training Branch on Public Sector Equality and Human Rights Duty with XX and XX

If you would like to register your interest for any of these webinars, please click on **here**

Accessing the Webinar

1. The webinars will be hosted on MS Teams
2. Copy and paste the link for the event to your personal email address.
3. Open your personal email in Google Chrome **outside** of the Citrix environment.
4. If an MS Teams account is already connected on the device you are using you will need to log out of MS Teams and sign in again.
5. Follow this **guide** for accessing MS Teams.

Remember to use your XX email address as your screen name when you join the meeting. See the screen below.

Hope to see you there!

Regards,
The Equality, Diversity and Inclusion Committee.

Please note that XX cannot guarantee that any personal and sensitive data, sent in plain text via standard email, is fully secure. Customers who choose to use this channel are deemed to have accepted any risk involved. The alternative communication methods offered by XX include standard post and the option to use our (encrypted) My Enquiries service which is available within my Account and XX. You can register for either my Account or XX on the XX website. XX will review the registration and participation rates in these events to improve engagement with XX initiatives. If you do not wish your registration status to be recorded, please email XX indicating that you wish to attend the event, but do not wish to have your registration status recorded. The webinars will be recorded, and the video will be made available to watch back at a time convenient to you.

Figure A.3. Follow-up Reminder Emails for Each Condition (Contd.)

2. Messenger Group

Colleagues,

XX Diversity and Inclusion Week is taking place November 15th -19th. I am really excited about the three great events that we have planned. It's not too late to join me by getting involved and signing-up if you haven't already done so!

Date	Time	Event	Description
Tuesday 16th	**12.30–13.00**	**Introduction to Irish Sign Language**	A 30-minute introduction to sign language with our colleagues XX and ISL user, XX and XX
Wednesday 17th	**12.00–13.00**	**Cooking Demonstration**	Join XX from Healthy Workforce Ireland and learn how to prepare some quick easy and tasty meals with everyday ingredients. Accompanied by ISL interpreter.
Friday 19th	**12.30–13.00**	**Lunch and Learn – Human Rights and Equality**	A 30-minute lunchtime talk from XX Training Branch on Public Sector Equality and Human Rights Duty with XX and XX

If you too would like to support this important initiative by registering your interest for any of these webinars, please click on **here.**

Accessing the Webinar

1. The webinars will be hosted on MS Teams
2. Copy and paste the link for the event to your personal email address.
3. Open your personal email in Google Chrome **outside** of the Citrix environment.
4. If an MS Teams account is already connected on the device you are using you will need to log out of MS Teams and sign in again.
5. Follow this **guide** for accessing MS Teams.

Remember to use your XX email address as your screen name when you join the meeting. See the screen below.

Hope to see you there!

Regards,

XX Assistant Secretary

Please note that XX cannot guarantee that any personal and sensitive data, sent in plain text via standard email, is fully secure. Customers who choose to use this channel are deemed to have accepted any risk involved. The alternative communication methods offered by XX include standard post and the option to use our (encrypted) My Enquiries service which is available within my Account and XX. You can register for either my Account or XX on the XX website. XX will review the registration and participation rates in these events to improve engagement with XX initiatives. If you do not wish your registration status to be recorded, please email XX indicating that you wish to attend the event, but do not wish to have your registration status recorded. The webinars will be recorded, and the video will be made available to watch back at a time convenient to you.

Figure A.3. Follow-up Reminder Emails for Each Condition (Contd.)

3. Social Proof Group

Colleagues,

XX Diversity and Inclusion Week is taking place November 15th -19th. We have three great events planned. It's not too late to sign-up if you haven't already done so! 231 of your colleagues have already expressed their support for this important initiative by securing their places. Why don't you join them by clicking on here to register your interest.

Date	Time	Event	Description
Tuesday 16th	**12.30–13.00**	**Introduction to Irish Sign Language**	A 30-minute introduction to sign language with our colleagues XX and ISL user, XX and XX
Wednesday 17th	**12.00–13.00**	**Cooking Demonstration**	Join XX from Healthy Workforce Ireland and learn how to prepare some quick easy and tasty meals with everyday ingredients. Accompanied by ISL interpreter.
Friday 19th	**12.30–13.00**	**Lunch and Learn – Human Rights and Equality**	A 30-minute lunchtime talk from XX Training Branch on Public Sector Equality and Human Rights Duty with XX and XX

Accessing the Webinar

1. The webinars will be hosted on MS Teams
2. Copy and paste the link for the event to your personal email address.
3. Open your personal email in Google Chrome **outside** of the Citrix environment.
4. If an MS Teams account is already connected on the device you are using you will need to log out of MS Teams and sign in again.
5. Follow this **guide** for accessing MS Teams.

Remember to use your XX email address as your screen name when you join the meeting. See the screen below

Hope to see you there!

Regards,

The Equality, Diversity and Inclusion Committee.

Please note that XX cannot guarantee that any personal and sensitive data, sent in plain text via standard email, is fully secure. Customers who choose to use this channel are deemed to have accepted any risk involved. The alternative communication methods offered by XX include standard post and the option to use our (encrypted) My Enquiries service which is available within my Account and XX. You can register for either my Account or XX on the XX website. XX will review the registration and participation rates in these events to improve engagement with XX initiatives. If you do not wish your registration status to be recorded, please email XX indicating that you wish to attend the event, but do not wish to have your registration status recorded. The webinars will be recorded, and the video will be made available to watch back at a time convenient to you.

Figure A.3. Follow-up Reminder Emails for Each Condition (Contd.)

4. Default Group

Colleagues,

This is just to remind you that you have been specially selected to attend the **Introduction to Irish Sign Language event** as part of XX Diversity and Inclusion Week. You will be sent a link to the live event 24 hours before it commences. Alternatively, if you would prefer to switch to one of the other two events we have planned (see below), or to not attend any of the events, then please copy and paste the link below into your browser outside of citrix to access the registration page:
XX Diversity and Inclusion Week is taking place **November 15th -19th**. We have three great events planned.

Date	Time	Event	Description
Tuesday 16th	**12.30–13.00**	**Introduction to Irish Sign Language**	A 30-minute introduction to sign language with our colleagues XX and ISL user, XX and XX
Wednesday 17th	**12.00–13.00**	**Cooking Demonstration**	Join XX from Healthy Workforce Ireland and learn how to prepare some quick easy and tasty meals with everyday ingredients. Accompanied by ISL interpreter.
Friday 19th	**12.30–13.00**	**Lunch and Learn – Human Rights and Equality**	A 30-minute lunchtime talk from XX Training Branch on Public Sector Equality and Human Rights Duty with XX and XX

Registrations for the events are operated by XX through Qualtrics software.

We hope you enjoy your event!

Regards,

The Equality, Diversity and Inclusion Committee.

Please note that XX cannot guarantee that any personal and sensitive data, sent in plain text via standard email, is fully secure. Customers who choose to use this channel are deemed to have accepted any risk involved. The alternative communication methods offered by XX include standard post and the option to use our (encrypted) My Enquiries service which is available within my Account and XX. You can register for either my Account or XX on the XX website. XX will review the registration and participation rates in these events to improve engagement with XX initiatives. If you do not wish your registration status to be recorded, please email XX indicating that you wish to attend the event, but do not wish to have your registration status recorded. The webinars will be recorded, and the video will be made available to watch back at a time convenient to you.

Table A.1: Sample Characteristics (Full Sample and by Condition)

	Number of Employees (% of total)	*Number of Employees (% of condition) Control*	*Number of Employees (% of condition) Simplification*	*Number of Employees (% of condition) Messenger*	*Number of Employees (% of condition) Social Proof*	*Number of Employees (% of condition) Default*	*p-value*
Gender							.614
Female	4,372 (62.5%)	859 (61.4%)	885 (63.3%)	881 (62.9%)	856 (61.3%)	891 (63.5%)	
Male / Other	2,618 (37.5%)	540 (38.6%)	514 (36.7%)	519 (37.1%)	541 (38.7%)	512 (36.5%)	
Grade							.497
Clerical Officer	2,653 (37.9%)	513 (36.7%)	521 (37.2%)	562 (40.1%)	528 (37.8%)	529 (37.7%)	
Executive Officer	2,272 (32.5%)	483 (34.4%)	462 (33.0%)	439 (31.3%)	440 (31.4%)	448 (31.9%)	
Other	80 (1.1%)	17 (1.2%)	15 (1.1%)	9 (0.6%)	21 (1.5%)	18 (1.3%)	
Administrative Officer	328 (4.7%)	59 (4.2%)	62 (4.4%)	60 (4.3%)	66 (4.7%)	81 (5.8%)	
Higher Executive Officer	960 (13.7%)	194 (13.9%)	210 (15.0%)	175 (12.5%)	194 (13.9%)	187 (13.3%)	
Assistant Principal	549 (7.8%)	102 (7.3%)	100 (7.1%)	124 (8.9%)	115 (8.2%)	108 (7.7%)	
Principal Officer	133 (1.9%)	29 (2.1%)	22 (1.6%)	28 (2.0%)	28 (2.0%)	26 (1.8%)	
Assistant Secretary / Commissioner	23 (0.3%)	2 (0.1%)	7 (0.5%)	3 (0.2%)	5 (0.4%)	6 (0.4%)	
Seniority							.837
Junior (CO/EO/ Other)	4,925 (71.2%)	1,013 (72.4%)	998 (71.3%)	1,010 (72.1%)	989 (70.8%)	995 (70.9%)	
Senior (AO grade or higher)	1,993 (28.8%)	386 (27.6%)	401 (28.7%)	390 (27.9%)	408 (29.2%)	408 (29.1%)	

Source: Authors' analysis.

Table A.2: Impact of Treatment on Registrations – Probit model (marginal effects)

	All Treatment Groups v Control	*Pure Simplification v Control*	*SM v Control*	*SP v Control*	*Default v Control*
Registration Rate	.241*** (.008)	.012 (.008)	.027*** (.009)	.022** (.009)	.902*** (.008)

Source: Authors' analysis.
Note: *** p<0.01, ** p<0.05. * p<0.1. Robust standard errors in parentheses. Probit regression model – marginal effects. Dependent variable is registrations where 0 = No and 1 = Yes (registered for one or more events). SM = simplification + messenger. SP = simplification + social proof. Column 1 uses the entire sample (n = 6,998). Columns 3-6 restrict the sample to the groups being analysed (n = 2,798).

Table A.3: Penalised Logistic Regression – Marginal Effects (Registration)

	Change in % of employees in treatment group registering for any event
Simplification	0.012
	(0.008)
Messenger	0.027***
	(0.009)
Social Proof	0.022**
	(0.009)
Default	.901***
	(.008)
Observations	6,998

Source: Authors' analysis.
Note: Penalised logistic regression marginal effects. Marginal effects represent the percentage change in registration for each treatment group relative to the control group. Standard errors in parentheses; *** p<0.01, ** p<0.05. Dependent variable measures whether or not an employee registered for one or more events.

Table A.4: Penalised Logistic Regression – Marginal Effects (Attendance)

	Change in % of employees in treatment group registering for any event
Simplification	–0.008
	(0.006)
Messenger	0.009
	(0.006)
Social Proof	–0.002
	(0.006)
Default	.067***
	(.009)
Observations	6,998

Source: Authors' analysis.
Note: Penalised logistic regression marginal effects. Marginal effects represent the percentage change in attendance for each treatment group relative to the control group. Standard errors in parentheses; *** p<0.01, ** p<0.05. Dependent variable measures whether or not an employee attended one or more live events.

Table A.5: Percentage of Registrations by Condition (Excluding Defaults) Pre- and Post the Issuance of the Reminder Email (Chi-square Test)

	Control	*Simplification*	*Messenger*	*Social Proof*
Registered pre-reminder	60.0% (42)	38.2% (34)	500% (55)	40.0% (40)
Registered post-reminder	40.0% (28)	61.8% (55)	50.0% (55)	60.0% (60)

Source: Authors' analysis.
Note: Pearson chi2(3) = 9.8321; p = .020. No. of registrations in parentheses.

Table A.6: Percentage Increase in Registrations Occurring After the Issuance of the Reminder (By Condition, Excluding Defaults)

Control	*Simplification*	*Messenger*	*Social Proof*
+ 33.3% (28 employees)	+61.7% (55 employees)	+100% (55 employees)	+50.0% (60 employees)

Source: Authors' analysis.

Table A.7: LPM – Effect of Registering Before or After the Reminder on Attendance

	Attendance
Registered after reminder	.031
	(.123)
Simplification	–.221**
	(.111)
Messenger	.028
	(.101)
Social Proof	–.179
	(.107)
Registered after reminder*simplification	–.040
	(.161)
Registered after reminder*messenger	–.198
	(.156)
Registered after reminder*social proof	–.063
	(.157)
Observations	367

Source: Authors' analysis.

Note: *** p<0.01, ** p<0.05. Robust standard errors in parentheses. Sample is restricted to employees who registered for one or more events. Dependent variable is binary attendance. Independent variables are Registered after the reminder where 0 = No and 1 = Yes and Condition where 0 = Control condition and the default condition is excluded.