

Applying nudge to organisational communications: nudge and source impact on e-learning completion

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ABSTRACT

Nudge and its application to decision-making and behavioural change, continues to gain increasing academic and mainstream interest. Mandatory e-learning is now a vehicle which delivers many core and business critical skills including legal compliance with safety and security. In addition, the ‘just in time’ nature of an efficient business requires that employees receive business learning for sales and service offerings as close to the point of use as possible, without limit of geography and supporting learner inclusivity and we have seen a drop in lengthy induction and training courses. It is disappointing then, that the claims made for digital learning procurement are rarely matched by the uptake or measurable transfer from it. There is substantial empirical evidence to support the effectiveness of nudge intervention in the public and domestic domain. However, little attention has focused on its application to the workplace and even less so, in instances where behavioural change is not linked to clear personal reward. This study quantitatively explored whether nudge application and source of communication influenced the probability of employees completing an optional e-learning module. Two hundred and sixty-five employees at a major UK transport organisation were exposed to one of six versions of an email stimulus manipulated by source and nudge application. Third Person Effect, a phenomenon where individuals believe others are more likely to be influenced by mass media communication than themselves, was identified as a potential co-variate. A binomial logistical regression identified ‘nudge, expert source’ and ‘no nudge, authority source’ to be statistically significant predictors for e-learning completion. Findings suggest that information disclosure nudges introduced by an expert source can support organisations in encouraging employees to engage with optional work-based activity where no clear personal reward is identifiable. Non-nudged organisational communications from an authority source are better predictors to encourage compliance driven decision-making and behaviour change.

KEYWORDS

Nudge, Communication, E-Learning

Method

This study was an academic industry partnership between Coventry University and Transport for London, facilitated by Arup Consulting. LU Stations Staff are those who are based at the many tube stations in the system and their positioning in the organisation aligns with the following employment banding structure which runs from least to most senior. Customer service assistant 2 (CSA2), customer service assistant 1 (CSA1), customer service staff 2 (CSS2), customer service

staff 1 (CSS1), customer service manager 3 (CSA3), customer service manager 2 (CSA2), customer service manager 1 (CSA1) and area manager (AM). Heads of Customer Service (HofCS) manage the stations staff for different tube lines.

Participants

Participants were recruited through a research advertisement containing a study registration web link. This advertisement was marketed to a population of 5500 TfL employees, all of whom fulfilled the participant inclusion criteria of being a current Stations Staff employee of London Underground at the CSA2, CSA1, CSS2, CSS1, CSM3, CSM2, CSM1 or AM levels. Marketing of the study was done through three TfL communication channels identified as having the most effective reach to the study's target population. The inclusion of the research advertisement in Heads of Customer Service news bulletins to Area Managers – requesting AM's sign up to the study and encourage their teams to do likewise. By providing the research advertisement on screen during lunch breaks at Stations Staff training days which run Monday to Friday for different cohorts. Through HofCS posting and upvoting the research advertisement on the Stations Staff Yammer group. Two hundred and seventy employees consented to participate in the study, providing an allocation of 45 participants per group. However, one participant was omitted from the final data set due to leaving their employment before the experiment was complete. Two further participants were omitted from the final data set due to being duplicate sign ups each with an erroneous allocation to two of the independent conditions - identified at the post-experimental stage. This resulted in a study sample of 265 participants; group one (44), group two (44), group three (45), group four (43), group five (44) and group six (45). Participants had an age range of fifty-eight, ($M = 46.7$, $SD = 10.97$) and worked at the company on average 13 years and nine months ($SD = 125.12$).

Design

This research took the form of a quantitative, experimental study employing a between subjects three x two factorial design. The first independent variable – Nudge Application, had two categories; 'no nudge' and 'nudge'. The second independent variable - Source of Nudge, had three categories; 'no source', 'authoritarian source' and 'expert source'. Participants score of third-person effect (3PE) was the covariate – consisting of two categories '3PE' and 'no 3PE'. The dependent variable - E-learning Progress, was measured as 'not-started', 'incomplete' and 'complete' in permittance with the monitoring capability of the organisations' e-learning system. Participants were randomly allocated to one of the six experimental groups using the Microsoft Excel Rand() function.

Materials

The study materials consisted of both a questionnaire and email stimulus. A questionnaire was created to capture participants' measure of third-person effect and their descriptive data. In line with the common method for measuring third-person effect (Conners 2005; Schweisberger, Billinson & Chock 2014); participants were asked to rate on a 7-point Likert scale ranging from 1 = Not at All Likely to 7 = Very Likely; "Are you likely to take action based on the recommendations and suggestions of Heads of Customer Service?" And "Are station staff likely to take action based on the recommendations and suggestions of Heads of Customer Service?" Participants 3PE scores were calculated by taking away self-rating from their rating given for the average TfL employee. A positive score denoted a third person effect, suggesting that the participant believes mass

communication has a greater effect on others, compared to themselves. This was followed by four questions to capture participant age, gender, current banding and length of time worked at the organisation.

Two versions of an email communication - requesting participants complete an e-learning module - were developed in consultation with the Transport for London E-learning team, Employee Communications team and Heads of Customer Service. Thus, ensuring the email stimulus reflected a format and content style familiar to participants. E-learning Progress (DV), was chosen as the most appropriate employee behaviour to promote for the following reasons. (i) An increase in staff engagement with optional e-learning training, would be a desirable outcome for the organisation. (ii) Stations Staff have access in-shift, to participate in optional e-learning through their work iPads and iPhones. (iii) E-learning Progress offers a hard measure that is already monitored by an existing organisational system with an inbuilt reporting function. (iv) Participants would have the freedom of choice to not complete the e-learning activity and would experience no adverse consequence for this - aligning with recommended guidelines for the ethical use of nudge (Thaler, Cass & Sunstein 2009; Hansen & Jeperson 2013; Hansen 2016). Furthermore, the behaviour of engaging with optional e-learning training is beneficial to those implementing the nudge and those being nudged.

The particular e-learning module selected '*Stations Introduction – Different Customer Types*', was chosen due to its alignment with the organisations current strategic priorities and an existing staff engagement metric (incomplete / complete) of 28. Thus, providing a pool of 5472 potential research participants. Version two (nudged email) varied only from version one (non-nudged email), by the inclusion of a type 2 nudge. The type 2 nudge designed, combined information disclosure and moral persuasion – by disclosing metrics on the success of the organisations '*Please Offer Me a Seat Scheme*.' An information disclosure nudge was determined to be most appropriate in the unionised context of the organisation. The '*Please Offer Me a Seat*' scheme stemmed from TfL having understood the needs of their customers with hidden conditions and disabilities. The designed nudge therefore provided information disclosure relevant to the moral benefits of completing the '*Stations Introduction – Different Customer Types*' e-learning module and was evidencable to staff through key performance indicators.

<p>Dear All,</p> <p>'Stations Introduction – Different Customer Types', is an e-learning course that is relevant to all Customer Service (stations) staff.</p> <p>Driving customer service, being better for our customers every day is one of our key priorities. Providing a good customer experience is also a key theme of the Mayor's 2018 Transport Strategy.</p> <p>By completing this e-learning course you will be provided with knowledge of:</p> <ol style="list-style-type: none"> 1. Different types of customers that use the tube and their specific needs when travelling with us 2. How we measure customer experience through surveys <p>This learning will allow you to enhance the experience you offer to all customers travelling on the London Underground.</p> <p>You have been identified as an important member of our team to complete this module, which takes 5minutes.</p> <p>Accessing the course:</p> <ul style="list-style-type: none"> • Ezone is accessed by opening the url: https://xxxxxxxxx on a desktop or iPad – this will automatically log you into the system • You will find 'stations introduction – different customer types' in your learning plan • If you have any problems accessing e-zone or the course, email the Online Learning Team at xxxxxxxxx <p>If you have any questions about why completing this e-learning is so important, please contact xxxxxxxxx</p> <p>Thank You</p> <p>Name Job Title</p>	<p>Dear All,</p> <p>'Stations Introduction – Different Customer Types', is an e-learning course that is relevant to all Customer Service (stations) staff.</p> <p>Driving customer service, being better for our customers every day is one of our key priorities. Providing a good customer experience is also a key theme of the Mayor's 2018 Transport Strategy.</p> <p>By completing this e-learning course you will be provided with knowledge of:</p> <ol style="list-style-type: none"> 1. Different types of customers that use the tube and their specific needs when travelling with us 2. How we measure customer experience through surveys <p>This learning will allow you to enhance the experience you offer to some of the 1.37 billion customers travelling on the London Underground each year.</p> <p>The <i>please offer me a seat scheme</i> is one example of the positive impact that can be achieved from understanding the needs of our customers.</p> <p>This learning will also allow you to better understand our Customer KPIs – that you see on your noticeboards, and in our Customer Service Update emails.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Customer KPIs</p> <ul style="list-style-type: none"> • Staff presence was at 97 for the full year 2017/18 • Attention to customers was also at 97 • Helpfulness was at 98 for the full year </div> <p>You have been identified as an important member of our team to complete this module, which takes 5minutes.</p> <p>Accessing the course:</p> <ul style="list-style-type: none"> • Ezone is accessed by opening the url: xxxxxxxxx on a desktop or iPad – this will automatically log you into the system • You will find 'stations introduction – different customer types' in your learning plan • If you have any problems accessing e-zone or the course, email the Online Learning Team at xxxxxxxxx <p>If you have any questions about why completing this e-learning is so important, please contact xxxxxxxxx</p> <p>Thank You</p> <p>Name Job Title</p>
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Figure 1. Experimental Stimuli: Non-Nudged and Nudged Emails

Procedure

The study procedure consisted of two stages. Stage one involved participant sign-up and initial data collection. Stage two constituted the experimental phase of the research project. All of the study data was collected onsite, digitally, at Transport for London's head office.

Stage One: Participant Sign-Up and Initial Data Collection

The study was advertised to the target population as an endorsed graduate research project investigating how Heads of Customer Service could work better with Stations Staff. The study registration link was embedded in the research advertisement which Stations Staff were able to access through their iPads and iPhones, during their working hours. This weblink opened up to the Participant Information Sheet and Consent Form. Participants were provided with the option to select '*prefer not to say*', for questions pertaining to their descriptive data. On completion of the questionnaire, participants were provided with a holding de-brief which explained that they would receive the full de-brief on the completion of the dissertation project.

Stage Two: Experimental Phase

Participants were randomly assigned to one of six experimental groups; group one (no source & no nudge), group two (authoritarian source & no nudge), group three (expert source & no nudge), group four (no source & nudge), group five (authoritarian source & nudge) and group six (expert source & nudge). To achieve a 'no source' sender, participants in groups one and four received their email from the e-learning system, with no email signature. To achieve an 'authoritarian source' sender, participants in groups two and five received their email from the inbox of a prior identified Head of Customer, signed off with a personalised email signature. To achieve an 'expert source' sender, participants assigned to groups three and six received their email from the inbox of the LU Learning Delivery Manager, also signed off with a personalised email signature.

Table 1. Experimental design: non-nudged and nudged by no source, authority and expert source.

	No Source E-Learning Inbox	Authority Source HofCS	Expert Source Senior Business Partner, Skills Development
None Nudged Email	Group 1	Group 2	Group 3
Nudged Email	Group 4	Group 5	Group 6

The experimental phase lasted for 28 days. All six participant groups were sent their respective emails at the beginning of the experimental phase and re-sent their emails half way through the experimental phase. After the 28 days, a snapshot of participants e-learning progress was matched, through their employee id, with the data obtained from the phase one questionnaire.

Results

Two hundred and seventeen participants were recorded as 'not started & incomplete' and 48 participants were recorded as 'complete'. One hundred and seventeen participants demonstrated a third-person effect. A binomial logistical regression was performed to ascertain the effect of source and nudge on encouraging employees to complete a recommended e-learning module. Assumptions for linearity and multicollinearity were not relevant as all IV's were categorical. There were eight studentized residuals; two with values of 2.837 standard deviations, three with values of 2.880 standard deviations, two with values of 3.523 standard deviations and one with a value of 3.576

standard deviations. All of which were kept in the analysis. The logistical regression model was statistically significant, $X^2(6) = 14.206$, $p < .05$. The model explained 8.5% (Nagelkerke R^2) of the variance in E-Learning Progress and correctly classified 81.9% of cases. Sensitivity was 0%. Specificity was 100%. Positive predictive value was 0% and negative predictive value was 81.9%. Third-person effect and group overall, were not statistically significant predictors for E-learning Progress. Of the six participant groups, group two (authority source, no nudge) and group six (nudge, expert source) were statistically significant. Employees receiving an email communication encouraging e-learning completion from an authority source, were 80% more at odds of completing their e-learning than employee's who received an email attributed with no source. Additionally, employees who received a nudged email communication from an expert source, encouraging them to complete their e-learning, were 80% more at odds of complete their e-learning than employees who received a non-nudged email attributed with no source.

Discussion

Grounded in Cognitive Psychology, Social Psychology and Behavioural Economics a nudge intervention is a scientifically devised mechanism that can be implemented to promote an intended behavioural outcome within a decision set – the number of options available for an individual to choose from in a given decision – without removing free will from the decision-making equation. I.e. it does not restrict or narrow the original choice available and there is no adverse financial, social or further personal impact for not selecting the promoted behaviour (Hansen & Jeperson 2013).

The Dual Process Theory of Thought (DPT) (Kahneman & Frederick 2002; Osman 2004; Stanovich 1999), is an umbrella concept in the cognitive and social psychology literature which comprehends various theories concerned with human thought - and is the salient theoretical framework through which nudge is currently understood (Lin, Osman & Ashcroft 2017). DPT posits that two co-existing systems of processing are cognitively responsible for decision making (Evans & Stanovich 2013) under the terminology of System 1 and System 2 processing. The defining features of type 1 processing are that it is autonomous and does not engage working memory. Whereas type 2 processing can be defined by its requirement on working memory and its features of mental stimulation and cognitive decoupling. Either processing system can give rise to a given decision or behavioural outcome. However, this does not suggest that one system is solely responsible for the initiation or sustainment of said choice. Rather, the two systems operate interactively (Hansen & Jeperson 2013). One widely supported categorisation of nudges are type 1 and type 2. Aligning with Dual Process Theory, type 1 and type 2 nudges are classified '*according to the degree to which processing efforts are needed to maintain psychological coherence*' (Lin, Osman & Ashcroft 2017). Examples of type 2 nudges include social normative messaging, moral persuasion and information mechanisms such as introducing new data, communicating risks, benefits or the use of warnings or reminders. Lin, Osman and Ashcroft (2017) argue that type 2 nudges should be the preferred nudge intervention of use. This is because type 2 nudges seek to stimulate a preserved re-assessment of the evidence on which an individual formulates their decision and the decision set itself, by disrupting the logic through which the two are connected. Whilst, through self-mental examination, consciousness of thinking is possible during both system 1 and 2 thought processing. Consciousness of system 1 processing only extends to an awareness of the thinking output. However, consciousness of type 2 processing, expands to an awareness of the cognitive steps one has taken to reach that output. Therefore, type 2 nudges, over type 1, aim to make decision-makers at minimum more conscious of the cognitive process by which they have

come to their decision. And ideally, more thoughtful about the choice they are making (Jung & Mellers, 2016). Therefore, the introduction of a type 2 nudge such as an information disclosure nudge, can contextualise the decision set to frame a specific choice as most appropriate, through enabling a new logic for reaching the intended option. E.g. The NHS including the cost of the appointments in patients SMS appointment reminder messages, significantly decreased the number of patients not turning up to their appointments and increased the number of patients who rang up to reschedule their appointment if they were unable to attend (Hallsworth et al, 2015). The DPT provides a compelling theoretical framework, upon which the present study findings can be understood. Visual displays of the results will be shown in the slide presentation.

Focusing first on the interpretation of findings for group one, two and three where the primary decision-making cue for the email was the source of the email communication. In the literature, source effects have been most predominately explained by the elaboration likelihood model (ELM) (Petty & Cacioppo, 1986). The ELM explains individual decision making as occurring through two potential routes, peripheral processing and central processing. Central processing occurs in instances of 'high involvement'. High involvement posits that individuals make decisions when it is possible or desirable for them to focus and be engaged. When decision makers are not in a high involvement state, then a peripheral processing route is taken. In the context of a recipient receiving a persuasive communication, if the individual is in low involvement state, ELM proposes that their decision making would be influenced by surface level characteristics. The ELM hypothesis is supported by extensive empirical findings. These findings have demonstrated that when recipients are unable to focus or are unmotivated, message content, quality and persuasiveness does little to exert influence on the attitude they form towards the communication.

Rather, they are significantly influenced by judgment indicators e.g. the credibility of the source, or the length of communication. Additionally, the influence of source effects often influence perception more significantly when participants are in a low involvement state. For groups one through three, it can be argued that participants had low level involvement engagement with the email communication and therefore, peripherally evaluated the surface characteristics i.e. source of the communication. Those in group one with a no source sender, evaluated that nobody specifically was asking them to complete the e-learning. Consequent of low-level engagement with the stimulus, type 1 processing of the DPT dominated participants decision-making process. Employing a familiarity heuristic whereby, no ownership of the communication, related to no implication for not following through – the recommendation to complete the e-learning was ignored. Participants in group two, however, were found to be significantly likely to complete the e-learning. Applying a consistent line of argument; those in group two recognised the seniority of the authority source sender and evaluated that the communication could be important and / or there could be a personal implication for not following through. Consequent of low-level engagement with the stimulus, type 1 processing of the DPT dominated participants decision-making. Thus, a familiarity / compliance heuristic of "*it's best to do as recommended*" was applied. Participants in group three, with an expert source sender, made the surface evaluation that the source was unfamiliar. Consequent of low-level engagement with the stimulus, type 1 processing of the DPT dominated participants decision-making process. Employing a familiarity heuristic, whereby the source was not recognised and therefore not likely of personal importance – participants in group three, as their colleagues in group one, were likely to decide that the recommendation to complete the optional e-learning could be ignored.

Moving on to interpret the findings for groups four through to six; application of the ELM suggests that the introduction of the information disclosure nudge activated participants to have high involvement with the email stimulus, resulting in a deeper evaluation of the persuasiveness of the communication beyond just that of the source characteristic judgements made by participants in groups one through to three. Consequent of the high-level engagement with the stimulus, type 2 processing of the DPT dominated participants decision-making process. Based upon a review of the literature, Lin, Osman and Ashcroft (2017) argue that type 2 nudges, of which information disclosure nudges are one such form, should be the preferred nudge intervention of use. This is because type 2 nudges seek to stimulate a preserved re-assessment of the evidence on which an individual formulates their decision and the decision set itself, by disrupting the logic through which the two are connected. Applied; participants in groups four through six evaluated the hypothetical outcomes of the different choices available to them - to not complete, or complete – in light of the further information the nudge provided on why they were being recommended to engage with the optional e-learning module. Only the ‘nudge and expert source’ grouping combined, group six, was statistically significant amongst the three conditions. This condition was the second of two statistically significant research findings, and the most significant finding identified within the study.

This is consistent with more recent findings on nudge and source combined, where nudges designed by experts were perceived as being more acceptable than nudges designed by policy or industry authority figures (Junghans et al 2018). Nudge on its own (group four) was not significant in predicting e-learning completion. Suggestions for this could be attributed to three explanations, drawing on Vroom (1964) and Green’s (2000) process-oriented theory of employee motivation. Firstly, (1) the effort perceived in completing the e-learning was not being deemed worth the benefit of doing so. Benefit measures put forth were whether the e-learning would elevate employee’s work performance, whether the organisation acknowledges / rewards engagement with optional work-based behavior and if so, whether this acknowledgement / reward would be considered satisfactory by the recipient employee. Or, (2) the association between the information disclosure nudge and the potential benefit to work performance or one’s career development was not transparent. Therefore type 1 processing dominated employees decision making in the nudge no-source condition.

Building upon these explanations. When nudge and expert source were then combined; the expert source could have acted to more explicitly indicate that completion of the e-learning module would enhance employee’s work place performance. Nudge interventions that are more implicit often activate a reflexive decision-making processing. Whereas nudge interventions of a more explicit design often activate a reflective decision-making processing (Thaler & Sunstein, 2008; Kahneman, 2011). However, where the nudge served to make the link between e-learning completion and longer-term personal benefit more overt; it could also be proposed that it moderated the exertion of compliance driven decision making in the “nudge, expert” condition (group five). Thus, providing a plausible explanation as to why communication from an authority source alone was significant, but paired with an information disclosure nudge, it was not.

Conclusions and implications for organisations using digital learning

The study findings demonstrate that nudge combined with an expert source increases the likelihood of employee’s completing optional e-learning. More broadly, these findings suggest the benefit of utilising information disclosure nudges paired with an expert source – toward encouraging employees to engage in optional work-based activities where there is no direct / clear personal

incentive and, or where the behavioural consequence is not immediate or overtly apparent to employees. In a boarder context, potential application for these findings extend to increasing staff participation with employee engagement surveys, engagement with change / transformation programmes, communications campaigns to target particular behaviours (e.g. 'green' behaviours like not printing and recycling) and collaborative / knowledge sharing practises.

A second avenue of application is indicated where it may not always be appropriate or possible to nudge. Also, whilst nudge is low cost – it still takes time and resource commitment to develop. In instance where the authority source is readily recognised – a nudge may lessen the persuasiveness of a communication recommending optional work-related activity. In this instance, research suggests it may be beneficial to focus on the surface characteristics of the communication e.g. the message length and enhancing status credibility as an authority source. The findings of this study therefore point towards the development of a best practice framework for organisational – employee communications that are either compliance or engagement motivated.

References

- Conners, J. L. (2005). Understanding the Third-Person Effect. *Communication Research Trends* 24 (2), 3-22.
- Evans, J. S. B., & Stanovich, K. E. (2013). Dual-process theories of higher cognition: advancing the debate. *Perspectives on Psychological Science*, 8, 223–241.
- Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, 79, 701–721.
- Hallsworth, M., Berry, D., Sanders, M., Sallis, A. & King D. (2015) 'Stating Appointment Costs in SMS Reminders Reduces Missed Hospital Appointments: Findings from Two Randomised Controlled Trials.' *PLOS ONE* 10(9):<https://doi.org/10.1371/journal.pone.0137306>
- Hansen, P. G. (2016). The Definition of Nudge and Libertarian Paternalism: Does the Hand Fit the Glove? *European Journal of Risk Regulation* 1, 1-20.
- Hansen, P. G., & Jeperson, A. M. (2013). Nudge and the Manipulation of Choice: A Framework for the Responsible Use of the Nudge Approach to Behaviour Change in Public Policy. *European Journal of Risk Regulation*, 4 (1), 3- 28.
- Junghans, A.F., Marchiori, D.R., Cremers, J., Evers, C., & De Ridder, D.T.D. (forthcoming). The who and how of nudging cross- national perspectives on consumer approval in eating behavioural.
- Jung, J. Y. and Mellers, B. A. (2016) 'American attitudes toward nudge'. *Judgment and Decision Making* 11 (1) 62–74.
- Kahneman, D. (2011). *Thinking fast think slow*. Allen Lane: UK, London.
- Lin, Y., Osman, M., & Ashcroft, R. (2017). Nudge: Concept, Effectiveness, and Ethics. *Basic and Applied Social Psychology*, 36 (9).
- Osman, M. (2004). An evaluation of dual-process theories of reasoning. *Psychonomic. Bulletin & Review*. 11, 988–1010.
- Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change*. New York: Springer-Verlag.
- Schweisberger, V., Billinson, J., and Chock, M. (2014) 'Facebook, the Third-Person Effect, and the Differential Impact Hypothesis'. *Journal of Computer-Mediated Communication*, 19, 403–413.

- Thaler, R. H and Sunstein, C. R. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. New Haven, CT: Yale University Press.
- Vroom, V. H. (1964). *Work and motivation*. New York: Wiley.