

# **A Reward-Based Approach to Improve Workplace Well-Being Awareness and Behaviours**

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## ***ABSTRACT***

*Workplace well-being refers to employees' overall experience and functioning from a psychological (e.g., subjective experience), physical (e.g., health), and social perspective (e.g., workplace relationships) [1]. Despite the important role that workplace well-being plays in the effectiveness of military organizations and the retention of its members, there has been a lack of workplace well-being interventions that have demonstrated sustained beneficial effects. The emergence of new digital tools and technologies provides an opportunity to consider innovative approaches in designing and delivering interventions that optimize workplace well-being. The primary objective of this pilot project is to determine the cost-effectiveness and feasibility of a workplace well-being program that combines traditional workplace well-being interventions with reward-based incentivization, delivered on a mobile platform. Specifically, this research project will assess the feasibility of using points-based incentives to drive behaviour change, predominantly with the intent to engage public servants, military, and leadership in familiarizing themselves on the importance of fostering healthy workplace habits while providing opportunities and encouragement for participants to make healthy workplace behaviours. The four objectives of the project are: a) to collect baseline data on perceived quality of interpersonal workplace relationships within a civilian setting and military; b) identify weaknesses and opportunities to improve workplace well-being; c) pilot a reward-based mobile application incentivizing employees and managers to make positive workplace behaviours; and, d) evaluate changes in perceived quality of interpersonal relationships in the workplace. The results of this project will impart insight into the development of innovative approaches that can be leveraged by current government practices to promote and enhance workplace well-being in public servants and military personnel.*

## **1.0 INTRODUCTION**

### **1.1 Background**

Workplace well-being refers to employees' overall experience and functioning from a psychological (e.g., subjective experience), physical (e.g., health), and social perspective (e.g., workplace relationships) [1]. Employee workplace wellness is identified as an important factor for both individual employees and organizational effectiveness and productivity [2]. As such, there has been interest from organizations to develop and implement programs, policies, and interventions that aim to foster employee well-being [2]. Accordingly, Canadian federal government departments and the Canadian Standards Association are dedicated to maintaining and improving employee workplace wellness [3].

The Government of Canada (GoC), with a workforce of approximately 262,000 employees, is Canada's largest employer. The health and wellness of the Public Service is vital to the success of the GoC, and, as

noted by the Clerk of the Privy Council in a recent message to all public servants, “support for wellness needs to come from all levels. To date, more than 90 deputy ministers and heads of agencies have signed the pledge to support mental health, and employees now have access to tools, support, and training through the newly-launched Centre of Expertise on Mental Health in the Workplace” [4]. Moreover, he reiterated that “the mental health and well-being of our workforce remains a top priority for the Public Service of Canada and for me personally” [4].

Currently, the Public Service Employee Survey (PSES) is the primary survey being used to assess workplace well-being in the GoC, which provides limited cross-sectional data and does not allow for ongoing, longitudinal, real-time data collection. The Department of National Defence (DND) conducts research that will allow for a better understanding of the workplace well-being of its employees [e.g., 2]. Moreover, as outlined in Canada’s 2017 Defence Policy, work focused on developing initiatives and promoting physical and mental health in military personnel is a top priority [5]. However, the lack of comprehensive knowledge of employee well-being may prevent organizations from implementing timely and tailored interventions to optimize the well-being of their employees. Finally, traditional behavioural nudges (i.e., interventions that motivate employees to make the intended behaviours, such as healthy lifestyle choices) are typically challenging to execute, standardize, and monitor when implemented within workplace settings. The emergence of new digital tools and technologies (e.g., smartphones, mobile applications) provides an opportunity to consider innovative approaches in designing and delivering interventions that optimize workplace well-being.

A complementary approach to the PSES is to harness new technology and to consider innovative approaches to help improve workplace well-being. Research suggests that there may be benefits to using technology-enabled approaches, such as mobile apps to increase awareness of depression symptomatology, reduce stress, and reduce excessive sitting in the workplace [6]. The primary objective of the current project is to determine the cost-effectiveness and feasibility of a workplace well-being program that combines traditional workplace well-being interventions with reward-based incentivization, delivered on a mobile platform. Specifically, this project will assess the feasibility of using points-based incentives to drive behaviour change, predominantly with the intent to engage public servants, military members, and leadership in familiarizing themselves with the importance of fostering healthy workplace habits, while providing opportunities and encouragement for participants to adopt healthy workplace behaviours. The methodological approach of the project will consist of: a) collecting baseline data on the perceived quality of interpersonal workplace relationships within a military and civilian setting; b) identifying weaknesses and opportunities to improve workplace well-being; c) piloting a reward-based mobile application incentivizing employees and managers to make positive workplace behaviours; and, d) evaluating changes in perceived quality of interpersonal relationships in the workplace. Secondarily, the current research may shed light on whether there may be effective methodologies that could be employed to positively influence the workplace well-being of GoC employees. Moreover, this work may provide support for encouraging positive workplace relationship behaviours. The Harvard University Study of Adult Development that was launched in 1938 and continued for 80 years was designed to examine factors associated with healthy aging [7]. One of the strongest predictors of perceived health and happiness is strong interpersonal relationships [8]; thus, this is an area of workplace well-being that our current work focuses on.

## **1.2 Government of Canada Entrepreneurs (GCE)**

The Deputy Ministers Task Force on Public Sector Innovation (DM TF-PSI) examines broader trends and emerging technologies with the objective of advancing concrete initiatives in two key work streams: core systems transformation and experimenting with disruptive technologies. To support the DM TF-PSI and their organization-specific objectives, a team of GoC Entrepreneurs (GCEs) was convened to explore emerging technology-based initiatives to measure, understand, and enhance workplace well-being in the federal public service, and complement data from the PSES. Discussions within the DM TF-PSI raised the issue of investigating potential alternatives to the PSES, an annual online survey that includes limited

questions related to assessing employee workplace well-being. In particular, discussions that arose were focused on whether assessing workplace wellness more often than once a year would be beneficial, such that it may provide more current and thus more relevant information on which to base workplace wellness interventions in the future.

### 1.3 Rationale

By leveraging the advanced features of smartphones and the talents of a Toronto-based firm, Carrot Rewards, we are evaluating the effect of nudges aimed at promoting relationship-building in the workplace on perceived change in the quality of interpersonal relationships in the workplace. Carrot Rewards is a mobile application that leverages behavioural nudges to promote healthier choices. Carrot Rewards provides its users with consumer loyalty points as an incentive for completing surveys or hitting one's daily step target. The firm has worked with Ontario, British Columbia, and Newfoundland governments to increase physical activity amongst their residents. Carrot Rewards has also worked with Natural Resources Canada for energy efficiency research and Health Canada for indoor air quality and opioid research. This social marketing organization has developed a unique social reward platform that uses mobile technology to support large-scale behaviour changes to improve Canadians' well-being.

As part of this pilot, the Carrot Rewards mobile app will reward public servants and military members with an accumulation of redeemable points (e.g. Scene Points, Aeroplan, RBC rewards, Petro Points, etc.) when they respond to short quizzes within the app designed to assess various topics related to workplace well-being such as interpersonal communication and work stress. They will also be rewarded each time they achieve their daily step goal.

This app has been downloaded and is being used regularly by over 700,000 Canadians. In addition, its development has been made possible by a contribution of \$5 million by the GoC, through the Public Health Agency of Canada's grants and contribution program. The results of this project will impart insight into the feasibility, comprehensiveness, impact, and success of using a digitally-delivered reward-based workplace well-being intervention for driving behaviour change within a military and civilian organization.

### 1.4 Purpose of Study

The current research is a pilot study that will be used to help inform future experimentation in this domain. The objective of this project is to deliver customized interventions related to workplace well-being on the Carrot Rewards mobile app to meet the following needs:

1. To roll out the customized app for public servants and military personnel in various GoC departments;
2. To build awareness and understanding of workplace well-being among public servants and encourage behavioural change to foster healthier relationships in the workplace;
3. To collect and analyze workplace well-being data and report on the findings; and,
4. To inform and better target policy and program measures related to workplace well-being.

## 2.0 Methodology

The current work is being conducted under DRDC Toronto's Human Research Ethics Committee's approval and guidelines.

### 2.1 Focus Group

Before distributing invitations across the departments, a small focus group ( $n = 7$ ) was conducted at Defence Research and Development Canada – Toronto Research Centre. The purpose of the focus group was to (i)

obtain feedback on the nudges; and, (ii) assess their experience using the Carrot Rewards app in general. Participants downloaded the app before the focus group session. Participants engaged with the app for a thirty-minute period and completed a simple use-case scenario session within the app (e.g., complete the sign-up process, set up a walking challenge with a friend, etc.). Participants' usability based on their first interactions with the mobile app was then captured with the System Usability Scale (SUS) [9], a generic usability scale with validated psychometric properties [10]. Given the small sample size, SUS scores are not reported here, however, it is worth noting that certain issues with on-boarding were identified and were communicated to Carrot Rewards.

Upon completion of the SUS, participants were presented with 12 nudges and were asked: (1) their initial thoughts; (2) what they (dis)liked about the nudge; (3) if they would perform the recommended behaviour; (4) any barriers to engaging in the behaviour; and (5) any suggestions for improving the wording of the nudge. For each nudge, participants then indicated on a 10-point Likert scale (1 = *strongly disagree*; 10 = *strongly agree*) the extent to which they agreed with the following statement: "I would like to receive the nudge." Mean scores ranged between 3.00 ( $SD = 1.93$ ) and 8.63 ( $SD = 1.19$ ). These scores, along with the open-ended feedback that participants provided, were used to select the final nudges that were included in the study.

## 2.2 Participants

Up to 1500 GoC employees across various workplaces (e.g., DND, Transport Canada (TC), Canada School of Public Service (CSPS), Health Canada, and Statistics Canada) will be invited to participate in this study.

## 2.3 Design

Data collection is currently in progress. Participants are invited to participate via email, which includes a link to the website (only accessible to public servants) containing relevant information pertaining to the study ([http://www.gcpeia.gc.ca/wiki/GC\\_Entrepreneur/RewardsPilot](http://www.gcpeia.gc.ca/wiki/GC_Entrepreneur/RewardsPilot)) as well as links to the information sheet and to the voluntary consent form. There are multiple versions of the recruitment email; this was done in order to assess if certain versions were more effective at recruiting participants compared to others.

The following in-app elements are included in the program:

- One baseline survey to assess current perceived quality of interpersonal relationships in the workplace
- Rewards for daily step goal achievement
- Rewards for Step Together Challenges encouraging competition among participants
- Four short surveys related to improving mental wellness, resilience, and connections in the workplace
- Five blog posts on the following topic areas: (1) The importance of forging real relationships at work; (2) Exploring the "languages" of appreciation and recognition; (3) Having difficult conversations: Boost your skills to reduce stress; (4) Trust in the workplace; (5) Office relationships: Connection and closeness to work colleagues
- A follow-up survey to measure change in the perceived quality of interpersonal relationships in the workplace throughout the program
- A final survey to assessment of user experience using Carrot Rewards app

Once participants have downloaded the app and entered the code, they are presented with the first of six offers (i.e., surveys) that will be presented over a three-month period. Offers in the Carrot Rewards app are referred to as short, app-based learning exercises and surveys that have redeemable points associated with

completing them. We have created a series of nudges that will be presented to participants throughout the study, presented on the homepage (see Figure 1). The nudges are focused primarily on promoting positive workplace relationships (e.g., “Commit to getting to know one co-worker you don’t know very well this week”). Two types of codes are being used during recruitment such that some participants will either receive a code that will provide them with nudges being presented within the app, whereas others will receive a code that is associated with no nudges being presented to them within the app.<sup>1</sup>



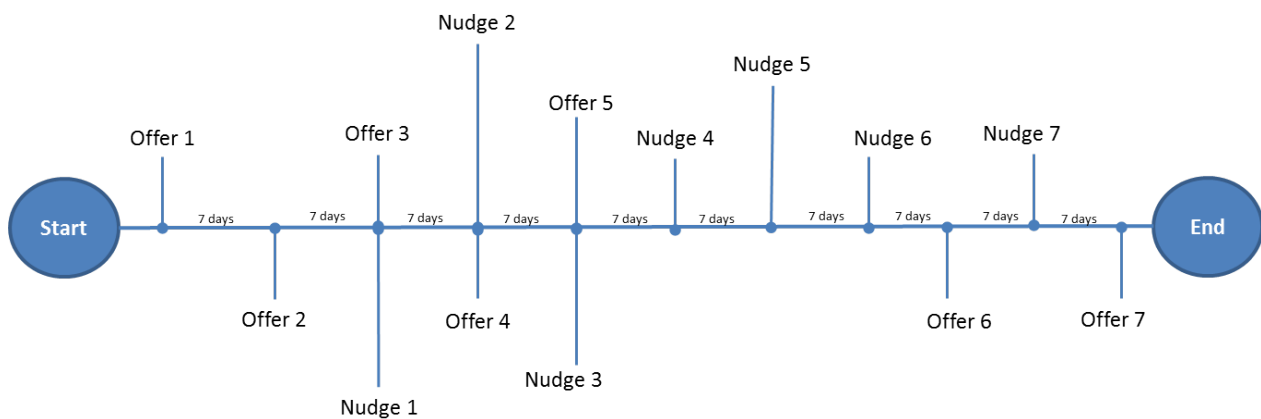
**Figure 1: ‘How was your weekend?’ nudge presented on the homepage.**

*(Images Copyright 2019 by Carrot Insights, used with permission)*

The first offer assesses workplace relationships and the same measure will also be administered during the sixth offer (see Figure 2). The remaining offers consist of questions that assess workplace well-being for interpersonal communication, recognition and reward, work stress, work-life balance, and trust. Additionally, as mentioned above, nudges will be presented only to approximately half of the participants within the app at different intervals to promote positive workplace well-being and wellness behaviours. In partnership with Carrot Rewards, the investigators are also including subtle nudges for all of the participants to help promote behaviours such as tracking steps or challenging a work colleague to achieve their daily step goals together. Additionally, data on behavioural outcomes within the app such as the number of users who continue to use the app over time, number of app referrals to other new users, daily steps, number of challenges initiated by participant to complete daily steps with another user, and so on, will be collected. All participants are also presented with five blog posts with topics related to workplace relationship at the end of offer two to six. The traffic analytics from each blog posts been tracked, and two of the blog posts will give participants redeemable points for reading them.

<sup>1</sup> Due to restrictions associated with recruiting participants, it was not possible to randomly assign participants to receive a code that presents nudges within the app or a code that does not include nudges.





**Figure 2: Timeline of the Offers and Nudges.**

## 2.4 Measures

As mentioned prior, participants will receive a total of seven offers throughout a three-month period. Some of the measures are taken from established measures and are described below. Additionally, some items from the PSES are included in the offers so that comparisons can be made to the prior PSES results as well as to assess relevant concerns that have been highlighted in past PSES. Finally, Carrot Rewards created educational items that are typically presented at the beginning of each offer (e.g., “Managers play a large role in building and promoting a trusting team environment” (*true or false*)).

### 2.4.1 Demographics Characteristics

We are collecting demographic information on age, gender, and, whether the individual is military or a public servant. This information will be used in our analyses to better understand our sample (i.e., which individuals elected to participate in the study).

### 2.4.2 Offers 1 & 6: Workplace Relationships

Workplace relationships is the only measure that is repeated and will be assessed at the beginning of the study and at the end, using the Needs for Relatedness subscale of the Work-Related Basic Need Satisfaction Scale [11]. The subscale has seven items to assess the extent to which participants feel connected to others and a sense of group membership within the workplace context [11].

### 2.4.3 Offer 2: Interpersonal Communications

Four items from the Co-workers subscale of the Job Satisfaction Survey [12] are used to assess interpersonal relationships at work and the extent to which participants believe they are affected by those relationships.

### 2.4.4 Offer 3: Recognition & Reward

Recognition and reward is being measured using the Contingent Reward subscale of the Job Satisfaction Survey [12]. The subscale has four items used to assess the extent to which participants perceive recognition and the availability of rewards within their workplace [12]. Additionally, one question from the PSES is included in the offer: “I receive useful feedback from my immediate supervisor on my job performance”.

### 2.4.5 Offer 4: Work Stress

To assess work stress, four items from the PSES are included: “My immediate supervisor creates an environment where I feel free to discuss with him or her matters that affect my well-being at work”; “I have support at work to balance my work and personal life”; “In my work unit, people behave in a respectful manner”; and, “I am satisfied with how interpersonal issues are resolved in my work unit.”

### 2.4.6 Offer 5: Trust

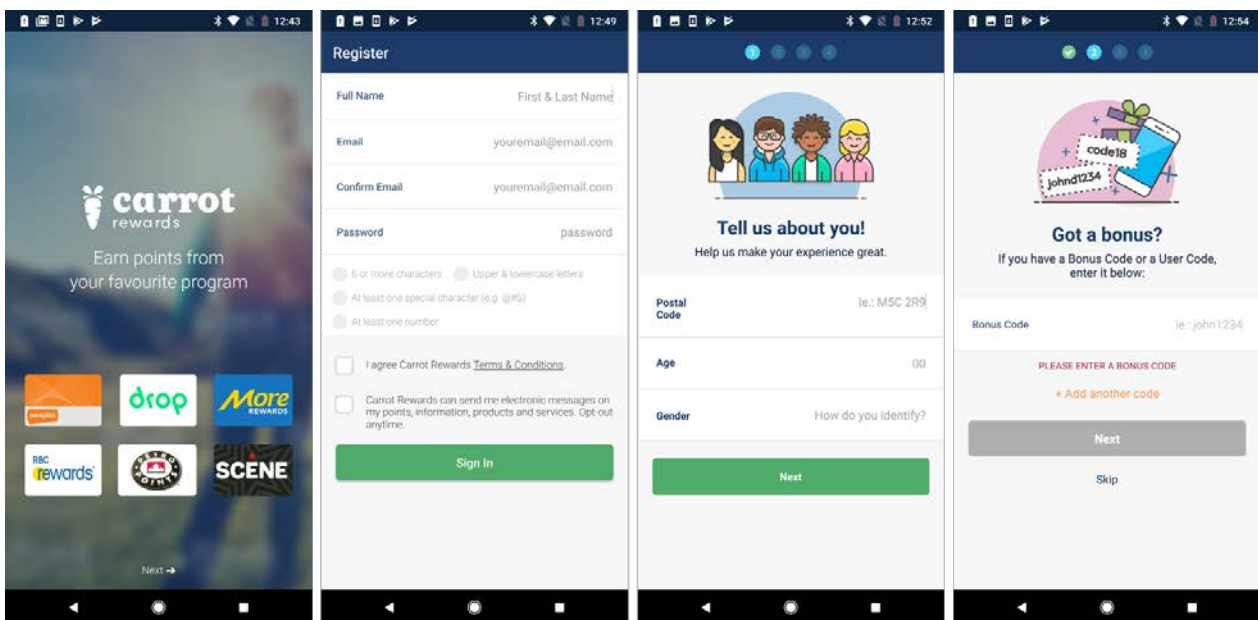
Trust will be measured using the following PSES questions: “Overall, my department or agency treats me with respect”; “In my work unit, every individual is accepted as an equal member of the team”; “Overall, to what extent do issues with your co-workers cause you stress at work”; and, “Overall, I feel valued at work”.

### 2.4.7 Offer 7: User Experience

To assess overall user experience of the Carrot Rewards app and the perceived effectiveness of the pilot study a series of close-ended questions will be presented in the final offer.

### 2.4.8 User journey through the Carrot app

Figure 3 presents the user journey flow through the Carrot Rewards mobile app, starting with initial onboarding, and continuing through the process of completing the initial offer.



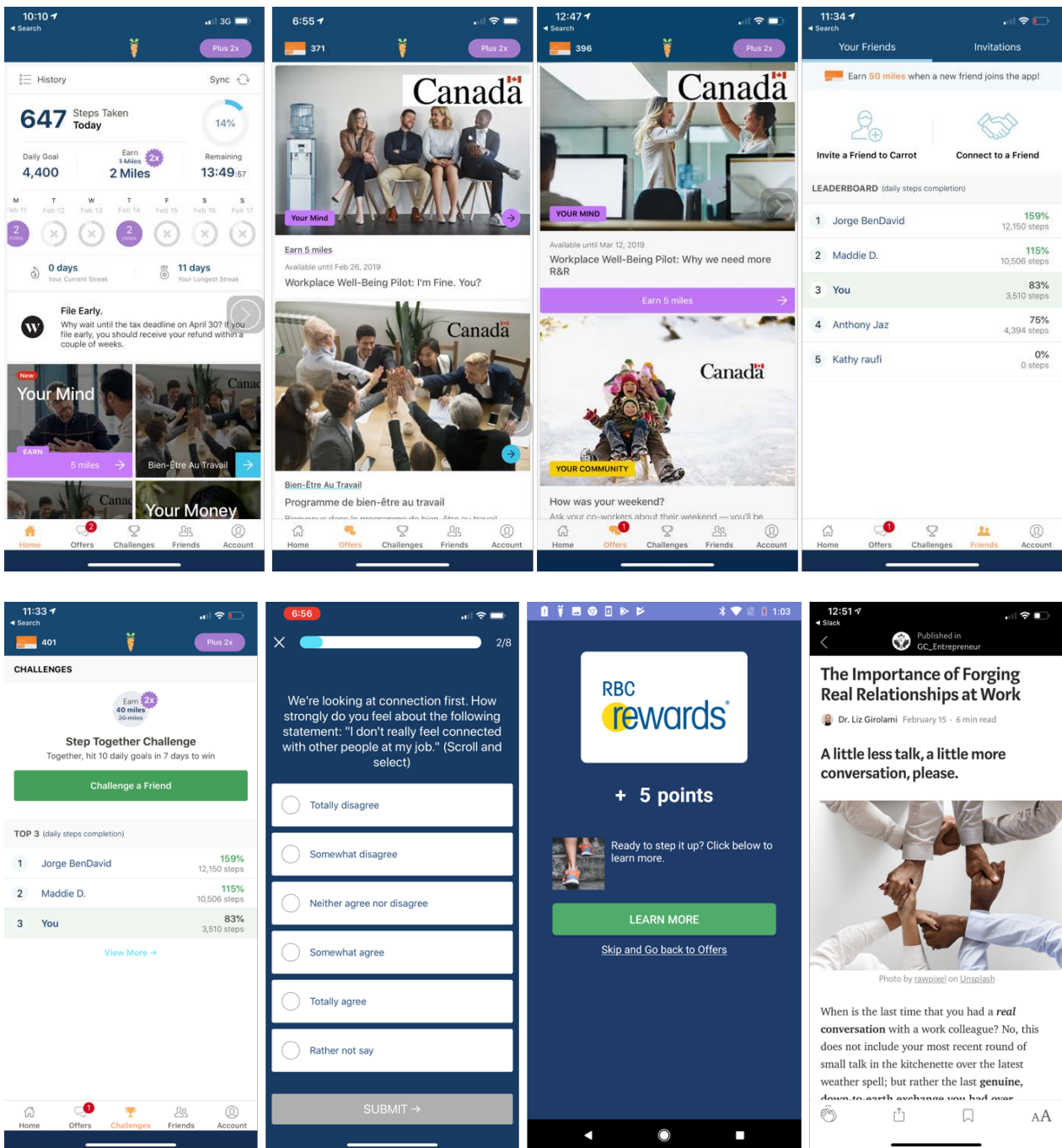


Figure 3: User journey through Carrot app.  
 (Images Copyright 2019 by Carrot Insights, used with permission).

### 3.0 PRELIMINARY RESULTS

As mentioned prior, data collection is currently underway; however, here we present preliminary results from the Work-Related Basic Need Satisfaction Scale [11] Offer 1 of the study. Participants ( $n = 292$ ) who have completed Offer 1, generally report positive workplace relationships (see Figure 4 and 5).



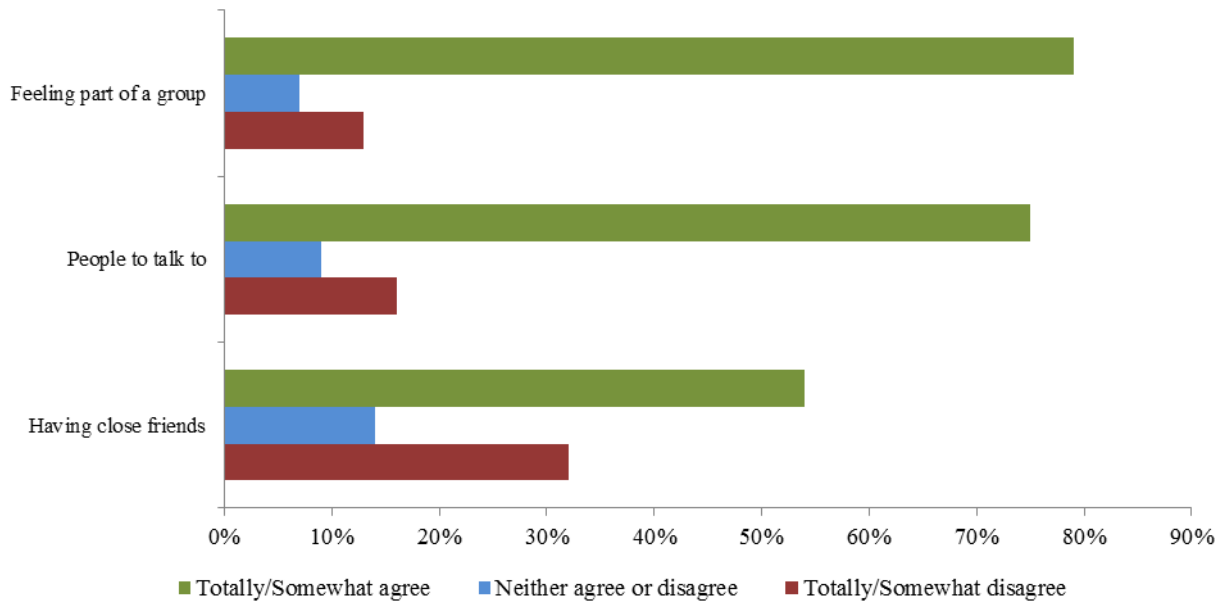


Figure 4: Percentage of participants' responses to positively worded items assessing workplace relationships.

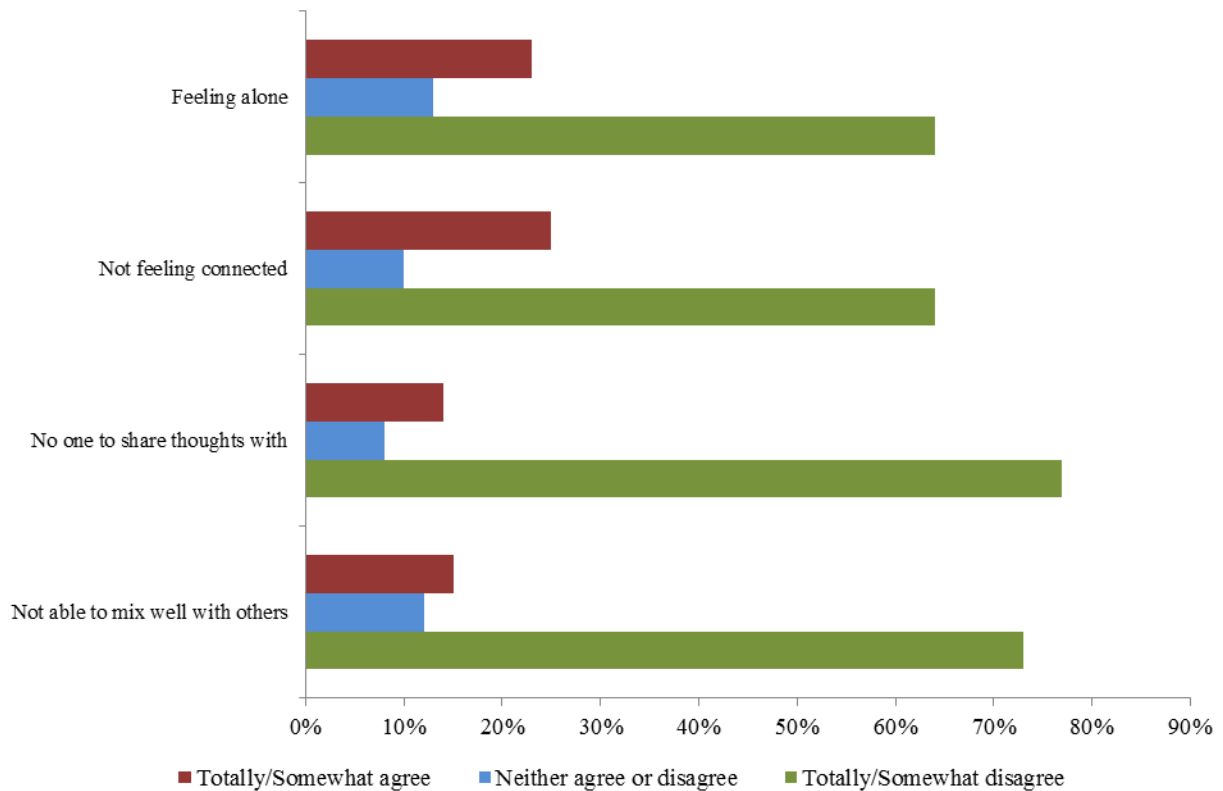


Figure 5: Percentage of participants' responses to negatively worded items assessing workplace relationships.

## 4.0 DISCUSSION

Despite the important role that workplace well-being plays in the effectiveness of military organizations and the retention of its members, more work is needed to develop interventions with sustained beneficial effects. The emergence of new digital tools and technologies provides an opportunity to consider innovative approaches in designing and delivering interventions that optimize workplace well-being. This pilot experiment is attempting to determine the cost-effectiveness and feasibility of a workplace well-being program that combines traditional workplace well-being interventions with reward-based incentivization, delivered on a mobile platform. The project will assess the feasibility of using points-based incentives (i.e., the Carrot Rewards app) to drive behaviour change, predominantly with the intent to engage public servants, military, and leadership in familiarizing themselves on the importance of fostering healthy workplace habits while providing opportunities and encouragement for participants to perform healthy workplace behaviours. The GCE team working on the Workplace Well-being project may help in the development of a model that the GoC can utilize to break down barriers and to help form agile and nimble teams to work on cross-cutting projects of this nature.

## 5.0 NEXT STEPS

Upon completion of data collection, we will focus our efforts on documenting some of the perceived and real barriers that were faced in launching a study of this nature. To conduct research within the GoC, there are various procedures and processes that must be followed. Although certain processes are necessary and clear to follow (i.e., obtaining approval from a human research ethics board), others, at times, seemed less central to conducting research and innovation. We will also examine user data from the app (e.g., on-boarding, participation rates, etc.) in order to provide recommendations for scaling future initiatives or programs similar to the current research. Finally, Statistics Canada will receive anonymized data from Carrot Rewards to host a data hackathon, a new method of solving data analysis challenges that began in 2018. Participating in this event will allow for data analyses to be conducted by a team of analysts from the GoC for a period of three days. These results will provide an overview of the findings of this pilot.

## 6.0 CONCLUSION

The work of the GCEs along with the results of this project will impart insight into the feasibility of using a digitally-delivered reward-based workplace well-being intervention program to drive behaviour change within military and government organizations. More specifically, the current work, as an innovate solution, can be leveraged by current GoC approaches to address issues in the current problem space (e.g., the PSES; large-scale research, etc.) to promote workplace well-being. Moreover, our work may promote the use of behavioural economics (i.e., nudges) as a subtle and effective technique for enhancing workplace well-being in federal government employees and military personnel.

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## 8.0 REFERENCES

- [1] Grant, A. M., Christianson, M. K., & Price, R. H. (2007). Happiness, health, or relationships? Managerial practices and employee well-being tradeoffs. *Academy of Management Perspectives*, *21*, 51-63.
- [2] Ivey, G. W., Blanc, J. R. S., Michaud, K., & Dobрева-Martinova, T. (2018). A measure and model of psychological health and safety in the workplace that reflects Canada's National Standard. *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration*.
- [3] Canadian Standards Association & Bureau de normalisation du Québec (CSA Group/BNQ; 2013). Psychological health and safety in the workplace – Prevention, promotion, and guidance to staged implementation (CSA Publication No. CAN/CSAZ100313/BNQ9700-803/2013). Retrieved from [https://www.csagroup.org/documents/codes-and-standards/publications/CAN\\_CSA-Z1003-13\\_BNQ\\_9700-803\\_2013\\_EN.pdf](https://www.csagroup.org/documents/codes-and-standards/publications/CAN_CSA-Z1003-13_BNQ_9700-803_2013_EN.pdf)
- [4] Message from the Clerk to all public servants for annual Mental Health Week. Retrieved from: <https://www.canada.ca/en/privy-council/corporate/clerk/news/mental-health-week.html>
- [5] National Defence (2017). Strong, Secure, Engaged: Canada's Defence Policy. Retrieved from:
- [6] <http://dgpaapp.forces.gc.ca/en/canada-defence-policy/docs/canada-defence-policy-report.pdf>.
- [7] Kekkonen, M., Oinas-Kukkonen, H., & Tikka, P. (2018). Systems Supporting Occupational Health Behavior Change: A Systematic Literature Review. In *Proceedings of the Sixth International Workshop on Behavior Change Support Systems (BCSS'18) in conjunction with the 13th International Conference on Persuasive Technology*.
- [8] Harvard Second Generation Study (2015). *Study of Adult Development Retrieved*. from: <https://www.adultdevelopmentstudy.org/grantandglueckstudy>
- [9] Waldinger, R. J., & Schulz, M. S. (2010). What's love got to do with it? Social functioning, perceived health, and daily happiness in married octogenarians. *Psychology and Aging*, *25*, 422.
- [10] Brooke, J. (1996). SUS-A quick and dirty usability scale. *Usability Evaluation in Industry*, *189*, 4-7.
- [11] Bangor, A., Kortum, P., & Miller, J. (2008). An empirical evaluation of the system usability scale. *International Journal of Human-Computer Interaction*, *24*, 574-594.
- [12] Van den Broeck, A., Vansteenkiste, M., De Witte, H., Soenens, B., & Lens, W. (2010). Capturing autonomy, competence, and relatedness at work: Construction and initial validation of the work-related basic need satisfaction scale. *Journal of Occupational and Organizational Psychology*, *83*, 981-1002.
- [13] Spector, P. E. (1985). Measurement of human service staff satisfaction: Development of the job satisfaction survey. *American Journal of Community Psychology*, *13*, 693-713.

