



# Assessing the influence of the Road to Mental Readiness (R2MR) mental health training program on voluntary release among recruits in Basic Military Qualification training

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## Scientific Letter

# Assessing the influence of the Road to Mental Readiness (R2MR) mental health training program on voluntary release among recruits in Basic Military Qualification training

## Background

The *Road to Mental Readiness* (R2MR) program was developed by the Canadian Armed Forces (CAF) Directorate General Health Services at the request of the Chief of Military Personnel (CMP) and the Surgeon General (SG) in order to optimize the mental health of CAF members. Military members' first exposure to R2MR is during Basic Military Qualification (BMQ). Like any large-scale public health intervention, R2MR needs to be tested to see if it works (i.e., if it is efficacious). To this end, Defence Research and Development Canada (DRDC) Toronto is currently conducting a group randomized control trial (GRCT) of R2MR at BMQ.

There was a request from both stakeholders of the R2MR GRCT project (Directorate General Health Services (DGHS) and the previous and current Commanding Officers (COs) at the Canadian Forces Leadership and Recruit School (CFLRS) to look at military training/performance outcomes as well as psychological health and psychological resilience early on in the pilot phase of the GRCT. Given that DGHS aims to influence military performance as well as psychological functioning outcomes with R2MR and the importance for CFLRS to meet recruit graduation quotas at BMQ each year, voluntary release (VR) was an important outcome to investigate early on during the pilot phase of the GRCT.

According to administrative data obtained from CFLRS (M. Cicci personal communication May 19, 2017), over 32,850 individuals have been recruited into BMQ training since 2006. While the majority of these recruits successfully completed BMQ training, 20.5% were unsuccessful. While there are a multitude of reasons for individuals to not complete BMQ, by far the most prevalent is VR, which accounts for 78.8% of all attrition, or conversely, 16.1% (5,295) of all individuals recruited into BMQ. According to the Office of the Auditor General (2016), the national deficit between targeted and actual Regular Force members is at five-year high of 4,200. Given this disparity, it is worthwhile to investigate whether R2MR has any beneficial effect on reducing the rate of VR.

While previous work identifies some factors predictive of VR during BMQ, including demographic (Lee and Otis 2011; Michaud 2010), health (Booth-Kewley, Larson and Ryan 2001; Lee and Otis 2011; Pope et al. 1999), lifestyle (Charbonneau and Bradley 2004 a,b,c; Michaud 2010), and personality (Michaud 2010), to our knowledge, no study to date has explored **causal** relationships between mental health education and resilience training programs, such as R2MR, and the rate of VR.



## **Study objectives**

The objective of the present investigation was to establish the feasibility of a future investigation into whether R2MR reduces VR at BMQ. Using data collected from the pilot phase of the R2MR GRCT, we assessed if it was possible to investigate whether platoons exposed to R2MR had a lower rate of VR than platoons not exposed to R2MR. Feasibility was determined through examining: access to administrative data; ability to link administrative and R2MR data; cleanliness/usability of the administrative data to generate a research-quality dataset; and forecasting whether the distribution of VR in the larger trial would be sufficiently varied across study conditions to allow for full efficacy analysis, including controlling for confounders.

## **Method**

### **Participants and procedure**

The pilot phase of the R2MR GRCT began on October 31, 2016 and concluded on February 8, 2017. Participants of the pilot phase were eight Anglophone Non-Commissioned Member (NCM) recruit platoons stationed at the CFLRS in Saint-Jean-sur-Richelieu, Quebec. Details of the participant selection and study design can be found in other reports (Fikretoglu, Liu, and Blackler (in press); Blackler, Fikretoglu, and Liu (in press); Liu, Fikretoglu, and Blackler, 2017). Additionally, Annex A, Figure A.1 summarizes the experimental design of the R2MR pilot phase. In the study, four platoons were randomly assigned to Intervention (R2MR at Week 2 of BMQ) and four platoons were assigned to Delayed Intervention Control (R2MR at Week 9 of BMQ). Informed Consent to participate in the GRCT and a separate Informed Consent allowing Data Linkage to other NCM recruit research and administrative databases was sought at the start of the pilot during the Study Information and Sign-Up session.

### **Data collection**

Attaining consent for data linkage was essential in order to link participants' R2MR condition to their administrative data. Given that the primary outcome of the present investigation is VR, inclusion of participants' data within our analysis was wholly dependent on their consent to link these two datasets. Thus, participants who did not consent to data linkage were not included in the analysis. An examination of the data linkage consent groups is provided in Fikretoglu, Liu, and Blackler (in press).

### **Measures**

For the Department of National Defence, VR is the process where a member of the CAF either submits a request to leave of their own volition, or leaves subsequent to not being offered a further contract (Government of Canada, National Defence, 2014). Barring extenuating circumstances, recruits in BMQ are first able to request VR at the end of their fifth week of training (E. Richard personal communication June 30, 2017). Despite VR not being formally authorized by CFLRS prior to Week 5 of training, in some instances individuals are permitted to request VR prior to Week 5. The process of VR at CFLRS is outlined in Annex B, Figure B.1. Critically, at the time of the initial request, CFLRS staff categorizes recruit's reason under one of five categories: personal problems, family problems, physical fitness, wrong career choice, or wrong trade choice. The wrong trade choice category is reserved for cases where the recruit has successfully graduated from BMQ. We excluded these individuals from our analysis



because we are primarily interested in VR as an intermediate outcome that leads to not graduating from BMQ training. Additionally, we excluded instances of VR prior to Week 2 of BMQ (when R2MR is delivered to the Intervention group) since any VR prior to Week 2 could not have been influenced by R2MR. Furthermore, we excluded all cases of VR following Week 9 of BMQ as by this time the Delayed Intervention Control group would have also received R2MR (i.e., the Delayed Intervention Control group would stop functioning as a no-R2MR Control).

Finally, throughout the course of the BMQ, some recruits pause their training due to illness, injury, or an inability to meet physical fitness demands. Once ready to resume BMQ, recruits are transferred into a new platoon different from the platoon they started their BMQ training with. Due to the possibility of moving from the Intervention to the Control platoon (or vice versa), and the possibility of contamination (being exposed to R2MR), all recoured recruits were also excluded from analyses.

### Statistical analyses

The objective of the present investigation is to examine if R2MR affects VR, and if so, to what extent. To this end, we employed a binomial mixed-effects logistic regression model to control the random effects that different recruit platoons may have on VR. Thus, in the determination of the fixed effect of R2MR, we controlled for the random effects of platoon.

### Statement of results

The R2MR pilot phase had a total of 354 participants, of whom 267 agreed to data linkage. Of these 267 participants, 221 were included in the current analysis. For a complete visualization of participant flow, see Annex C, Figure C.1.

The VR rate was 3.77% in the Intervention group and 6.09% in the Control group. Results from the binomial mixed-effects logistic regression model for assessing the effect of R2MR on VR can be found in Table 1 below. Overall, this model indicated that recruits who received R2MR training were 39% less likely to VR than those who did not. However, this difference did not reach statistical significance,  $t(213) = -.78, p = .43$ .

*Table 1: Odds ratio for the effect of R2MR on VR assessed from a binomial mixed effects logistic regression model that predicts VR from R2MR condition.*

<b>Condition</b>	<b>Odds ratio</b>	<b>95% confidence interval</b>	<b>t-value</b>	<b>p-value</b>
<i>Intervention vs. Control</i>	0.61	0.17 – 2.1	-.78	.43
$N_{participants} = 221$	$N_{platoons} = 8$		$N_{vr} = 11$	



## Discussion of results

The analysis of the mixed effects model did not yield evidence in support of a beneficial effect of R2MR on VR. Additional analyses, available upon request, in which we included recoured recruits did not change these results. However, it is important to remain cognizant that null findings are unsurprising in a pilot phase GRCT and not necessarily predictive of future main study findings.

The present investigation used data from a pilot study with a small sample size. The main objective of a pilot GRCT is to establish the feasibility of the larger trial. Hypothesis testing, if pursued, should be interpreted with an abundance of caution in small pilot studies such as the current study. Small pilot studies are particularly at risk for Type II error (i.e., a false negative or in this case, erroneously concluding R2MR does not have a beneficial effect when in fact it does). Therefore, a rigorous empirical test of whether R2MR has beneficial effects on VR must await data from the full GRCT that is currently underway. The full GRCT is expected to have approximately 60 platoons which will not only allow us to test the effect of R2MR on VR, but to also control for the effects of potential confounders, which we could not do here due to limited sample size.

Data access, linking and refinement methodologies established in the present investigation have proven to be successful in analyzing the influence of R2MR on VR during BMQ. This was demonstrated through our success in utilizing the administrative data from CFLRS in order to identify, subset, and distill a valid measure of VR in the context of R2MR. Furthermore, the steps taken to develop the dependent variable were recorded in R, an open-source statistical programming language (R Core Team 2017), thereby ensuring that a future study would obtain an identically defined measure of VR.

## Conclusion and future directions

In the present investigation, we established that it is feasible in the larger ongoing GRCT on R2MR to assess whether R2MR has beneficial effects on VR. This feasibility was established by confirming that 1) it was indeed possible to access the administrative data using the consent to data linkage process, 2) to translate the administrative data into a useable research dataset, and 3) by observing in the pilot phase and forecasting for the larger trial the distribution of the VR variable.

Our analysis with the pilot data on VR found a very small decrease in VR for those recruits who received R2MR training. However, this effect did not reach statistical significance and did not control for potential confounders. Thus, an empirical test of whether R2MR influences VR must await complete data from the full GRCT that is currently underway at CFLRS.

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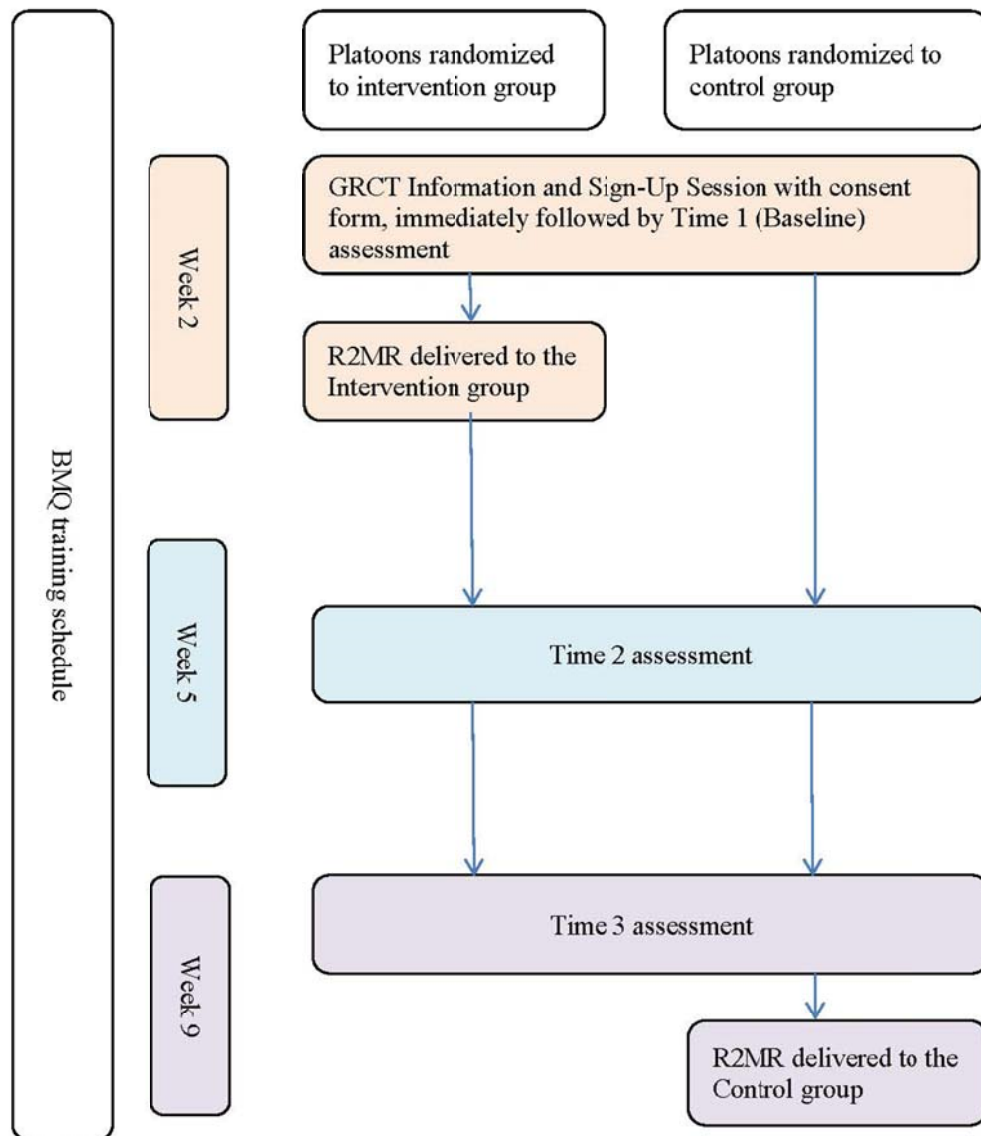
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## Annex A

Figure A.1: Overview of the design of the Anglophone pilot phase GRCT.

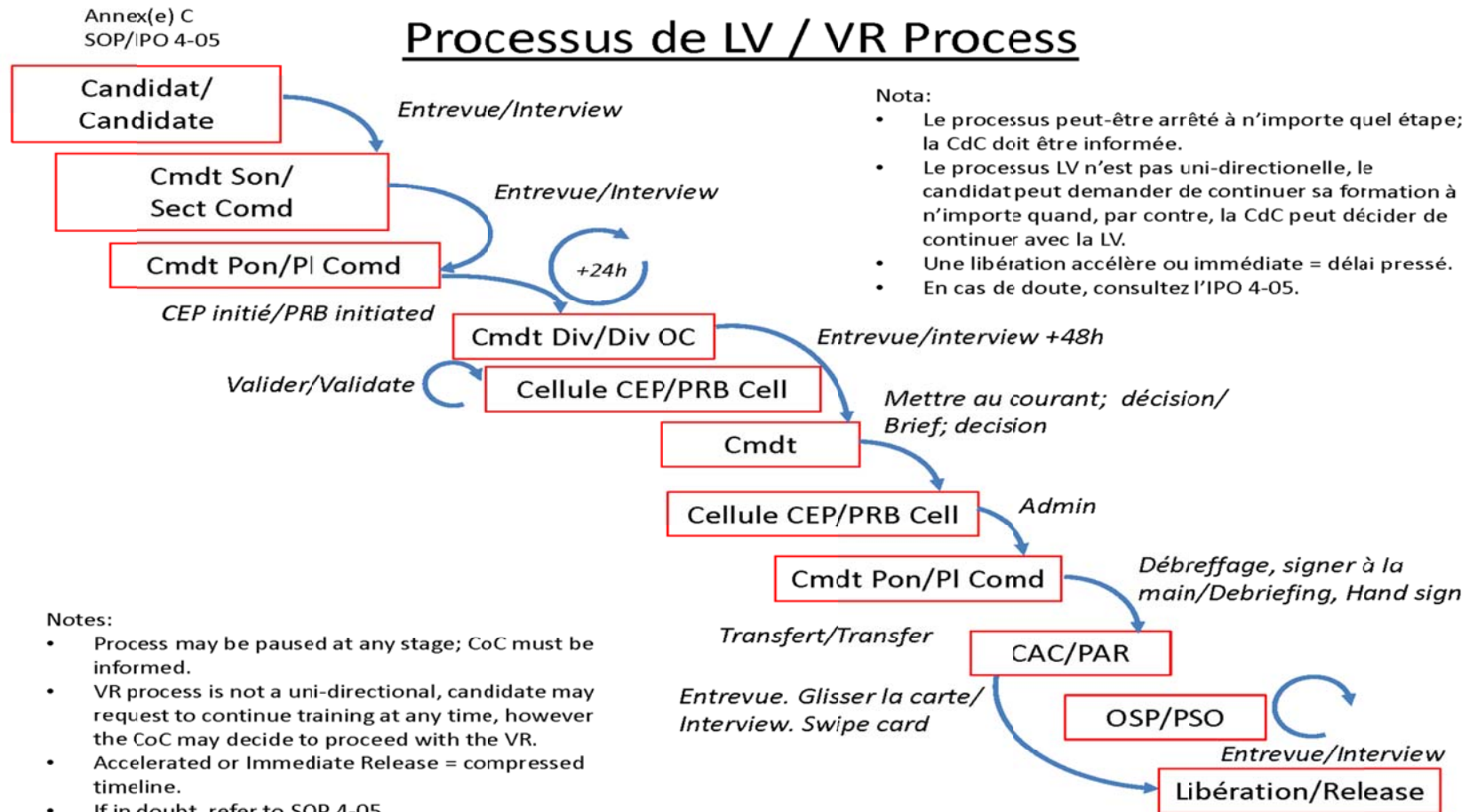






## Annex B

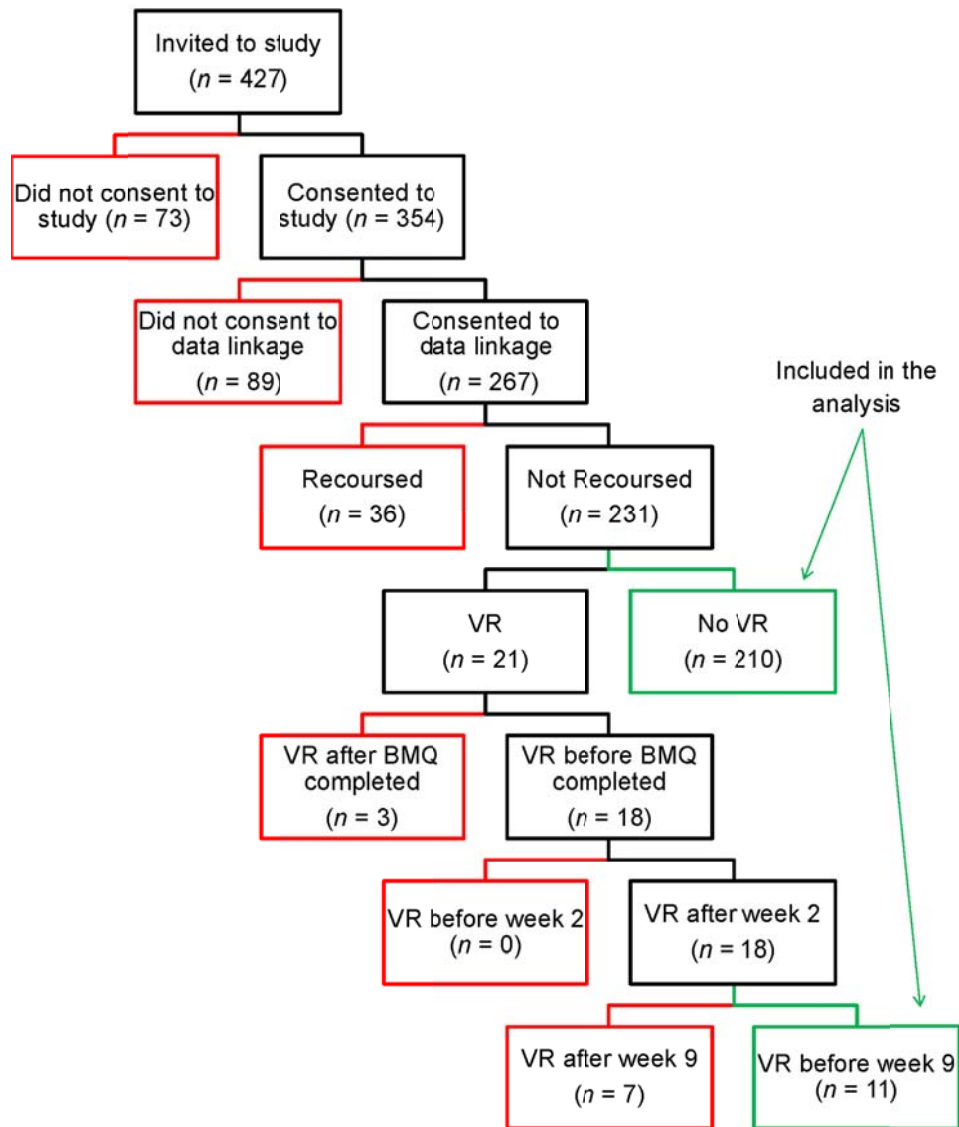
Figure B.1: Diagram of the Voluntary Release process.





## Annex C

Figure C.1: Diagram of participant flow through select dispositions.



Green squares denote final sub-samples used in the main analysis, whereas red squares are sub-samples not included.

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