An evaluation of a new resilience intervention for emergency service workers

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Table of Contents

Chapter	Title	Page
1	**Acknowledgements**	3
2	**Abstract**	5
3	**Introduction**	5
	Aims	6
4	**Methods**	6
	Trial Design	6
	Interventions	6
	Inclusion and Exclusion Criteria	8
	Procedure	8
	Baseline and Outcome Measures	9
	Hypotheses	12
	Analyses	16
5	**Results**	23
	Resilience	23
	Wellbeing	23
	Social Capital	24
	Psychological Distress	25
	Mental Health Awareness	26
	Confidence to Manage Mental Health	27
	Rumination	28
	App: Eye5	29
	Which modules linked to greatest change?	30
	Early Predictors of Participant Success	31
6	**Discussion**	32
	Discussion Points	33
7	**Conclusion**	36
8	**References**	38

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Abstract

Background: Emergency service workers dedicate their lives to promoting public health and safety yet suffer higher rates of mental health problems compared to the general population. Existing interventions are not very successful in improving the resilience of this population, possibly because they fail to target predictors of mental health problems. First establishing predictors of mental health problems in this population (Wild et al., 2016), we then developed a mixed format intervention, consisting of 4 online modules and 4 linked group sessions, to modify predictors. Here we evaluate the new resilience intervention in a randomised controlled trial.

Methods: Emergency service workers (N=180) were randomly allocated on a 1:1:1 basis to receive the new resilience intervention, a placebo intervention or a wait period of four months. Participants completed a number of measures assessing resilience, wellbeing, coping and social capital at three assessment points: pre-intervention, post-intervention and three-month follow-up.

Results: Significant improvements over time in resilience, wellbeing, social capital, psychological distress, mental health awareness and confidence to manage mental health were specific to the resilience intervention and were not seen in the placebo or wait conditions. Participants who had received the resilience intervention demonstrated significant improvements in social capital and psychological distress by post-intervention compared to participants who had received the placebo and wait conditions. By follow-up, they had demonstrated significant changes in wellbeing, resilience, mental health awareness, confidence to manage mental health and sustained changes in social capital compared to participants who had received the placebo intervention or wait period. Participants receiving the intervention also demonstrated a trend to ruminate less often in response to unwanted memories by post-intervention compared to participants receiving the placebo and wait conditions, and this change was sustained at follow-up. All effects of the intervention were small to medium. The strongest effect of the intervention was linked to improvements in mental health awareness, which tapped use of tools to manage mental health. The modules which appeared to be most effective focused on types of over-thinking: worry and rumination.

Conclusions: The success of this intervention is promising and may be associated with changes in targeted predictors of mental health problems. Future research could evaluate the intervention with a much larger sample and investigate mediators of outcome.

Introduction

Some people can get over anything. They help someone in distress, are viciously attacked, yet pull through to devote even more hours as a paramedic helping to save other people's lives. They see daily violent crime in their job as a police officer and keep going even more committed to solving crime and protecting people. As firefighters and search and rescue personnel, they may risk their own lives finding and helping people in dangerous situations, returning to work with an even deeper resolve to make a difference. These people are resilient.

Resilience is what determines how people react to adversity, how it affects the outcomes of their lives. Resilience can be trained and with treatment, people can become more resilient (i.e., Connor & Davidson, 2003). Research suggests that resilient people are less likely to experience mental health problems (e.g., Foresight, 2008).

Mind is a leader in identifying and responding to the needs of populations at risk of mental health problems. In January 2015, the charity identified the need to improve the resilience of emergency services personnel in England through an impressive scoping survey of 3,627 emergency service workers. When surveyed, a staggering 88% of emergency service workers reported stress, low mood and poor mental health whilst working. These results are consistent with our own research that has identified a significant increase in emergency service workers' risk for posttraumatic stress disorder (PTSD), depression and associated physical health problems compared to the general population (Wild et al., 2016). Emergency service workers are clearly in need of interventions to improve their resilience to stress and mental health problems.

Responding to the needs of emergency service workers, Mind developed their innovative Blue Light Programme, which contributes towards the achievement of two of Mind's visionary strategies. The programme includes a resilience strand and through this strand, emergency service workers were offered access to Mind's six-session resilience intervention, initially developed for unemployed men and new mothers at risk of social isolation.

In a large-scale study including more than 400 emergency service workers, our team at the University of Oxford evaluated Mind's six-session resilience intervention. Although the intervention was very acceptable to emergency service workers, the results demonstrated that it did not lead to notable improvements in resilience, wellbeing, coping or social capital. Such findings are consistent with the results of other evaluations of interventions aimed at improving emergency service workers' mental wellbeing. For example, randomized controlled trials (RCT) found that trauma risk incident management (TRiM), a peer support system widely available to the police and ambulance services in England (Greenberg et al., 2010) and critical incident stress debriefing widely used by UK fire-services (van Emmerik et al., 2002) had no effect on resilience or rates of mental health problems. More effective resilience interventions for emergency service workers that respond to the limitations of current interventions are urgently needed.

Existing resilience interventions appear to be limited in success because they (1) fail to target predictors of resilience or mental health problems (2) are evaluated with measures of resilience or wellbeing, which may not relate well to wellbeing, resilience or coping as they are experienced by emergency service workers, (3) do not include follow-up training to sustain gains and (4) do not include strategies that could help emergency service workers cope with characteristic stressors. For example, our and others' research has demonstrated that exposure to stressful scenarios through imagery reduces anxiety for police officers (Arnetz et al., 2013) and other at risk populations (Wild et al., 2007; 2008; 2011) yet exposure to imagery of stressful scenarios is not included in resilience interventions for emergency service workers in England.

Our research (Wild et al., 2016) identified predictors of resilience and mental health problems in emergency service workers. The most robust predictors were rumination and low resilience appraisals. We then developed an intervention to modify predictors. This evaluation aims to ascertain how effective the new resilience intervention is for emergency service personnel. To what extent, does it lead to improvements in social capital, psychological distress, wellbeing, resilience, rumination, and confidence in managing mental health?

Our Aims

Our evaluation aims to:

1. Establish the effectiveness of the revised resilience intervention
2. Link changes in key outcomes to specific course material to identify the most effective parts of the intervention for further development
3. Identify early predictors of participants' success
4. Inform the development of evaluation tools for continued use by local Minds

Methods

Design

Our evaluation is a randomized control in which participants (N=180) were randomly allocated in a 1:1:1 ratio to receive the mixed format resilience training (N=60), a placebo online intervention (N=60) or a wait period of 4 months (N=60).

The Interventions

Mixed Format Resilience Intervention

The resilience intervention consisted of four online modules and four linked group sessions (2 hours in length) delivered once a week over a four-week period. The course aimed to improve resilience to stress by targeting key predictors of long-term stress reactions in emergency service workers.

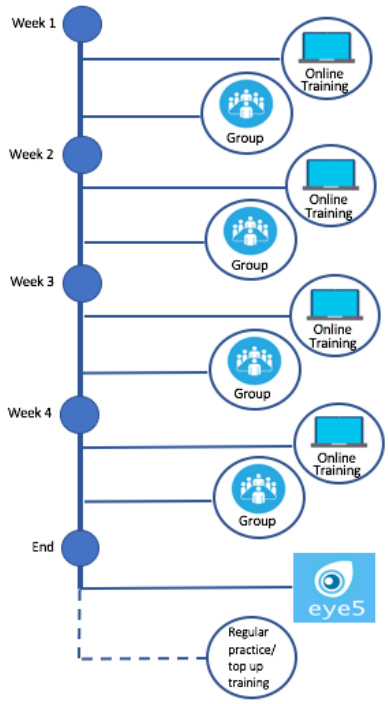
The online modules were released one week before each group session and took approximately fifteen minutes to complete. They included experiential exercises,

psychoeducation, question and answer sections, whiteboard videos, and videos of emergency service worker testimony. The modules were as follows:

Module 1: It Matters What You Focus On: Helpful and Unhelpful Attention
Module 2: Habits and Dwelling: How to Change Them
Module 3: Dealing with Difficult Emotions
Module 4: Transforming Worry & Improving Performance

The group sessions reviewed and built on the material covered in the modules with further experiential exercises, opportunities to ask questions, and to meet other emergency service workers.

Participants were also given details for the bespoke smartphone application, Eye5, during the follow-up period. The app included key videos and learning from the online modules and a chat function so that participants could keep in touch with each other.



Placebo Online

The placebo online intervention consisted of accessing already available information on mental health developed by Mind and, where possible, tailored for emergency service workers. The online intervention was delivered over four weeks and included four topics:

Module 1: Stress
Module 2: Sleep
Module 3: Anger, PTSD and Depression
Module 4: Mindfulness

A link for each topic was emailed to participants once a week and participants completed them remotely.

Wait

Participants allocated to the wait list condition were asked to complete a set of questionnaires at three different time points (baseline, four weeks and three months). Once they had completed the final questionnaires they were offered the digital modules of the mixed-format resilience training.

Inclusion and Exclusion Criteria

Inclusion Criteria

The inclusion criteria included being employed or volunteering as front-line or office- based staff in one of the following emergency services: police, fire and rescue, ambulance and search and rescue.

Exclusion Criteria

Participants who scored in the clinical range on measures of post-traumatic stress or depression, or those who expressed suicidal ideation, had a one-to-one discussion with the study's psychologist. They were included in the study if they did not evidence risk, their symptoms were not interfering with their daily functioning and they did not wish to access treatment. Chart 1 shows the participant flow through the study and the percentage of people who scored for risk and the percentage of participants re-included into the study or signposted for further treatment.

Quantitative and Qualitative Components

The study included quantitative and qualitative measures to ascertain the effects of the resilience training on outcome. The qualitative component of our study assessed staff and participant experience of the intervention, their thoughts on what worked as well as their thoughts on possible ways to improve the intervention. This part of the evaluation was conducted by the New Economics Foundation, the results of which are available in a separate report.

Procedure

Recruitment

Between September 2016 and April 2017, we worked with local Minds to invite participants to take part in the study. A total of N=306 completed registration. A total of N=236 were immediately eligible. A total of N=104 did not take registration any further (i.e., did not complete the study's baseline questionnaires so that randomisation could take place). A total of N=22 were signposted for treatment. A final total of N=180 participants took part in the programme.

Charts 1 to 2 show the participant flow through the study.

Stratification

All N=180 were randomised in a 1:1:1 ratio to receive the mixed format resilience intervention, placebo or wait list conditions across five sites in England. Random allocation was stratified by site and gender.

Number of courses

Eight resilience courses were offered from November 2016 to May 2017. The placebo online intervention was delivered at the same time. There were a small number of drop-outs after random allocation and before the courses started. As such, a total of N=55 participants received the resilience intervention, N=59 received the placebo intervention and N=60 began the wait period. A total of N=52 completed post-intervention and N=53 completed follow-up questionnaires in the waitlist condition. On average, 5 participants (range 3-13) took part in each group session.

Questionnaires

Participants were asked to complete a number of measures via a secure digital programme at three distinct time-points: baseline (pre-intervention), post-intervention and at three-month follow-up. The questionnaires took about 30 minutes to complete.

In depth interviews

For the qualitative component of our evaluation, a random sample of staff and participants were invited for in-depth interviews at the end of phase one, two and three. In total, 12 participants in the mixed format resilience intervention, eight participants in the online control intervention, and eight course facilitators were interviewed. The results of the qualitative analyses are reported in the final report produced by the new economics foundation.

Post-Intervention

Immediately after each intervention/initial wait period, we asked participants to complete post-intervention questionnaires. A total of N=50 participants in the mixed format group, N=50 online control participants, and N=52 wait list participants completed questionnaires at this time-point.

Follow Up

We invited all 180 participants to complete three month follow-up questionnaires. A total of N=50 participants in the mixed format training group, N=52 online control participants, and N=53 wait list participants completed questionnaires at this time-point.

Baseline and Outcome Measures

The following measures were administered at baseline, pre-intervention, post-intervention and at follow up.

Wellbeing

Warwick Edinburgh Mental Wellbeing scale (Tennant et al., 2007): The Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS), developed by Warwick and Edinburgh Universities, is a scale of 14 positively worded items with five response categories for assessing mental wellbeing. The WEMWBS was administered in previous evaluations of Mind's resilience interventions. The total scores range from 14 to 70. The higher the score, the greater the wellbeing. The WEMWBS showed excellent reliability in our sample, Cronbach's alpha=0.94.

ONS Wellbeing (ONS; Office of National Statistics, 2009): We used one item from the ONS four item questionnaire designed to measure wellbeing. The question was 'Overall, how satisfied are you with your life nowadays?'. It is scored on a scale of 0=Extremely dissatisfied to 10=Extremely satisfied.

Resilience

Resilience Scale (Wagnild & Young, 1993): This scale consists of 25 items that each carry a 7 point range of responses from 'disagree' to 'agree'. The total scores range from 25- 175, higher scores reflect higher resilience. The Resilience Scale showed excellent reliability in our sample, Cronbach's alpha=0.95.

Self-efficacy

Schwarzer-Jerusalem General Self-Efficacy Scale (GSE; Schwarzer & Jerusalem,1995):
The General Self-Efficacy Scale is a 10-item scale that is designed to assess optimistic self-beliefs to cope with a variety of difficult demands in life. In contrast to other scales that have been designed to assess optimism, this one explicitly refers to personal agency, i.e., the belief that one's actions are responsible for successful outcomes. The GSE was administered in previous evaluations of Mind's resilience interventions. The total scores range from 10 to 40. Higher scores represent greater self-efficacy. The GSE showed good internal reliability in our sample, Cronbach's alpha=0.92.

Social Capital

Social Participation (Alden & Taylor, 2011): This is a 13-item questionnaire that assesses an individual's social participation. Example items include: In the past month, did you: 'Share your opinions and ideas with others?', 'Talk about meaningful personal experiences with others?', 'Attend work-or school-related social events?'. Participants rate how often they have actively participated in such activities in the last month on a 7-point scale ranging from 1=Not at all to 7=Often. Total scores range from 13 to 91. Higher scores represent greater desire to be social and participate in social situations. This questionnaire showed excellent internal reliability in our sample, Cronbach's alpha=0.91.

Psychological Coping Styles

Attributions Questionnaire (Kleim et al., 2008): This questionnaire assesses attributions of negative events. The scale has 11 items that measure negative stable attributions (e.g., *'When bad things happened to me, I was sure it would happen again'),* negative internal attributions (e.g.,' *When bad things happened, I thought it was my fault'),* and negative global attributions (e.g., *'When bad things happened to me, I couldn't see anything positive in my life')* and helplessness (e.g., '*When things did not go well, I got easily discouraged').* Responses are rated on a 4-point scale from 1=Not at all true to 7=Exactly true. Total scores

range from 11 to 44. Higher scores represent more negative attributions. This questionnaire showed excellent internal reliability in our sample, Cronbach's alpha=0.92.

Rumination Subscale of the Responses to Intrusions Questionnaire (RIQ; Clohessy & Ehlers, 1999). Intrusive memories are commonly experienced by emergency service personnel both by frontline and office-based staff. The rumination subscale of the RIQ measures rumination in response to memories of stressful events. Total scores for the Rumination subscale range from 0 to 24. Internal reliability for the subscale was excellent, Cronbach's alpha=0.90.

Wishful Thinking subscale (unpublished): This is a short questionnaire of three items to assess how participants think when faced with a stressful situation. Items are rated on a scale of 1= I don't do this at all to 4= I do this a lot. Total scores range from 4 to 12, with higher scores indicating higher levels of wishful thinking. Internal reliability for the subscale was adequate, Cronbach's alpha=0.74.

Mental Health Awareness & Confidence in Managing Mental Health

Mental Health Awareness (unpublished): This questionnaire was developed for the evaluation to assess awareness and use of adaptive and maladaptive strategies for managing stress. There are 17 items, which give a total score ranging from 0 to 68, higher scores indicate the participant has greater knowledge and use of adaptive tools to manage their mental health. The items can be divided into subscales to assess learning linked to each module. Items 3 and 16 assess attention and relate to Module 1. Items 1, 5 and 8 assess knowledge and response to warning signs for stress and relate to Module 2. Items 2, 9, 11, 12 and 13 link to Module 3, dealing with difficult emotions. Items 7, 10, 14, and 17 relate to Module 4, dealing with worry and performance. Example item are 'I prioritise wellbeing activities outside of work' and 'I know my early warning signs for stress and I take action pretty quickly.' Item 6 of the questionnaire assesses confidence to manage mental health 'I feel confident managing my own mental health.' The internal reliability of the scale was adequate, Cronbach's alpha=0.77. Removing the second item, which tapped mind wandering, improved the internal consistency from adequate to good, Cronbach's alpha=0.80.

Mindful Attention

Mindfulness Attention Awareness Scale (MAAS; Brown & Ryan, 2003): This scale is designed to assess a key feature of mindfulness, receptive awareness of and attention to the present situation. It consists of 15 items rated on a scale of 1=Almost always to 6=Almost never. Total scores range from 15 to 90, with higher scores reflecting higher levels of mindful attention. Internal reliability of the scale in our sample was excellent, Cronbach's alpha=0.92.

Exercise

Short International Physical Activity Questionnaire (IPAQ-SF; http://www.ipaq.ki.se and Booth, 2000): The scale was designed to capture physical activity and inactivity for use across cultures. The short version here contains 4 items and asks participants to consider their activities in the last seven days.

The following measure was administered at baseline only.

Demographic Information

General Information Questionnaire (unpublished): This questionnaire records demographic information, such as age, gender, marital status, and years of education.

Clinical Measures

The following measures were assessed at pre-intervention, post-intervention and at follow-up.

Trauma Screener (unpublished): This is a 21-item questionnaire looking at exposure to previous trauma relevant to the emergency services and includes items from the Clinician Administered PTSD Scale (CAPS, Blake et al., 1998). Participants select 'yes' or 'no' to indicate whether or not they have experienced the trauma. Total scores range from 0 to 21.

Post-traumatic Stress Disorder Checklist (PCL; Weathers et al., 2013): The PCL-5 consists of 20 items that parallel the diagnostic criteria for PTSD set out in the Diagnostic and Statistical Association, 2013). Items are rated on a scale of 0=Not at all to 4=Extremely. Total scores range from 0 to 84. Internal reliability of the scale in our sample was excellent, Cronbach's alpha=0.93.

Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001): This is a well validated 9-item measure to assess symptoms of depression. Items are rated on a scale of 0=Not at all to 3=Nearly every day. Total scores range from 0 to 27. Internal reliability of the scale in our sample was good, Cronbach's alpha=0.86.

General Anxiety Disorder Scale (Spitzer et al., 2006). This is a 7-item well validated measure of anxiety. High scores are suggestive of an anxiety problem. Items are rated on a scale of 0=Not at all to 3=Nearly every day. Total scores range from 0 to 21. Internal reliability of the scale in our sample was good, Cronbach's alpha=0.88.

General Health Questionnaire (GHQ-12; Goldberg & Williams, 1988): This is a 12 item questionnaire designed to capture short-term psychiatric disorders in the general population. Scores range from 0 to 36 with a higher score indicating a more severe condition. Internal reliability of the scale in our sample was good, Cronbach's alpha=0.854.

Hypotheses

We hypothesised that the newly developed resilience intervention would lead to greater improvements in resilience, wellbeing, social capital, psychological distress, rumination and confidence to manage mental health compared to the placebo and waitlist conditions.

Questions

We investigated whether or not the intervention would lead to greater changes in self-efficacy, depressive attributions, coping by wishful thinking, exercise and mindful attention.

Analyses

To investigate the effects of the interventions on outcome, we conducted mixed model analysis of variance (ANOVA) with condition (mixed format, online, wait) as the between-subjects factor and time (pre-intervention, post-intervention, follow-up) as the repeated measures factor. Where Mauchly's test of sphericity was violated, degrees of freedom were corrected with Greenhouse-Geisser estimates of sphericity.

We calculated the mixed format effect sizes for changes in outcome using Cohen's d statistic (Cohen, 1988): $d = M_{initial} - M_{post} / SD_{pooled}$, with $SD_{pooled} = SQRT((SD^2_{initial} + SD^2_{post})/2$ where d=0.20 represents a small effect, d=0.50 represents a medium effect and d=.80 represents a large effect. We conducted one-way ANOVAs to determine whether there were any differences on measures at baseline before the interventions/wait began.

Chart 1: Participant Flow through the Study

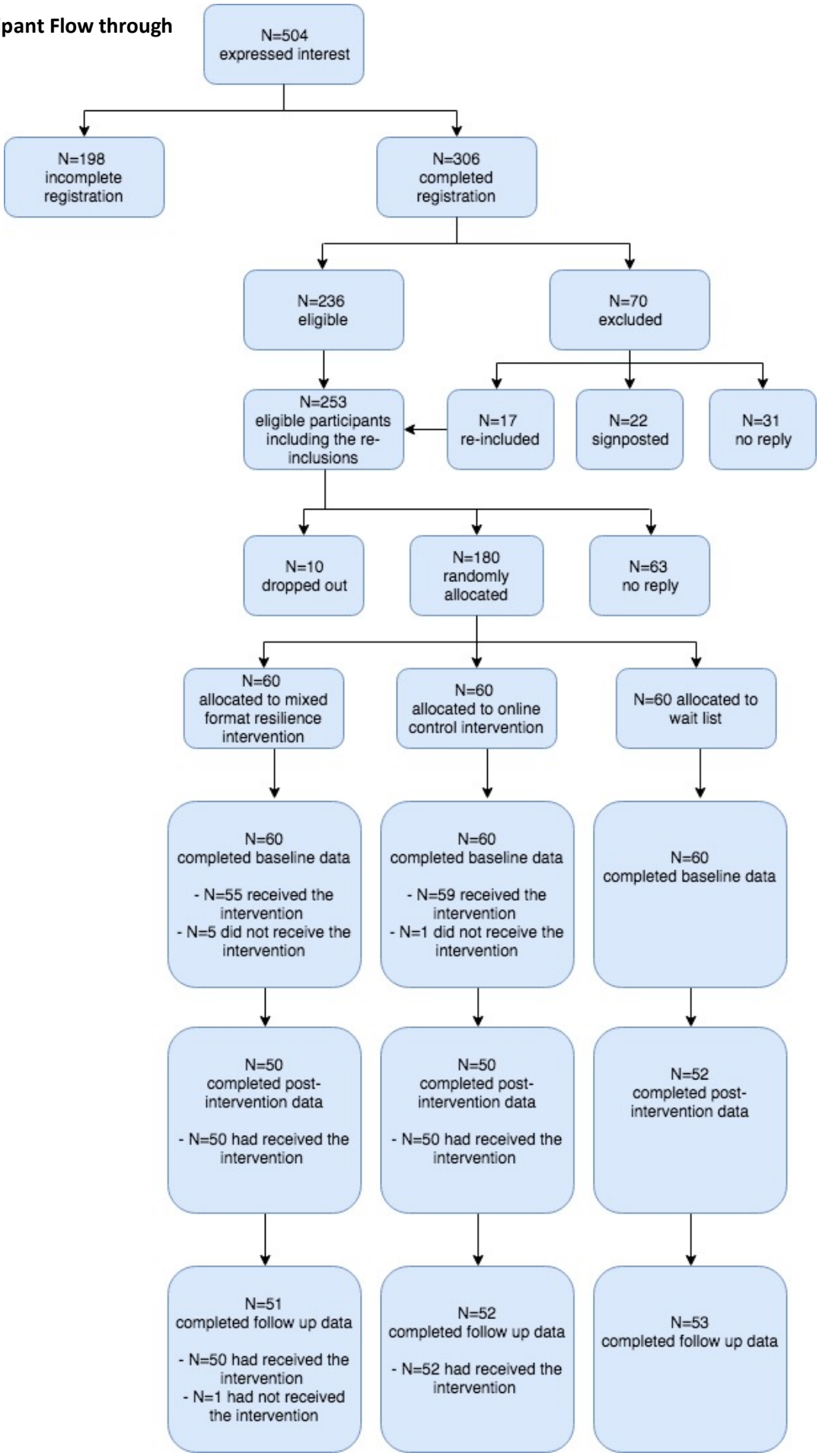
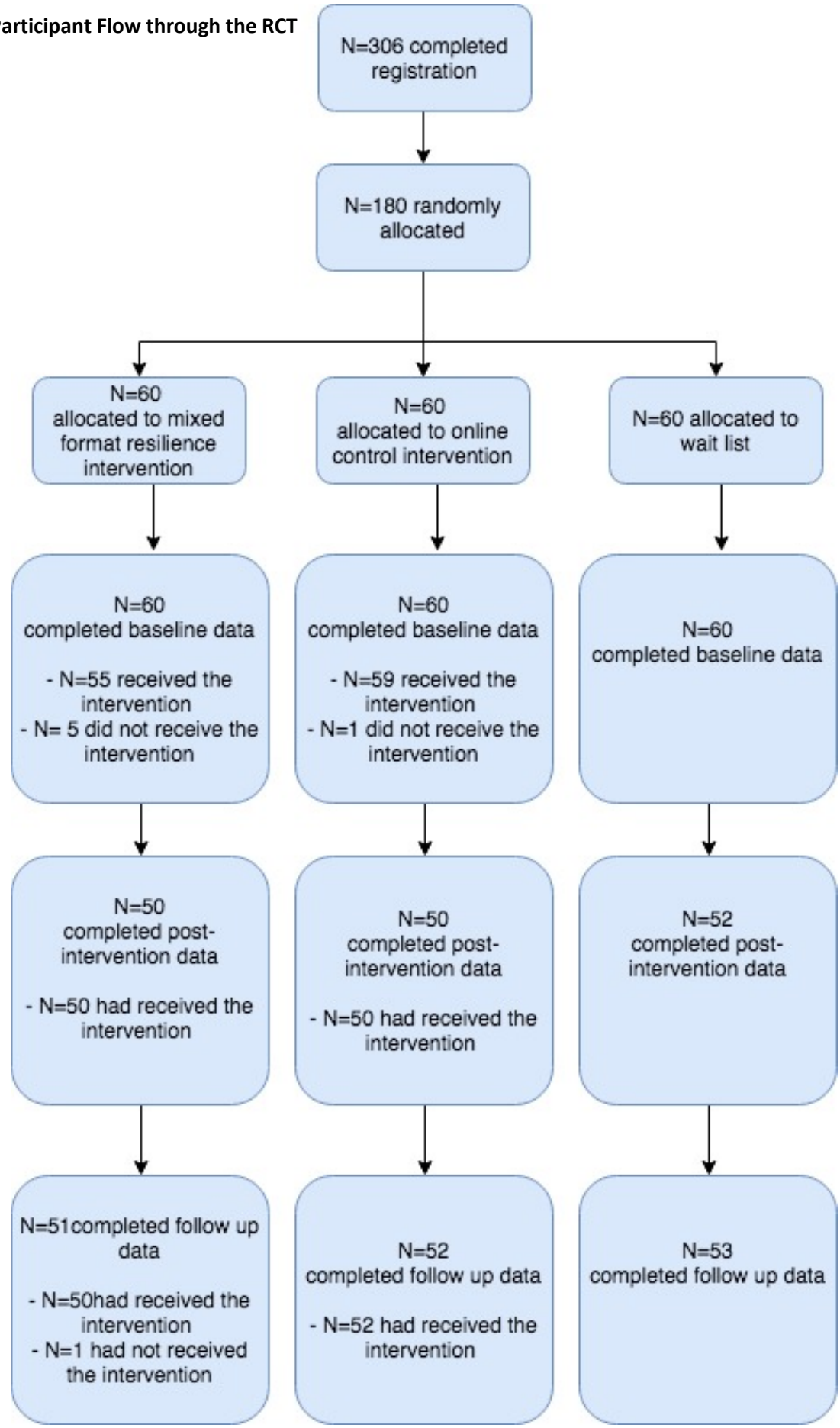


Chart 2: Participant Flow through the RCT



Results

Tables 1 and 2 show the demographic data for (1) all participants and (2) participants in each condition. Table 3 shows the means and standard deviations of the outcome measures at each assessment point (baseline, post-intervention and follow-up).

Table 1: Baseline demographics for all participants

	N	Mean	SD	General Population Mean
Age	179	42.54	8.68	Not applicable
Previous Trauma	178	4.43	3.08	3.00[1]
PTSD (PCL-5)	179	10.03	12.05	Not available
Depression (PHQ-9)	180	3.58	3.64	2.6[2]
Anxiety (GAD-7)	178	3.08	3.44	2.9[3]
Wellbeing (WEMWBS)	176	48.56	9.09	51.6[4]
Resilience (Wagnild &Young)	166	133.91	25.30	130.2[5]
Psychological Distress (GHQ)	175	11.29	4.70	11.07[6]
Social Participation (Social Capital)	175	60.65	15.97	Not available
Dwelling (RIQ)	174	7.64	5.38	Not available
Mental Health Awareness (Max score 68)	168	54.83	8.97	Not available
Confidence in Managing Mental Health (0-4)	177	3.92	.95	Not available
Life Satisfaction (ONS, item 1) (0-10)	174	6.83	2.01	7.7[7]
Self-Efficacy (GSE)	175	31.41	4.76	Not available

	N	%
Service: Police	143	79.4
Ambulance	15	8.3
Fire	22	12.2
Marital Status: Single	37	20.4
Married	83	45.9
Divorced/separated	20	11
Widowed	2	1.1
Civil partnership	3	1.7
Long-term partner	33	18.2
Gender: Female	103	57.2
Male	76	42.2
Other	1	.6
Education Level: No qualifications	1	.6
GCSE	131	72.8
A Level	94	52.2
Degree	73	40.6
Masters	16	8.9
PhD	2	.6
Vocational degree	10	5.6
Ethnicity: White British	151	83.9
White Irish	3	1.7

Eastern European	1	.6
Another White Background	4	2.2
African	1	.6
Caribbean	5	2.8
Another Black Background	1	.6
Chinese	1	.6
Pakistani	1	.6
White & Asian	2	1.1
White & Black Caribbean	1	.6
Another Mixed Background	4	2.2
Another Background	3	1.7

Population means obtained from:

[1]Kilpatrick, D. G., Resnick, H. S., Milanak, M. E., Miller, M. W., Keyes, K. M., & Friedman, M. J. (2013). National estimates of exposure to traumatic events and PTSD prevalence using DSM-IV and DSM-5 criteria. *Journal of traumatic stress*, *26*(5), 537-547.

[2]Kocalevent, R.D., Hinz, A., & Brähler, E. (2013). Standardization of the depression screener Patient Health Questionnaire (PHQ-9) in the general population. *General Hospital Psychiatry 35*, 551-555.

[3]Löwe, B., Decker, O., Müller, S., Brähler, E., Scellberg, D., Herzog, W., & Herzberg, P.Y. (2008). Validation and Standarization of the Generalized Anxiety Disorder Screener (GAD-7) in the General Population. *Medical Care,* 46(3), 266-274.

[4]Fuller E, Mindell J, Prior G (eds) (2016) Health Survey for England 2015, London: NHS Digital.

[5]The Resilience Center's website (http://www.resiliencecenter.com/resilience-scale/)

[6]Booker, C.L., & Sacker, A. Health over the life course: Associations between age, employment status and well-being. *Understanding Society: Early findings from the first wave of the UK's household longitudinal study*. Available from: https://www.understandingsociety.ac.uk/d/33/9_Early_findings_Chapter_9.pdf

[7]Statistical bulletin: Personal well-being in the UK: July 2016 to June 2017. Office for National Statistics. https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/bulletins/measuringnationalwellbeing/july2016tojune2017

We collected data on type of service (i.e., police, ambulance, fire, search and rescue), length of service, and whether or not participants worked full or part-time. Unfortunately we did not collect data on the specific roles participants held within their services. Of the participants who were interviewed by the New Economics Foundation (NEF) who had received the mixed format intervention (62.5%) or the online intervention (37.5%), 50% were in support roles, and 50% were frontline staff, with 31% in full operational duty and 18.75% on light duties/temporary support. These data may reflect the distribution of roles within the wider sample although we cannot say with certainty.

The majority of participants worked full-time. Please see the table below for a breakdown of employment type.

	Frequency	Percentage
Full-time	160	89%
Part-time	14	7.8%
Volunteer	5	2.7%
Other	1	0.5

Years of service ranged from 1 to 37 years, with a mean of 15.68 years (SD=8.96).

Table 2: Baseline demographic data for participants in each condition

	Mixed Format			Online			Wait		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
Age	60	42.57	8.0	59	42.95	8.31	60	42.12	9.76
Previous trauma	58	4.41	3.13	60	4.30	3.07	60	4.58	3.12
PTSD (PCL-5)	60	10.52	11.10	60	10.67	13.41	59	8.90	11.63
Depression (PHQ-9)	60	4.07	3.41	60	3.22	4.14	60	3.47	3.32
Anxiety (GAD7)	58	3.17	3.01	60	2.77	3.41	60	3.30	3.86
Wellbeing (WEBMWBS)	58	47.78	9.25	59	48.39	9.37	59	49.51	8.72
Resilience (Wagnild &Young)	56	131.11	26.55	54	134.00	27.47	56	136.63	21.74
Psychological distress (GHQ)	58	11.78	4.56	58	11.26	5.00	59	10.85	4.57
Social participation (Social capital)	58	59.02	18.15	58	60.53	15.19	59	62.36	14.45
Dwelling	57	8.19	5.59	58	7.78	5.53	59	6.98	5.05
Mental Health Awareness (Max score 68)	55	54.49	8.51	57	55.25	9.71	56	54.73	8.76
Confidence in Managing Mental Health (0-4)	58	3.76	.92	59	3.97	1.02	60	4.03	.90
Life Satisfaction (ONS, item 1) (0-10)	58	6.62	1.81	57	6.77	2.18	59	7.10	2.02
Number of years of education	51	16.98	6.86	56	14.38	4.17	56	16.59	6.98
	N		%	N		%	N		%
Service: Police	48		80	48		80	46		78.0
Ambulance	7		11.7	2		3.3	6		10.2
Fire	5		8.3	10		16.7	7		11.8
Marital Status: Single	15		25	14		23.3	8		13.3
Married	25		41.7	24		40	34		56.7
Divorced/separated	6		10	8		13.3	6		10
Widowed	1		1.7	1		1.7	0		0
Civil partnership	2		15.0	1		1.7	0		0
Long-term partner	9		3.3	12		20	12		20
Gender: Female	35		58.3	34		56.7	34		56.7
Male	24		40	26		43.4	26		43.3
Other	1		1.7	0		0	0		0

Education Level: No qualifications	0	0	1	1.7	0	0
GCSE	44	73.3	44	73.3	43	71.7
A Level	33	55	29	48.3	32	53.3
Degree	32	53.3	15	25	26	43.3
Masters	5	8.3	5	8.3	6	10
PhD	1	1.7	0	0	0	0
Vocational degree	5	8.3	3	5	2	3.3
Ethnicity: White British	49	81.7	50	83.3	52	86.7
White Irish	1	1.7	1	1.7	1	1.7
Eastern European	0	0	1	1.7	0	0
Another White Background	0	0	2	3.3	2	3.3
African	0	0	1	1.7	0	0
Caribbean	1	1.7	3	5	1	1.7
Another Black Background	0	0	1	1.7	0	0
Chinese	0	0	0	0	1	1.7
Pakistani	1	1.7	0	0	0	0
White & Asian	1	1.7	1	1.7	0	0
White & Black Caribbean	1	1.7	0	0	0	0
Another Mixed Background	1	1.7	0	0	3	5
Another Background	3	5	0	0	0	0

Table 3: Means and Standard Deviations of outcome measures at baseline, post-intervention and follow-up

Measure	Mixed Format			Online			Wait		
	Pre	Post	Follow-up	Pre	Post	Follow-up	Pre	Post	Follow-up
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Wellbeing (WEMWBS)	47.23 (10.10)	48.25 (9.02)	50.27 (8.47)	49.32 (8.92)	49.00 (9.87)	47.08 (10.80)	50.70 (8.45)	48.61 (9.54)	48.91 (10.15)
Resilience (Wagnild)	130.68 (26.44)	134.36 (18.69)	139.81 (19.66)	138.02 (24.07)	132.89 (24.22)	133.68 (28.76)	138.82 (22.25)	135.80 (22.08)	135.93 (24.99)
Psychological distress (GHQ-12)	11.61 (4.57)	9.64 (5.82)	9.98 (5.68)	10.54 (4.68)	11.24 (5.27)	12.00 (7.29)	9.95 (4.31)	11.91 (5.62)	11.43 (5.58)
Social Participation	59.80 (18.20)	61.76 (15.63)	61.76 (17.04)	61.50 (15.06)	58.32 (16.64)	54.07 (17.09)	64.78 (12.43)	60.80 (15.13)	62.69 (16.99)
Rumination (RIQ)	8.40 (5.44)	7.31 (4.62)	7.37 (4.67)	7.10 (5.03)	7.80 (5.69)	7.57 (5.10)	6.49 (4.69)	6.84 (5.30)	6.82 (4.39)
Mental Health Awareness	54.47 (9.00)	56.20 (6.46)	58.24 (6.57)	56.10 (8.54)	55.27 (7.34)	56.87 (9.36)	55.38 (8.85)	54.13 (8.27)	56.72 (8.51)
Confidence Mental Health (CMH)	3.89 (0.89)	3.98 (0.66)	4.18 (0.81)	4.20 (0.79)	4.03 (0.80)	3.93 (0.80)	4.11 (0.89)	4.04 (0.77)	4.00 (0.91)
Self-Efficacy (GSE)	31.71 (3.76)	31.11 (3.29)	31.41 (3.78)	31.63 (3.50)	32.27 (4.12)	32.00 (5.17)	32.59 (4.39)	33.11 (4.15)	32.04 (4.66)
Attributions Questionnaire (AQ)	11.33 (7.49)	11.74 (7.81)	11.65 (8.20)	8.40 (7.07)	9.90 (8.23)	10.35 (8.96)	8.54 (6.18)	8.89 (7.49)	9.41 (7.20)
Wishful thinking	7.41 (2.41)	7.30 (2.33)	6.98 (2.34)	6.98 (2.01)	6.95 (2.24)	7.12 (2.21)	6.65 (2.19)	6.87 (2.17)	6.80 (2.25)
Vigorous Physical Activity (# of days)	2.09 (1.93)	1.72 (1.72)	2.32 (1.96)	2.75 (2.35)	2.75 (2.43)	2.85 (2.35)	1.89 (1.82)	1.74 (1.71)	2.33 (1.96)
Moderate Physical Activity (# of days)	2.61 (2.09)	2.72 (2.13)	3.07 (2.29)	3.58 (2.44)	3.05 (2.48)	3.65 (2.47)	3.59 (2.44)	2.98 (2.44)	3.11 (2.07)
Mindful Attention	59.02 (12.82)	56.74 (10.97)	58.93 (13.02)	64.85 (12.51)	62.43 (12.77)	62.20 (13.91)	63.15 (14.85)	61.95 (16.15)	62.33 (15.15)
Life satisfaction (ONS, item 1)	6.70 (1.90)	7.13 (1.66)	7.46 (1.28)	6.88 (2.13)	7.07 (2.04)	6.93 (2.17)	7.23 (2.07)	7.15 (1.97)	7.55 (1.82)

Demographic and Baseline Differences
There were no significant differences on demographic variables (age, previous trauma, number of years of education, service, marital status, gender, ethnicity) and baseline measures between participants receiving the mixed format, online or wait conditions.

Attendance to Sessions/ Modules completed
Participants in the mixed format group attended a mean number of 2.48 sessions (SD=1.62) and completed a mean number of 3.38 (SD=1.25) modules. Participants in the online condition completed a mean number of 3.70 (SD=0.74) modules. There were no significant differences between the conditions in the number of modules completed.

Mixed Format and Online Interventions
How helpful were the modules?
After completing each module, participants rated out of 100% how valuable they found the module. For the mixed format intervention, the highest mean rating was 79.83 (SD=13.26) for Module 2 on habits and dwelling. The lowest mean rating was 70.63 (SD=20.12) for Module 1 on attention. For the online intervention, the highest mean rating was 76.02 (SD=20.07) for Module 3 on Anger, PTSD and Depression. The lowest mean rating was 69.72 (SD=22.60) for Module 2 on Sleep.

Charts 3 and 4 show the mean ratings for each module for the two interventions.

Chart 3: Mixed format intervention: Mean ratings for the modules

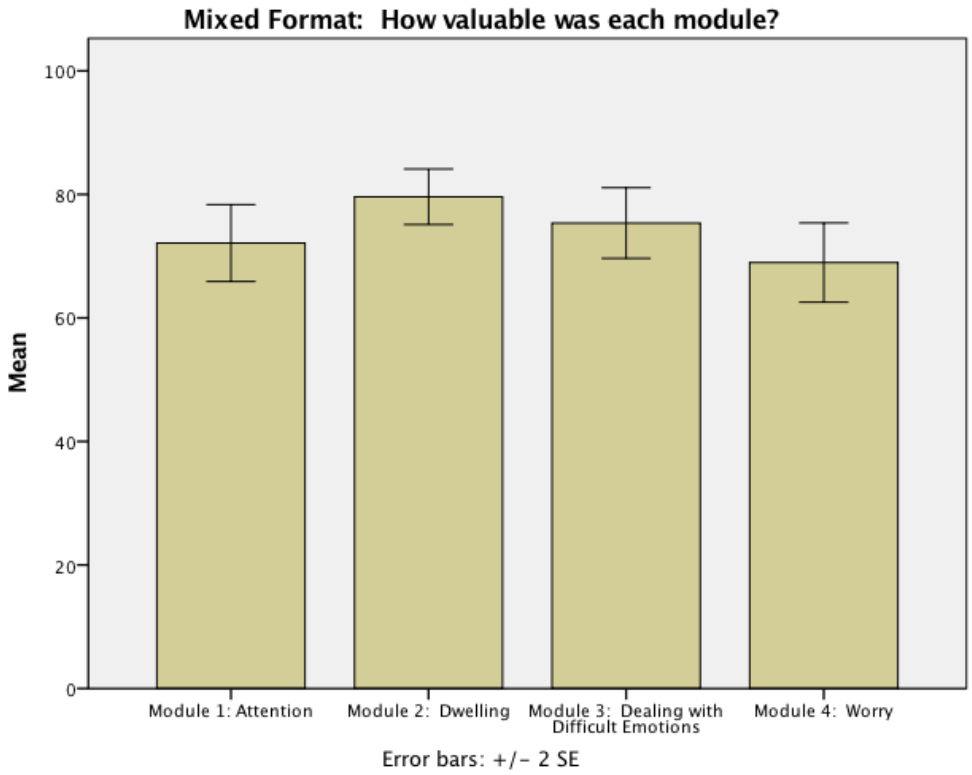
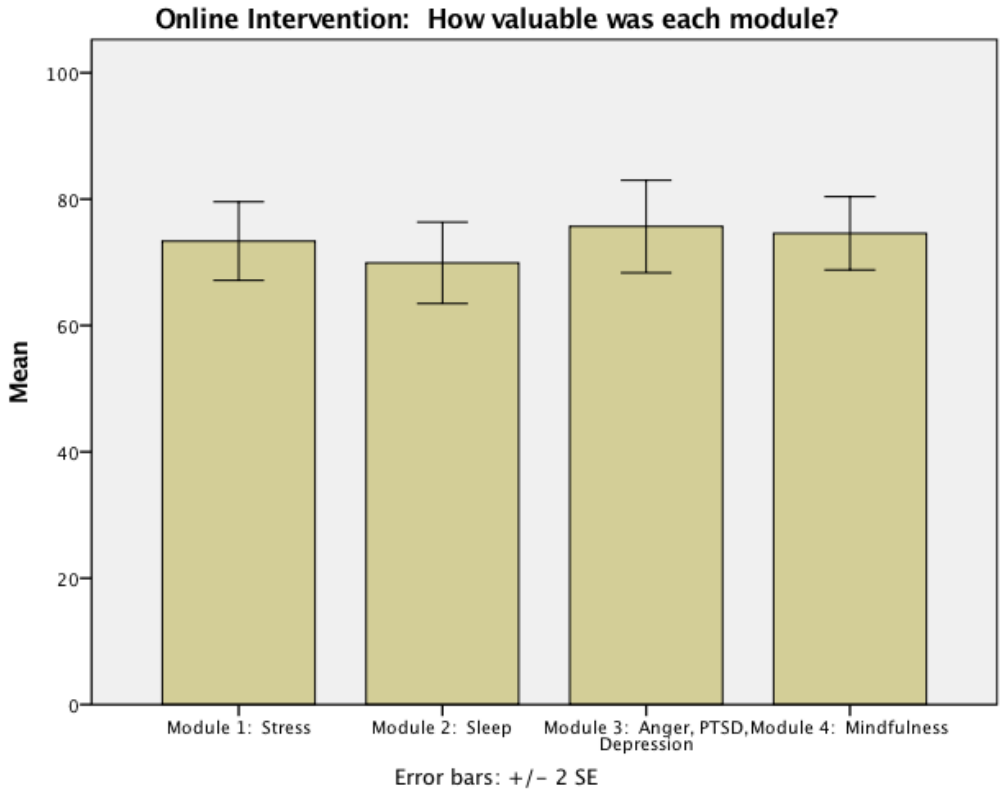


Chart 4: Online intervention: Mean ratings for the modules



Participants in the mixed format condition were also asked to rate how valuable they found the whole course, the modules overall and the groups overall. The mean rating for the whole course was 78.82% (SD 17.96). For the modules, it was 74.77% (21.32) and for the groups, the mean rating was 77.52% (23.82).

Mixed Format Intervention: Group Component

Adherence to protocol

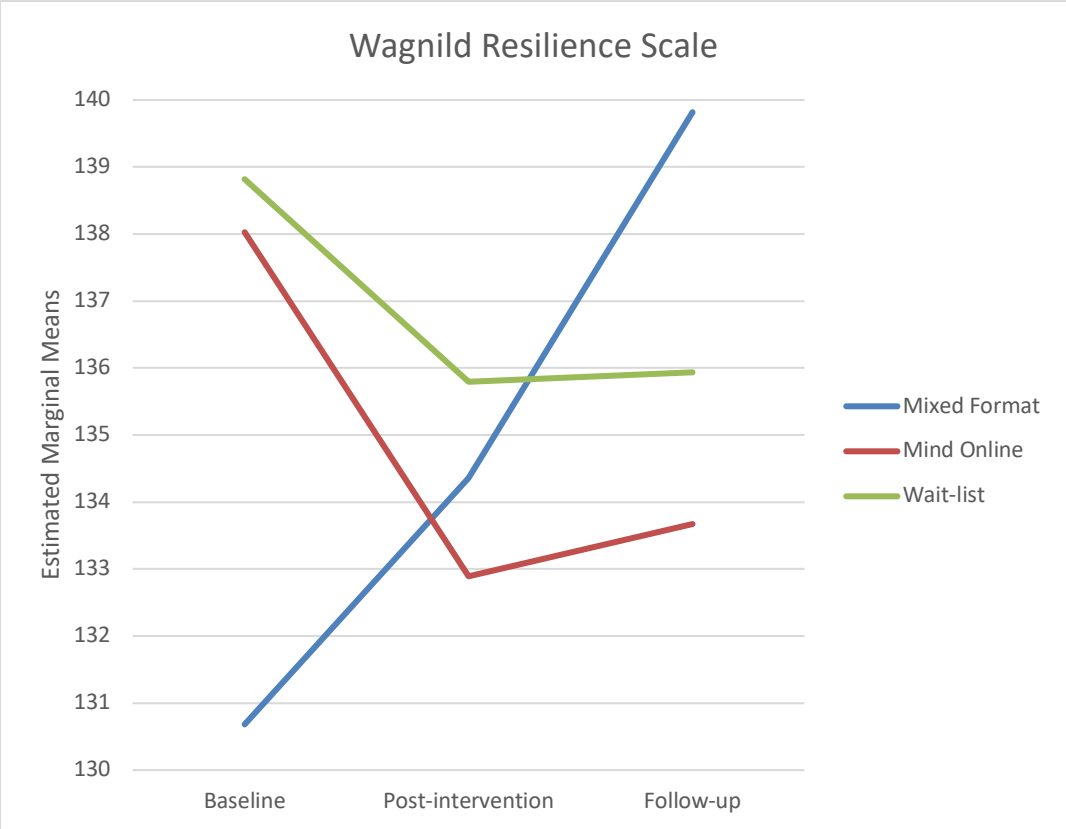
Six audio-recordings of group sessions were randomly selected from the courses that were offered from November 2016 to May 2017. Adherence to protocol ratings out of 100% ranged from 71.40 to 100, with a mean rating of 91.28 (SD=11.56), suggesting that the Local Mind trainers demonstrated good adherence to protocol for delivering the group component of the mixed format intervention.

Resilience

A repeated measures ANOVA was conducted to assess the effects of the training. There was a significant time x condition effect, indicating that the degree to which resilience changed over time was linked to which training participants received, $F(3.8, 231.47)=3.26$, $p<0.01$.

Follow-up ANOVAs were conducted to investigate the degree of change between the training conditions at post-intervention and follow-up. Participants receiving the mixed format training showed the greatest improvements in resilience compared to the placebo and wait-list conditions at post-intervention $F(2,133)=2.45$, $p<0.09$ and at follow-up, $F(2, 138)=4.65$, $p<0.01$. The average effects achieved with the mixed format intervention on resilience were small to medium, $d=0.39$. See Figure 1.

Figure 1: Changes in Resilience by Condition over Time



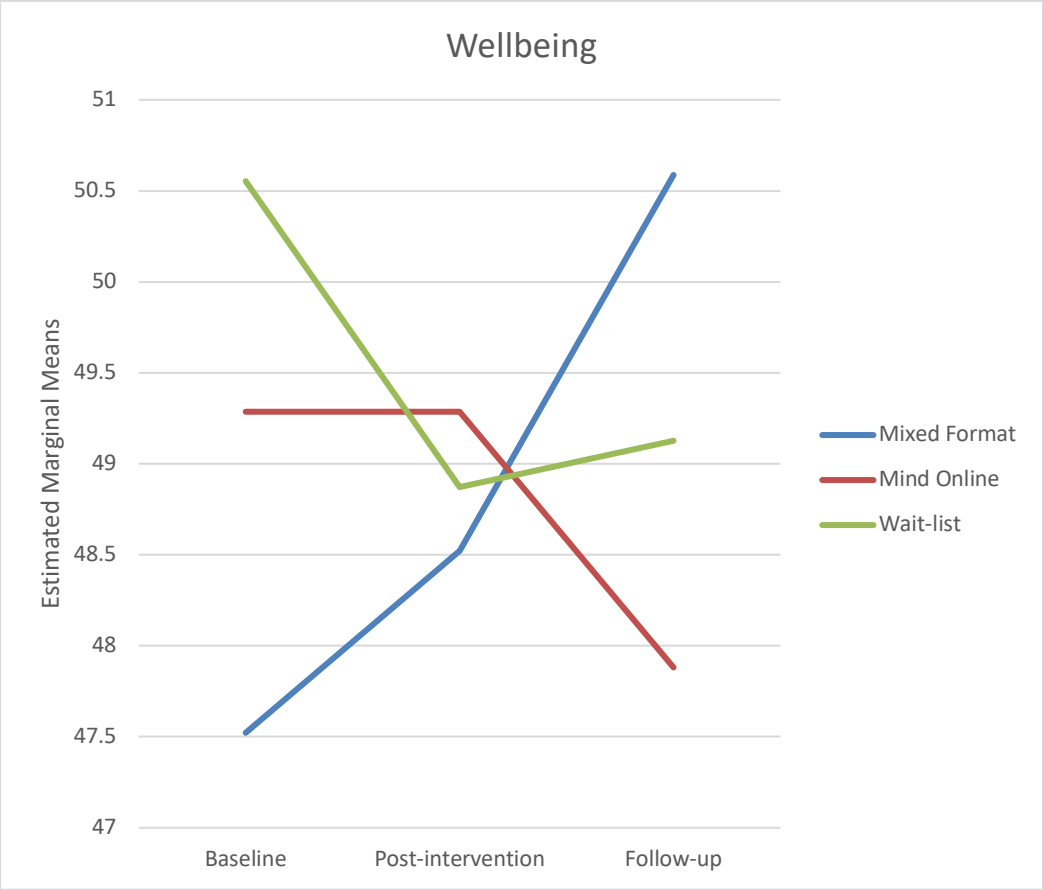
Wellbeing

A repeated measures ANOVA was conducted to assess the effects of the training. There was a significant time x condition effect, indicating that the degree to which wellbeing changed over time was linked to which training participants received, $F(3.65, 240.72)=2.5$, $p<0.04$.

Follow-up ANOVAs were conducted to investigate the degree of change between the training conditions at post-intervention and follow-up. Participants receiving the Mixed Format training showed the greatest improvements in wellbeing compared to the placebo

and wait-list conditions at post-intervention F(2,143)=1.27, p=0.29 and significantly so at follow-up, F(2, 148)=3.10, p<0.04. The average effects achieved with the Mixed Format condition on wellbeing were small to medium, d=0.33. See Figure 2.

Figure 2: Changes in Wellbeing by Condition over Time



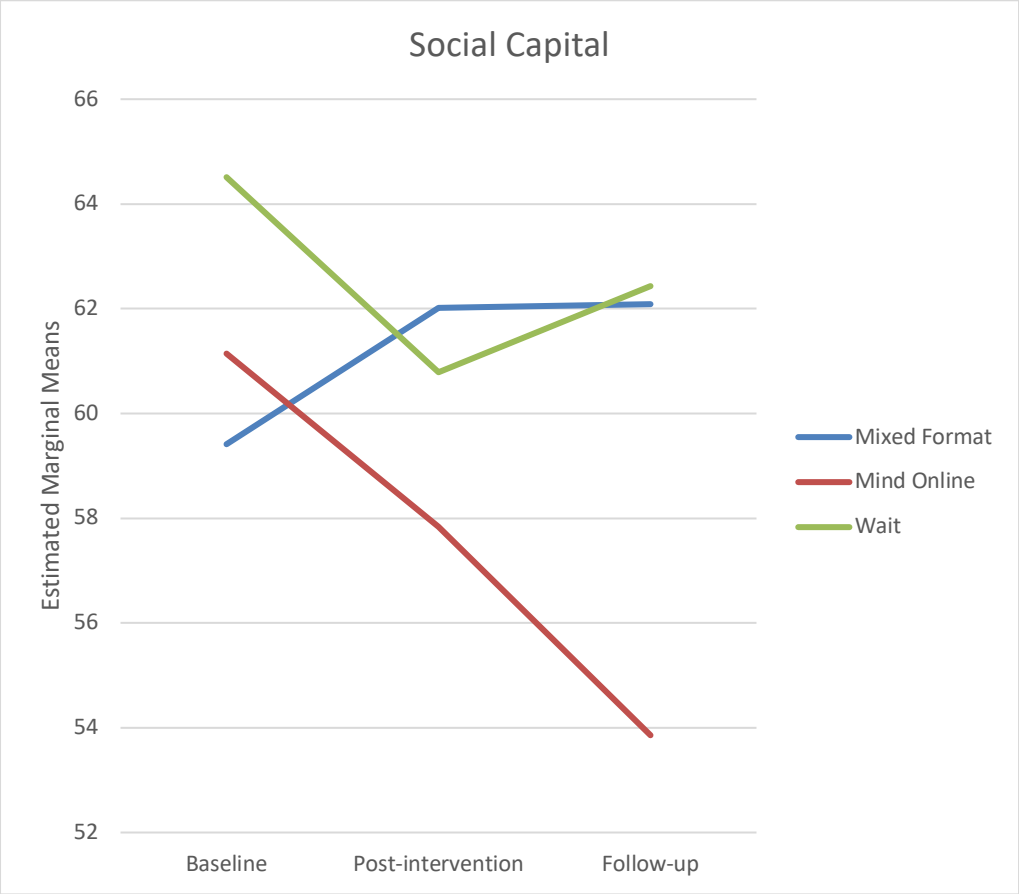
Social Capital

Social capital was assessed with the Social Participation questionnaire (Alden & Taylor, 2011). A repeated measures ANOVA was conducted to assess the effects of the training. There was a significant time x condition effect, indicating that the degree to which social capital changed over time was linked to which training participants received, F(3.79, 250.09)=3.55, p<0.009.

Follow-up ANOVAs were conducted to investigate the degree of change between the training conditions at post-intervention and follow-up. Participants receiving the Mixed Format training showed significantly greater improvements in social capital compared to the placebo and wait-list conditions at post-intervention F(2,143)=3.30, p<0.04 and at follow-up,

F(2, 147)=4.35, p<0.02. The average effects achieved with the Mixed Format training on social capital were small, d=0.15. See Figure 3.

Figure 3: Changes in Social Capital by Condition over Time

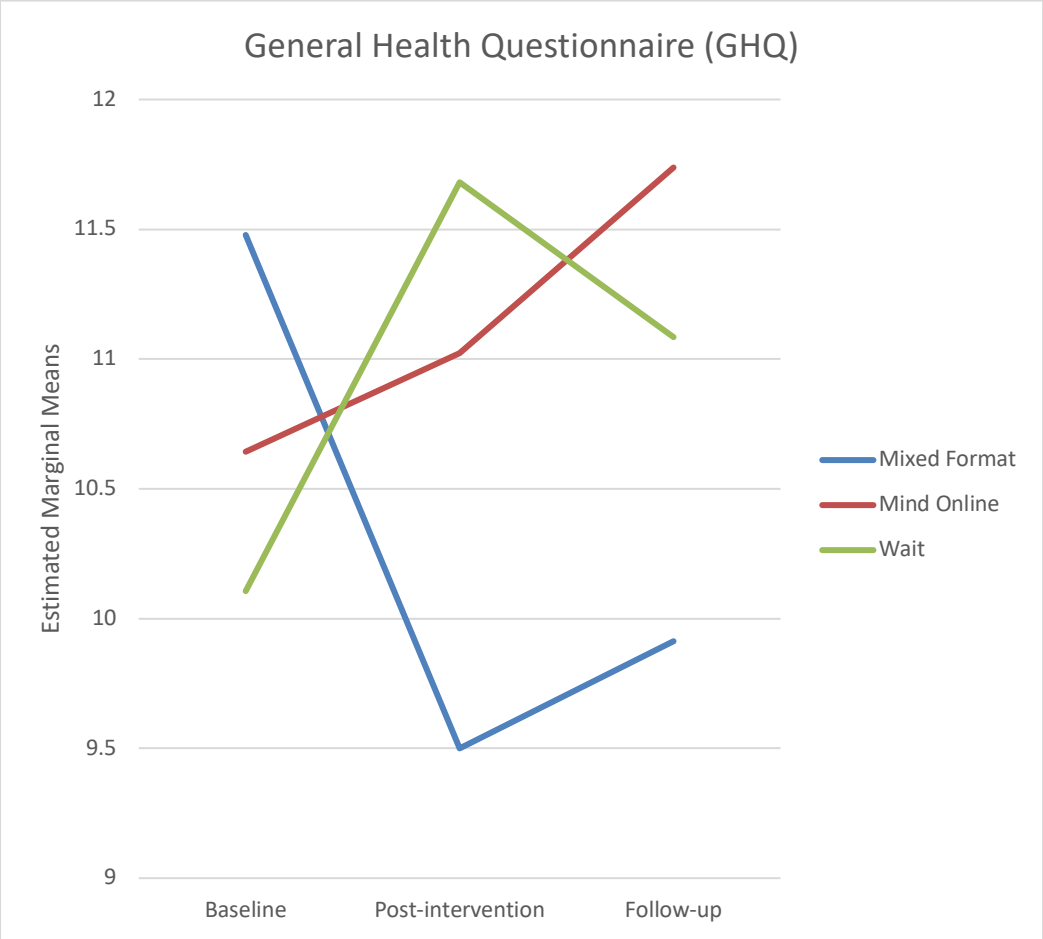


Psychological Distress (General Health Questionnaire-12 item)

A repeated measures ANOVA was conducted to assess the effects of the training. There was a significant time x condition effect, indicating that the degree to which psychological distress changed over time was linked to which training participants received, F(3.53, 233.14)=2.54, p<0.04.

Follow-up ANOVAs were conducted to investigate the degree of change between the training conditions at post-intervention and follow-up. Participants receiving the Mixed Format training showed greater improvements in social capital compared to the placebo and wait-list conditions at post-intervention F(2,147)=6.57, p<0.002 and at follow-up, F(2, 147)=2.15, p<0.12. The average effects achieved with the Mixed Format training on psychological distress were small to medium, d=0.39. See Figure 4.

Figure 4: Changes in Psychological Distress by Condition over Time



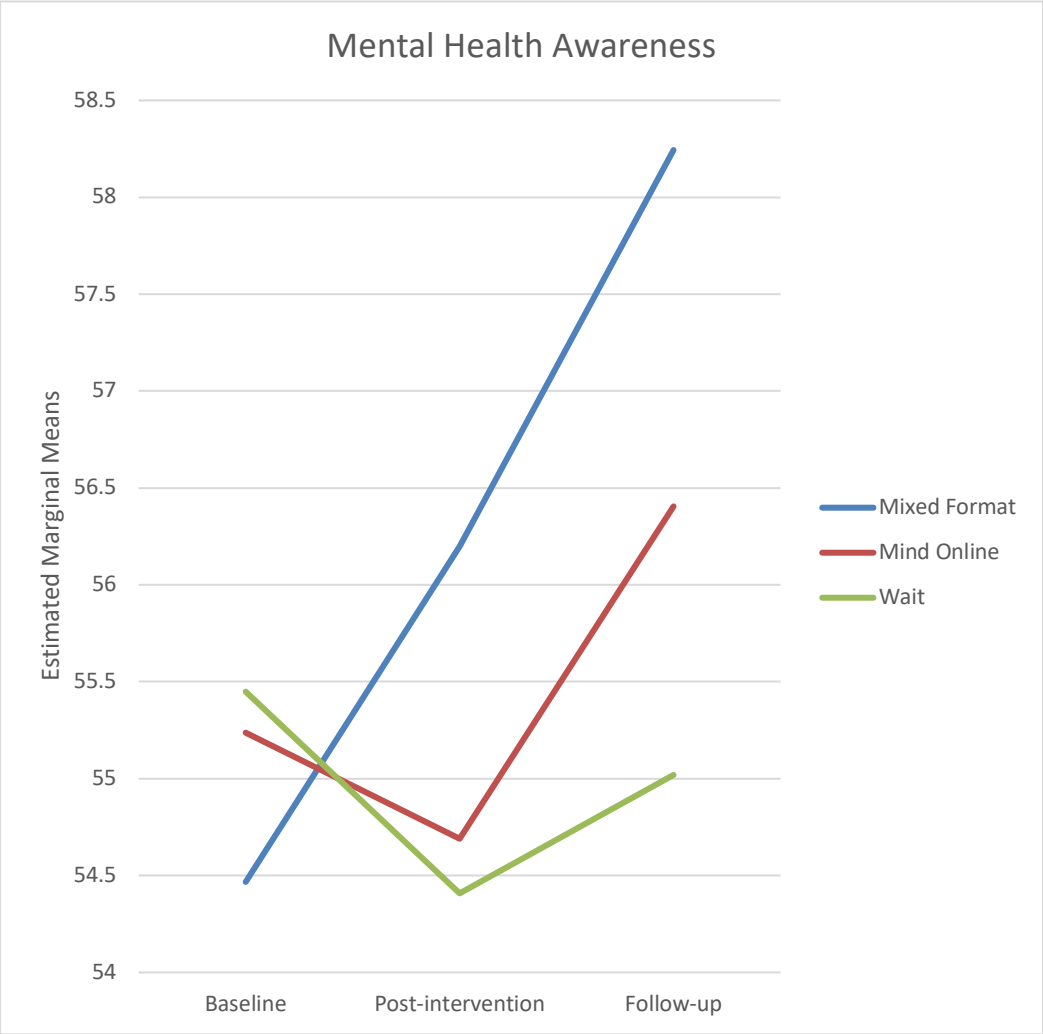
Mental Health Awareness

A repeated measures ANOVA was conducted to assess the effects of the training. There was a trend-level time x condition effect, indicating that the degree to which mental health awareness changed over time was linked to which training participants received, $F(3.77, 250.52)=1.78$, $p<0.13$.

Follow-up ANOVAs were conducted to investigate the degree of change between the training conditions at post-intervention and follow-up. Participants receiving the Mixed Format training showed greater improvements in mental health awareness compared to the placebo and wait-list conditions at post-intervention $F(2,142)=1.82$, $p<0.17$ and significantly

so by follow-up, F(2, 144)=3.19, p<0.04. The average effects achieved with the Mixed Format training on mental health awareness were medium, d=0.48. See Figure 5.

Figure 5: Changes in Mental Health Awareness by Condition over Time

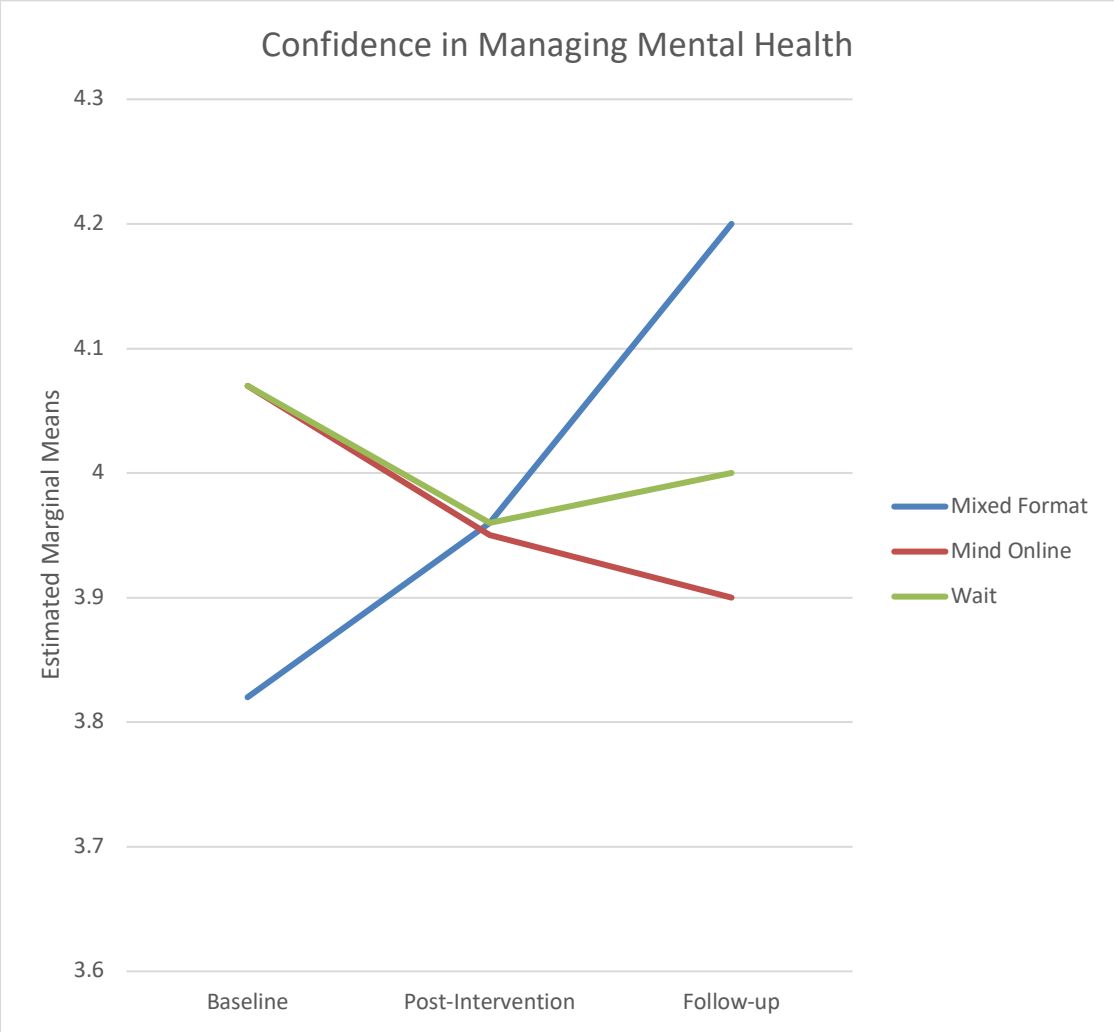


Confidence in Managing Mental Health

To investigate potential changes in confidence to manage mental health, we looked at changes on the item assessing confidence in managing mental health on the Mental Health Awareness questionnaire. A repeated measures ANOVA was conducted to assess the effects of the training. There was a significant time x condition effect, indicating that the degree to which confidence in managing mental health changed over time was linked to which training participants received, F(4, 274)=2.4, p<0.05.

Follow-up ANOVAs were conducted to investigate the degree of change between the training conditions at post-intervention and follow-up. Participants receiving the Mixed Format training showed greater improvements in mental health awareness compared to the placebo and wait-list conditions at post-intervention $F(2,146)=0.43$, $p<0.65$ and significantly so by follow-up, $F(2, 151)=5.06$, $p<0.007$. The average effects achieved with the Mixed Format training on mental health awareness were small to medium, $d=0.42$. See Figure 6.

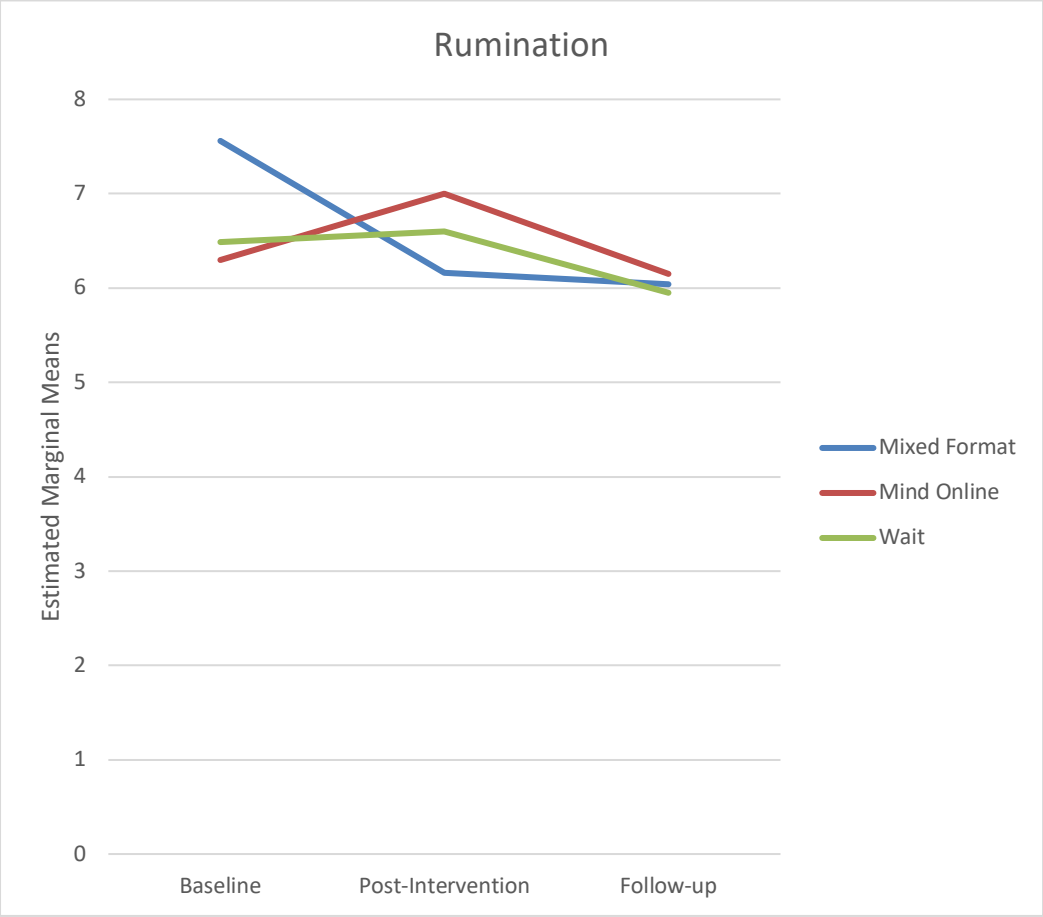
Figure 6: Changes in Confidence to Manage Mental Health by Condition over Time



Rumination

A repeated measures ANOVA was conducted to assess the effects of the training. There was no significant time x condition effect. However, investigation of the time x condition plot, indicated change between pre and post-intervention for all conditions. ANOVAs investigating changes revealed participants receiving the Mixed Format training showed greater improvements (trend-level) in rumination compared to the placebo and wait-list conditions at post-intervention $F(2,142)=2.00$, $p<0.14$, which were sustained at follow-up. The effect size was small, $d=0.17$. See Figure 7.

Figure 7: Changes in Rumination by Condition over Time



Self-Efficacy, Depressive Attributions, Coping by Wishful Thinking, Exercise and Mindful Attention and Awareness

Repeated measures ANOVAs revealed there were no differences in changes over time x condition which approached significance for self-efficacy, depressive attributions, coping by wishful thinking, number of days of moderate and vigorous activity and mindful attention and awareness.

App: Eye5

As part of the intervention, an app was developed to offer Mixed Format participants the opportunity to continue to practise tools that they had learned during their course. The app allowed participants to add IF-THEN plans to address early warning signs for stress and

dwelling as well as to log their stress levels. Key videos to help participants practise shifting their focus of attention from themselves to their environment were included as well as all the key points from all of the modules. A chat function was also included so that participants could stay in touch with each other once the course was over.

Unfortunately, the app was not fully developed until the courses were completed. Instead of being offered to participants during their course, it was offered in early follow-up. Twenty-two participants downloaded the app and nineteen of these participants (38%) had received mixed format training. The mean age of participants who downloaded the app was 40.59 years (SD=7.99).

Repeated measures ANOVAs were conducted to investigate changes in outcome measures from post-intervention to 3 month follow-up for participants who had downloaded the app. Participants who had downloaded the app were more likely at trend-level significance to continue to make improvements in rumination from post-intervention to follow-up compared to participants who had not downloaded the app, $F(1, 5.24)=1.86$, $p=0.18$.

Which modules were linked to most change?

To assess which modules were linked to the greatest changes over time for participants in the mixed format condition, we conducted bivariate correlations between module specific learning assessed on the mental health awareness questionnaire at post-intervention and changes in outcome (wellbeing, resilience, social capital, psychological distress) from pre to post intervention and from post-intervention to follow-up.

There were no significant correlations between Module 1 (It Matters What You Focus On: Attention Training) learning and outcome. Learning linked to **Module 2** (Habits & Dwelling: How to change them) was associated with greater changes in wellbeing from pre to post-intervention ($r=0.27$, $N=48$, $p=0.06$) and greater changes in resilience ($r=0.27$, $N=46$, $p=0.07$) and significantly associated with greater changes in psychological distress, $r=0.31$, $N=48$, $p=0.03$ from pre to post-intervention. **Module 3** (Dealing with Difficult Emotions) was linked to changes in resilience from pre to post intervention, $r=0.26$, $N=46$, $p=0.08$. **Module 4** (Transforming Worry & Improving Performance) was linked to changes in wellbeing, $r=0.27$,$N=48$, $p=0.07$, and significantly associated with changes in psychological distress from pre to post intervention, $r=0.33$, $N=48$, $p=0.02$, and from post intervention to follow-up, $r=0.28$, $N=48$, $p=0.05$.

Early Predictors of Participants' Success

To assess early predictors of success, we conducted bivariate correlations between baseline mental health variables (depression, anxiety, PTSD, depressive attributions, responses to intrusive memories and coping by wishful thinking) and outcome (wellbeing, resilience, social capital and psychological distress).

Early Predictors of Pre-Post Change

Greater scores on the PHQ-9 (depression) at baseline were significantly correlated with changes in wellbeing ($r=0.45$, $N=48$, $p=0.001$), resilience ($r=0.43$, $N=46$, $p=0.003$), social capital ($r=0.29$, $N=48$, $p=0.05$) and psychological distress ($r=0.40$, $N=48$, $p=0.005$).

A similar pattern emerged with baseline scores on the GAD-7 (anxiety). Greater scores on the GAD-7 (anxiety) at baseline were significantly correlated with changes in wellbeing ($r=0.57$, $N=48$, $p<0.001$), resilience ($r=0.42$, $N=46$, $p=0.004$), social capital, ($r=0.31$, $N=48$, $p=0.03$) and psychological distress ($r=0.50$, $N=48$, $p<0.001$).

Greater scores on the PTSD measure (PCL-5) at baseline were significantly correlated with changes in wellbeing ($r=0.29$, $N=48$, $p=0.05$).

Higher scores on the measure of depressive attributions at baseline were significantly associated with changes in wellbeing ($r=0.35$, $N=48$, $p=0.01$) and social capital ($r=0.39$, $N=48$, $p=0.007$) with trend-level significance for changes in resilience ($r=0.27$, $N=46$, $p=0.07$). Since depressive attributions are significantly associated with the PHQ-9 ($r=0.57$, $N=175$, $p<0.001$), the PHQ-9 could be given in future without administering the questionnaire of depressive attributions to determine potential likelihood of success with the intervention.

Rumination identified as a typical response to memories of stressful events at baseline was significantly associated with changes in wellbeing ($r=0.34$, $N=48$, $p=0.02$).

When faced with a stressful situation, coping by wishful thinking (i.e., wishing it would go away or could be changed or fantasizing about how it may turn out) as a strategy to deal with the situation at baseline was significantly associated with changes in wellbeing ($r=0.29$, $N=48$, $p=0.04$).

We also investigated the relationship between outcome and broader factors, such as length of service and type of service. Years of service were related to change in psychological distress ($r=0.23$, $p=0.14$). Years of service were significantly related to greater change in mental health awareness with greater years in service being linked to greater change in mental health awareness ($r=0.39$, $p=0.009$).

Discussion

Our evaluation set out to determine the effectiveness of the newly developed resilience intervention. We conducted a randomised controlled trial in which participants were randomly allocated on a 1:1:1 ratio to receive the mixed format intervention, the placebo intervention or a four month wait period before receiving the digital modules of the mixed format intervention. We hypothesised that the resilience intervention would demonstrate specific effects. That is, we expected the resilience intervention to lead to greater improvements in resilience, wellbeing, social capital, psychological distress and confidence in managing mental health compared to the control conditions.

Our aims are set out and discussed below in light of the results. We aimed to:

1. Establish the effectiveness of the new resilience intervention

Significant improvements over time in resilience, wellbeing, social capital, psychological distress, mental health awareness, and confidence to manage mental health were specific to the resilience intervention and were not seen in the placebo or wait conditions. Participants who had received the resilience intervention demonstrated significant improvements in social capital and psychological distress by post-intervention compared to participants who had received the placebo and wait conditions. By follow-up, they had demonstrated significant changes in wellbeing, resilience, mental health awareness, confidence to manage mental health and sustained changes in social capital compared to participants who had received the placebo intervention or wait period. Participants receiving the intervention also demonstrated a trend to ruminate less often in response to unwanted memories by post-intervention compared to participants receiving the placebo and wait conditions, and this change was sustained at follow-up.

All effects of the intervention were small to medium. The strongest effect of the intervention was linked to improvements in mental health awareness, which tapped use of tools to manage mental health.

2. Link changes in key outcomes to specific course material to identify the most effective parts of the intervention for further development.

To assess which modules were linked to the greatest changes over time for participants receiving the resilience intervention, we assessed module specific learning and outcome. The modules linked to the greatest changes in outcome were Modules 2 on habits and dwelling and Module 4 on transforming worry. These modules target over-thinking and continuing to target over-thinking in future refinements of the intervention is likely to be beneficial. The success of these modules in supporting changes in wellbeing and resilience is broadly consistent with what participants rated as being most valuable. Module 2 received the highest ratings, followed by Module 3 then Module 4.

Module 2 (Habits & Dwelling: How to change them) was linked to change across the most number of outcomes, improving resilience, wellbeing and psychological distress, followed by

Module 4 (Transforming Worry & Improving Performance), which was related to change in wellbeing and psychological distress, followed by **Module 3** (Dealing with Difficult Emotions) which was linked to change in resilience. Learning linked to Module 1 (It Matters What You Focus On: Helpful and Unhelpful Attention) was not related to significant or trend-level change in outcome, which could reflect that the module was unrelated to change or that the items aimed to assess learning were not sensitive enough to capture it. Interestingly, participants interviewed by NEF reported that attention training (Module 1 and Group 1) was the intervention exercise they liked best.

After attention training which was reported as the most popular, memorable and preferred exercise when interviewed by NEF, participants' preferred exercises in order of frequency were: the circle activity (**Module 3**), concrete and abstract thinking (**Module 2**), realistic risk (**Module 4**), visualization (**Module 4**), and if-then planning (**Module 2**). These exercises were in modules linked to the most change.

3. Identify early predictors of success to further develop the intervention for future delivery and to inform future training.

To identify predictors of success, we investigated associations between mental health variables (depression, anxiety, PTSD, depressive attributions, responses to intrusive memories and coping by wishful thinking) assessed at baseline and outcome measures (wellbeing, resilience, social capital and psychological distress). Higher scores on measures of depression, anxiety, PTSD, depressive attributions, rumination and wishful thinking at baseline were linked to greater changes in outcome, suggesting that participants most likely to benefit from the training may be more vulnerable at the outset, although it is important to bear in mind that scores on mental health measures typically fell in the non-clinical range.

4. Inform the development of evaluation tools for continued use by Local Minds

We calculated the internal reliability for all of the scales administered in this study. The measures performed extremely well. One measure would warrant review for future use and this is the mental health awareness questionnaire. Removing the second item of the questionnaire improved the internal consistency from adequate to good. Future use of the questionnaire may benefit from removing the second item.

Discussion Points

Length of the Course

The module with the lowest rating was the module on attention: It Matters What You Focus On: Helpful and Unhelpful Attention. However, of the 10 participants who were interviewed by NEF and who had completed the mixed format intervention, N=5 (50%) reported that the attention module was their most memorable topic. Of the six facilitators

who were interviewed by NEF, all reported that attention training was the most popular and memorable activity.

If Mind were looking to shorten the intervention, then removing the module with the lowest rating and the linked group would appear to be a sensible strategy. However, whilst the attention module did receive the lowest rating, it still received a satisfactory rating (70.63% valuable) and positive feedback from participants and Mind staff who were interviewed by NEF.

It is also possible, of course, that memorability is unrelated to helpfulness. Whilst the attention module and training may be the most memorable, the data show that learning linked to this module (assessed by two items on the mental health management questionnaire) was unrelated to outcome. It is possible that the questions did not adequately tap learning or that the module was unrelated to outcome.

It would seem that qualitative feedback praised the attention module, yet quantitative analyses showed it to be satisfactory and not significantly linked to outcome as assessed by evaluating the relationship between learning linked to the module and outcome.

Consideration would have to be given to weighing up the potential benefits of shortening the course versus the potential disadvantages of removing potentially useful content.

The NEF report raised barriers to attending group sessions, most commonly getting time off work and the culture within services. If reducing the face-to-face time commitment leads to greater participation, then steps to reduce the face-to-face time commitment may be beneficial. One way to reduce the face-to-face time commitment would be to reduce the number of group sessions either by removing the lowest rated topic or by combining it in a shorter format with another group session.

The control module with the highest rating was Anger, PTSD and Depression (mean rating: 76% valuable). This content is already included in the mixed format Module 3: Dealing with Difficult Emotions, which received a comparable mean rating of 73% valuable. The material could be reviewed more explicitly in a group session and would tie in with some of NEF's findings in which N=8 (50% of interviewed participants) wanted to learn more about how to support other people to build resilience.

Most appropriate audience for the course

The results revealed that participants benefited from the intervention with greater change being linked to higher scores on baseline measures of anxiety and depression. This is not to say that participants with lower scores of anxiety or depression did not benefit, it means they made smaller improvements, which is understandable since there is less room for improvement when scores are low on clinical measures and already high on non-clinical measures of resilience, wellbeing and psychological distress. Importantly, scores on anxiety and depression questionnaires were unrelated to improvements on measures of mental health awareness and confidence to manage mental health, suggesting that the course was successful in improving mental health awareness irrespective of participants' levels of

baseline symptoms. Participants receiving the mixed format intervention showed enormous change in mental health awareness and confidence to manage mental health compared to participants receiving the online intervention or wait period.

We also investigated the relationship between outcome and broader factors, such as length of service and type of service. Greater number of years in service were related to greater change in psychological distress. Years of service were significantly related to greater change in mental health awareness with greater years in service being linked to greater change in mental health awareness.

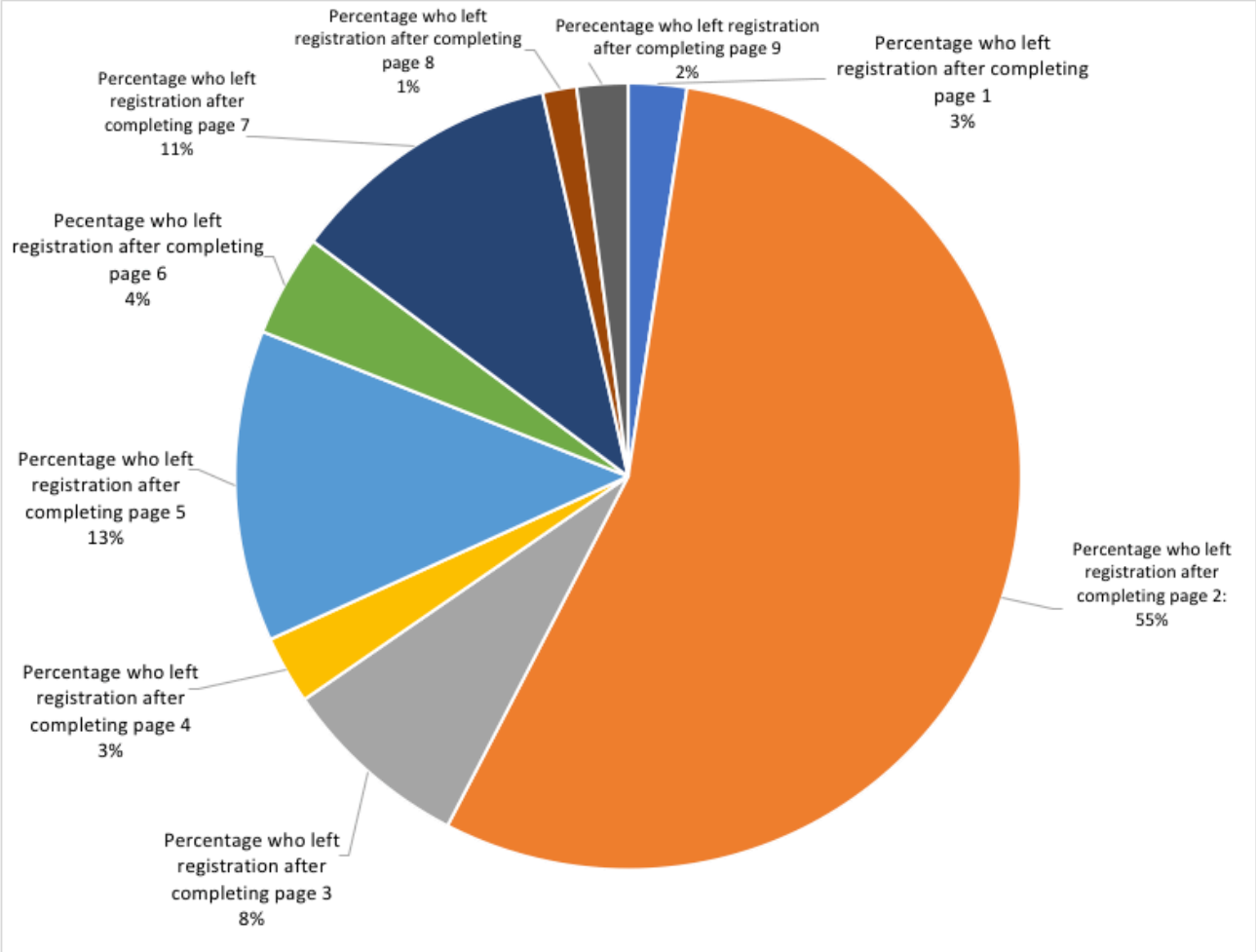
Since most of the sample were working full-time and working for the police (79.4%), we can conclude that the findings are relevant to the police service. Only 20% of the sample were from other services (12.2% from fire and 8.3% from ambulance services). It would most likely be helpful to tailor some of the videos in the online modules, many of which were aimed at police officers, to ambulance, fire and search and rescue personnel.

Whilst only 5 of the 16 participants (31%) interviewed by NEF were full-time frontline staff, these participants reported that frontline staff made up the groups that they attended. It is possible that a sampling issue may have biased the qualitative sample in favour of office-based staff who may experience fewer barriers to taking time off over and above what was required for the intervention.

Unfortunately we are unable to comment on the potential link between role (front-line/office-based) and outcome since we do not have data on participants' roles. However, frontline and office-based staff did make up the total sample of participants as well as the specific sample of participants who received the mixed format intervention. The mixed format intervention demonstrated intervention specific improvements. We can therefore conclude that it benefited both frontline and office-based staff. According to the NEF report, there were greater barriers to attending for frontline staff and this may need to be taken into consideration for future delivery.

Attrition

With regards to attrition between expressing interest and completing registration, we analysed data for the partially completed registration (N=198). Of people who did not complete registration, the majority (N=109; 55%) left after reading page 2 of the registration survey, which included a short video of a police officer and a search and rescue worker speaking about their experience of an earlier resilience course (Shaun Goodwin's modified course). The majority of participants who registered were police officers. It is possible that participants from ambulance and fire services were less likely to proceed after page 2. We cannot know for certain, however, since we have no demographic data for participants who did not complete registration.



There was a low level of attrition between allocation and starting the course. Of the N=120 participants allocated to receive immediate training, N=114 received interventions (90%) with N=6 being unable to continue, N=5 had been allocated to the mixed format course and let us know they could not attend the group sessions due to scheduling issues. They were offered the online only portion of the training and did not respond. A total of N=1 was allocated to online only and did not respond to further emails.

Conclusion

Our evaluation rigorously evaluated a new resilience intervention for emergency service workers, developed to target predictors of poor mental health, which have previously been established in prospective studies specific to this population. The intervention was linked to specific effects that were not seen in the placebo or waitlist conditions. Participants receiving the mixed format condition demonstrated improvements in resilience, wellbeing, social capital, psychological distress, awareness of and confidence to manage mental health, and rumination. There were no specific effects linked to the placebo intervention or to

receiving no intervention. The modules which appeared to be most effective focused on types of over-thinking: worry and rumination. The success of this intervention is promising and may be associated with changes in targeted predictors of mental health problems. Future research could evaluate the intervention with a much larger sample and investigate mediators of outcome.

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