

Appendix

Supplementary tables

Study no	Gender	Age years	Diagnosis	Design workshop	User testing workshop 1	User testing workshop 2	User testing Workshop 3	Evaluation workshop
1	Male	54	Ca prostate	Yes	Yes	No	Yes	Yes
2	Male	66	Melanoma	Yes	No	No	No	No
3	Female	72	Ca cervix	Yes	No	Yes	No	No
4	Female	67	Medullary ca	Yes	No	No	Yes	Yes
5	Female	74	Ca lung	Yes	Yes	No	No	Yes
6	Male	74	Neuroendocrine tumour	Yes	Yes	No	No	No
7	Male	69	Ca prostate	Yes	No	Yes	Yes	Yes
8	Male	71	Ca nasopharynx	No	No	Yes	No	No
9	Female	51	Ca thyroid	No	No	Yes	No	Yes
10	Female	37	Scq tongue	No	No	No	No	No
11	Female	62	Ca breast	No	No	No	Yes	No

Supplementary table 1: Phase 1 participant demographic data

Supplementary Table 2: Missing data management

Questionnaire	Variable measured	Missing Data	Statistical test
EQ-5D – 3D	QoL	No computation if values missing as single scores	
QLQ-C30	QoL	Values computed if < or = 10% data missing. Calculated mean for subscore	
DASS-21	Depression, Anxiety, Stress		Friedman (missing listwise)
AAQ II	Psychological flexibility		Friedman (missing listwise)
POMs	Mood state		Friedman (missing listwise)
SCS	Self-compassion		Friedman (missing listwise)
WEBWBS/Ad WEMWBS	Mental well-being		Friedman (missing listwise)
Locally developed Q	Self-compassion after intervention use		Friedman (missing listwise)

Supplementary Table 3: Descriptive Statistics Questionnaire Domain Scores

QUESTIONNAIRES & DOMAINS	N	Mean	Std. Dev.	Min	Max
EQ-5D-5L					
MOBILITY					
B_EQ5DM	12	1.33	.49	1	2
VR1_EQ5DM	12	1.33	.49	1	2
VR2_EQ5DM	12	1.33	.49	1	2
VR3_EQ5DM	12	1.33	.49	1	2
SELF-CARE					
B_EQ5DSC	12	1.25	.45	1	2
VR1_EQ5DSC	12	1.25	.45	1	2
VR2_EQ5DSC	12	1.17	.39	1	2
VR3_EQ5DSC	12	1.17	.39	1	2
USUAL ACTIVITIES					
B_EQ5DUA	12	1.58	.52	1	2
VR1_EQ5DUA	12	1.58	.52	1	2
VR2_EQ5DUA	12	1.42	.52	1	2
VR3_EQ5DUA	12	1.42	.52	1	2
PAIN & DISCOMFORT					
B_EQ5DPD	12	1.50	.67	1	3
VR1_EQ5DPD	12	1.58	.67	1	3
VR2_EQ5DPD	12	1.33	.49	1	2
VR3_EQ5DPD	12	1.67	.65	1	3
ANXIETY & DEPRESSION					
B_EQ5DAD	12	1.42	.52	1	2
VR1_EQ5DAD	12	1.42	.52	1	2
VR2_EQ5DAD	12	1.42	.52	1	2
VR3_EQ5DAD	12	1.42	.67	1	3
BAROMETER / VAS					
B_BAROMETER	12	71.83	15.30	50	100
VR1_BAROMETER	12	71.00	15.09	50	100
VR2_BAROMETER	12	72.17	16.68	40	100
VR3_BAROMETER	12	67.50	20.62	29	100
QLQ C30 – EORTC QoL					
GLOBAL HEALTH SCORE					
BQLQC30GHS	11	-43.18	25.77	-83.33	-8.33
VR1QLQC30GHS	11	-43.94	22.39	-83.33	-8.33
VR2QLQC30GHS	11	-48.48	23.51	-83.33	-16.67
VR3QLQC30GHS	11	-48.48	23.81	-83.33	-16.67
FUNCTIONAL SCALE					
BQLQC30FS	11	7.07	24.05	-42.22	33.33
VR1QLQC30FS	11	4.44	23.83	-42.22	33.33
VR2QLQC30FS	11	7.47	24.10	-44.44	33.33
VR3QLQC30FS	11	7.27	24.93	-46.67	33.33
SYMPTOM SCORE					
BQLQC30SS	11	10.02	21.13	-35.90	30.77
VR1QLQC30SS	11	8.39	20.13	-35.90	30.77
VR2QLQC30SS	11	10.26	21.54	-43.59	33.33
VRQLQC30SS	11	10.02	21.62	-43.59	33.33
DASS21 – DEPRESSION, ANXIETY, STRESS 21					
DEPRESSION					
BDASDEP	11	9.09	9.01	0	28
VR1DASDEP	11	8.91	9.05	0	28
VR2DASDEP	11	8.73	8.40	0	24

VR3DASDEP	11	6.91	7.34	0	18
ANXIETY					
BDASANX	10	8.00	8.79	0	30
VR1DASANX	10	6.60	5.82	0	16
VR2DASANX	10	7.40	6.33	0	18
VR3DASANX	10	4.60	3.53	0	10
STRESS					
BDASSTRS	19	13.37	8.11	0	28
BDASDEP	19	7.68	8.41	0	28
BDASANX	18	7.89	7.62	0	30
VR3DASSTRS	13	8.15	7.89	0	24
VR3DASDEP	12	6.67	7.05	0	18
VR3DASANX	11	4.36	3.44	0	10
AAQ – ACTION & ACCEPTANCE QUESTIONNAIRE					
BTOTAAQ	12	18.75	9.30	7	41
VR1TAAQ	12	19.25	8.85	7	39
VR2TAAQ	12	21.08	10.80	7	43
VR3TAAQ	12	18.08	9.06	7	39
POMS – PROFILE OF MOOD STATE					
VR1PREPOM	19	20.42	5.79	12	36
VR2PREPOMS	16	21.50	7.14	9	39
VR3PREPOMS	13	23.62	6.97	17	36
VR1POSTPOM	18	23.06	6.91	8	36
VR2POSTPOM	13	22.38	4.25	16	31
VR3POSTPOM	13	23.31	6.74	17	39
SCS – SELF-COMPASSION SCALE					
SELF-KINDNESS					
BSCSSK	10	3.14	.811	2.00	4.40
VR1SCSSK	10	3.14	.79	2.00	4.20
VR2SCSSK	10	3.26	.92	1.8	5.0
VR3SCSSK	10	3.30	1.13	1.8	5.0
SELF-JUDGEMENT					
BSCSSJ	10	3.48	1.05	1.40	4.80
VR1SCSSJ	10	3.48	1.05	1.40	4.80
VR2SCSSJ	10	3.34	1.30	1.0	5.0
VR3SCSSJ	10	3.50	1.14	1.6	5.0
COMMON HUMANITY					
BSCSCH	10	3.13	.68	2.25	4.25
VR1SCSCH	10	3.23	.79	2.25	4.75
VR2SCSCH	10	2.90	1.12	1.25	4.50
VR3SCSCH	10	3.15	1.04	1.50	5.00
ISOLATION					
BSCSISO	10	3.30	1.14	1.75	5.00
VR1SCSISO	10	3.38	1.13	1.75	5.00
VR2SCSISO	10	3.43	1.13	1.75	5.00
VR3SCSISO	10	3.58	1.24	1.50	5.00
MINDFULNESS					
BSCSM	10	4.10	.74	3	5
VR1SSCSM	10	4.05	.64	2.75	5.00
VR2SSCSM	10	3.73	.76	2.75	5.00
VR3SSCSM	10	3.75	.82	2.75	5.00
OVER-IDENTIFIED					
BSCSOI	10	3.30	1.12	1.50	5.00
VR1SCSOI	10	3.35	1.14	1.50	5.00
VR2SCSOI	10	3.70	1.26	1.50	5.00

VR3SCSOI	10	3.58	1.24	1.50	5.00
LDL – LOCALLY DEVELOPED QUESTIONS					
VR1LDQTS	12	51.08	15.92	33	80
VR2LDQTS	12	50.67	14.75	36	77
VR3LDQTS	12	50.50	17.42	14	77
WEMWBS WARWICK-EDINBURGH MENTAL WELL-BEING SCALE					
BWEMTS	19	48.74	8.92	34	67
VR1TWEWM	19	48.58	9.17	34	67
VR2WEMWTS	15	48.13	9.48	37	70
VR3WEMWTS	13	49.46	10.44	39	70
AWEMWBS – ADAPTED WARWICK-EDINBURGH METAL WELL-BEING SCALE					
VR1TAWEM	18	53.00	8.24	36	70
2AWEMTS	14	54.43	12.64	37	85
VR3AWEMTS	13	52.69	8.98	39	70
BWEMTS	12	45.92	7.76	34	58
VR1TAWEM	12	51.67	8.66	36	70
2AWEMTS	12	54.00	13.52	37	85
VR3AWEMTS	12	52.83	9.36	39	70

Supplementary table 4: Number of missing variables (number of participants)

Measure	Baseline	VR1	VR1	VR2	VR2	VR3	VR3
		Pre intervention	Post intervention	Pre intervention	Post intervention	Pre intervention	Post intervention
EQ-5D	0	0	N/A	0	N/A	0	N/A
QLQ C30	0	0	N/A	2(2)	N/A	0	N/A
Action and Acceptance Questionnaire II - AAQII	0	0	N/A	4(2)	N/A	0	N/A
Depression, Anxiety and Stress Scale 21 – DASS21	7(3)	8(2)	N/A	2(2)	N/A	14(2)	N/A
Profile of Mood State - POMS	6 (2)	8(3)	5(3)	9(3)	6(2)	1	2(2)
Warwick Edinburgh Mental Well-being Scale - WEMWBS	1	2(1)		0	N/A	0	
Self-compassion Scale - SCS	23 (1)	2(1)	N/A	0	N/A	0	N/A
Adapted Warwick Edinburgh Mental Well-being Scale - AWEMWBS	N/A	N/A	0	N/A	0	N/A	1
Locally developed questionnaire	N/A	N/A	0	N/A	1	N/A	0

Supplementary Table 5: Multivariate analyses comparing baseline, VR1, VR2 and VR3 session scores

Friedman Test for EQ-5D-5L, QLQ C30 EORTC, DASS21, AAQ, SCS, LDQ, WEMWBS, AWEMWBS and Heart Rate Variation

Ranks							
Domain	M Rank	Domain	M Rank	Domain	M Rank	Domain	M Rank
B_EQ5DM	2.50	B_EQ5DSC	2.58	B_EQ5DUA	2.67	B_EQ5DPD	2.46
VR1_EQ5DM	2.50	VR1_EQ5DSC	2.58	VR1_EQ5DUA	2.67	VR1_EQ5DPD	2.63
VR2_EQ5DM	2.50	VR2_EQ5DSC	2.42	VR2_EQ5DUA	2.33	VR2_EQ5DPD	2.13
VR3_EQ5DM	2.50	VR3_EQ5DSC	2.42	VR3_EQ5DUA	2.33	VR3_EQ5DPD	2.79
N	12	N	12	N	12	N	12
Chi-Square	.000	Chi-Square	2.000	Chi-Square	6.000	Chi-Square	5.526
df	3	df	3	df	3	df	3
Asymp. Sign.	1.000	Asymp. Sign.	.572	Asymp. Sign.	.112	Asymp. Sign.	.137
Domain	M Rank	Domain	M Rank	Domain	M Rank	Domain	M Rank
B_EQ5DAD	2.50	B_BAROMETER	2.63	BQLQC30GHS	2.82		
VR1_EQ5DAD	2.50	VR1_BAROMETER	2.42	VR1QLQC30GHS	2.82		
VR2_EQ5DAD	2.50	VR2_BAROMETER	2.67	VR2QLQC30GHS	2.27		
VR3_EQ5DAD	2.50	VR3_BAROMETER	2.29	VR3QLQC30GHS	2.09		
N	12	N	12	N	11		
Chi-Square	.000	Chi-Square	.880	Chi-Square	4.935		
df	3	df	3	df	3		
Asymp. Sign.	1.000	Asymp. Sign.	.830	Asymp. Sign.	.177		
Domain	M Rank	Domain	M Rank	Domain	M Rank	Domain	M Rank
BQLQC30FS	2.41	BQLQC30SS	2.64	BDASDEP	2.59		
VR1QLQC30FS	2.18	VR1QLQC30SS	2.00	VR1DASDEP	2.45		
VR2QLQC30FS	2.64	VR2QLQC30SS	2.77	VR2DASDEP	2.59		
VR3QLQC30FS	2.77	VR3QLQC30SS	2.59	VR3DASDEP	2.36		
N	11	N	11	N	11		
Chi-Square	1.709	Chi-Square	3.000	Chi-Square	.365		
df	3	df	3	df	3		
Asymp. Sign.	.635	Asymp. Sign.	.392	Asymp. Sign.	.947		
Domain	M Rank	Domain	M Rank	Domain	M Rank	Domain	M Rank
BDASANX	2.75	BDASSTRS	2.96	BTOTAAQ	2.38		
VR1DASANX	2.50	VR1DASSTRS	2.92	VR1TAAQ	2.63		
VR2DASANX	2.80	VR2DASSTRS	2.38	VR2TAAQ	3.04		
VR3DASANX	1.95	VR3DASSTRS	1.75	VR3TAAQ	1.96		
N	10	N	12	N	12		
Chi-Square	4.789	Chi-Square	8.656	Chi-Square	5.742		
df	3	df	3	df	3		
Asymp. Sign.	.188	Asymp. Sign.	.034	Asymp. Sign.	.125		
Domain	M Rank	Domain	M Rank	Domain	M Rank	Domain	M Rank
BSCSSK	2.50	BSCSSJ	2.25	BSCSCH	2.25		
VR1SCSSK	2.45	VR1SCSSJ	2.25	VR1SCSCH	2.65		
VR2SCSSK	2.30	VR2SCSSJ	2.60	VR2SCSCH	2.40		
VR3SCSSK	2.75	VR3SCSSJ	2.90	VR3SCSCH	2.70		
N	10	N	10	N	10		
Chi-Square	.733	Chi-Square	2.133	Chi-Square	.976		
df	3	df	3	df	3		
Asymp. Sign.	.866	Asymp. Sign.	.545	Asymp. Sign.	.807		
Domain	M Rank	Domain	M Rank	Domain	M Rank	Domain	M Rank
BSCSISO	2.20	BSCSM	2.90	BSCSOI	2.05		

VR1SCSISO	2.40	VR1SSCSM	2.90	VR1SCSOI	2.25
VR2SCSISO	2.75	VR2SSCSM	2.05	VR2SCSOI	2.95
VR3SCSISO	2.65	VR3SSCSM	2.15	VR3SCSOI	2.75
N	10	N	10	N	10
Chi-Square	2.018	Chi-Square	5.230	Chi-Square	4.417
df	3	df	3	df	3
Asymp. Sign.	.569	Asymp. Sign.	.156	Asymp. Sign.	.220
Domain	M Rank	Domain	M Rank	Domain	M Rank
VR1LDQTS	2.13	BWEMTS	1.38	VR1 HRV Pre	2.00
VR2LDQTS	1.83	VR1TAWEM	2.75	VR1 HRV Mid	2.00
VR3LDQTS	2.04	2AWEMTS	2.83	VR1 HRV Post	2.00
VR1LDQTS	2.13	VR3AWEMTS	3.04	VR1 HRV Pre	2.00
N	12	N	12	N	3
Chi-Square	.565	Chi-Square	12.905	Chi-Square	.000
df	2	df	3	df	2
Asymp. Sign.	.754	Asymp. Sign.	.005	Asymp. Sign.	1.000

Supplementary Table 6: Multi-variate analyses comparing baseline to VR3 session scores

Wilcoxon Signed Ranks Test for DASS21, AAQ, WEMWBS & AWEMWBS, POMS and SSC

DASS21		N	Mean Rank	Sum of Ranks
VR3DASSTRS - BDASSTRS	Negative Ranks	9 ^a	6.33	57.00
	Positive Ranks	2 ^b	4.50	9.00
	Ties	2 ^c		
	Total	13		
VR3DASDEP - BDASDEP	Negative Ranks	5 ^d	5.20	26.00
	Positive Ranks	4 ^e	4.75	19.00
	Ties	3 ^f		
	Total	12		
VR3DASANX - BDASANX	Negative Ranks	5 ^g	3.00	15.00
	Positive Ranks	0 ^h	.00	.00
	Ties	6 ⁱ		
	Total	11		
Test statistics				
	VR3DASSTRS - BDASSTRS	VR3DASDEP - BDASDEP	VR3DASANX - BDASANX	
Z	-2.138 ^b	-.418 ^b	-2.032 ^b	
Asymp. Sig. (2-tailed)	.033	.676	.042	
AAQ				
		N	Mean Rank	Sum of Ranks
VR1POSTPOM - VR1PREPOM	Negative Ranks	2 ^a	7.50	15.00
	Positive Ranks	11 ^b	6.91	76.00
	Ties	5 ^c		
	Total	18		
VR2POSTPOM - VR2PREPOMS	Negative Ranks	6 ^d	4.17	25.00
	Positive Ranks	4 ^e	7.50	30.00
	Ties	3 ^f		
	Total	13		
VR3POSTPOM - VR3PREPOMS	Negative Ranks	4 ^g	3.00	12.00
	Positive Ranks	2 ^h	4.50	9.00
	Ties	7 ⁱ		
	Total	13		
Test statistics				
	VR1POSTPOM - VR1PREPOM	VR2POSTPOM - VR2PREPOMS	VR3POSTPOM - VR3PREPOMS	
Z	-2.136 ^b	-.255 ^b	-.315 ^c	
Asymp. Sig. (2-tailed)	.033	.799	.752	
WEMWBS & AWEMWBS				
		N	Mean Rank	Sum of Ranks
VR1TAWEM - VR1TWEWM	Negative Ranks	2 ^d	5.00	10.00
	Positive Ranks	13 ^e	8.46	110.00
	Ties	3 ^f		
	Total	18		
2AWEMTS - VR2WEMWTS	Negative Ranks	2 ^g	1.50	3.00
	Positive Ranks	8 ^h	6.50	52.00

	Ties		4 ⁱ			
	Total		14			
VR3AWEMTS - VR3WEMWTS	Negative Ranks		1 ^j	1.50	1.50	
	Positive Ranks		8 ^k	5.44	43.50	
	Ties		4 ^l			
	Total		13			
Test statistics						
	VR1TAWEM - VR1TWEWM		2AWEMTS - VR2WEMWTS		VR3AWEMTS - VR3WEMWTS	
Z		-2.846 ^b		-2.501 ^b		-2.492 ^b
Asymp. Sig. (2-tailed)		.004		.012		.013
POMS			N	Mean Rank	Sum of Ranks	
VR1POSTPOM - VR1PREPOM	Negative Ranks		2 ^a	7.50	15.00	
	Positive Ranks		11 ^b	6.91	76.00	
	Ties		5 ^c			
	Total		18			
VR2POSTPOM - VR2PREPOMS	Negative Ranks		6 ^d	4.17	25.00	
	Positive Ranks		4 ^e	7.50	30.00	
	Ties		3 ^f			
	Total		13			
VR3POSTPOM - VR3PREPOMS	Negative Ranks		4 ^g	3.00	12.00	
	Positive Ranks		2 ^h	4.50	9.00	
	Ties		7 ⁱ			
	Total		13			
Test statistics						
	VR1POSTPOM - VR1PREPOM		VR2POSTPOM - VR2PREPOMS		VR3POSTPOM - VR3PREPOMS	
Z		-2.136 ^b		-.255 ^b		-.315 ^c
Asymp. Sig. (2-tailed)		.033		.799		.752
SSC	VR3SCSSK - BSCSSK	VR3SCSSJ - BSCSSJ	VR3SCSCH - BSCSCH	VR3SCSISO - BSCSISO	VR3SSCSM - BSCSM	VR3SCSOI - BSCSOI
Z		-1.011 ^b		-.978 ^b		-.224 ^c
Asymp. Sig. (2-tailed)		.312		.328		.823
				.207		.108
						.153

Supplementary Tables 6a & 6b: Multi-variate analyses comparing VR session scores

ANOVA for Electrodermal Activity (EDA) and Heart Rate

Supplementary Table 6a Physiology Data – Electrodermal Activity (EDA) – VR 1 – Pre/Mid/Post**DESCRIPTIVE STATISTICS**

	Mean	Std. Deviation	N				
VR1 EDA PRE	11.50	3.416	4				
VR1 EDA MID	8.75	2.217	4				
VR1 EDA POST	8.25	2.062	4				
TESTS OF WITHIN-SUBJECTS EFFECTS							
SOURCE		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
EDA1	Sphericity Assumed	24.500	2	12.250	13.364	.006	.817
	Greenhouse-Geisser	24.500	1.658	14.781	13.364	.011	.817
	Huynh-Feldt	24.500	2.000	12.250	13.364	.006	.817
	Lower-bound	24.500	1.000	24.500	13.364	.035	.817
ERROR(EDA1)	Sphericity Assumed	5.500	6	.917			
	Greenhouse-Geisser	5.500	4.973	1.106			
	Huynh-Feldt	5.500	6.000	.917			
	Lower-bound	5.500	3.000	1.833			

Supplementary Table 6b Physiology Data – Heart Rate – VR 2 – Pre/Mid/Post

Descriptive Statistics							
	Mean	Std. Deviation	N				
VR2 HR Pre	75.75	6.185	4				
VR2 HR Mid	73.75	6.850	4				
VR2 HR Post	75.00	6.683	4				
Tests of Within-Subjects Effects							
Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
HR2	Sphericity Assumed	8.167	2	4.083	13.364	.006	.817
	Greenhouse-Geisser	8.167	1.424	5.737	13.364	.017	.817
	Huynh-Feldt	8.167	2.000	4.083	13.364	.006	.817
	Lower-bound	8.167	1.000	8.167	13.364	.035	.817
Error(HR2)	Sphericity Assumed	1.833	6	.306			
	Greenhouse-Geisser	1.833	4.271	.429			
	Huynh-Feldt	1.833	6.000	.306			
	Lower-bound	1.833	3.000	.611			