



**Using and analysing WEMWBS
to measure the impact of interventions in improving mental
wellbeing**

March 5th 2013 Workshop

WORKBOOK

Jude Stansfield
Brendan Collins
Hannah Timpson
Gayle Whelan

This workbook has been developed for the ChaMPs CPD workshop on “Using and analysing WEMWBS to measure the impact of interventions in improving mental wellbeing”.

It is based on the WEMWBS practice-based user guide produced by Coventry City Council, NHS Coventry, and Warwick Medical School, and authored by Rebecca Putz, Kate O’Hara, Frances Taggart and Sarah Stewart-Brown, September 2012: *Using WEMWBS to measure the impact of your work on mental wellbeing: A practice-based user guide*

Who is this for?

The workshop and workbook is for staff who are using the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS), or would like to, to evaluate the effectiveness of their interventions in improving mental wellbeing.

The purpose is to equip staff with the knowledge and skills to effectively collect and analyse data collected through the Warwick-Edinburgh Mental Wellbeing Measurement Scale (WEMWBS).

Learning outcomes:

At the end of the workshop/workbook participants will have the knowledge and tools to equip them to measure mental wellbeing as an outcome of their intervention, through:

- setting-up and administering the WEMWBS measurement tool with participants
- analysing the data and calculating a mean score
- interpreting the results to show impact

It addresses Public Health competencies:

KH8 Analysis of data on a small area basis and understanding of the limitations of the analysis

KH26 The principles and methods of evaluation

Further information is available at

<http://www.champspublichealth.com/page.aspx?pageid=304&ParentID=0>

This workbook has been adapted for use by:

Jude Stansfield, Mental Health & Wellbeing Programme Manager, ChaMPs

Brendan Collins, Research Fellow in Health Economics, NHS Wirral/ University of Liverpool

Dr Hannah Timpson, Applied Health and Wellbeing Partnership, Centre for Public Health, LJMU

Gayle Whelan, Applied Health and Wellbeing Partnership, Centre for Public Health, LJMU

Contents

	Page:
1.0 Introduction to mental wellbeing and WEMWBS	4
What is mental wellbeing?	4
What is WEMWBS and why use it?	4
Local WEMWBS scores	5
What interventions can be measured	6
2.0 How to use WEMWBS to measure mental wellbeing	8
Gaining permission	8
Planning	8
Sample selection	9
Timescales	9
Completing WEMWBS	10
Introducing the tool to potential participants	11
Are there any risks to participants?	12
QUICK GUIDE TO SETTING UP WEMWBS	13
3.0 Collecting the data	14
Assigning identifiers	14
Additional information	14
Storing the data	14
4.0 Analysing and interpreting the data	15
Missing data	15
Inputting data	15
Analysing data	15
Measuring the impact of your work	17
Further statistical calculations	17
5.0 Reporting on your work	18
Useful links	18
Appendix 1: WEMWBS and sWEMWBS	19
Appendix 2: Answers to weighted scores calculation	22
Appendix 3: Undertaking further statistical calculations	22

1.0 Introduction: mental wellbeing and WEMWBS

1.1 Background

Improved mental wellbeing is a key national outcome and a fundamental part of being a healthy and resilient individual. It is a local priority for most of the Health & Wellbeing Boards in Cheshire and Merseyside. WEMWBS is a measure for the 'self-reported wellbeing' indicator in the Public Health Outcomes Framework.

In order to achieve a consistent and comparable approach and to understand and improve best practice ChaMPs recommends that sWEMWBS is used across Cheshire and Merseyside, where appropriate, to measure improvements in mental wellbeing.

1.2 What is mental wellbeing?

Mental wellbeing is about having control and influence, a sense of meaning, belonging and connection and the capability to manage problems and change. It is therefore central to parenting, educational attainment, employment & work productivity, community participation and cohesion, crime and safety.

Mental wellbeing is also a key outcome for and a determinant of physical health, for example:

- Effectively managing long term conditions
- Reducing obesity, heart disease and other illness
- Making healthy life choices
- Recovery from illness

1.3 What is WEMWBS?

The Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) is a validated measure of mental wellbeing that has been used nationally, regionally and locally and seen as an effective tool. There is a 14-item and a 7-item (sWEMWBS) questionnaire that produces a single score. See Appendix 1. It is self-completed (for people aged 13+) to record 'statements about their thoughts and feelings over the past two weeks'.

1.4 Why use WEMWBS?

The findings can be used to establish whether a specific population has low, average or high mental wellbeing. This can be used to identify which groups are most in need and where to target investment. It can be used to measure changes over time or differences to other population groups. WEMWBS can also be used before and after an intervention (at least two weeks duration) to establish if mental wellbeing has improved. Having a control group would strengthen any findings of the impact that the intervention has had on mental wellbeing.

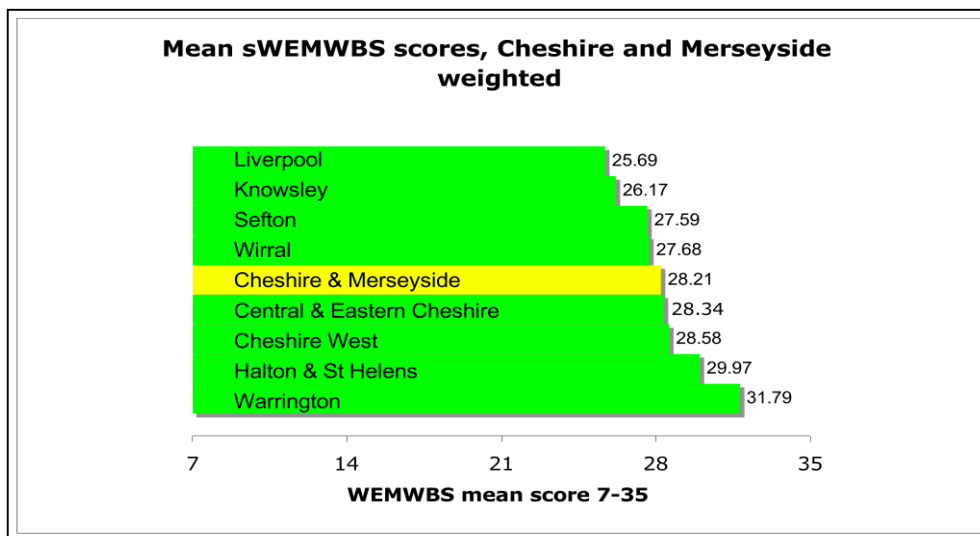
1.5 Current population baseline

A population baseline for mental wellbeing already exists for each locality within Cheshire & Merseyside¹ as well as regionally² and nationally^{3,4}. This means that there is a score for the population averages that you can compare your intervention group with. It also allows improvements to be measured across the whole population over time.

National SWEMWBS mean score 25.3

North West 27.7

Cheshire & Merseyside 28.21



Results for the 2012/13 NW survey will be available in April 2013 from the NW Public Health Observatory.

¹ <http://www.champspublichealth.com/page.aspx?pageid=866&ParentID=0>

² Deacon et al (2010) The North West Mental Wellbeing Survey 2009, NWPHO
<http://www.nwph.net/nwpho/publications/NorthWestMentalWellbeing%20SurveySummary.pdf>

³ see the Health Survey for England 2010
http://www.ic.nhs.uk/webfiles/publications/003_Health_Lifestyles/HSE2010_REPORT/HSE2010_Ch7_Well_being_health_and_work.pdf

⁴ Understanding Society, the UK's Household longitudinal study 2011
<http://research.understandingsociety.org.uk/files/research/findings/early-findings/9%20Early%20findings%20Chapter%209.pdf>

1.6 What interventions can be measured?

Q 1. What interventions are you currently using WEMWBS on or plan to?:

There are many examples of WEMWBS being used already with different intervention groups within Cheshire & Merseyside as well as nationally. For example

Liverpool John Moore's University evaluated **Wellbeing Sefton**, a social prescribing range of programmes. A baseline questionnaire indicated 88% had lower wellbeing (20.83) than the Sefton average (27.59), showing the right people were accessing the service. Data was collected for 18 months with a post-intervention questionnaire after three to six months. The programmes all showed an improvement in wemwbs and shifted the mean wellbeing from low to moderate (25.14). The range of improvement was from 2.98 to 5.00 with a weighted average of 4.31.

The Warrington Positive Thoughts programme is a seven week therapeutic intervention to manage feelings. sWEMWBS is completed on weeks one and seven. A three month evaluation with 21 people showed an increase in mean sWEMWBS of 11%.

Sefton Sanctuary was set up to address the physical and mental health of women aged 40-60 in the more deprived South of Sefton. It was decided that the best way to do this was by going to community venues which women in this target group accessed. A 5-hour health and wellbeing event was carried out in 6 community venues in South Sefton. The intervention offered a health check, information around the 5 ways to wellbeing with individuals making pledges, complementary therapies, and representatives from other health agencies who were available on the day with specific information. Evaluation was conducted over 3 months and found that average mental wellbeing increased from 24.7 to 25.2, shifting the percentage of those with higher wellbeing from 3.5% to 6.1%.

WEMWBS could be used to measure improvements in wellbeing within services and interventions such as:

- Social prescribing
- Health Trainers
- Employment support
- Parenting support
- Workplace health
- Community involvement and development projects
- Volunteering
- Self-care/condition management
- Befriending

IMPORTANT

WEMWBS is **not** designed to be an individual diagnostic tool, or to be part of the intervention itself. By this, we mean that it should not be used to 'diagnose' a person's poor mental wellbeing. It is used to evaluate the whole intervention. When completing the tool, however, this may raise issues for individual that they want to discuss with others. Other tools exist to support discussing mental wellbeing with individuals and groups. E.g. Five ways to wellbeing, Fair deal for wellbeing discussion kit. See:

www.champspublichealth.com paper on [Discussing mental wellbeing during brief interventions](#)

www.ourlife.org.uk discussion kit [Fair Deal for Wellbeing](#)

If a participant is worried about their mental distress, or any other aspect of their health, please advise them to speak to their GP. **Alternatively they can contact local helplines or websites. Other resources include:**

Living Life to the Full – www.lltff.com

NHS Choices – www.nhs.uk/LiveWell/mental-wellbeing

2.0 How to use WEMWBS to measure mental wellbeing

2.1 Gaining permission

WEMWBS is **free** to use. HOWEVER, you **must** seek permission to use WEMWBS by completing a registration form Prof Sarah Stewart-Brown: Sarah.Stewart-Brown@warwick.ac.uk. The Reproduction copyrights for WEMWBS are as follows and must be presented on any copy of WEMWBS used:and contacting Dr Frances Taggart: frances.taggart@warwick.ac.uk or

“Warwick-Edinburgh Mental Well-being Scale (WEMWBS) © NHS Health Scotland, University of Warwick and University of Edinburgh, 2006, all rights reserved”.

If you produce any documents outlining your WEMWBS results (such as reports, presentations) you must also reference the tool accordingly, as above.

2.2 Planning

Take time to consider what it is your project is aiming to achieve. The things you are measuring are important. WEMWBS data that you collect will show the impact of your project on participants’ mental wellbeing.

Q 2. Before you start..

What might you need to consider before starting to use WEMWBS in your project?

Use this space to write down your thoughts:

See Appendix 2

2.3 Sample selection

The number of people you ask to complete WEMWBS will depend on the nature of your project.

Q3. What types of projects are **you** involved in?

How long does the intervention last?

How many people participate?

2.4 Timescales

In order to identify the **impact** of a project, WEMWBS data must be collected at the start and end.

If you have a long project, you might choose to also collect data mid-way through, to identify progress. If your project is discrete (has a clear start and end point) you may be able to easily identify when this information will be collected (for example, during the registration to a project, and at the final session).

Example

If you have a 12-week project, you could ask participants to complete the WEMWBS survey in week 1, upon registration. You could then ask participants to complete the follow-up survey during their final session in week 12. Alternatively, if you know that a lot of people drop-out of your project from about the 8th week, you may wish to ask people to complete their follow-up WEMWBS after 8 weeks to maximise your sample size.

You may wish to also ask participants to complete WEMWBS at a mid-point, such as 6-weeks into the course. This will enable identification of early progress.

But what if my project is open-ended...

If your project is open-ended and does not have a structured start and finish, you may wish to recruit a selection of participants as they register. The timescale for the collection of follow-up data will be dependent on the nature of your project, but you could collect their follow-up data at 8-10 weekly intervals, and/ or when they decide to leave (if sooner). If possible, you may also collect WEMWBS at a time after the project has finished to see if mental wellbeing levels are sustained beyond the life of the intervention.

2.7 Introducing WEMWBS to potential participants

Before you collect any data, you need to explain WEMWBS to potential participants, and gather their consent to take part in the survey.

WEMWBS can be described to potential participants as '**statements about their thoughts and feelings in the past two weeks**'. Explain that you would like to ask them about these statements before they start the project and then again at the end (you may also ask them at a mid-point) to follow the effects of this project. Explain that WEMWBS has been specifically designed and tested for measuring the impact of projects such as this one.

Gaining consent to participate in evaluation

It is important to invite participants to take part in the project evaluation. Participants should be made aware that WEMWBS is not part of the intervention/ service, that they do not have to complete the questionnaire if they don't want to, and their decision will not affect the service offered to them.

Q 5. How might you check that people are happy to participate?

What might be included in a consent form?

See Appendix 2

2.8 Are there any risks to participants?

WEMWBS is an ideal tool to use, as it generates information regarding positive mental wellbeing in a timely and cost-effective manner. However, occasionally, reflection on the WEMWBS statements may generate distress. See page 6 of the Coventry practitioner user guide.

For participants to recognise that their mental wellbeing is not good is not necessarily a bad thing. It can be the first step towards taking action to feel better.

Provide information to the participant on where they can seek help with distress. It may be that the intervention is appropriate for the participant to discuss any issues.

REMEMBER that WEMWBs is not an intervention tool. The practitioner can use other tools, such as the Five Ways to Wellbeing, to discuss mental wellbeing with participants. See the ChaMPs brief guide on [Discussing mental wellbeing during brief interventions](#).

<http://www.champspublichealth.com/writedir/4349Discussing%20wellbeing%20during%20brief%20interventions.pdf>

Quick Checklist for setting up using WEMWBS

Before you start using WEMWBS check that you have...

- Understood WEMWBS is to evaluate change in mental wellbeing as a direct result of a project intervention and that it is not a diagnostic tool.
- Sought permission from University of Warwick (frances.taggart@warwick.ac.uk / Sarah.Stewart-Brown@warwick.ac.uk)
- Decided whether using WEMWBS/SWEMWBS
- Decided on time frame/interval – before, during, after; at start and eight weeks
- The timeframe is at least two weeks apart
- Decided on who to distribute to – whether there are enough participants
- All participants are aged 13 years and older
- Printed out all relevant document (including information sheets/consent forms and WEMWBS questionnaire sheets)
- Information includes an explanation of the research, that it is anonymous and their decision to participate or not does not affect the service offered.
- Ensured any potential risks, such as distress, disclosure of personal information, data protection issues etc are fully considered
- Agreed and included any additional information to collect at the same time as WEMWBS, such as age, gender, ethnicity, employment status
- Agreed how you will record the WEMWBS responses – on an Excel spreadsheet, statistical package such as SPSS.
- Ensured the project team is fully aware of all aspects of the research and why these questionnaires are being used. All staff should be fully briefed on methods such as assigning identifiers and what to do with completed questionnaires.
- Ensured you meet any information governance requirements of your organisation

3.0 Collecting the data

3.1 Assigning identifiers

Each person completing a WEMWBS questionnaire will need to be assigned a unique identifying code so that their responses at each stage can be compared. This identifier can be an initial, a number or a code, but cannot be the individual's full name. This identifier needs to be recorded so that any member of staff can refer to this at any stage of the research. A good idea is to assign this participant code at registration, next to their name, and to store this electronically on a password protected file. This way you can check which code you have given to which participant when it comes to the follow-up survey/s. This information should be saved separately from where you save your WEMWBS data. You may need this identifier to match up your data if you want to analyse by any socio-demographic group that is not in the WEMWBS datasheet.

The Coventry practitioner guide provides an example of tracking data, see page 9-10.

3.2 Additional information

For each questionnaire, it is a good idea to collect more information so that you can understand more about the individual taking part in the research. The individual can complete this information at the same time as completing the WEMWBS questionnaire. This form could for example, include the project title, an identifier, what stage of the research the form is (before during or after), the date, any demographic information such as age and ethnicity, along with any notes relating to the individual but which are not identifiable, such as completed intervention at 8 weeks, dropped out at week 4 etc.

3.3 Storing data

Once you receive completed questionnaires it is best to check them and to make notes on the front sheet if there are any missing sections for example and ensuring the unique identifying code is there. The paper questionnaires should be stored in a locked filing cabinet. Hard copies of names and corresponding participant codes should not be stored – this needs to be kept electronically on a password protected computer. Only members of the project team must access the files.

4.0 Analysing and Interpreting the Data

4.1 Missing data

For the SWEMBWS all 7 questions need to be answered. Do not analyse any questionnaires where data is missing.

For the 14 item WEMWBS we recommend not reporting on any questionnaires where less than 11 out of 14 answers have been completed. If more than three are missing then do not include the questionnaire in analysis. For those questionnaires with 11, 12 or 13 questions, a weighted average can be used, so if 11 questions are answered, add up the answers and multiply by 14/11 (1.273), for 12 questions multiply by 14/12 (1.167), for 13 answers multiply by 14/13 (1.077). The Excel worksheet supplied does this automatically.

Q. 6

If you get some time, try calculating the adjusted scores below.

Answers in appendix 2

Number of questions answered	WEMWBS Score	Adjusted WEMWBS score
11	36	45.82
12	41	
13	41	
9	28	
14	45	

4.2 Inputting data

It is good practice to record the data from the completed WEMWBS questionnaires as you receive them, or at the end of each stage once all have been submitted. The data can be entered onto an excel spreadsheet.

A template worksheet has been prepared and can be downloaded at <http://www.champspublihealth.com/page.aspx?pageid=866&ParentID=0>

Record data for each individual on a separate row:

- i. Unique identifier code – on both questionnaires
- ii. Date of completion of first (pre) questionnaire
- iii. Score of each question (1-5) from first questionnaire
- iv. Sum of scores (the worksheet calculates this automatically)
- v. Date of completion of second (post) questionnaire
- vi. Score of each question (1-5) from second questionnaire

- vii. Sum of scores (the worksheet calculates this automatically)
- viii. Record any additional data you are collecting e.g. age

The SWEMWBS worksheet also calculates whether the score denotes low, moderate or high wellbeing, according to the NW Mental Wellbeing Survey 2009 baseline. This can be useful to confirm if you are targeting the correct participants e.g. people with low wellbeing. (SWEMWBS low=7-22, moderate 23-32, high 33-35; mean 27.7)

The worksheet also does a check that the questionnaires were done 2 weeks apart.

4.3 Analysing data

You may be working with a team and a data analyst to help you understand the results. It will be between your project team and the data analyst to work together and put the WEMWBS results in the context of your project. Your worksheet should already have been set up to work out the WEMWEBS scores for each stage. You might want to do some additional analysis that is not in the worksheet such as by subgroup in your intervention. Remember that you can save more copies of the worksheet and put different data into it.

i) Calculate the change

For each entry, subtract the sum of scores 1 (first questionnaire) from the sum of scores 2 (second questionnaire). If the first sum is greater this will give a minus (-) and denotes a decrease in wellbeing. The worksheet includes a column on whether the change is positive i.e. resulted in an increase in wellbeing and meaningful, i.e. greater than 3 for WEMWBS or 2 for SWEMWBS.

ii) Calculate the mean change

Add together all the change scores from i) above. Divide this by the total number of participants*. This is the mean change in wellbeing from the beginning of the intervention to the end.

* see below

Q7. Quick calculation:

For the group of 10 participants below:

What is the mean SWEMWBS of participants before the course?

What is the mean SWEMWBS of participants after the course?

What is the mean change in SWEMWBS ?

R1	pre score 21	post score 21
R2	pre score 14	post score 19
R3	pre score 12	post score 18
R4	pre score 10	post score -

R5	pre score 22	post score 21
R6	pre score 19	post score 22
R7	pre score 17	post score -
R8	pre score 23	post score 25
R9	pre score 20	post score 22
R10	pre score 22	post score 26

4.4 Measuring the impact of your work

Meaningful increases in WEMWBS:

A three to eight points difference in WEMWBS score is considered meaningful.

For sWEMWBS a two to four points increase can be considered meaningful.

The total number of participants and completed questionnaires needs to be clear in the interpretation of your results.

Q8. How would you describe the change in wellbeing from the results in Q7?

4.5 Statistical significance

Whether a difference is statistically significant or not will depend on the number of participants completing WEMWBS questionnaires, the average change, and the amount of variation in scores. So it is not possible to say for certain what sample size will produce statistically significant results, but as a general minimum at least 30 before and after values will be needed for statistical significance. That is not to say that you should not use WEMWBS to evaluate an intervention with less than 30 clients as you may still get useful results even if they are not statistically significant.

In terms of statistical tests, results from WEMWBS can be compared several ways. If you have before and after data for more than around 100 clients, you can use a paired sample t test – this assumes that your data is normally distributed (i.e. has a bell shaped distribution), if you are not sure if your data is normally distributed you get a rough idea by looking at your data in a histogram or can do a test of normality in SPSS.

See Appendix 3 for more information on statistical tests.

5.0 Reporting on your work

It is useful to document details about your intervention and its impact on project participants. Alongside the data you may want to talk about the mechanism through which you think clients subjective wellbeing has increased and include additional interviews or information from clients or project staff to understand how smoothly the project has been running, and what their perceptions are of the project itself.

The methodology behind your research involving WEMWBS will need to be included in a final report, which explains the stages to your research. For example:

- Recruitment and actual numbers including details of those who may have dropped out or number of uncompleted questionnaires
- WEMWBS questionnaire stages – before, during or after
- Explain any additional research you may have conducted, such as satisfaction surveys or interviews with clients/staff.
- Include reference to local, regional or national baseline scores

5.1 Communicating your results

It is useful to communicate your results in a final paper/ report, even if there was no positive change:

- to all members of your team.
- to your clients/ project participants - it is helpful for them to hear the outcome of the research, and to also to understand the findings – the impact that the project has on mental health and wellbeing.
- to Champs to support dissemination of best practice locally
- In agreement with the permission to use, to the University of Warwick (frances.taggart@warwick.ac.uk or Sarah.Stewart-Brown@warwick.ac.uk).
- Also consider publishing your work in a journal e.g. Journal of Public Mental Health http://www.emeraldinsight.com/products/journals/author_guidelines.htm?id=jpmh&PH_PSESSID=6v98ts1n7in4tildkk5dcucjd6

Useful links

WEMWBS user guide <http://www.healthscotland.com/documents/2702.aspx>

NW report providing local baselines - Deacon et al (2010) The North West Mental Wellbeing Survey 2009, NWPHO
<http://www.nwpho.net/nwpho/publications/NorthWestMentalWellbeing%20SurveySummary.pdf>

**The Warwick-Edinburgh Mental Well-being Scale
(WEMWBS)**

Below are some statements about feelings and thoughts.

Please tick the box that best describes your experience of each over the last 2 weeks

STATEMENTS	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been feeling interested in other people	1	2	3	4	5
I've had energy to spare	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling good about myself	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been feeling confident	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5
I've been feeling loved	1	2	3	4	5
I've been interested in new things	1	2	3	4	5
I've been feeling cheerful	1	2	3	4	5

Warwick-Edinburgh Mental Well-Being Scale (WEMWBS)

© NHS Health Scotland, University of Warwick and University of Edinburgh, 2006, all rights reserved.

**The Short Warwick-Edinburgh Mental Well-being Scale
(SWEMWBS)**

Below are some statements about feelings and thoughts.

Please tick the box that best describes your experience of each over the last 2 weeks

STATEMENTS	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5

Warwick-Edinburgh Mental Well-Being Scale (WEMWBS)

© NHS Health Scotland, University of Warwick and University of Edinburgh, 2006, all rights reserved.

Appendix 2:

Q2 suggested answers:

- Is there a project team in place to collect the information?
- Do the project team understand what mental wellbeing is and why it is important for health?
- Do the project team understand what WEMWBS is and how it is used?
- Do the project team fully understand the aims and objectives of the project?
- Timescales (is the project open-ended, or does it have a clear start and end point?) Is it possible to complete a follow-up survey?
- How big is the project (how many people attend/are part of it)?
- Is there a structure in place for collecting, recording and managing WEMWBS data?
- Do team members know how to track individuals over time (to enable collection of before and after WEMWBS scores, to identify change) ?

Q 5 suggested answers:

- Information about the project and how the information they provide will be used
- Assurance that responses will remain anonymous when project results are reported
- All WEMWBS forms will be kept secure and confidential
- If the information is stored electronically, it will be kept on a password protected computer, and only the project team will have access to this

Q 6 answers:

Number of questions answered	WEMWBS Score	Adjusted WEMWBS score
11	36	45.82
12	41	47.83
13	41	44.15
9	28	do not score
14	45	45

Appendix 3: Statistical tests

Wilcoxon Signed Rank Test

The WEMWBS and SWEMWBS workbook you will get automatically does a **Wilcoxon signed rank test**, this is appropriate where you have a small sample or data is not normally distributed. With a larger sample the results of this test are similar to the results you would get with a paired sample t test, so it is fine to use this even if you have a bigger sample.

Doing a paired sample t-test in Excel

You can do a paired sample t test using the 'analysis toolpak' [sic] add-in in Excel, this is a free add-in that comes with Excel. You do not need a disk or admin rights to install it.


Excel 2003

1. On the **Tools** menu, click **Add-Ins**.
2. In the **Add-Ins available** box, select the check box next to **Analysis Toolpak**, and then click **OK**.

Tip If **Analysis Toolpak** is not listed, click **Browse** to locate it.

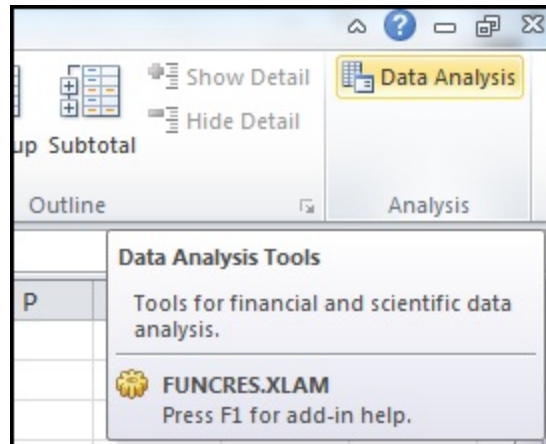
3. If you see a message that tells you the Analysis Toolpak is not currently installed on your computer, click **Yes** to install it.
4. Click **Tools** on the menu bar. When you load the Analysis Toolpak, the **Data Analysis** command is added to the **Tools** menu.

Excel 2007

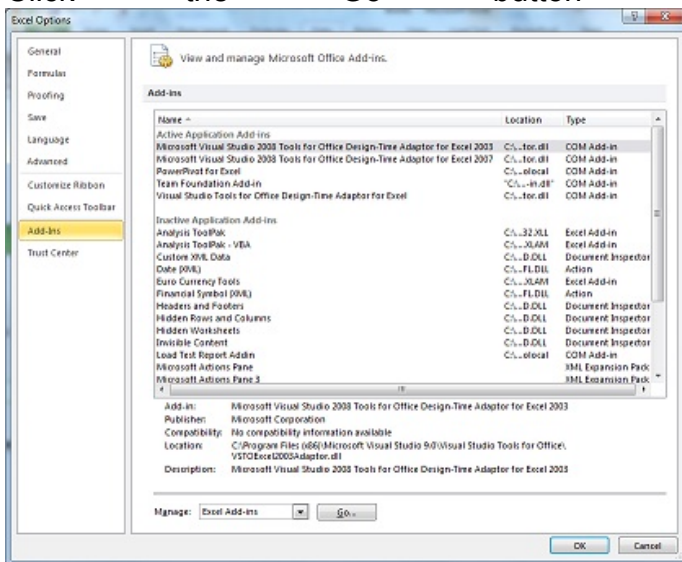
1. Click the **Microsoft Office Button** , and then click **Excel Options**.
2. Click **Add-Ins**, and then in the **Manage** box, select **Excel Add-ins**.
3. Click **Go**.
4. In the **Add-Ins available** box, select the **Analysis ToolPak** check box, and then click **OK**.
 - **Tip** If **Analysis ToolPak** is not listed in the **Add-Ins available** box, click **Browse** to locate it.
 - If you get prompted that the Analysis ToolPak is not currently installed on your computer, click **Yes** to install it.
5. After you load the Analysis ToolPak, the **Data Analysis** command is available in the **Analysis** group on the **Data** tab.

Excel 2010

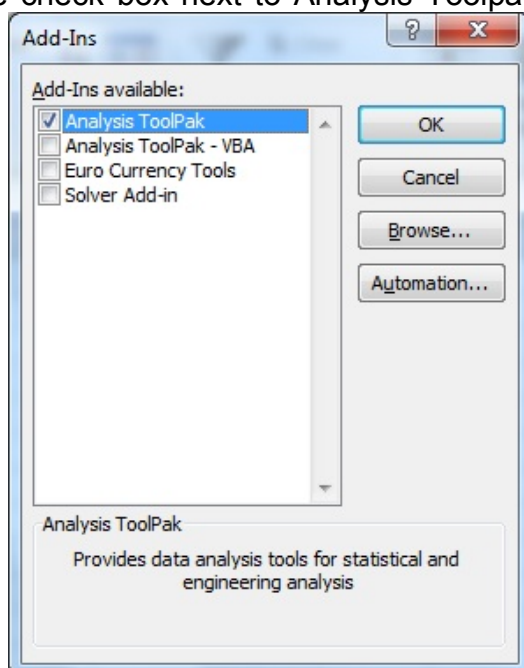
To confirm whether you already have the Analysis Toolpak installed, open the Data tab on the Excel ribbon. If the Analysis Toolpak is installed, you should see a Data Analysis button



on the Ribbon, like the one shown here. If the Analysis Toolpak is not installed, go to the File tab and select Options in the left column. In the Excel Options Window, select the Add-Ins category on the left. Near the bottom of this window, you see Excel Add-ins already selected in a drop-down menu labeled Manage. Click the Go button next to this drop-down.

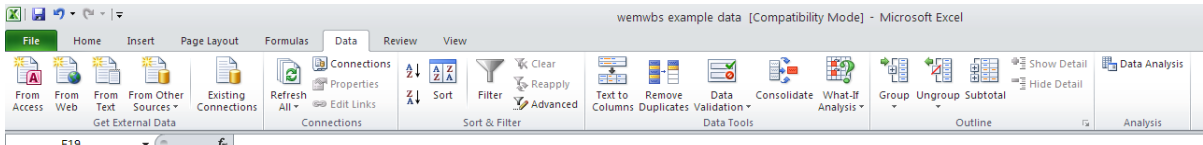


The Add-Ins dialog will open. Here, you can select the check box next to Analysis Toolpak (and any other add-ins you want to install).

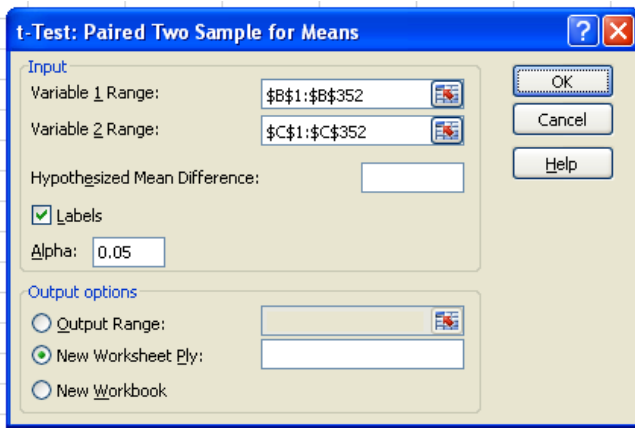


Click OK.

Once you have done this, on the data tab on the Excel ribbon you will have a button that says 'Data Analysis'.



If you click on 'Data analysis' you can do a paired samples t test, scroll down to 't test: paired samples for two means'. You will need your before and after WEMWBS totals data to be arranged in columns. then select your 'before' or baseline WEMWBS data as variable 1, and 'after' WEMWBS data as variable 2, and if you have selected the column titles then click the box that says 'labels', then click 'ok'.



Interpreting a paired sample t test

The t test will give you an output in a new worksheet which will look something like this (the comments column has been added here to tell you more about what each value means):

	Baseline WEMWBS	12 week WEMWBS	Comments
Mean	49.47008547	51.21937322	These are the averages for the two groups.
Variance	112.912674	104.2003093	Variance is the standard deviation (SD) squared, so if you want to calculate SD, put in =SQRT(then click on these cells)
Observations	351	351	This is how many people there was before and after data for.

Pearson Correlation	0.628192431		This is the correlation between people's before and after scores (it will be between 0 and 1 where 1 is a perfect correlation, 0 is no correlation)
Hypothesized Mean Difference	0		Don't worry about these
df	350		Don't worry about these
t Stat	-3.645167516		Don't worry about these
P(T<=t) one-tail	0.000153871		Don't worry about these
t Critical one-tail	1.64921887		Don't worry about these
P(T<=t) two-tail	0.000307741		This is the significance level. Anything less than 0.05 can be said to be significant at the 95% level.
t Critical two-tail	1.966765003		Don't worry about these

If you have data for more than two time points, say baseline, 12 weeks and six months, you can do more than one paired sample t-test to see if there has been a significant change between baseline and 12 weeks, 12 weeks and six months, and baseline and six months.