

The 'Music-Related Quality of Life' (MuRQoL) questionnaire

INSTRUCTIONS FOR USE

This document provides recommendations for the use of the MuRQoL questionnaire and scoring instructions for each of the recommended uses. Most of the instructions and recommendations contained in this document are based on the reliability and validity evidence presented in Dritsakis et al. (in press). Other recommended uses are intended in the collection of further validation evidence.

Method of administration: The MuRQoL questionnaire is a self-administered instrument. It has been mainly validated as an online questionnaire (90% of 147 participants completed it online). However, it can also be given to the patient to complete in paper (e.g. while waiting for their appointment) and then hand in to the clinician. We also recommend that for a complete music assessment, the MuRQoL questionnaire is ideally combined with music perception tests.

RECOMMENDED USE 1: Measurement of changes in self-reported music experiences of adult CI users after music rehabilitation

The recommended use of the MuRQoL depends on whether a study aims to detect a change in self-reported music experiences across groups of CI users, or whether the aim is to detect change at an individual level.

ASSESSMENT OF POST-INTERVENTION CHANGE WITH GROUPS OF CI USERS

Calculate one or more of the following scores for a group of CI users before and after an intervention:

1. The average frequency (PART I) and/or importance (PART II) scores
2. The average MUSIC PERCEPTION or MUSIC ENGAGEMENT score for PART I and/or PART II

This is based on reliability coefficients of >0.8 (suitable for group assessments) for all the above measures, see Dritsakis et al., in press.

ASSESSMENT OF POST-INTERVENTION CHANGE WITH INDIVIDUAL CI USERS

Calculate only frequency (PART I) scores:

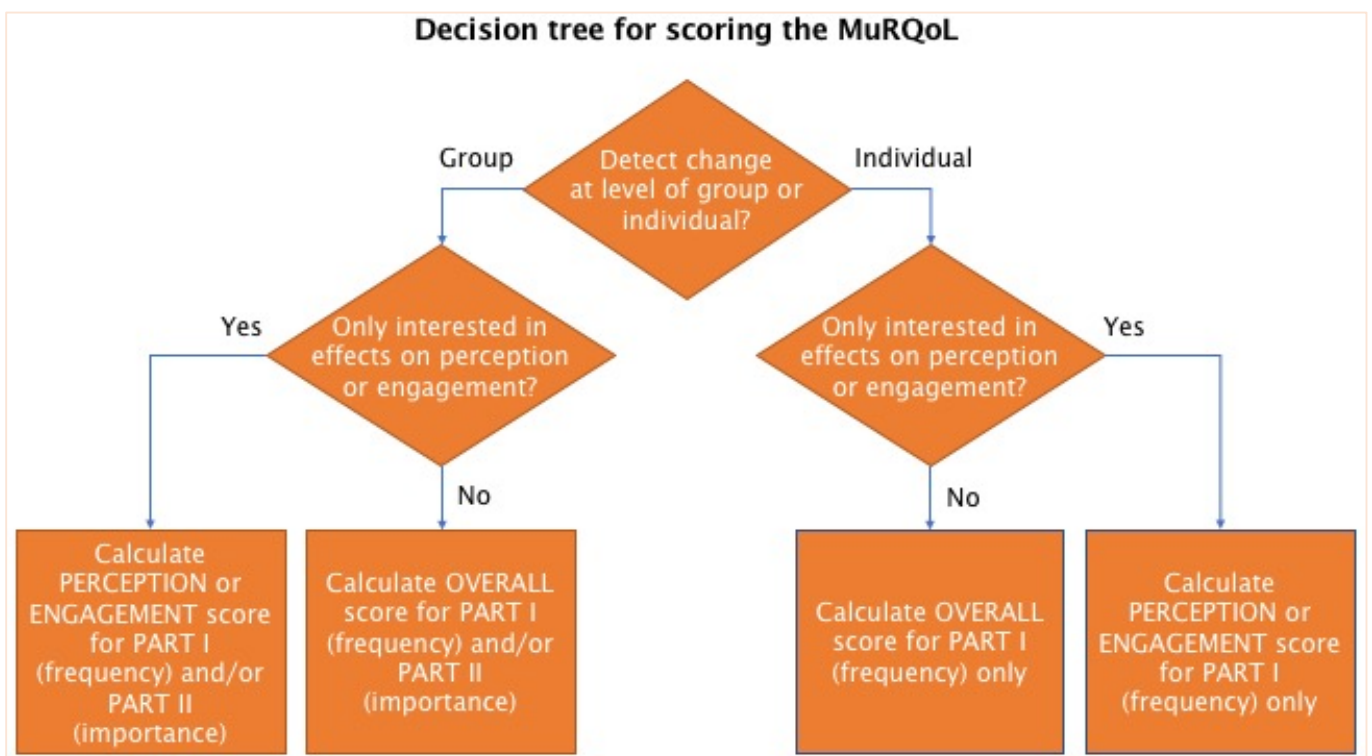
1. The average score for PART I (18 items, MUSIC PERCEPTION & MUSIC ENGAGEMENT)
2. The average MUSIC PERCEPTION score for PART I
3. The average MUSIC ENGAGEMENT score for PART I

This is based on reliability coefficients of >0.9 (required for individual measurements) for all PART I scores, i.e. OVERALL, MUSIC PERCEPTION or MUSIC ENGAGEMENT (Dritsakis et al., in press).

The choice of whether to use the OVERALL, MUSIC PERCEPTION or MUSIC ENGAGEMENT score should depend on the aim of the study:

- If the aim is to assess changes in the frequency of self-reported music experiences or in the importance of music OVERALL, use the average of PART I (frequency; individual- or group-level change) or PART II (importance; group-level change only).
- If the aim is solely to assess changes in the frequency and/or importance of music perception or music engagement, then use the average MUSIC PERCEPTION or MUSIC ENGAGEMENT scores of PART I (frequency; individual- or group-level change) or PART II (importance; group-level change only).

A decision tree to aid the use of the MurQoL is shown below:



How to calculate average scores:

1. Convert the 1-5 scores for PART I or PART II to a 0-100 scale, i.e. 1 = 0, 2 = 25, 3 = 50, 4 = 75, 5 = 100.
2. Add up the scores for PART I or PART II, for MUSIC PERCEPTION only, MUSIC ENGAGEMENT only or the OVERALL scale.
3. Divide by the number of items, i.e. 11 items for MUSIC PERCEPTION only, 7 items for MUSIC ENGAGEMENT and 18 items for the OVERALL scale.

N/A (non-applicable scores): It is recommended that questionnaires with > 3 N/A responses for PART I or PART II are discarded.

To compare scores pre- and post-intervention: Subtract the average score before intervention from the average score after intervention. If the difference is bigger than the corresponding ‘smallest detectable change’ shown below then it is likely to reflect a true change (i.e. not a change due to random/measurement error), at least for group assessments (Dritsakis et al., in press). However, whether or not score differences can be considered clinically meaningful should be determined with the use of clinical anchors, especially for individual patients.

| | Smallest detectable change (on a 0-100 scale) |
|--|--|
| PART I (Frequency) OVERALL | 10 |
| PART I (Frequency) MUSIC PERCEPTION | 15 |
| PART I (Frequency) MUSIC ENGAGEMENT | 13 |
| PART II (Importance) OVERALL | 19 |
| PART II (Importance) MUSIC PERCEPTION | 23 |
| PART II (Importance) MUSIC ENGAGEMENT | 23 |

WORKED EXAMPLE 1

A group of adult CI users were upgraded to a new processor designed to better preserve temporal fine-structure. We wanted to see if their self-reported perception of music and their self-reported importance of music perception would improve. They completed the MuRQoL questionnaire before and 1 month after receiving the new processor. Their average scores for PART I and II pre- and post- were the following:

| MUSIC PERCEPTION (11 ITEMS) | | | |
|-------------------------------------|--------------|--------------------------------------|--------------|
| PART I AVERAGE SCORE (0-100) | | PART II AVERAGE SCORE (0-100) | |
| PRE- | POST- | PRE- | POST- |
| 34 | 57 | 48 | 48 |

Based on the above, their **change scores** for MUSIC PERCEPTION were:

PART I: $57 - 34 = 23$, which is larger than the smallest detectable change for PART I PERCEPTION (15%).

PART II: $48 - 48 = 0$, so no change.

There was a change only in the frequency score (PART I), which can be considered as a true change. We conclude that the self-reported music perception for this group of CI users (as measured with the MuRQoL questionnaire) improved after using the new processor but the importance of music perception did not change.

WORKED EXAMPLE 2

Below are the MUSIC ENGAGEMENT (7 items) scores for FREQUENCY (PART I) of an adult CI user before and 1 week after participating in an online training programme on musical instrument recognition. Did musical instrument recognition training improve music engagement for this individual patient?

| MUSIC ENGAGEMENT | | |
|------------------|----------------------|------------|
| ITEM | PART I SCORE (0-100) | |
| | PRE- | POST- |
| 12 | 50 | 100 |
| 13 | 25 | 100 |
| 14 | 50 | 50 |
| 15 | 25 | 100 |
| 16 | 50 | 75 |
| 17 | 75 | 50 |
| 18 | 100 | 100 |
| AVERAGE | $375/7=54$ | $575/7=82$ |

Based on the above, the change score for that patient was 28, which is larger than the smallest detectable change for PART I ENGAGEMENT (13%) so it can be considered as a true change. Therefore, we conclude that the music engagement (measured by the MuRQoL questionnaire) of this patient improved as a result of music training.

RECOMMENDED USE 2: Identification of individual rehabilitation needs

Although it is not recommended that importance scores are calculated to measure change in individual patients, frequency and importance scores can be combined as shown in the matrix below for characterising individual patient needs.

For each of the 18 items plot scores from PART I ('frequency' scores) and PART II ('importance' scores) on a matrix like this (Dritsakis et al., in press):

| | 1 (NEVER) | 2 (RARELY) | 3 (OCCASIONALLY) | 4 (FREQUENTLY) | 5 (ALWAYS) |
|--------------------------|--|------------|------------------|--|------------|
| 1 (NOT IMPORTANT AT ALL) | Weak-negative impact of music on the quality of life | | | Weak-positive impact of music on the quality of life | |
| 2 (NOT VERY IMPORTANT) | | | | | |
| 3 (SOMEWHAT IMPORTANT) | Strong-negative impact of music on the quality of life | | | Strong-positive impact of music on the quality of life | |
| 4 (VERY IMPORTANT) | | | | | |
| 5 (EXTREMELY IMPORTANT) | | | | | |

The grey-shaded area of the matrix represents aspects of music perception and music engagement that are considered important but perception, enjoyment or participation is rated as poor. The items falling in this area of the matrix for an individual patient can highlight areas of concern, issues for discussion, rehabilitation needs and can help forming a profile for that individual.

The classification of ‘Occasionally’ and ‘Somewhat important’ in the matrix is based on the average scores from normal-hearing adults (see Dritsakis et al., in press).

WORKED EXAMPLE 1

Results: Patient A responds ‘Rarely’ in Question 3, Part I (‘Can you hear differences in musical tone (i.e. how high or low music sounds)?’) and ‘Not important at all’ in the same question, Part II (‘How important is it for you to be able to hear differences in musical tone (i.e. how high or low music is)?’). Patient A also responds ‘Occasionally’ in Question 13, Part I (‘Do you enjoy music on TV, DVD or on the computer?’) and ‘Extremely important’ in the same question, Part II (‘How important is it for you to enjoy music on TV, DVD or on the computer?’).

Interpretation: Despite poor self-reported performance, pitch perception is unlikely to have a big impact on Patient A’s quality of life because it is not considered important. Therefore, it may not be worth investing on improving this patient’s pitch perception as it is unclear how much this would improve their quality of life. On the contrary, poor music enjoyment is likely to affect the quality of life of Patient A strongly and negatively due to its importance. Therefore, this is something the clinician should focus on by giving advice and tips for better music listening on TV/computer, e.g. use of direct input or other supportive devices.

WORKED EXAMPLE 2

Patient B, who is a musician and music teacher, responds ‘Rarely’ in both question 3 and 5 in Part I and ‘Extremely important’ in both question 3 and 5 in Part II.

Poor pitch and timbre perception is likely to have a strong and negative effect on this patient’s quality of life. The clinician may wish to offer the option of auditory music training that focuses on pitch and timbre. A pitch and timbre perception listening test could also be used to confirm the self-reports.

If you are willing to use the MuRQoL questionnaire in your study, please get in touch with Giorgos Dritsakis, G.Dritsakis@ucl.ac.uk as data collected will help us further validate the questionnaire.

Source: The MuRQoL questionnaire is publicly available from the University of Southampton repository at <https://eprints.soton.ac.uk/403268> under a CC-BY-NC licence.

Please cite the MuRQoL questionnaire as:

Dritsakis, G., van Besouw R. M., Kitterick, P. & Verschuur C. A. (2017) A 'Music-Related Quality of Life' (MuRQoL) measure to guide rehabilitation for adult CI users. American Journal of Audiology (in press)

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