GPAQ Software v1.2.0 Documentation

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Abstract

GPAQ is a questionnaire that assesses the physical activity (PA) behavior of people during work, displacements, or hobbies. From this information, one can estimate the number of minutes per week spent by this person practicing moderate (MPA), vigorous (VPA), or no PA; and then translate it into metabolic equivalents (MET)-minutes per week. The `gpaq.py` software automates these calculations.

Keywords: GPAQ, Python.

1 What are the requirements?

Before using the `gpaq.py` software, ensure you have **Python 3** installed from https://www.python.org/downloads/. The **Anaconda** distribution (https://www.anaconda.com/download/success) is recommended as it includes all required modules.

Download the repository from https://github.com/MatthieuGG/GPAQ-scores/archive/refs/heads/main.zip, and extract the files.

Transpose your paper, PDF, or online questionnaires into CSV files, and put them all in the same folder. Please find an example of the original paper GPAQ filled at https://github.com/MatthieuGG/GPAQ-scores/blob/main/sample.pdf. You can provide one document per participant, or one document containing them all (one line per participant). Example of file structure can be found at https://github.com/MatthieuGG/GPAQ-scores/tree/main/data. Ensure your files follow the structure shown in Table 1.

Table 1: Input data structure

ID	P1	P2	P3a	P3b	P4	P5	P6a	P6b	P7	P8	P9a	P9b	P10	P11	P12a	P12b	P13	P14	P15a	P15b	P16a	P16b
Participant 1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

2 What does the software do?

The `gpaq.py` software first checks that the folder containing the data as well as the data files exist, that data files are correctly structured, that there is no duplicate, missing values or inconsistent values, that the logic between items is respected (ex: if "no physical activity during transport" is selected in item 7, then items 8 and 9 should be empty), and that values range make sense (ex: no more than 24h within a day). If any issue is present in the data, the corresponding print will appear in the terminal.

The software then calculates the different values of PA (MPA, VPA, MVPA), and saves the results as CSV files. The structure of this file is shown in Table 2.

Table 2: Output data structure

ID	P1	...	P16b	VPA work	MPA work	travel	VPA hobbies	MPA hobbies	sed	work	VPA	MPA	MVPA
Participant 1	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...

We based our calculation on the GPAQ guides from the World Health Organisation (https://www.who.int/docs/default-source/ncds/ncd-surveillance/gpaq-analysisguide.pdf) and the ONAPS recommendations (https://onaps.fr/wp-content/uploads/2020/10/Interpretation-GPAQ.pdf).

3 How to use the software?

3.1 Terminal functions and options

From the terminal, navigate to the directory where the `gpaq.py` file is located. To do to, use the `cd` function:

```
cd /path/to/gpaq.py
```

You can now run the program in the terminal using this line command:

```
python3 gpaq.py [-d <input_path>] [-o <output_path>] [-ind]
```

The options are:

- `[-d <input_path>]`: defines the path to your data. If you don't provide one, the default is `/data/` in the same folder.
- `[-o <output_path>]`: defines the path to your results. If you don't provide one, the default is `/results/` in the same folder.
- `[-ind]`: saves individual files. If you don't specify this, the default is one concatenated file.

3.2 Example of Use

```
cd /Users/Me/Downloads/GPAQ\_scores\_main
```

→ Will navigate to the folder where the `gpaq.py` file is located.

```
python3 gpaq.py
```

→ Will use the `/data` folder in `GPAQ_scores_main` as input, and create or use the `/results` folder in `GPAQ_scores_main` for output, saving one unique CSV file for all subjects.

```
python3 gpaq.py -d /Users/Me/Desktop/gpaq/myData/ -o
↪  /Users/Me/Desktop/gpaq/myResults/ -ind
```

→ Will use the `/Users/Me/Desktop/gpaq/myData/` folder as input, and create or use the `/Users/Me/Desktop/gpaq/myResults/` folder for output, saving one CSV file per subject.

4 How to cite this work?

To cite this work, use the following reference:

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