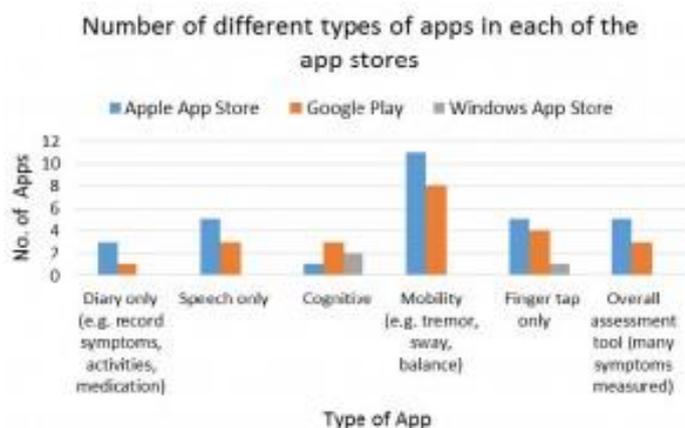


# Don't worry – be 'Appy'

As mobile apps begin to take over our world, there is no surprise that there has been an upsurge in medical apps. Only a couple of years ago Jon Stamford wrote in a paper on e-health that there were few apps specifically for Parkinson's disease, yet earlier this year I carried out a

basic search of apps specifically to do with self-monitoring and Parkinson's and it seems that the app world has caught on to the need for such specificity.

That's not to say that these apps are perfect or even offering or measuring what is actually wanted/needed by people with Parkinson's.

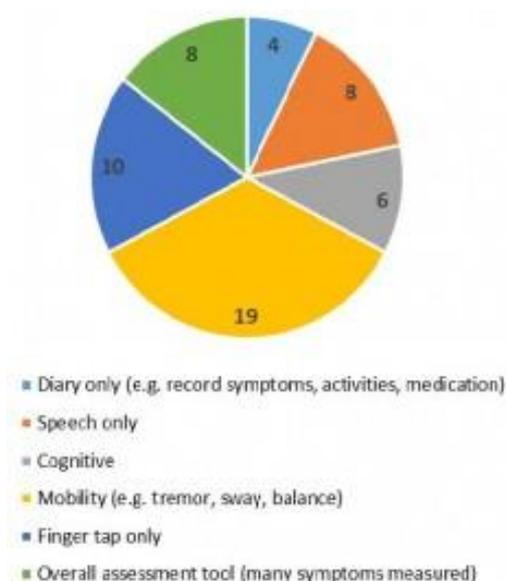


Earlier this year I searched for apps related to the measurement and/or monitoring of Parkinson's disease in three different popular app stores; Apple App Store, Google Play and the Windows App Store. The data below shows the most common apps with regards to the criteria were related to mobility symptoms including tremor and balance.

From the data it is clear that there are few apps that measure/monitor cognitive abilities and no apps (in my search) that specifically monitor non-motor symptoms. For apps to properly monitor cognitive ability and other

non-movement symptoms they need to go further than simple memory games and diary functions especially as the importance of non-movement symptoms in Parkinson's is becoming ever more apparent affecting individuals as much, if not more, than movement symptoms in the majority of cases.

Total number of each type of app



Using the results of this search, my father (a person with Parkinson's) and I decided to try out some of these apps. We used a random number generator to choose 5 apps for iPhone that we continually tested throughout the day. We started with an app called [Toozon tremor](#). This app claims to test small instantaneous vertical and tilt movements, for many applications including human tremor. In this app the only instruction given is to hold your iPhone vertically upright, not defining the positioning of your hand which could lead to inconsistencies when trying to compare data from different time points. It asks you to hold the iPhone in this position for the duration of the test but the test goes on for what seems like an eternity so by the end of it no wonder my dad's hand was rigorously shaking! I had a go and the same thing happened which makes me question its accuracy in measuring tremor. Below is a screen shot of my dad's results, the first two were when he was 'off' and the last two were when he was 'on' in both cases when he was using his right and then left hand to hold the iPhone (his left being his weaker side).

This section has the potential to be really useful, allowing you to compare your results from many different time points. However, there is no baseline amount of movement given so the meaning of the numbers given are not particularly clear, if zero is meant to be no movement then 28.438 on the 'tilt up/down' movement shown in the second result seems quite high, which would be surprising seeming as my dad does not suffer greatly from tremor.

Previous Results			
Click me to hide or show columns!			
Date	Vertical Up / Down	Tilt Right / Left	Tilt Up / Down
Jun 30 2015 09:01:25 BST	9.523	14.942	28.438
Jun 30 2015 09:03:42 BST	28.303	11.102	12.852
Jun 30 2015 11:03:16 BST	17.936	12.477	27.272
Jun 30 2015 11:03:16 BST	17.936	12.477	27.272

Dad did quite enjoy the next app we tried out, Brain Tap, this app is a simple memory game where you have to remember the pattern that lights up on the screen and then repeat it. This, although simple, we thought was quite fun and if you jot down your scores you can compare them at different times of day, on or off medication for example. That said, it would have been better if it provided a results page and perhaps even graphs showing clearly how you are performing throughout the day and on a day to day basis.

[Parkinson's Diary](#) is a simple, easy to use diary-type app which allows you to record sleep, meals, medication, exercise and how you feel against their criteria. Although this app is simple to use we found it a bit too basic, it's good as a diary to look back over your day but it doesn't really monitor specific symptoms or even give you the option to note down any extra information.



[PD Me](#), another diary-like self-monitoring app, on the other hand was very useful. You can set your own personal baseline or use standardised scores so the app can tell you how you are doing on the different tasks that it has to offer. These include tests to monitor your memory, balance, reaction and time perception. You can view your history and trends, the history shows how you did on different tests and the trends show your baseline, performance, PD symptoms, fatigue and medication over time which enabling you to continually monitor your performance with respect to when you took medication for example. There is also a 'diary only' option which allows you to simply look at your PD symptoms, fatigue and medication over time. The only issue we really had with this app was that it only monitors your 'PD symptoms' with a very simple survey, this doesn't give any specificity to the type of symptoms monitored, that said you are able to add information in the diary function if you wish too.

[StutterHelp](#), the final app we used, also had some good aspects. It provides a lot of information (which does however mean a lot of reading!) on how you can improve your speech using yoga and finger tapping; it also has a mirror function, metronome and delayed auditory feedback which dad found particularly useful to help increase the volume of his voice, the only down side to this is that there is no stored history to hear your improvement over time, which could be a useful addition to the app.

In carrying out this task of trying out these apps we realised how difficult it is to rate apps, what makes a good app? And how do we know that these apps are actually accurately testing what they claim to be? It made us think that the generic star and number rating scales used on major app stores do not give much information.

What is being assessed when people give these apps ratings; usability, feasibility, aesthetics, quality of information, whether it's enjoyable? Who knows! There is no guideline of what is being assessed in these generic rating scales or what people are basing their assessment on when the public are urged to give a score out of 5 for example. For apps to really succeed in being useful self-monitoring tools, it would be helpful to have some kind of universal Parkinson's app rating scale, exploiting the knowledge of people with Parkinson's who have already downloaded and used the app. If a scale was developed which allowed people with Parkinson's and the wider Parkinson's community to assess apps on different criteria, we could gain an idea of what we are getting ourselves in for when we decide to download an app. We could even specifically choose apps based upon what we wanted to use it for, whether that be stringent and accurate monitoring or more 'fun' Parkinson's games that have more lax approach to monitoring, mainly for our own amusement.

The app list that was generated from my search can be found in [our measurement section](#)