Impulse control disorders in adults with and without Parkinson's disease: seeking for a better understanding and assessment.

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Background/rationale of the project:
In some cases, adults develop Impulse Control Disorders (ICDs), such as pathological gambling, compulsive shopping, and binge eating. Research has found that ICDs can affect both the general, non-clinical population, and adults with Parkinson’s disease, although the prevalence of ICDs is higher in people with Parkinson’s than in people without PD (Weintraub & Claassen, 2017). Moreover, previous studies have found that a consistent percentage of patients with Parkinson’s disease develop impulse control disorders even though they have never experienced them before being diagnosed with PD and before starting dopaminergic treatment (Voon et al., 2007, 2011). Although the pharmacological plan – above all, the class of dopamine-agonists – is deemed to be one of the main predictors of the onset of ICDs (Voon & Fox, 2007), not all PD patients who experience this treatment develop ICDs, which suggests the presence of some protective/risk factors. Among them, impulsivity has been suggested to play a key role (Ceravolo, Frosini, Rossi, & Bonuccelli, 2009; Voon, 2017; Weintraub & Claassen, 2017). However, impulsivity is not a unitary construct, as it includes many facets, such as delay discounting, reflection impulsivity (i.e., participants gather a limited amount of information before making a decision) and risk taking (Evenden, 1999). Nonetheless, previous studies focused only on single facets, instead of examining all of them in the same sample and at the same time.

Thus, this project is aimed at assessing several facets of impulsivity and investigating whether the examined aspects of impulsivity may be different in people with and without Parkinson’s. Moreover, we aim to examine which dimension(s) of impulsivity may specifically present a risk factor for developing ICDs in those populations.

References:

Project design and methods:
Although both studies will be conducted with older adults (over 60) with and without Parkinson’s disease, Study 1 will be performed in a lab at the School of Psychology of Queen's University Belfast, whereas for Study 2 participants will be free to fill in the online survey anywhere and at any time, using their own computers or smartphones. Administration time for Study 1 will be of approximately 40 minutes, whereas administration time for Study 2 will be of approximately 30 minutes. Participants in the lab-based study will be offered £6 as a contribution to their travel costs associated with participating in the research.

We aim at recruiting about 30 participants for Study 1 (15 with PD and 15 without it), and about 100 participants for Study 2 (50 with PD and 50 without it).

In both studies, participants will be administered some self-report questionnaires (moreover, in Study 1, two computer-based tasks will be administered; see details in the following Study Materials Section).

Ethical considerations:
This study involves collecting sensitive personal information, such as information about mental and physical health issues. Nonetheless, we will ensure that standard ethical procedures will be followed regarding confidentiality, the participants’ anonymity and their right to withdraw from the study.
Participants will be reassured that there are no right or wrong answers for the questions. Moreover, they will be told that the data will be analysed in an aggregate form. To reassure participants about their anonymity, they will be told that a numerical ID will be given to them and that their answers will be electronically collected and stored using this ID number. However, if they do not feel comfortable with answering some questions, they can skip those questions.

**Benefits of the study:**
The main benefit of the study is to better understand which individual traits of impulsivity may better explain the development of impulse control disorders in people with and without Parkinson’s disease. The results will be helpful both for researchers and clinicians, because it will allow clinicians to identify both non-clinical people and de novo PD patients who may be at higher risk of developing ICDs.

**Study Materials:**
   Example items: People differ in the ways they act and think in different situations. This is a test to measure some of the ways in which you act and think. Read each statement and answer using the 4-point Likert scale. Do not spend too much time on any statement. Answer quickly and honestly.
   1. I plan tasks carefully.
   2. I am self-controlled.
   3. I act “on impulse”
   (1=Rarely/Never) (2=Occasionally) (3=Often) (4=Almost always/ Always)

   Example items: For each of the next 27 choices, please indicate which reward you would prefer: the smaller reward today, or the larger reward in the specified number of days.
   1. Would you prefer £55 today, or £75 in 61 days?
   2. Would you prefer £31 today, or £85 in 7 days?

   Example items:
   1. A bat and a ball cost £1.10 in total. The bat costs £1.00 more than the ball. How much does the ball cost? _____

   Example items: Below are a number of statements that describe ways in which people act and think. For each statement, please indicate how much you agree or disagree with the statement. Be sure to indicate your agreement or disagreement for every statement below.
   1. My thinking is usually careful and purposeful.
   2. When I am in great mood, I tend to get into situations that could cause me problems.
   3. I quite enjoy taking risks.
   (1=Strongly disagree) (2=Partially disagree) (3=Partially agree) (4=Strongly agree)

Example items: Please check the most appropriate box for every question. All questions refer to your current situation including the preceding 3 months.

1. I gamble or wager money or valuables (e.g., playing cards or lottery, in casino, in the Internet, at sports events), and I struggle with abstaining from it.
2. Gambling or wagers interfere with my relationships, my family life, my financial situation, or my job.

(Never) (Rarely) (Sometimes) (Very often) (Always)


Instructions: This task examines risky decision-making in a gambling situation with explicit rules, which means that rules and amounts of gains and losses are explicitly described during instructions and can be visualized on the screen during the task. Participants are asked to increase their virtual initial capital of £1,000 within 12 throws of a virtual die. They are asked to guess which number will come up at the next dice throw. They can choose a single number or a combination of 2, 3, or 4 numbers, knowing that each choice is associated with specific virtual gains and losses based on the probability of occurrence of the choice (i.e., a single number, which has a winning probability of 1 out of 6, is associated with a £1,000 gain/loss). After each throw, feedback on gain or loss is provided both visually on the screen and acoustically with two different signals for gains and losses.


Instructions: Participants are presented with two containers holding different portions of beads: 90%:10% red vs. green and vice versa. Instructions are displayed next to a picture of the two containers. The experimenter explicitly states the proportion of beads in each container. Further, it is explained that in the following session the computer will randomly draw beads from one container throughout the whole task. Beads will then be returned to the container. After each bead, the participant is asked to press a button (keys 1–7) according to their best estimate: 1 = beads are definitely from container A; 2 = beads are very likely to be from container A; 3 = beads are probably from container A; 4 = no estimate possible yet; 5 = beads are probably from container B; 6 = beads are very likely to be from container B; 7 = beads are definitely from container B. Subsequently, the first bead appears, and the computer prompts participants to decide among the seven alternatives. There is also an explicit reminder about the proportion of beads in the two containers to minimize memory load. To further decrease memory load, each new bead is shown linked to the previous beads with a line segment, such that all drawn beads appear connected on a string. The current bead is marked with an arrow. Along with every new bead an instruction set appears stating that estimates/decisions should be carried out while considering all beads. In total, 10 beads are ‘drawn’.