

The development of a self-report scale to measure 'recent' impulsivity and an exploration of its association with recent alcohol consumption

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Introduction

- Traditionally, impulsivity has been regarded as a stable construct. However, behavioural laboratory studies consistently report acute increases in impulsivity following small alcohol doses
- This suggests impulsivity incorporates trait and state manifestations. Whilst existing impulsiveness questionnaires tap the former, there is currently no self-report instrument to assess 'recent' impulsivity. The present study therefore set out to construct such a measure (the Recent Impulsivity Scale or RIS)
- The study additionally investigated:
 - The test re-test stability of the RIS relative to a parallel trait measure (the Trait Impulsiveness Scale or TIS)
 - The relative associations of the RIS and TIS with an existing measure of trait impulsiveness – the BIS-11 (Patton *et al.*, 1995)
 - The relative sensitivities of the RIS and TIS to recent: alcohol consumption

Methods

- **Participants:** 277 first year Psychology undergraduates at Goldsmiths College, University of London, completed the study and received course credits for doing so. They were drawn from 2 consecutive cohorts, 145 in the first and 132 in the second. There were no exclusion criteria
- **Developing the new impulsivity scales**
 - Widely-used and well-validated trait impulsiveness instruments were scanned for items with the potential to be framed within the recent past
 - With considerable overlap between the 68 items identified from the existing measures, redundancy and repetition were minimised by categorising them and then formulating a single question which captured the essence of each category. This yielded 17 questions, which were then ordered such that conceptually similar items (e.g. those involving some aspect of inhibitory control) were not adjacent
 - Respondents rated the frequency with which each behaviour had occurred during the previous 2 weeks on a 4-point Likert scale with the following response options (and scoring): 'rarely/never' (0), 'occasionally' (1), 'often' (2) and 'almost always/always' (3)
 - **The Trait Impulsivity Scale (TIS):** This comprised the same items and response options as the RIS, but was not associated with any specified time-frame. Whereas the RIS item would be, 'In the last two weeks I have thought carefully before doing and saying things', the corresponding TIS item would simply be, 'I think carefully before doing and saying things'
 - **Alcohol intake**
 - Participants were asked the following 2 questions:
 - 'How many units of alcohol have you typically consumed in an average week over the last year?'
 - Response options were: 'None'; '1-4'; '5-8'; '9-12'; '13-16'; '17-20'; and '21+'
 - 'In the last 2 weeks, how has your alcohol intake compared with your typical weekly intake over the previous year?'
 - Response options were: 'A lot less'; 'A bit less'; 'No change'; 'A bit more'; and 'A lot more'
 - **Procedure:** Participants completed measures in the following fixed order: i) RIS; ii) demographic information; iii) BIS-11; iv) questions about alcohol use; and v) TIS. A subgroup of 200 participants completed i), iv) and v) again after a 4-week interval

Results

- Table 1 shows the numbers and proportions of participants with data on each variable at Times 1 and 2. Some participants omitted to provide some information, but overall there was relatively little missing data

Table 1: Numbers (and percentages) of participants with data on each variable at Time 1 and Time 2

Measure/instrument	Time 1	Time 2
	Total N= 277 Number of participants with complete data	Total N= 200 Number of participants with complete data
Age (years)	262 (94.58%)	n/a
Gender (male/female)	262 (94.58%)	n/a
Drinking status (social drinker/abstainer)	259 (93.50%)	n/a
Habitual weekly alcohol intake (units per week during previous 12 months)	259 (93.50%)	n/a
Alcohol intake during previous 2 weeks compared to previous 12 months ('A lot more' / 'A bit more' / 'No change' / 'A bit less' / 'A lot less')	253 (91.34%)	191 (68.95%)
RIS scale	277 (100%)	200 (72.20%)
Females	211	153
Males	51	44
Gender not given	15	3
TIS scale	270 (97.47%)	196 (70.76%)
Females	205	149
Males	50	44
Gender not given	15	3
BIS-11 scale	261 (94.22%)	199 (71.84%)

Results (continued)

- An exploratory factor analysis was first performed on Time 1 TIS scores. Confirmatory factor analyses were then conducted on TIS Time 2 and RIS Time 1 data
- Analyses were based on the TIS as the very purpose of the RIS (i.e. to capture fluctuations in impulsivity within the previous 2 weeks) may mean that its factor structure is intrinsically less stable. The extended time-frame for responses on the TIS means that its structure is more likely to be stable
- Factor analyses revealed both the RIS and TIS to comply with a 2-factor solution. These factors were labelled 'Cognitive Impulsivity' (CI) and 'Motor Impulsivity' (MI) (see Table 2)

Table 2: Factor loadings, communalities (h^2) and percentages of variance and covariance explained for exploratory principal factors extraction with varimax rotation on the 17 TIS items at Time 1 (N= 262)

Item	Cognitive Impulsivity	Motor Impulsivity	h^2
<i>I plan work tasks and activities in my free time carefully^a</i>	0.67	0.05	0.46
<i>I am focused, seeing things through to the end^a</i>	0.67	0.24	0.50
<i>I plan events and activities well ahead of time^a</i>	0.57	0.06	0.33
<i>I think carefully before doing and saying things^a</i>	0.55	0.26	0.37
<i>I encounter problems because I do things without stopping to think</i>	0.20	0.64	0.45
<i>I become involved with things that I later wish I could get out of</i>	0.19	0.55	0.34
<i>I tend to jump from one interest to another</i>	0.10	0.54	0.30
<i>I tend to act 'on impulse'</i>	0.12	0.50	0.27
<i>I find it difficult thinking ahead</i>	0.45	0.12	0.22
<i>I find it easy to exercise self-control^a</i>	0.45	0.30	0.29
<i>I find it easy to concentrate^a</i>	0.43	0.25	0.25
<i>I tend to work quickly, without bothering to check</i>	-0.33	0.17	0.14
<i>I am surprised at people's reactions to things that I do or say</i>	-0.01	0.43	0.19
<i>I become easily bored when working</i>	0.29	0.40	0.24
<i>I get restless when watching things, e.g. at the cinema / theatre, on television, at lectures</i>	0.12	0.38	0.16
<i>I spend more money than I should do</i>	0.21	0.37	0.18
<i>I become so frustrated when waiting, for example in a shop queue, that I leave</i>	-0.04	0.35	0.13
Percentage of variance explained	14.94	13.68	
Percentage of covariance explained	52.20	47.80	

^a Indicates item was reverse-scored

- For the TIS, internal consistency was acceptable, with an alpha coefficient of 0.72 for the total TIS score. For Cognitive Impulsivity, alpha reliability was 0.76, whilst for Motor Impulsivity it was 0.65
- The alpha coefficient for the total RIS score was 0.63. For Cognitive Impulsivity, alpha reliability was 0.64, whilst for Motor Impulsivity it was 0.56

It was found that:

- The correlation between the BIS-11 and the TIS ($r = 0.75$; $p < 0.01$) was greater than that between the BIS-11 and the RIS ($r = 0.68$; $p < 0.01$); this difference was statistically significant ($Z_1 = -2.31$; $p = 0.01$)
- There was a weak trend for the lower test-retest correlation of RIS Motor Impulsivity ($r = 0.48$; $p < 0.01$) compared to TIS Motor Impulsivity ($r = 0.55$; $p < 0.01$) ($Z = 1.15$; $p = 0.13$)
- There was a stronger correlation between recent alcohol intake and RIS Motor Impulsivity ($r = 0.36$; $p < 0.01$) than between recent alcohol intake and TIS Motor Impulsivity ($r = 0.19$; $p < 0.01$) ($Z_1 = 2.69$; $p < 0.01$)
- For Cognitive Impulsivity, RIS scores were more strongly correlated with TIS scores in participants who reported no recent change in their alcohol intake relative to habitual intake ($r = 0.80$; $p < 0.01$) than in those who reported recent increases or decreases ($r = 0.59$; $p < 0.01$) ($Z = 2.15$; $p = 0.02$)
- There was a significant positive correlation between change in RIS MI across Times 1 and 2 and change in alcohol intake across Times 1 and 2 ($r = 0.24$; $p < 0.01$); thus, RIS Motor Impulsivity increased with greater levels of recent drinking

Conclusions

- These data suggest that: i) recent impulsivity can be assessed via self-report; and ii) recent changes in alcohol intake are related to real-world recent impulsivity
- The study is limited as the sample was not representative of the general population, being comprised entirely of first year Psychology undergraduates, mostly aged below 24 and predominantly (80%) female
- An obvious future step will be to administer the RIS and TIS alongside behavioural measures of delay aversion and inhibitory control

References

- Patton, J. H., Stanford, M. S. & Barratt, E. S. (1995). Factor structure of the Barratt Impulsiveness Scale. *J Clin Psychol*, 51, 768-774.
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