

## **Supplementary Tables**

### **Exploring phenotypic and genetic overlap between cannabis use and schizotypy**

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Supplementary Table 1: Summary of Phenotype Operationalisation

Phenotype	Operationalisation	Source	Responses
Hypomanic personality	Hypomanic Personality Scale (HPS) (Eckblad and Chapman, 1986)	Ortega-Alonso et al. (2017)	48 true/false items measuring hypomanic personality that provide a numeric summary score.
Perceptual aberration	Perceptual Aberration Scale (PAS) (Chapman, Chapman and Raulin 1978)	Ortega-Alonso et al. (2017)	35 true/false items measuring body-image perceptual aberration that provide a numeric summary score.
Physical anhedonia	Revised Physical Anhedonia Scale (PHAS) (Chapman, Chapman and Raulin 1976)	Ortega-Alonso et al. (2017)	61 true/false items assessing physical anhedonia that provide a numeric summary score.
Social anhedonia	Revised Social Anhedonia Scale (SAS) (Chapman, Chapman and Raulin 1976)	Ortega-Alonso et al. (2017)	40 true/false items assessing social anhedonia that provide a numeric summary score.
Distress caused by psychotic experience	<i>"How distressing did you find having any of these experiences (seeing a vision, hearing a voice, or believing that something strange was trying to communicate with you, or there was a plot against you)?"</i>	UKB (id: 20462)	0 = not distressing, 1 = a bit distressing, 2 = quite distressing, 3 = very distressing (recoded from original responses)
Frequency of psychotic experience (last year)	<i>"How often did any of these experiences happen in the past 1 year (seeing a vision, hearing a voice, or believing that something strange was trying to communicate with you, or there was a plot against you)?"</i>	UKB (id: 20467)	0 = not at all, 1 = once or twice, 2 = less than once a month, 3 = more than once a month, 4 = nearly every day or daily
Ever believed in an unreal conspiracy against self	<i>"Did you ever believe that there was an unjust plot going on to harm you or to have people follow you, and which your family and friends did not believe existed?"</i>	UKB (id: 20468)	0 = no, 1 = yes

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Ever believed in unreal communication or signs	<i>"Did you ever believe that a strange force was trying to communicate directly with you by sending special signs or signals that you could understand but that no one else could understand (for example through the radio or television)?"</i>	UKB (id: 20474)	0 = no, 1 = yes
Ever seen an unreal vision	<i>"Did you ever see something that wasn't really there that other people could not see?"</i>	UKB (id: 20471)	0 = no, 1 = yes
Ever heard an unreal voice	<i>"Did you ever hear things that other people said did not exist, like strange voices coming from inside your head talking to you or about you, or voices coming out of the air when there was no one around?"</i>	UKB (id: 20463)	0 = no, 1 = yes
Lifetime cannabis use	Various measures used (as the study implemented a combined sample), all of which classified those who had used cannabis and those who had not.	Pasman et al. (2018)	Individuals who have used cannabis over the lifetime (cases) and those who had not (controls).
Cannabis use disorder	Patients with cannabis use disorder as defined by the International Statistical Classification of Diseases (ICD-10, 1994) versus controls.	Demonti et al. (2019)	Individuals with a diagnosis of Cannabis Use Disorder (cases) and those without (controls).
Number of times used cannabis	<i>"Have you taken CANNABIS (marijuana, grass, hash, ganja, blow, draw, skunk, weed, spliff, dope), even if it was a long time ago?"</i>	UKB (id: 20453)	0 = no, 1 = yes, 1-2 times, 2 = yes, 3-10 times, 3 = yes, 11-100 times, 4 = more than 100 times
Maximum frequency of cannabis use	<i>"Considering when you were taking cannabis most regularly, how often did you take it?"</i>	UKB (id: 20454)	0 = less than once a month, 1 = once a month or more but not every week, 2 = once a week or more but not every day, 3 = every day

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*Supplementary Table 2: UKB Phenotype Response Frequencies*

Phenotype	Response <i>n</i>				
	0	1	2	3	4
Ever believed in conspiracy	150,765	1214			
Ever believed in unreal comm.	150,813	1096			
Ever heard an unreal voice	148,975	2669			
Ever seen an unreal vision	145,852	4865			
Distress caused by psychotic experience	4407	1305	696	882	
Maximum frequency of cannabis use	20,999	3903	5385	2235	
Frequency of psychotic experience (last year)	5207	1303	286	333	161
Number of times used cannabis	118,646	14,338	8329	6764	4068

*Supplementary Table 3: Polychoric correlations between UKB phenotypes*

Phenotype 1	Phenotype 2	$\rho$	p-value
Number of times used cannabis	Maximum frequency of cannabis use	0.21	< 0.001
Number of times used cannabis	Distress caused by psychotic experience	0.10	< 0.001
Number of times used cannabis	Ever heard an unreal voice	0.15	< 0.001
Number of times used cannabis	Frequency of psychotic experience	-0.05	< 0.001
Number of times used cannabis	Ever believed in an unreal conspiracy	0.18	< 0.001
Number of times used cannabis	Ever seen an unreal vision	0.13	< 0.001
Number of times used cannabis	Ever believed in unreal communication or signs	0.11	< 0.001
Maximum frequency of cannabis use	Distress caused by psychotic experience	0.12	< 0.001
Maximum frequency of cannabis use	Ever heard an unreal voice	0.10	< 0.001
Maximum frequency of cannabis use	Frequency of psychotic experience	0.05	< 0.001
Maximum frequency of cannabis use	Ever believed in an unreal conspiracy	0.16	< 0.001
Maximum frequency of cannabis use	Ever seen an unreal vision	0.06	< 0.001
Maximum frequency of cannabis use	Ever believed in unreal communication or signs	0.09	< 0.001
Distress caused by psychotic experience	Ever heard an unreal voice	0.03	< 0.001
Distress caused by psychotic experience	Frequency of psychotic experience	0.04	< 0.001
Distress caused by psychotic experience	Ever believed in an unreal conspiracy	0.38	< 0.001
Distress caused by psychotic experience	Ever seen an unreal vision	-0.06	< 0.001
Distress caused by psychotic experience	Ever believed in unreal communication or signs	0.02	0.087
Ever heard an unreal voice	Frequency of psychotic experience	0.07	< 0.001
Ever heard an unreal voice	Ever believed in an unreal conspiracy	0.64	< 0.001
Ever heard an unreal voice	Ever seen an unreal vision	0.70	< 0.001
Ever heard an unreal voice	Ever believed in unreal communication or signs	0.70	< 0.001
Frequency of psychotic experience	Ever believed in an unreal conspiracy	0.09	< 0.001
Frequency of psychotic experience	Ever seen an unreal vision	-0.02	0.083

*Supplementary Table 4: Genetic correlations*

Phenotype 1	Phenotype 2	$r_g$	p-value	p FDR
Lifetime cannabis use	Cannabis use disorder	0.33	0.003	0.010
Lifetime cannabis use	Number of times used cannabis	0.87	< 0.001	< 0.001
Lifetime cannabis use	Maximum frequency of cannabis use	0.60	< 0.001	< 0.001
Lifetime cannabis use	Physical Anhedonia	-0.03	0.789	0.829
Lifetime cannabis use	Social Anhedonia	-0.20	0.055	0.127
Lifetime cannabis use	Ever Seen an Unreal Vision	0.09	0.240	0.388
Cannabis use disorder	Number of times used cannabis	0.41	0.001	0.006
Cannabis use disorder	Maximum frequency of cannabis use	0.58	0.026	0.068
Cannabis use disorder	Physical Anhedonia	0.34	0.217	0.388
Cannabis use disorder	Social Anhedonia	-0.14	0.503	0.653
Cannabis use disorder	Ever Seen an Unreal Vision	0.30	0.229	0.388
Number of times used cannabis	Maximum frequency of cannabis use	0.69	< 0.001	< 0.001
Number of times used cannabis	Physical Anhedonia	-0.10	0.450	0.653
Number of times used cannabis	Social Anhedonia	-0.30	0.012	0.035
Number of times used cannabis	Ever Seen an Unreal Vision	0.05	0.587	0.685
Maximum frequency of cannabis use	Physical Anhedonia	0.17	0.528	0.653
Maximum frequency of cannabis use	Social Anhedonia	-0.16	0.518	0.653
Maximum frequency of cannabis use	Ever Seen an Unreal Vision	0.00	0.995	0.995
Physical Anhedonia	Social Anhedonia	0.66	0.003	0.010