

# Supplement

## Approval of psychotherapy and medication for the treatment of mental disorders over the life span. An Age Period Cohort analysis.

### Vignette schizophrenia

Imagine that you hear the following about an acquaintance with whom you occasionally spend your leisure time:

Within the past months, your acquaintance appears to have changed. More and more, he retreated from his friends and colleagues, up to the point of avoiding them. If someone managed to involve him in a conversation, he would address only one single topic: the question whether some people had the natural gift of reading other people's thoughts. This question became his sole concern. In contrast with his previous habits, he stopped taking care of his appearance and looked increasingly untidy. At work, he seemed absent-minded and frequently made mistakes. As a consequence, he has already been summoned to his boss.

Finally, your acquaintance stayed away from work for an entire week without an excuse. Upon his return, he seemed anxious and harassed. He reports that he is now absolutely certain that people cannot only read other people's thoughts, but that they also directly influence them. He was however unsure who would steer his thoughts. He also said that, when thinking, he was continually interrupted. Frequently, he would even hear those people talk to him, and they would give him instructions. Sometimes, they would also talk to each other and make fun of whatever he was doing at the time. The situation was particularly bad at his apartment, he claimed. At home, he would really feel threatened, and would be terribly scared. Hence he had not spent the night at his place for the past week, but rather he had hidden in hotel rooms and hardly dared to go out.

### Vignette major depressive disorder

Imagine that you hear the following about an acquaintance with whom you occasionally spend your leisure time:

Within the past two months, your acquaintance has changed in his nature. As opposed to previously, he is down and sad without being able to make out a tangible reason for his feeling low. He appears serious and worried. There is nothing that will make him laugh anymore. He hardly ever talks, and if he is saying something, he is speaking in a low voice about the worries he has with regard to his future. Your acquaintance feels useless and has the impression to do everything wrong. All attempts to cheer him up have failed. He lost all interest in

things and is not motivated to do anything. He complains of often waking up in the middle of the night and not being able to get back to sleep. He feels exhausted and without energy in the morning already. He says that he encounters difficulty in concentrating on his job. In contrast with previous times, everything takes him very long. He hardly manages his workload. As a consequence, he has already been summoned to his boss.

### Mathematical equations for the PLS components

This equation describes a simple ordinary least squares age-period-cohort regression model with Y as the outcome of interest and age, period and cohort as predictors.

$$y = b_0 + b_1age + b_2period + b_3cohort$$

The components  $comp_i$  are chosen to maximize the covariance to the outcome.

$$comp_i = t_{i1}age + t_{i2}period + t_{i3}cohort$$

Thus, in a two components model the regression equation can be rewritten as:

$$y = b_0 + b_1comp_1 + b_2comp_2$$

$$y = b_0 + b_1(t_{11}age + t_{12}period + t_{13}cohort) + b_2(t_{21}age + t_{22}period + t_{23}cohort)$$

The regression coefficients can be easily assessed by rearranging this equation into:

$$y = b_0 + (b_1t_{11}b_2t_{21})age + (b_1t_{12}b_2t_{22})period + (b_1t_{13}b_2t_{23})cohort$$

Table S1. Number of subjects of each age group at each time period

Birth Cohort	1990	2001	2011	1990	2001	2011
	Psychotherapy			Psychotropic medication		
Depression vignette	(N=4,120)			(N=4,034)		
<1930	260	211	11	255	212	9
1930-1939	189	361	69	194	364	61
1940-1949	197	366	92	199	372	82
1950-1959	230	420	104	223	408	96
1960-1969	236	506	119	229	487	109
1970-1979	56	363	84	54	354	85
≥80	-	153	93	-	153	88
Schizophrenia vignette	(N=4,212)			(N=4,061)		
<1930	282	216	15	265	221	11
1930-1939	205	345	66	196	327	63
1940-1949	215	353	108	212	348	100
1950-1959	252	437	104	245	425	98
1960-1969	297	503	108	281	490	103
1970-1979	44	325	89	40	320	80
≥1980	-	158	90	-	152	84

Table S2. Model fit ( $R^2$ ) for the main models logistic partial least squares analysis

Vignette	Item	1component	2 components	3 components
Depression	Psychotherapy	3.7%	4.1%	4.1%
	Psychotropic medication	3.0%	3.6%	3.7%
Schizophrenia	Psychotherapy	4.4%	4.9%	4.9%
	Psychotropic medication	8.2%	9.2%	9.2%

Table S3. Treatment recommendations towards a person with schizophrenia or depression: Age, period, and cohort effects. Logistic PLS regression with two components in the model including the “don’t know” category. Unstandardized coefficients.

Schizophrenia				
	Psychotherapy		Psychotropic medication	
	OR	95% CI <sup>1</sup>	OR	95% CI <sup>1</sup>
Age (years)	1.004	(1.001, 1.008)	1.017	(1.014, 1.019)
Cohort (years)	1.008	(1.007, 1.010)	1.006	(1.005, 1.011)
Period (1990 ref.)				
2001	2.944	(2.531, 3.371)	3.583	(3.185, 4.153)
2011	2.001	(1.553, 2.730)	2.918	(2.412, 3.609)
R <sup>2</sup>		5.47%		8.73%

  

Depression				
	Psychotherapy		Psychotropic medication	
	OR	95% CI <sup>1</sup>	OR	95% CI <sup>1</sup>
Age (years)	1.006	(1.003, 1.009)	1.009	(1.007, 1.012)
Cohort (years)	1.007	(1.006, 1.009)	1.002	(1.000, 1.004)
Period (1990 ref.)				
2001	2.601	(2.277, 2.945)	2.627	(2.256, 3.070)
2011	2.030	(1.569, 2.616)	1.629	(1.280, 2.122)
R <sup>2</sup>		4.88%		3.78%

<sup>1</sup>CI after 1,000 non parametric Bootstrap replicates

Table S4. Treatment recommendations towards a person with schizophrenia or depression: Age, period, and cohort effects. Ordinal logistic PLS regression with two components. Unstandardized coefficients.

Schizophrenia				
	Psychotherapy		Psychotropic medication	
	OR	95% CI <sup>1</sup>	OR	95% CI <sup>1</sup>
Age (years)	1.004	(1.001, 1.007)	1.014	(1.012, 1.016)
Cohort (years)	1.007	(1.006, 1.008)	1.006	(1.003, 1.008)
Period (1990 ref.)				
2001	2.318	(2.027, 2.591)	3.263	(2.903, 3.659)
2011	1.779	(1.448, 2.311)	3.123	(2.462, 3.695)

  

Depression				
	Psychotherapy		Psychotropic medication	
	OR	95% CI <sup>1</sup>	OR	95% CI <sup>1</sup>
Age (years)	1.007	(1.004, 1.011)	1.011	(1.009, 1.013)
Cohort (years)	1.007	(1.005, 1.009)	0.999	(0.997, 1.002)
Period (1990 ref.)				
2001	2.266	(2.028, 2.579)	2.232	(1.988, 2.501)
2011	2.151	(1.678, 2.539)	1.643	(1.347, 2.119)

<sup>1</sup>CI after 1,000 non parametric Bootstrap replicates

Figure S1. Histograms of age and birth cohort for all of the four main models stratified by recommendation.





