

Data supplement to Angermeyer et al. Cultural differences in stigma surrounding schizophrenia: comparison between Central Europe and North Africa. Br J Psychiatry doi: 10.1192/bjp.bp.114.154260

Online supplement DS1

We first performed analyses on item level, examining to what extent answers to single items differed between Germany and Tunisia. To reduce the number of response categories respondents who endorsed the two points on either side of the mid-point of the scales were grouped together, resulting in the three response categories “a cause”, undecided”, and “not a cause” (causal attributions), “agree”, “undecided”, and “disagree” (all other beliefs/stereotypes and emotional reactions), and “accept”, “undecided”, and “reject” (social distance). In order to examine the probability for country differences in public attitudes, multinomial logit regressions were carried out with the trichotomized items. To adjust the country effect for demographic variations across samples, the regression analyses controlled for respondents’ sex, age, marital status and educational attainment. To illustrate the magnitude of differences between both countries, discrete probability changes were calculated. A discrete change coefficient is the difference in the predicted probability of a given outcome between Germany and Tunisia, calculated with controls held at their means for the combined sample; it serves as an indicator of the effect size of the difference between both countries. Ninety-five percent confidence intervals were computed with the delta method. To make adjusted predictions comparable to unadjusted predictions, probabilities and discrete changes were multiplied by 100 and can thus be read as percentages of respondents choosing each answer category. The calculation of probability changes and the testing for differences in probabilities between the two countries were carried out using the modules `prvalue` and `prchange` in Stata, release 13.³³

We then carried out, separately for both countries, explorative factor analyses with the ten five-point Likert-scaled items assessing emotional reactions and the seven five-point Likert-scaled items measuring social distance, using the ‘factor’ command and the ‘pcf’ option of Stata, release 12, which performs a principal component factor analysis. We calculated factor scores with zero mean and unit variance which we used for the following path analyses. Since factor analyses yielded different

dimensional structures for Germany and Tunisia (see Results) we performed the path analyses separately for both countries. They simultaneously comprised the items measuring beliefs and stereotypes, the rotated factor scores for emotional reactions and social distance resulting from principal-component factor analyses, plus age, gender, and educational attainment as control variables. We employed a two-step approach^{34,35,36} exploring the country specific dimensional structures in the first step and estimating the coefficients of the structural models in the second step. The path models presented are fully saturated, although there is no path between the various emotional reactions. To obtain saturation the residual correlations for these variables were estimated freely. Direct effects, indirect effects, and total effects of this multiple mediator path model were estimated by computing the respective products and sums of products.³⁷ Estimating the standard errors of the multiple products of coefficients was done with bootstrapping (10,000 replications), since the distribution of products and the sum of all indirect effects cannot be considered normal.³⁸ Computations were carried out by Mplus 6.12³⁹ and Stata, release 13.1.

Additional references

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Online Table DS1. Socio-demographic characteristics of the German sample

	Sample %	German population (15+ years) ¹ %
Sex		
Male	45.6	48.6
Female	54.4	51.4
Age, years		
18-25	8.5	11.3
26-45	30.7	31.9
46-60	28.5	26.9
61+	32.3	29.9
Marital status		
Married	54.6	52.9
Single	28.3	30.6
Other	17.1	16.5
Educational attainment		
Still student	0.0	1.0
No schooling completed	3.4	4.0
8/9 years of schooling	39.6	38.5
10 years of schooling and more	57.1	56.4

¹ Data from the Federal Statistical Office of Germany for 2011

Online Table DS2. Socio-demographic characteristics of the Tunisian sample

	Sample %	Tunisian population (15-64 years) ¹ %
Sex		
Male	51.8	49.3
Female	48.2	50.7
Age, years		
15-29	41.2	40.1
30-44	30.9	32.0
45-64	27.9	27.9
Marital status		
Married	46.0	41.2
Single	53.5	54.1
Other	0.5	4.7
Educational attainment		
Illiterate/less than primary school	5.1	25.9
Primary school	46.2	31.6
Secondary school and more	48.6	36.9

¹ Data from the Statistical Office of Tunisia for 2013

Online Table DS3. Raw percentages for beliefs about schizophrenia and stereotypes about persons having it in Germany and Tunisia

	Response category	Germany N=926-929 %	Tunisia N=394-403 %
Continuum between the “normal” and the pathological	Agree	25.5	58.5
	Undecided	24.7	21.6
	Disagree	49.8	19.9
Causal attribution to brain disease	A cause	61.6	21.3
	Undecided	19.3	10.2
	Not a cause	19.1	68.5
Causal attribution to work-related stress	A cause	61.5	75.4
	Undecided	22.0	10.4
	Not a cause	16.5	14.1
Causal attribution to lack of parental affection	A cause	32.3	59.7
	Undecided	27.6	9.9
	Not a cause	40.1	30.4
Causal attribution to Lack of faith in God	A cause	-	61.2
	Undecided	-	11.9
	Not a cause	-	26.9
After treatment the person will lead a normal life	Agree	53.7	81.4
	Undecided	34.6	9.8
	Disagree	11.7	8.8
The person is to blame for getting his/her condition	Agree	9.7	29.6
	Undecided	20.6	17.4
	Disagree	69.7	53.0
The person has to pull herself/himself together to get well again	Agree	18.8	84.3
	Undecided	27.1	10.0
	Disagree	54.1	5.7
The person is unpredictable	Agree	49.2	68.8
	Undecided	28.0	16.9
	Disagree	22.8	14.4
The person is dangerous	Agree	23.4	31.4
	Undecided	28.8	22.7
	Disagree	47.7	45.9

Online Table DS4. Raw percentages for emotional reactions towards people with schizophrenia
In Germany and Tunisia

	Response category	Schizophrenia	
		Germany N=825-930 %	Tunisia N=399-403 %
I feel the need to help him/her	Agree Undecided Disagree	59.1 27.0 13.9	90.1 5.5 4.5
I feel pity for him/her	Agree Undecided Disagree	69.1 22.0 8.9	83.8 6.5 9.7
I feel sympathy for him/her	Agree Undecided Disagree	23.1 37.9 39.0	90.8 5.7 3.5
I feel uncomfortable	Agree Undecided Disagree	49.6 24.4 26.0	39.3 18.9 41.8
He/she makes me feel insecure	Agree Undecided Disagree	30.8 30.6 38.7	37.2 18.8 44.0
He/she scares me	Agree Undecided Disagree	37.3 23.6 39.1	24.9 12.7 62.3
I feel annoyed by him/her	Agree Undecided Disagree	13.0 24.2 62.8	24.7 18.5 56.8
I react angrily	Agree Undecided Disagree	9.1 15.9 75.0	12.7 11.0 76.3
I am amused by something like that	Agree Undecided Disagree	5.3 7.1 87.6	7.7 7.3 85.0
The person provokes my incomprehension	Agree Undecided Disagree	17.9 24.9 57.2	53.4 21.5 25.1

Online Table DS5. Rotated factor loadings of items measuring emotional reactions

	Germany (N=918)			Tunisia (N=391)	
	Factor 1 “Fear”	Factor 2 “Anger”	Factor 3 “Pro-social reactions”	Factor 1 “Negative feelings”	Factor 2 “Pro-social reactions”
Eigenvalue	2.914	1.920	1.396	2.610	1.894
Explained variance	29.1	19.2	14.0	26.1	18.9
The person provokes fear	0.840	0.101	0.016	0.710	-0.008
I feel uncomfortable	0.837	0.121	-0.058	0.883	0.043
I react angrily	0.228	0.756	0.050	0.522	-0.251
I feel pity	0.349	-0.279	0.564	0.097	0.613
I feel insecure	0.728	0.154	0.073	0.749	-0.049
I am amused	-0.140	0.754	-0.033	0.141	-0.509
I feel sympathy	-0.132	0.187	0.806	-0.025	0.769
I feel irritated	0.268	0.723	-0.037	0.406	-0.346
I feel the need to help	0.044	-0.178	0.804	0.002	0.762
The person provokes my incomprehension	0.297	0.636	-0.181	0.524	0.099

Factor loadings > 0.500 in bold figures

Online Table DS6. Raw percentages for desire for social distance from people with schizophrenia
In Germany and Tunisia

	Response category	Schizophrenia	
		Germany N=926-930 %	Tunisia N=396-402 %
Have as neighbor	Accept Undecided Reject	36.9 35.0 28.1	78.9 11.2 9.9
Work together	Accept Undecided Reject	40.1 30.4 29.5	73.4 10.2 16.4
Rent a room	Accept Undecided Reject	17.6 25.6 56.8	56.3 11.4 32.3
Introduce to a friend	Accept Undecided Reject	20.7 27.3 52.0	65.0 14.5 20.5
Recommend for a job	Accept Undecided Reject	11.7 26.5 61.8	56.8 15.3 27.9
Have marry into family	Accept Undecided Reject	12.2 27.3 60.6	16.4 11.0 72.6
Let take care of little children	Accept Undecided Reject	7.3 14.6 78.0	3.7 5.0 91.3

Online Table DS7. Rotated factor loadings of social distance items

	Germany (N=924)	Tunisia (N=345)		
	Factor 1 “Social rejection”	Factor 1 “Rejection in intermediate relationships”	Factor 2 “Rejection in distant relationships”	Factor 3 “Rejection in intimate relationships”
Eigenvalue	4.397	2.410	1.401	1.003
Explained variance	62.8	34.4	20.0	14.3
Rent a room	0.784	-0.051	0.763	0.272
Work together	0.772	0.299	0.773	0.061
Have as neighbor	0.783	0.343	0.693	-0.211
Introduce to friends	0.809	0.864	0.142	0.033
Recommend for job	0.823	0.844	0.121	0.143
Have marry into family	0.718	0.022	0.039	0.825
Let take care of little children	0.851	0.153	0.069	0.827

Factor loadings > 0.500 in bold figures