

## Core features and associated psychopathology of Tourette syndrome: modifications by cultural aspects?

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The role of cultural influences on children's behaviour within and between countries is still a matter of debate and needs to be elucidated to better understand children's mental health problems all over the world. Hence, the report of Samar et al. [4] is timely and informative.

The authors related their exploratory findings on behavioural differences between Tourette syndrome (TS) in Buenos Aires (BA) vs. New York (NY) to possible different cultural contexts between the two regions. The main message of their paper is that some aspects of TS [e.g. core features like age of tic onset, tic severity, and closely related psychopathology like attention deficit hyperactivity disorder (ADHD) and obsessive compulsive disorder/behaviour (OCD/OCB)] seem to be neurobiologically based and therefore not different between cultures; while merely distant respective reactive psychopathology (e.g. emotional problems and oppositional-defiant behaviour) is influenced by the cultural context. To further test this hypothesis, the authors are planning a larger study to overcome the limitations (e.g. small sample size of total group and moreover the psychopathological subgroups) of the recent one and they will also incorporate direct cultural measures.

In a globalizing world the dichotomy between “culturally resistant” and “culturally sensitive” features of TS seems to be a very interesting and, if empirically driven,

also a practically helpful viewpoint. But one should be sure about the facts and their possible societal consequences when presenting study results because this issue is an ethically sensitive field. Hence, more data are needed before the “dichotomy hypothesis” can be accepted or denied. Specifically, there exists some uncertainty concerning “culturally sensitive” features in TS (like depression, anxiety and externalizing problems). The results of Samar et al. [4] are not robust in respect to the before mentioned dichotomy. On the one hand, there were significantly higher values in BA vs. NY for ODD, mood disorders and non-OCD-anxiety. But on the other hand, the values for CBCL-internalizing and CBCL-externalizing scales were similar. This reflects, how important it is to disentangle the influence of informants (here: experts' diagnosis vs. parents' behaviour ratings) and those of cultural aspects. To overlook such confounders might lead to unintended negative consequences like stigmatization or even discrimination and the labelling of certain cultural ways of living. Further, the neurodevelopmental vs. cultural aspect needs to be considered. For example, as the authors pointed out, only time delay in referral to speciality treatment in BA vs. NY may explain the higher frequency of mood and anxiety disorders in BA. We agree, since there is a clear yearly wise increase of the rate of these disorders' co-existence with TS [2]. Finally, Samar et al. [4] suggest that their results may be generalized to other referred samples, specifically to those from other TS speciality clinics. Hence, to check this assumption we analyzed a large scale worldwide cross-sectional data set of children and adolescents ( $N = 5,060$ ) with TS from tertiary centres [1–3].

In accordance with Samar et al. [4], we used the same variables (see their Tables 1 and 2) and compared them descriptively between our TS-subsamples from the USA

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**Table 1** Demographic features of children and adolescents with Tourette syndrome in the USA and South America

	South America ( <i>N</i> = 94)		USA ( <i>N</i> = 1,185)		<i>p</i> value	
	<i>N</i>	%	<i>N</i>	%		
Male	71	75.5	1,004	84.7	*	
Currently on tic-medication	61	64.9	751	63.4	ns	
		M	SD	M	SD	
Age at tic onset		6.7	3.3	5.9	2.5	*
Age at tic diagnosis		11.0	3.9	9.0	2.7	***
Age at initial evaluation (specialty clinic)		12.8	3.7	11.0	3.3	***
Severity (expert rating)						
Mild		38	41.8	384	32.7	ns
Moderate		41	45.1	643	54.8	ns
Severe		12	13.2	146	12.4	ns

ns non-significant

\*  $p < 0.05$

\*\*\*  $p < 0.001$

**Table 2** Associated psychopathology (AP) of children and adolescents with Tourette syndrome (TS) in the USA and South America

	South America ( <i>N</i> = 94)		USA ( <i>N</i> = 1,185)		<i>p</i> value
	<i>N</i>	%	<i>N</i>	%	
TS and any other psychopathological disorders	77	81.9	1,067	90.0	*
OCD	11	11.7	394	33.2	***
OCB	38	40.4	304	25.7	**
OCD + OCB	49	52.1	698	59.0	ns
ADHD	48	51.1	832	70.2	***
ODD	18	19.1	220	18.6	ns
Mood disorders	9	9.6	265	22.4	***
Non-OCD-anxiety	14	14.9	250	21.1	ns
Sleep problems	17	18.1	258	21.8	ns

ns non-significant

\*  $p < 0.05$

\*\*  $p < 0.01$

\*\*\*  $p < 0.001$

( $N = 1,185$ ) and South-America (SA: Argentina  $N = 62$ , Brazil  $N = 32$ ) of our worldwide data set, using group statistics (Chi-square and  $t$  test). Results are listed in Table 1 (demographic features) and Table 2 (clinical correlates).

Similarities between USA and SA could be found for gender ratio (more boys), tic severity, and frequency of medication (Table 1). This corresponds to the findings of Samar et al. [4] and supports the existence of some “culturally resistant” core features of TS.

Also, the later referral in BA was reflected in our SA-data (Table 1, age at tic diagnosis, age at tic initial evaluation). The difference in “age at Tic onset” (SA later) might be a kind of anamnestic precursor of the later referral. So far, some findings of Samar et al. [4] may be generalized to other samples of the same cultural difference. The “culturally sensitive” feature of later referral in BA and SA samples supports the interpretation of the authors, that in SA the mental health care system for children needs to learn more about TS and its course. Regarding TS-associated psychopathology the facts of our sample do not confirm the view of Samar et al. [4]. In our sample, all mentioned associated disorders were either more frequent in USA (OCD, ADHD, mood disorders) or similar in frequency between USA and SA (ODD, anxiety, sleep problems), see Table 2. Only the percentage of OCB was higher in SA (Table 2). Since the combination of OCD/OCB was not significantly different (as in Samar et al. [4]), differences of assessment (and thus a different threshold between dimensional and categorical naming) probably play a role in explaining the differences between SA and USA. Hence, such an “assessment shift” may explain some of the results and should be seen as a possible confounder. It follows, that more data of more sophisticated studies seem necessary before firm conclusions can be drawn.

In sum, while there may exist “culturally resistant” features of TS which are intrinsic to the tic-movements, the handling of these features by the patients themselves and within the society might be modified by cultural factors. But it still remains an open question, if TS-associated psychopathology is fully “culturally sensitive” or (at least partly) “culturally resistant”. In order to avoid any form of

culturally driven stigmatization, discrimination or labeling, it is recommended for the planned larger study of the authors to integrate in an empirical way the relevant ethical objectives in their clinical research.

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