The Autism-Spectrum Quotient in university students: Pattern of changes in its scores and associated factors

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Background

It has been pointed out that an increasing number of students diagnosed as having Autism Spectrum Disorder (ASD) or ASD traits attend university, and that appropriate supports need to be provided to these students (Nevil and White, 2011). We think that it is important to contact students with ASD traits immediately after admission to check whether they are confused by the changes in the learning style, and if so, to provide support to them so as to assist them in resolving the difficulties in their lives.

In Japan, at present, most students with ASD enter university prior to being diagnosed with ASD (Nishimura, 2006). To contact students before the occurrence of troubles, a screening test would be useful. Therefore, as part of student supports, students are evaluated by the Autism-Spectrum Quotient (AQ; Baron-Cohen et al., 2001). The AQ is a self-administered questionnaire used to measure autism spectrum-related traits in young people and adults with normal intelligence (Baron-Cohen et al., 2001). It has a sensitivity and specificity of 79.3% and 97.7%, respectively (Baron-Cohen et al., 2001). On the other hand, there is also a report suggesting that the AQ-Japanese version’s (AQ-J) positive predictive value was low in a Japanese population (Kurita et al., 2005). It has been reported that the AQ identifies not only autistic traits but also mental health problems (Kurita and Koyama, 2006). Therefore, in this study, we investigated the AQ scores not only in a cross-sectional manner but also in a longitudinal manner, to examine the possibility of changes in AQ scores and associated factors.

Methods

1. Participants

The first-year survey involved 3,932 students between fiscal years (FY) 2006 and 2009. The second-year survey involved 2,903 students who were registered as second-year students between FY 2007 and 2009.

2. Measures

The questionnaire consisted of the University Personality Inventory (UPI; Matsubara, 1995), the AQ, and determination of whether or not the students desired mental health
consultation The UPI is a widely used tool in Japanese universities to screen students for neuroses, psychosomatic disorders, and other worries or anxieties (Kajita et al., 2002).

3. Procedures
A paper describing the purpose, methods, and handling of the survey was distributed at the time of student orientation, and responses were obtained from students who agreed to cooperate with the health checkup. For second-year students, only the AQ was administered.

Results
1. Initial survey
Valid responses were obtained from 3,427 (responses rate 87.2%). The number of students with AQ scores greater than or equal to 33 was 113 (3.3%). Of the total of 486 students who were interviewed, ASD was diagnosed in 22. The sensitivity and specificity of the AQ for the diagnosis of ASD were 81.8% and 92.0%, respectively. The score on the AQ was significantly higher in the high-UPI group. The rate of desire to receive mental health consultation is significantly higher in group with ASD. Fifty five students with high-AQ were interviewed and divided into two groups according to whether they had ASD. No significant difference was observed in the total AQ score or UPI score between the two groups. However, a significant difference between the two groups was observed in one item of the AQ: unexpectedly significantly more subjects in the group without ASD disagreed with item 44 (I enjoy social occasions; disagreement was scored “1”).

2. Comparison between the first and second-year survey results
The number of students who responded to both the first and second-year surveys was 319 (responses rate 11.0%). The high-AQ group in the first-year survey showed significantly decreased AQ scores in the survey conducted in the following year. Comparison of the scores between the first and second surveys showed significant differences in the scores for five items (3 of social skill, 1 of communication and 1 of attention to detail).

Discussion
1. Comparison with previous studies
The findings of this study, differences in AQ scores between the sexes and among
departments, were consistent with the results previously reported (Baron-Cohen et al., 2001; Wakabayashi et al., 2006).

2. Counseling requests from students with ASD
More students with ASD requested counseling than students without ASD did, suggesting that when students with ASD are asked “yes” or “no,” they choose a desire for consultation. In Japan, they are required to manage their lives on their own, and support is not often provided unless they request it. A somewhat standardized support system, such as classroom sessions or regular interviews with a personal tutor or healthcare worker, may be effective for these students.

3. AQ and associated factors
In this study, the AQ scores were more closely associated with the scores on the UPI \( (\geq/\leq \text{the cutoff point}) \) than the sex or department of study. The group with AQ scores greater than or equal to the cutoff point in the first year showed significantly lower scores the following year. There are several possibilities explain the current result: 1) the associations between the AQ and UPI scores suggest that psychological symptoms are associated with the score on the AQ; 2) because the AQ is a self-administered questionnaire, even if the subjects’ traits themselves may not have changed, a change in their perceptions of themselves may affect the AQ scores; 3) the AQ score merely regressed to the mean.

Among the AQ items, significant differences in the scores for social skills and communication-related items were observed between the first and second year surveys. Thus a student’s response to the AQ may vary for some items depending on their mental state.

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References
University Personality Inventory. Psychiatry Clin Neurosci. 56, 123–129.