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CORRECTION

ROBUSTNESS OF MULTIVARIATE TESTS

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By providing a counterexample, Guorui, Jiagang and Yaoting (1987) pointed out an error in Theorem 1. A corrected version of the theorem and the proof are as follows. In the statement of Theorem 1, replace (ii) by:

(iia) *When* $M = 0$ *and when we write* $X = ZA$ *with* $Z \in \mathscr{Z}$ *and* $A \in \mathscr{S}(p)$ *uniquely,* $\mathscr{L}_Z(t(ZA)) = \mathscr{L}(t(Z))$ *for all* $A \in \mathscr{S}(p)$ *and all* $\Sigma \in \mathscr{S}(p)$ *where* $\mathscr{L}_Z(\cdot)$ *denotes the distribution of* $\cdot$ *with respect to Z.*

The proof of sufficiency part is almost the same as the proof given since (iia) implies $\mathscr{L}(t(X)) = \mathscr{L}(t(Z))$ for all $\mathscr{L}(X) \in \mathscr{F}_L$. In the proof of necessity part, replace the sentence "Taking $C = A^{-1}$ in (2.10)... produces (ii)" in the last part by the following sentences:

"Taking $C = A^{-1}$ in (2.10) yields

$$\mathscr{L}(t(Z)) = \mathscr{L}_Z(t(ZA)) \tag{2.10a}$$

a.e. (A). Since the completeness of $\mathscr{N}$ implies that of $\mathscr{F}_L$, and since $\mathscr{L}(Z)$ remains the same for all $\mathscr{L}(X) \in \mathscr{F}_L$ by Lemma 1, (2.10a) holds a.e. (A) for all $\mathscr{L}(X) = \mathscr{L}(ZA) \in \mathscr{F}_L$. But for any given $A \in \mathscr{S}(p)$, there exists a distribution in $\mathscr{F}_L$ which gives a positive mass to A. Hence (2.10a) must hold for all $A \in \mathscr{S}(p)$."

We remark that Theorem 1 holds as it stands if $\mathscr{F}_L$ is replaced by $\tilde{\mathscr{F}}_L = \{\mathscr{L}(Z) \in \mathscr{F}_L | \mathscr{L}(X)$ has a pdf wrt Lebesgue measure$\}$. Also Theorem 2 should be correspondingly modified.

REFERENCE

GUORUI, B., JIAGANG, W. and YAOTING, Z. (1987). Conditions for the uniqueness of statistic's distribution in the class of spherical distributions. *J. Math. Res. Exposition* **3** 479–486.

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