Thus,

$$P(|\bar{Z}_n| \geqq t) = 2[1 - P(\bar{Z}_n \leqq t)]$$
$$= 2\left\{1 - \frac{1}{n!} \sum_{i \leqq (n/2)(t+1)} (-1)^i \binom{n}{i} \left[\frac{n}{2}(t+1) - i\right]^n\right\},$$

and in view of the identity

$$\sum_{k=0}^{n} (-1)^k \binom{n}{k} (u - k)^n = n!$$

this becomes

$$P(|\bar{Z}_n| \geqq t) = \frac{2}{n!} \sum_{(n/2)(t+1) < k \leqq n} (-1)^k \binom{n}{k} \left[\frac{n}{2}(t+1) - k\right]^n = \Psi_n(t)$$

for $0 \leqq t \leqq 1$. The random variable $\frac{Y}{a}$ is obviously more peaked about zero than Z. Since $\frac{Y}{a}$ and Z fulfil the assumptions of Theorem 1, it follows that $\frac{\bar{Y}_n}{a}$ is more peaked about zero than $\bar{Z}_n$, that is

$$P\left(\left|\frac{\bar{Y}_n}{a}\right| \geqq t\right) \leqq P(|\bar{Z}_n| \geqq t) = \Psi_n(t) \quad \text{for} \quad t \geqq 0.$$

Setting $at = y$, one obtains (4.1).

For $n \rightarrow \infty$ the function $\Psi_n(t)$ approaches asymptotically the probability $P(|X| \geqq t\sqrt{3n})$ for the normalized normal random variable X.[4] For $n = 8$ one obtains the following values which indicate a good approximation:

t	.3998	.5254	.6711
$P(\lvert X \rvert \geqq t\sqrt{24})$	.05	.01	.001
$\Psi_8(t)$	.049	.0092	.0005.

For smaller values of n, $\Psi_n(t)$ can be easily computed.

A METHOD FOR OBTAINING RANDOM NUMBERS

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The need for large quantities of random numbers to be used in sample design, subsampling, and other statistical problems is well known. Tippett's [1] numbers have been widely used for these purposes, despite criticism directed at their lack of randomness. The following procedure may be of interest to those

[4] Cramér, op. cit., p. 245.