

and  $1 - n/N$  become zero if the corresponding effects are fixed and one if the effects are random.

TABLE 8.14-6 Table for Determining E(MS) for Type SPF- $p,qr$  Design

Source	E(MS)
A	$\sigma_i^2 + \left(1 - \frac{n}{N}\right) \left(1 - \frac{q}{Q}\right) \left(1 - \frac{r}{R}\right) \sigma_{\beta_{rn}}^2 + n \left(1 - \frac{q}{Q}\right) \left(1 - \frac{r}{R}\right) \sigma_{z\beta_r}^2$ $+ q \left(1 - \frac{n}{N}\right) \left(1 - \frac{r}{R}\right) \sigma_{rn}^2 + nq \left(1 - \frac{r}{R}\right) \sigma_{zr}^2$ $+ r \left(1 - \frac{n}{N}\right) \left(1 - \frac{q}{Q}\right) \sigma_{\beta_n}^2 + nr \left(1 - \frac{q}{Q}\right) \sigma_{z\beta}^2$ $+ qr \left(1 - \frac{n}{N}\right) \sigma_n^2 + nqr \sigma_z^2$
Subj w.groups	$\sigma_i^2 + \left(1 - \frac{q}{Q}\right) \left(1 - \frac{r}{R}\right) \sigma_{\beta_{rn}}^2 + q \left(1 - \frac{r}{R}\right) \sigma_{rn}^2$ $+ r \left(1 - \frac{q}{Q}\right) \sigma_{\beta_n}^2 + qr \sigma_n^2$
B	$\sigma_i^2 + \left(1 - \frac{n}{N}\right) \left(1 - \frac{r}{R}\right) \sigma_{\beta_{rn}}^2 + n \left(1 - \frac{p}{P}\right) \left(1 - \frac{r}{R}\right) \sigma_{z\beta_r}^2$ $+ np \left(1 - \frac{r}{R}\right) \sigma_{\beta_r}^2 + r \left(1 - \frac{n}{N}\right) \sigma_{\beta_n}^2 + nr \left(1 - \frac{p}{P}\right) \sigma_{z\beta}^2 + npr \sigma_p^2$
AB	$\sigma_i^2 + \left(1 - \frac{n}{N}\right) \left(1 - \frac{r}{R}\right) \sigma_{\beta_{rn}}^2 + n \left(1 - \frac{r}{R}\right) \sigma_{z\beta_r}^2 + r \left(1 - \frac{n}{N}\right) \sigma_{\beta_n}^2$ $+ nr \sigma_{z\beta}^2$
B × subj w.groups	$\sigma_i^2 + \left(1 - \frac{r}{R}\right) \sigma_{\beta_{rn}}^2 + r \sigma_{\beta_n}^2$
C	$\sigma_i^2 + \left(1 - \frac{n}{N}\right) \left(1 - \frac{q}{Q}\right) \sigma_{\beta_{rn}}^2 + n \left(1 - \frac{p}{P}\right) \left(1 - \frac{q}{Q}\right) \sigma_{z\beta_r}^2$ $+ np \left(1 - \frac{q}{Q}\right) \sigma_{\beta_r}^2 + q \left(1 - \frac{n}{N}\right) \sigma_{rn}^2 + nq \left(1 - \frac{p}{P}\right) \sigma_{zr}^2 + npq \sigma_z^2$
AC	$\sigma_i^2 + \left(1 - \frac{n}{N}\right) \left(1 - \frac{q}{Q}\right) \sigma_{\beta_{rn}}^2 + n \left(1 - \frac{q}{Q}\right) \sigma_{z\beta_r}^2 + q \left(1 - \frac{n}{N}\right) \sigma_{rn}^2$ $+ nq \sigma_{zr}^2$
C × subj w.groups	$\sigma_i^2 + \left(1 - \frac{q}{Q}\right) \sigma_{\beta_{rn}}^2 + q \sigma_{rn}^2$
BC	$\sigma_i^2 + \left(1 - \frac{n}{N}\right) \sigma_{\beta_{rn}}^2 + n \left(1 - \frac{p}{P}\right) \sigma_{z\beta_r}^2 + np \sigma_{\beta_r}^2$
ABC	$\sigma_i^2 + \left(1 - \frac{n}{N}\right) \sigma_{\beta_{rn}}^2 + n \sigma_{z\beta_r}^2$
BC × subj w.groups	$\sigma_i^2 + \sigma_{\beta_{rn}}^2$