ison, contributing a 1 rather than a 0 to $T_{\mathbf{z}}$; however, this might or might not be an effect caused by the treatment, because even under the null hypothesis of no effect H_0, one of the k units will have the highest response among the k units. If $r_{bi_1\mathbf{z}} > \max_{j\in\{i_2,\ldots,i_k\}} r_{bj\mathbf{z}}$ but $\widetilde{r}_{bi_1} \leq \max_{j\in\{i_2,\ldots,i_k\}} \widetilde{r}_{bj}$ then treatment assignment $\mathbf{z}$ in the actual experiment does cause unit i_1 in block b to have a higher response than units $\{i_2,\ldots,i_k\}$ in block b in the sense that unit i_1 in block b would not have had the highest response in this comparison in the uniformity trial of §2.2 in which no unit was treated. In §1.3, this would mean that in block b, stop trial i_1 caused activity in the STN region to exceed the level in go trials $i_2,\ldots,i_k$ in the sense that the activity was higher in the actual experiment and would not have been higher in the uniformity trial. Conversely, if $r_{bi_1\mathbf{z}} \leq \max_{j\in\{i_2,\ldots,i_k\}} r_{bj\mathbf{z}}$ but $\widetilde{r}_{bi_1} > \max_{j\in\{i_2,\ldots,i_k\}} \widetilde{r}_{bj}$ then treatment assignment $\mathbf{z}$ in the actual experiment prevented treated unit i_1 from having the highest response in $\mathcal{S}_{b\mathbf{z}}$, in the sense that i_1 would have had the highest response in the uniformity trial but did not have the highest response in the actual experiment. The third possibility is that treatment assignment $\mathbf{z}$ does not alter whether or not i_1 has the highest response in $\mathcal{S}_{b\mathbf{z}}$. Concisely, these three situations are: (i) $v(\mathcal{S}_{b\mathbf{z}}) = 1$ and $\widetilde{v}(\mathcal{S}_{b\mathbf{z}}) = 0$, (ii) $v(\mathcal{S}_{b\mathbf{z}}) = 0$ and $\widetilde{v}(\mathcal{S}_{b\mathbf{z}}) = 1$, and (iii) $v(\mathcal{S}_{b\mathbf{z}}) = \widetilde{v}(\mathcal{S}_{b\mathbf{z}})$.

For treatment assignment $\mathbf{z} \in \Omega$, the attributable effect

$$A_{\mathbf{z}} = T_{\mathbf{z}} - \widetilde{T}_{\mathbf{z}} = \sum_{b=1}^{B} w_b \sum_{\mathcal{S}_{b\mathbf{z}} \in \mathcal{K}_{b\mathbf{z}}} \left\{ v(\mathcal{S}_{b\mathbf{z}}) - \widetilde{v}(\mathcal{S}_{b\mathbf{z}}) \right\}$$

is the net increase in the number of times (weighted by w_b) that a treated response in the actual experiment exceeded $k-1$ control responses because of effects caused by using treatment assignment $\mathbf{z}$. So $A_{\mathbf{z}}$ is a real valued function of $\mathbf{z}$, $\widetilde{\mathbf{r}}$ and $\mathcal{R}$. In contrast, $A_{\mathbf{Z}}$ is the attributable effect for the $\mathbf{Z}$ randomly chosen according to (1), so $A_{\mathbf{Z}}$ is the difference between an observed statistic, $T_{\mathbf{Z}}$, that describes the actual experiment, and an