

**Supplementary Table 1: Model Types Fitted by MR-RAPS**

<b>Overdispersion</b>	<b>Loss Function</b>	<b>Underlying Model</b>	<b>Results- Section Figure Label</b>
<b>FALSE</b>	<b>l2</b>	<b>No systematic pleiotropy, no idiosyncratic pleiotropy</b>	<b>A</b>
<b>FALSE</b>	<b>huber</b>	<b>No systematic pleiotropy, idiosyncratic pleiotropy</b>	<b>B</b>
<b>FALSE</b>	<b>tukey</b>	<b>No systematic pleiotropy, idiosyncratic pleiotropy</b>	<b>C</b>
<b>TRUE</b>	<b>l2</b>	<b>systematic pleiotropy, no idiosyncratic pleiotropy</b>	<b>D</b>
<b>TRUE</b>	<b>huber</b>	<b>systematic pleiotropy, idiosyncratic pleiotropy</b>	<b>E</b>
<b>TRUE</b>	<b>tukey</b>	<b>systematic pleiotropy, idiosyncratic pleiotropy</b>	<b>F</b>