**Mathematical Notations and Definitions**

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| **Notation** | **Definition** |
| *s* | Index for subjects |
| *b* | Index for category selection blocks |
| ***K*** | The set of all possible categories |
| *R* | Reference category  for the experimental conditions |
| *P* | Paired category  for the experimental conditions |
| *I, J ∈* ***K*** | A particular category  in the set of all possible categories |
| *i, j* | Particular exemplars  from the categories I and J |
| *Sij* | Similarity between exemplars i and j |

**Category-sampling Proportion Algorithm**

**Reference-category Selection Algorithm**

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**Paired-category Selection Algorithm:**