

| | | |
|------------|---|-----|
| 1. | Introduction | 1 |
| 1.1. | Intersensory Interaction and the Facilitation of Reaction Time | 1 |
| 1.2. | Modeling Intersensory Facilitation: The Plan of this Study | 3 |
| 2. | Experiment | 4 |
| 3. | Separate Activation Models | |
| 3.1 | Raab's Model of Intersensory Facilitation | 13 |
| 3.1.1. | The Arrival Time Distribution of Effective Triggers | 14 |
| 3.2. | Modification of Raab's Model | 16 |
| 3.3. | Testing Separate Activation Models | 17 |
| 3.3.1. | Testing for Statistical Facilitaion | 20 |
| 4. | Coactivation Models | 22 |
| 4.1. | Counter Models | 23 |
| 4.1.1. | Definitions | 23 |
| 4.1.2. | The Superposition Model for Intersensory Facilitation | 26 |
| 4.1.3. | Expected Value and Variance of the Reaction Time for the Superposition Model | 28 |
| 4.1.4. | Parameter Estimation | 30 |
| 4.1.5. | Results | 32 |
| 4.2. | Diffusion Models | 46 |
| 4.2.1. | The Diffusion Model for Intersensory Facilitation | 46 |
| 4.2.2. | Definitions | 48 |
| 4.2.3. | Approximation of a Diffusion Model by a Discrete-time Markov Chain | 50 |
| 4.2.4. | Expected Value and Variance of the Reaction Time for the Diffusion Model | 53 |
| 4.2.5. | Parameter Estimation | 61 |
| 4.2.6. | Results | 62 |
| 5. | Summary and Discussion | 76 |
| | | |
| Appendices | | |
| A: | Mathematical Derivations | 79 |
| B: | Tables of Observed Mean Reaction Time and Standard Deviations of the Right and the Left Hand for All Subjects | 87 |
| C: | Tables of Observed and Predicted Reaction Time for All Subjects | 97 |
| D: | Figures of Intersensory Facilitation | 115 |
| E: | Figures of the Test of Separate Activation | 129 |
| F: | Figures of the Prediction of the Superposition Model | 133 |
| G: | Figures of the Prediction of the Diffusion Model | 165 |
| | | |
| References | | 197 |