

# The perceptual integration of auditory onsets and offsets in stimulus patterns of two partly overlapping frequency glides

Remijn, Gerard Bastiaan

<https://doi.org/10.15017/458553>

---

出版情報 : Kyushu Institute of Design, 2002, 博士 (芸術工学), 課程博士  
バージョン :  
権利関係 :



## Table of contents

|           |                                                                                                                                                               |    |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Chapter 1 | Introduction and theoretical background                                                                                                                       | 4  |
| 1.1       | Gestalt principles in perception                                                                                                                              | 4  |
| 1.2       | Feature detection                                                                                                                                             | 9  |
| 1.3       | The gap transfer illusion                                                                                                                                     | 10 |
| 1.4       | The aim of this thesis                                                                                                                                        | 15 |
| 1.5       | Contents of this thesis                                                                                                                                       | 16 |
| Chapter 2 | Phenomenological descriptions of the perception of two partly overlapping glides                                                                              | 17 |
| 2.1       | General purpose                                                                                                                                               | 17 |
| 2.2       | Experiment 1: Verbal descriptions of the perception of stimulus patterns consisting of two partly overlapping glides                                          | 17 |
| 2.2.1     | Purpose                                                                                                                                                       | 18 |
| 2.2.2     | Method                                                                                                                                                        | 18 |
| 2.2.3     | Results and discussion                                                                                                                                        | 20 |
| 2.3       | Experiment 2: Graphical descriptions of the perception of stimulus patterns consisting of two partly overlapping glides                                       | 24 |
| 2.3.1     | Purpose                                                                                                                                                       | 24 |
| 2.3.2     | Method                                                                                                                                                        | 24 |
| 2.3.3     | Results and discussion                                                                                                                                        | 25 |
| 2.4       | Summary                                                                                                                                                       | 27 |
| Chapter 3 | Psychophysical investigation of other peripheral processes that may be involved in the perception of the middle tone: combination tones and spectral splatter | 29 |
| 3.1       | General purpose                                                                                                                                               | 29 |
| 3.2       | Experiment 3: Matching the duration and the pitch of the middle tone                                                                                          | 30 |
| 3.2.1     | Purpose                                                                                                                                                       | 30 |
| 3.2.2     | Method                                                                                                                                                        | 30 |
| 3.2.3     | Results and discussion                                                                                                                                        | 35 |
| 3.3       | Experiment 4: Judging the clarity of the middle tone in                                                                                                       |    |

|            |                                                                                                                                |    |
|------------|--------------------------------------------------------------------------------------------------------------------------------|----|
|            | double-glide stimulus patterns with masking noise bands                                                                        | 41 |
| 3.3.1      | Purpose                                                                                                                        | 41 |
| 3.3.2      | Method                                                                                                                         | 42 |
| 3.3.3      | Results and discussion                                                                                                         | 48 |
| 3.4        | Summary                                                                                                                        | 51 |
| Chapter 4: | Further psychophysical investigation of factors involved in the perception of the middle tone in double-tone stimulus patterns | 53 |
| 4.1        | Experiment 5: Judging the clarity of the middle tone                                                                           | 53 |
| 4.1.1      | Purpose                                                                                                                        | 53 |
| 4.1.2      | Method                                                                                                                         | 53 |
| 4.2        | Results and discussion                                                                                                         | 55 |
| Chapter 5: | Psychophysical investigation of factors involved in the perception of the pitch trajectory in double-tone stimulus patterns    | 59 |
| 5.1        | General purpose                                                                                                                | 59 |
| 5.2        | Experiment 6: Judging the continuity of the pitch trajectory                                                                   | 59 |
| 5.2.1      | Purpose                                                                                                                        | 59 |
| 5.2.2      | Method                                                                                                                         | 59 |
| 5.2.3      | Results and discussion                                                                                                         | 61 |
| 5.3        | Experiment 7: Judging the continuity of the pitch trajectory                                                                   | 64 |
| 5.3.1      | Purpose                                                                                                                        | 64 |
| 5.3.2      | Method                                                                                                                         | 64 |
| 5.3.3      | Results and discussion                                                                                                         | 64 |
| 5.4        | Experiment 8: Judging the perceptual continuity in 'step-up' and 'step-down' stimulus patterns                                 | 67 |
| 5.4.1      | Purpose                                                                                                                        | 67 |
| 5.4.2      | Method                                                                                                                         | 69 |
| 5.4.3      | Results and discussion                                                                                                         | 70 |
| 5.5        | Summary                                                                                                                        | 72 |
| Chapter 6: | Typical auditory continuity and the perceptual mechanism behind the pitch trajectory in double-glide stimulus patterns         | 74 |
| 6.1        | General purpose                                                                                                                | 74 |

|            |                                                                                                                                                                                         |    |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 6.2        | Experiment 9: Judging the perceptual continuity of the pitch trajectory as perceived in double-glide stimulus patterns and in stimulus patterns that render typical auditory continuity | 74 |
| 6.2.1      | Purpose                                                                                                                                                                                 | 74 |
| 6.2.2      | Method                                                                                                                                                                                  | 75 |
| 6.2.3      | Results and discussion                                                                                                                                                                  | 78 |
| 6.3        | Experiment 10: Perceptual continuity of two crossing glides that share a short temporal gap at the crossing point                                                                       | 81 |
| 6.3.1.     | Purpose                                                                                                                                                                                 | 81 |
| 6.3.2      | Method                                                                                                                                                                                  | 83 |
| 6.3.3      | Results and discussion                                                                                                                                                                  | 87 |
| 6.4        | Summary                                                                                                                                                                                 | 91 |
| Chapter 7: | Summary and conclusions                                                                                                                                                                 | 93 |
|            | References                                                                                                                                                                              | 99 |