Multisensory Research

Cross-Modal Correspondence Between Tonal Hierarchy and Visual Brightness: Associating Syntactic Structure and Perceptual Dimensions Across Modalities

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Supplementary Material

Audio S1. Examples of stable (A) and unstable (B) auditory stimuli used in experiments 1A and 1B. Both examples consist of a cadence type context element (a sequence of three chords), followed by either a stable (A) or an unstable (B) probe.

A

Link to download S1A.mp3

B

Link to download S1B.mp3

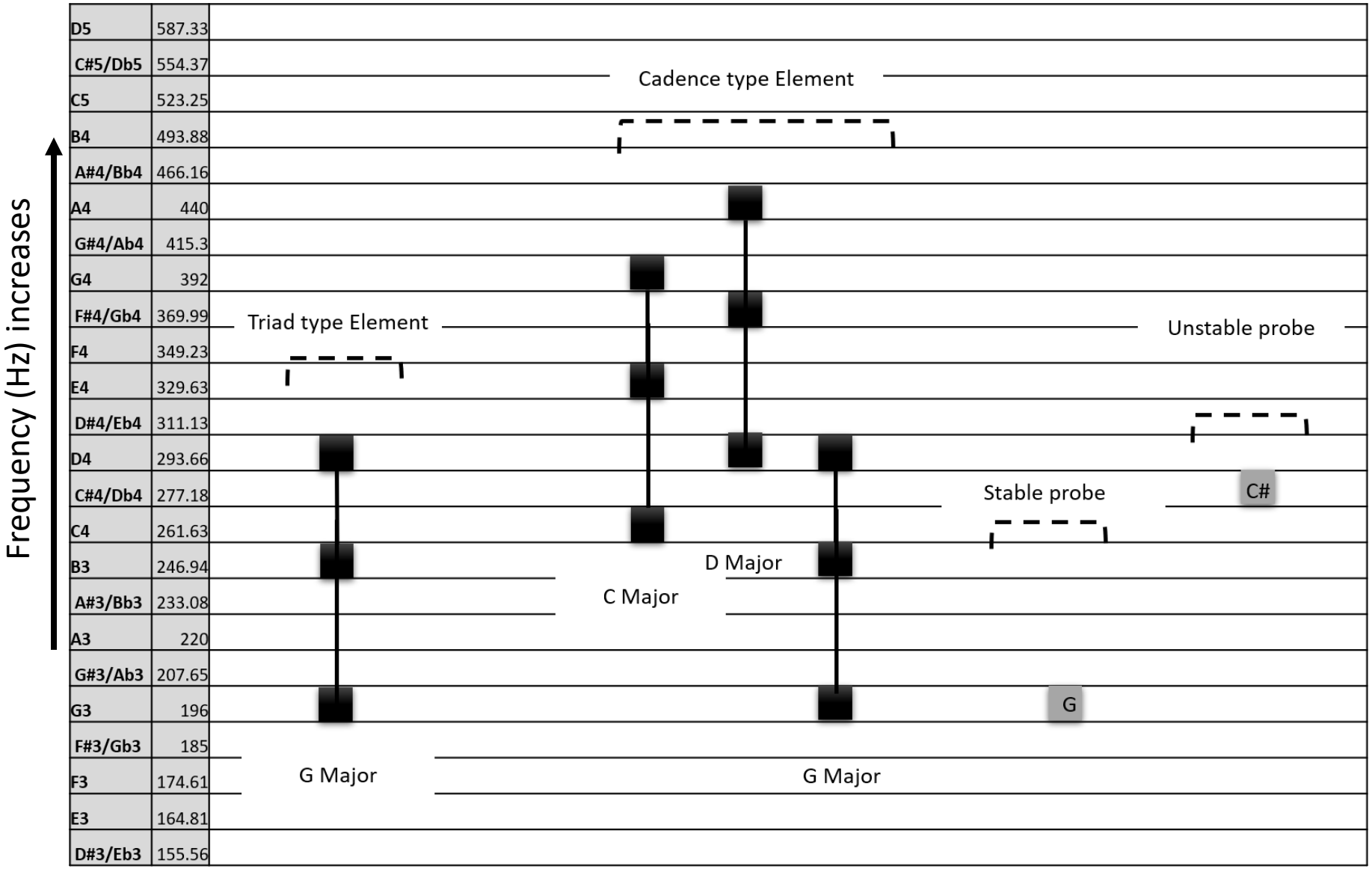


Figure S1. Schematic presentation of the auditory stimuli used in experiments 1A and 1B (probe-tone method), in G Major (2A) and in D flat Major (2B). Each black box is a note, and the lines connecting the notes create a chord. The example shows a triad element and a cadence context element (a sequence of three chords), followed by an example of stable or unstable probe. In this example, the elements are in G major key, the stable probe is the note G (the first scale degree, the most stable tone). The unstable probe is C# (the augmented forth degree, the tritone, which does not belong to the key, and is thus unstable). Note that for the sake of clarity, each note in this schematic representation is represented by a single frequency. Stimuli used in this experiment, however, were Shepard tones (Shepard, 1974), in which each pitch-class is created by 5 sine-tones separated by octaves.

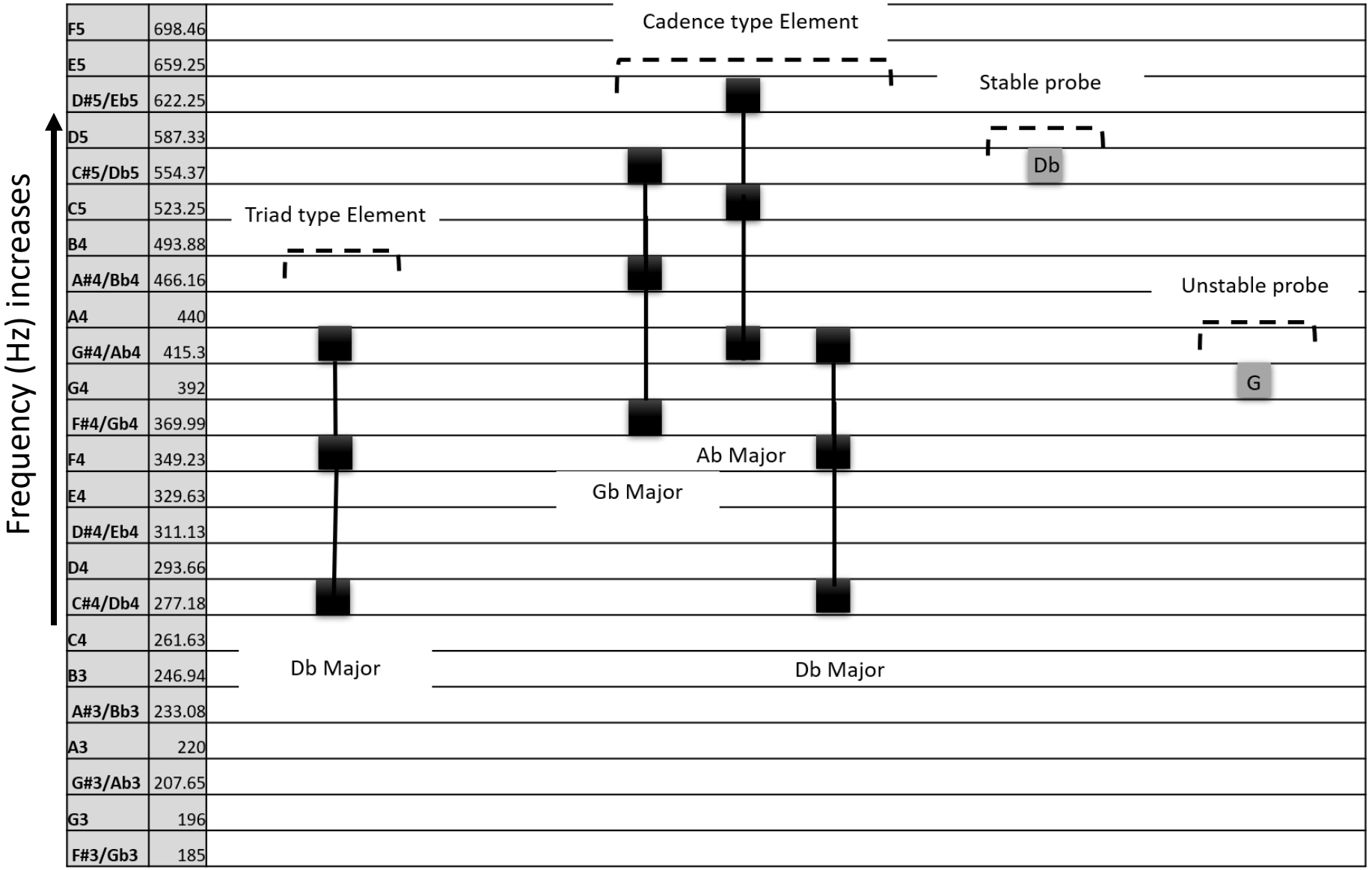
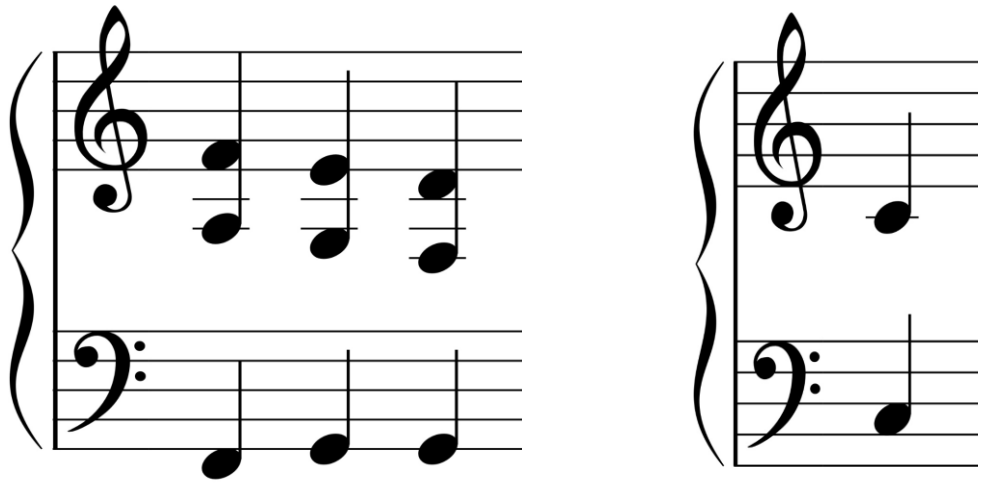


Figure S2. Schematic presentation of the auditory stimuli used in experiments 1A and 1B (probe-tone method). Each black box is a note, and the lines connecting the notes create a chord. The example shows a triad element, a cadence context element (a sequence of three chords), followed by an example of stable or unstable probe. In this example, the elements are in D flat major key, the stable probe is the note D flat (the first scale degree, the most stable tone). The unstable probe is G (the augmented forth degree, the triton, which does not belong to the scale, the least stable). Note that for the sake of clarity, each note in this schematic representation is represented by a single frequency. Stimuli used in this experiment, however, were Shepard tones (Shepard, 1974), in which each pitch-class is created by 5 sine-tones separated by octaves.

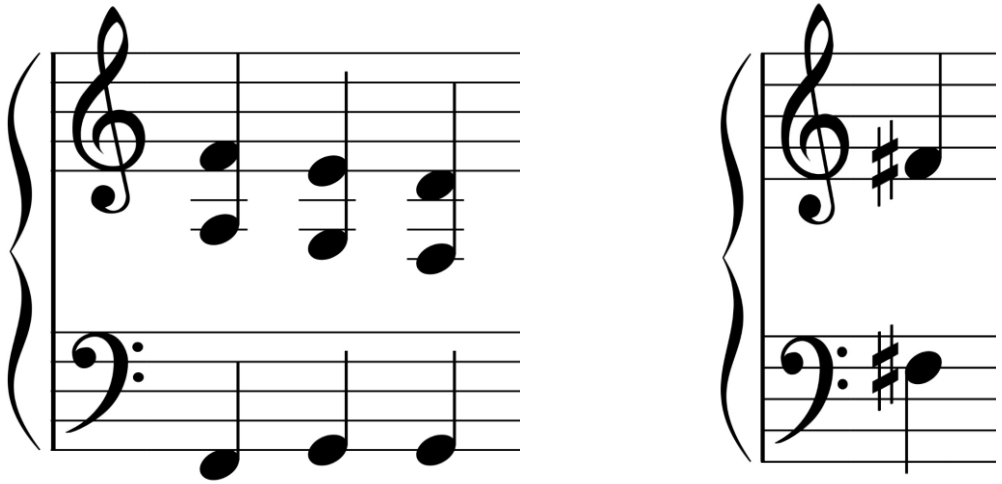
Audio S2. Examples of stable (A) and unstable (B) auditory stimuli used in Experiment 2. Stimuli consist of a sequence of three chords followed by either a stable (A) or an unstable (B) tone.

A



Link to download S2A.mp3

B



Link to download S2B.mp3

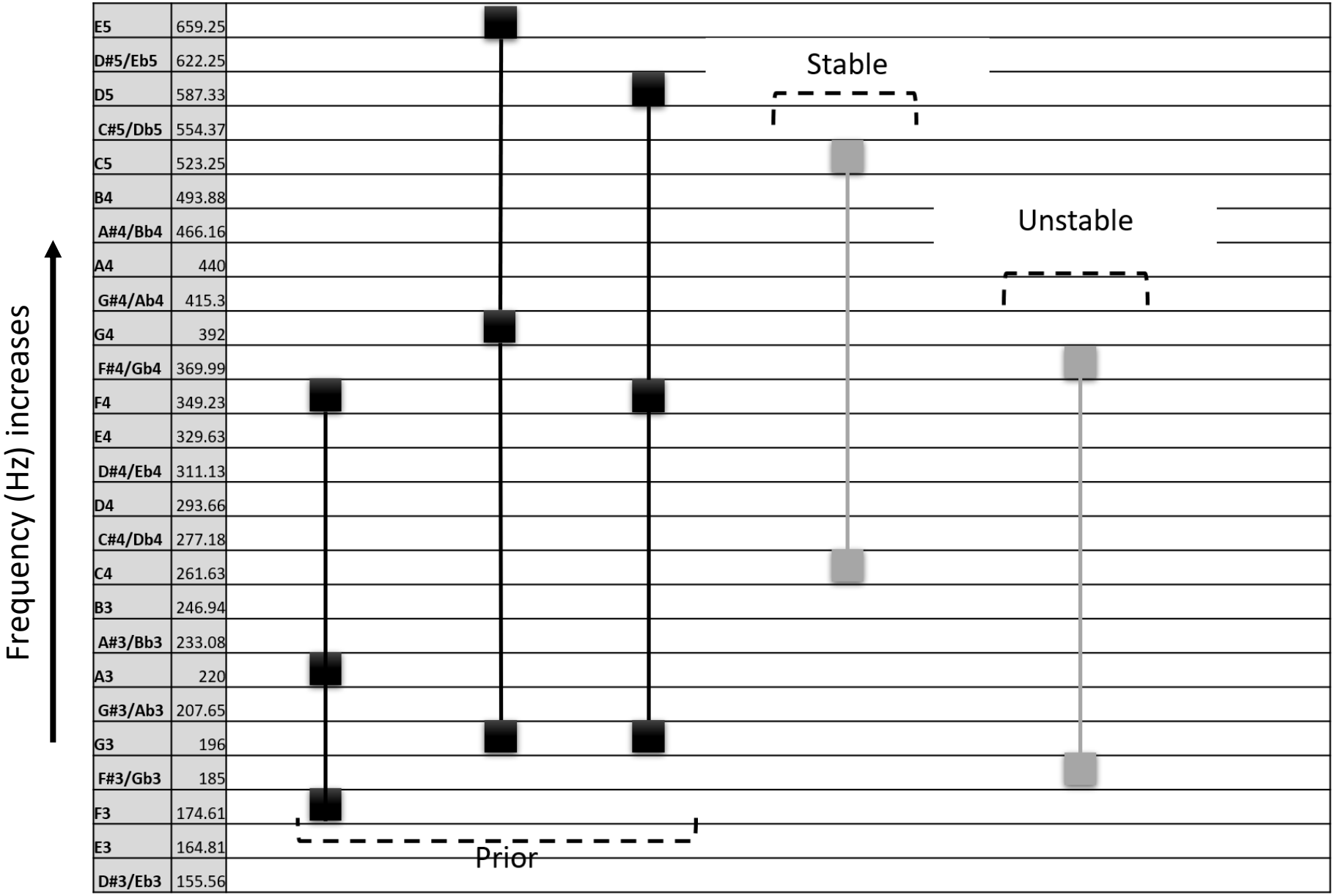


Figure S3. Schematic presentation of the auditory stimuli used in Experiment 2 (IAT method), in C Major (4A) and in C sharp Major (4B). Each black box is a note, and the lines connecting the notes create a chord. The example is in C Major and consists of prior (a sequence of three chords), followed by a stable note (C, first degree of the scale, most stable) or an unstable note (F#, the raised 4th degree, least stable). Note that while for the sake of clarity each tone is represented here by its fundamental frequency (F0) only, stimuli actually consisted of harmonic tones (piano timbre).

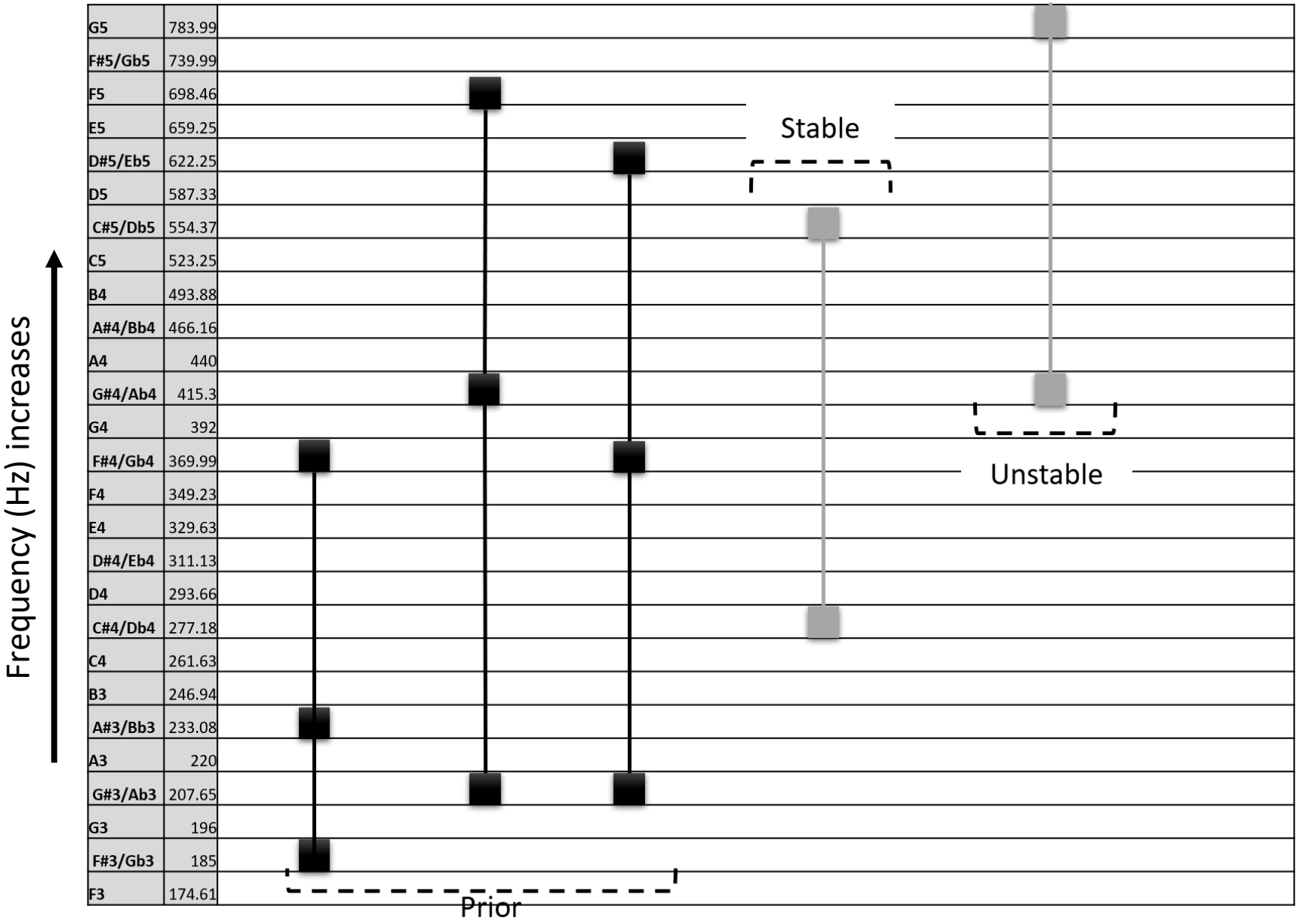


Figure S4. Schematic presentation of the auditory stimuli used in Experiment 2 (IAT method). Each black box is a note, and the lines connecting the notes create a chord. The example is in C sharp Major and consists of prior (a sequence of three chords), followed by a stable note (C sharp), first degree of the scale, most stable) and an unstable note (G, the raised 4th degree, least stable). Note that while for the sake of clarity each tone is represented here by its fundamental frequency (F0) only, stimuli actually consisted of harmonic tones (piano timbre).