Ocszsapinska and Heller, The Underlying Temporal Features in the Transition from Bouncing To Rolling Events. Submitted to Auditory Perception and Cognition, 6-17-2022.

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SUPPLEMENTARY FIGURES

# of bounce impulses in the sound	Pitch (Hz)	Harmonic Ratio	Centroid (Hz)	Spread (Hz)	Skewness
8	270.69	0.37	319.53	143.47	6.97
16	268.70	0.35	322.59	143.12	6.78
24	245.13	0.36	319.71	144.31	6.59
32	226.58	0.37	319.39	143.71	6.61
48	205.33	0.37	323.85	143.83	6.62
112	172.96	0.43	316.03	141.65	6.82
176	186.99	0.37	317.31	144.50	6.68
240	189.43	0.34	323.29	140.88	6.47
RANGES	[172.96, 270.69]	[0.34, 0.43]	[316.03, 323.85]	[140.88, 144.31]	[6.47, 6.97]

Table S1. Measures of pitch, harmonic ratio, spectral centroid, spectral spread, and spectral skewness for the core eight sounds that were subject to binary categorization, unitary ratings, and discrimination of density and temporal irregularity.
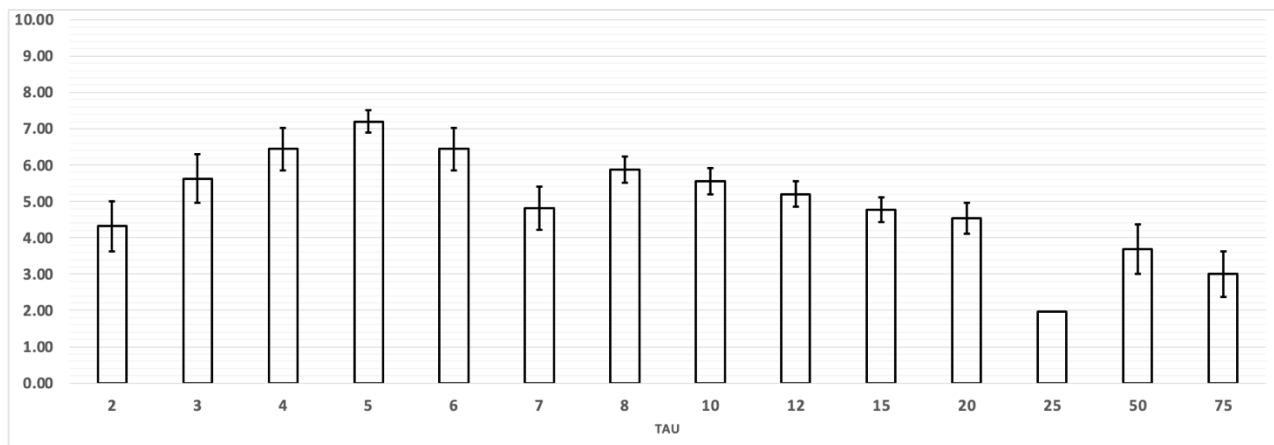

Figure S1. Likelihood that the sound conveys an object bouncing as a function of Tau. Tau is a single value that reflects the rate of change of the interval between bounce impulses. Small Tau values indicate that the intervals between bounces are decreasing at a fast rate, and the bounce impulses are located close together. Large Tau values indicate that the intervals between bounces are steady, and the bounce impulses are located equally apart in time. Each of the sounds have an SSP of 0.40 seconds, and the same number of bounce impulses (6). Tau is the only parameter that is changing between the sounds. A rating of 10 corresponds to the sound being extremely likely to have conveyed an object bouncing, and a rating of 0 corresponds to the sound being not at all likely to have conveyed an object bouncing. Standard error of the mean is reflected by the error bars.
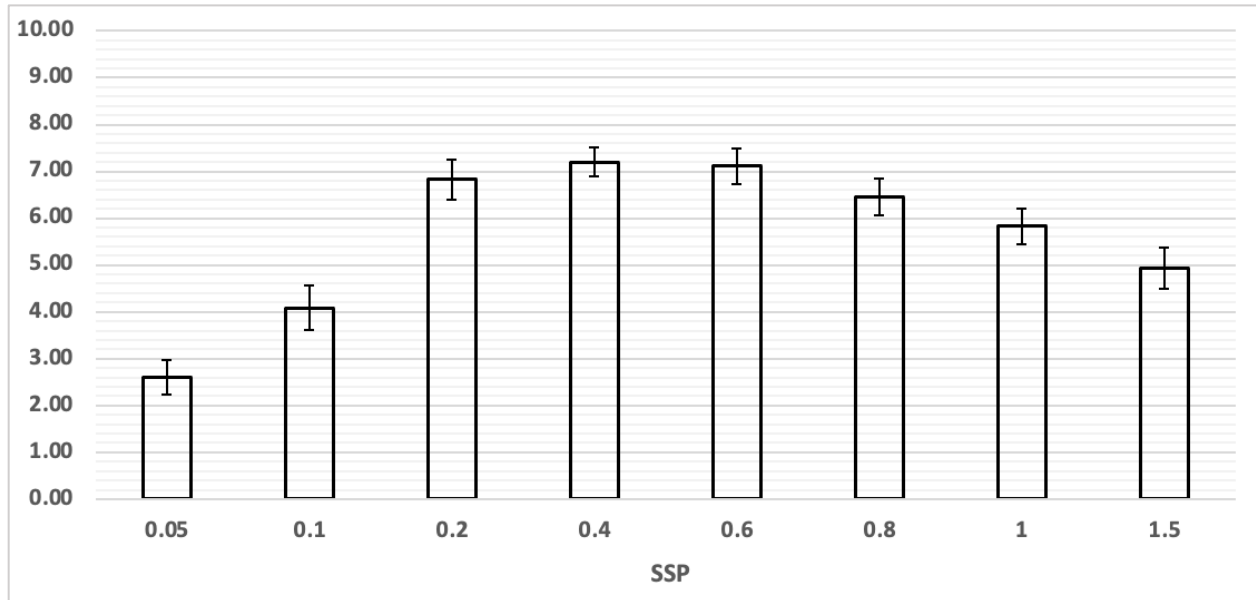
Figure S2. Likelihood that the sound conveys an object bouncing as a function of the pace of the Starting sequence. Each of the sounds have the same value of Tau (5), and the same number of bounce impulses (6). The Starting sequence pace (SSP) is the only parameter that is changing between the sounds. A rating of 10 corresponds to the sound being extremely likely to have conveyed an object bouncing, and a rating of 0 corresponds to the sound being not at all likely to have conveyed an object bouncing. Standard error of the mean is reflected by the error bars.
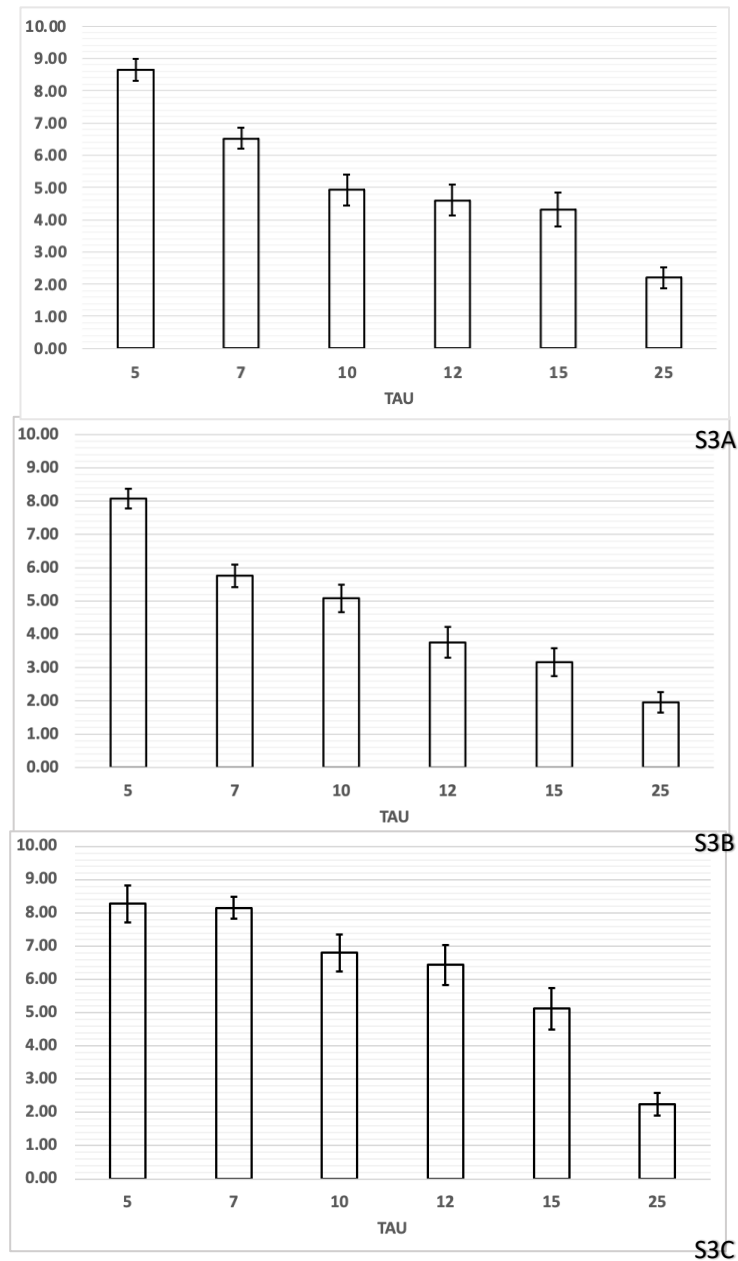
Figure S3. Likelihood that the sound conveys an object bouncing as a function of Tau. Tau is a single value that reflects the rate of change of the interval between bounce impulses. Small Tau values indicate that the intervals between bounces are decreasing at a fast rate, and the bounce impulses are located close together. Large Tau values indicate that the intervals between bounces are steady, and the bounce impulses are located equally apart in time. In each subfigure, each of the sounds have an SSP of 0.40 seconds, and the same number of bounce pulses. For subfigure A, the sounds have a total of 8 bounce impulses. For subfigure B, the sounds have a total of 10 bounce impulses. For subfigure C, the sounds have 15 bounce impulses. Tau is the only parameter that is changing between the sounds. A rating of 10 corresponds to the sound being extremely likely to have conveyed an object bouncing, and a rating of 0 corresponds to the sound being not at all likely to have conveyed an object bouncing. Standard error of the mean is reflected by the error bars.
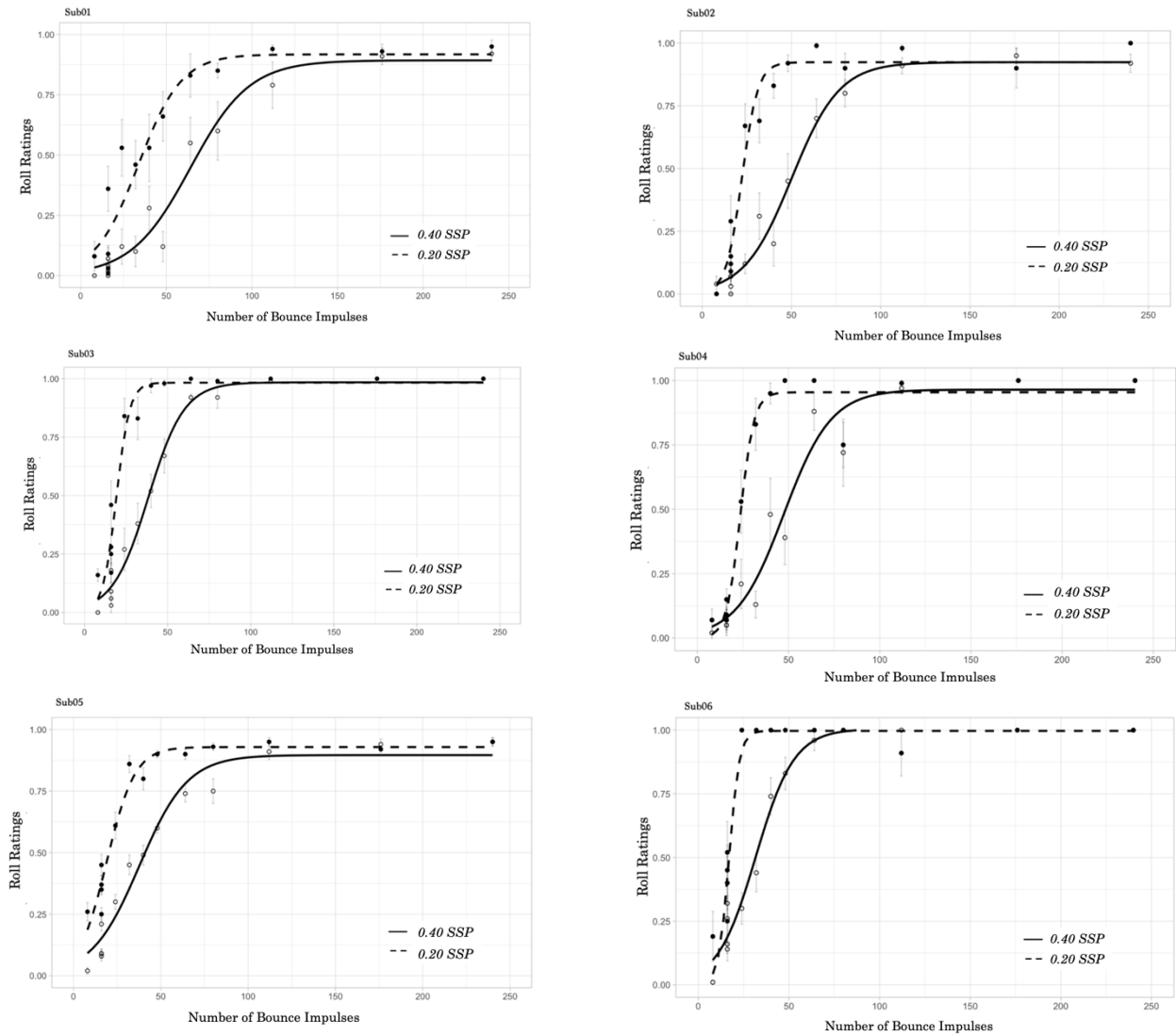
Figure S4. Six typical individual responses from the unitary task. Standard error of the mean is reflected at each data point for each participant.
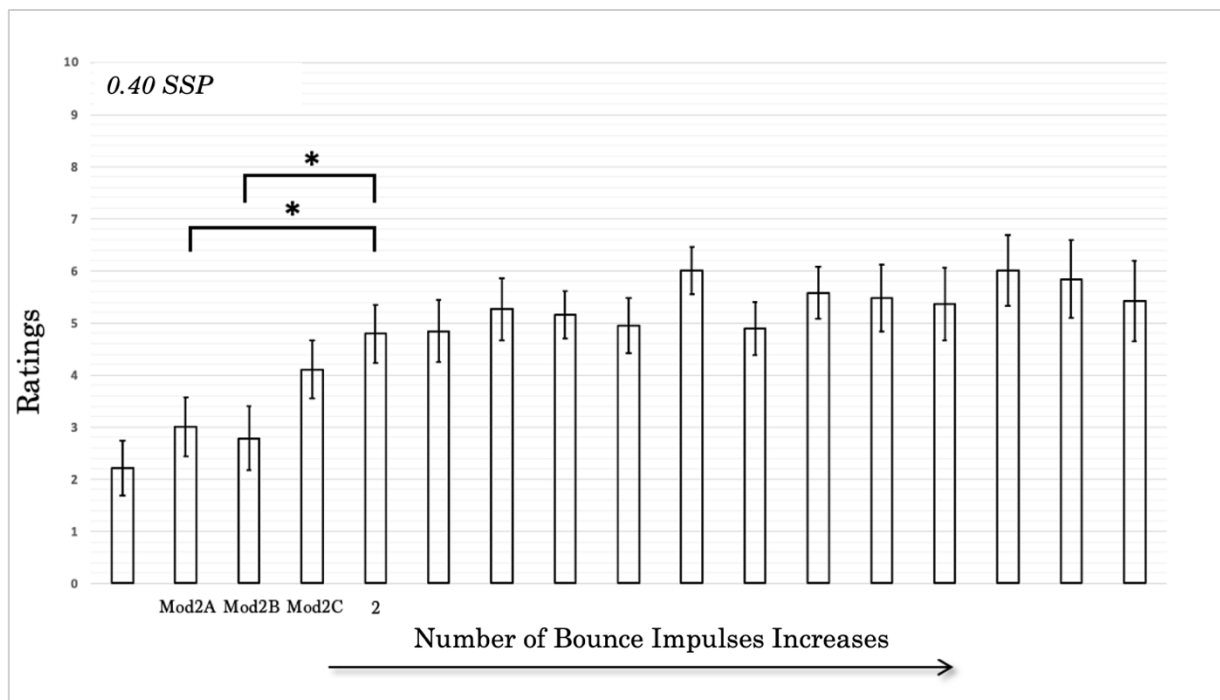
Figure S5. Average responses for the temporal irregularity of each sound. Mod2A, Mod2B and Mod2C contain the same number of bounce impulses, however, vary in the degree of irregularity in the IBI such that Mod2C contains the greatest variability. A rating of 10 corresponds to the sound being extremely irregular, while a rating of 0 corresponds to the sound being not at all irregular. Standard error of the mean is reflected by the error bars.
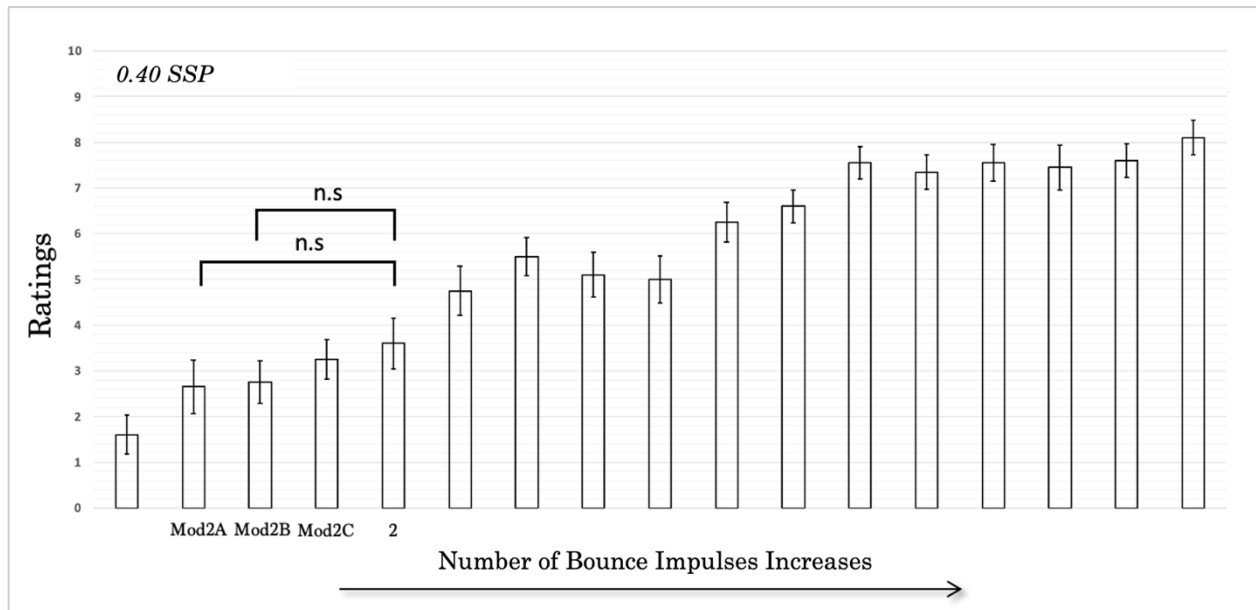
Figure S6. Average responses for the density of each sound. Mod2A, Mod2B and Mod2C contain the same number of bounce impulses. A rating of 10 corresponds to the sound being extremely dense, while a rating of 0 corresponds to the sound being not at all dense. Standard error of the mean is reflected by the error bars.
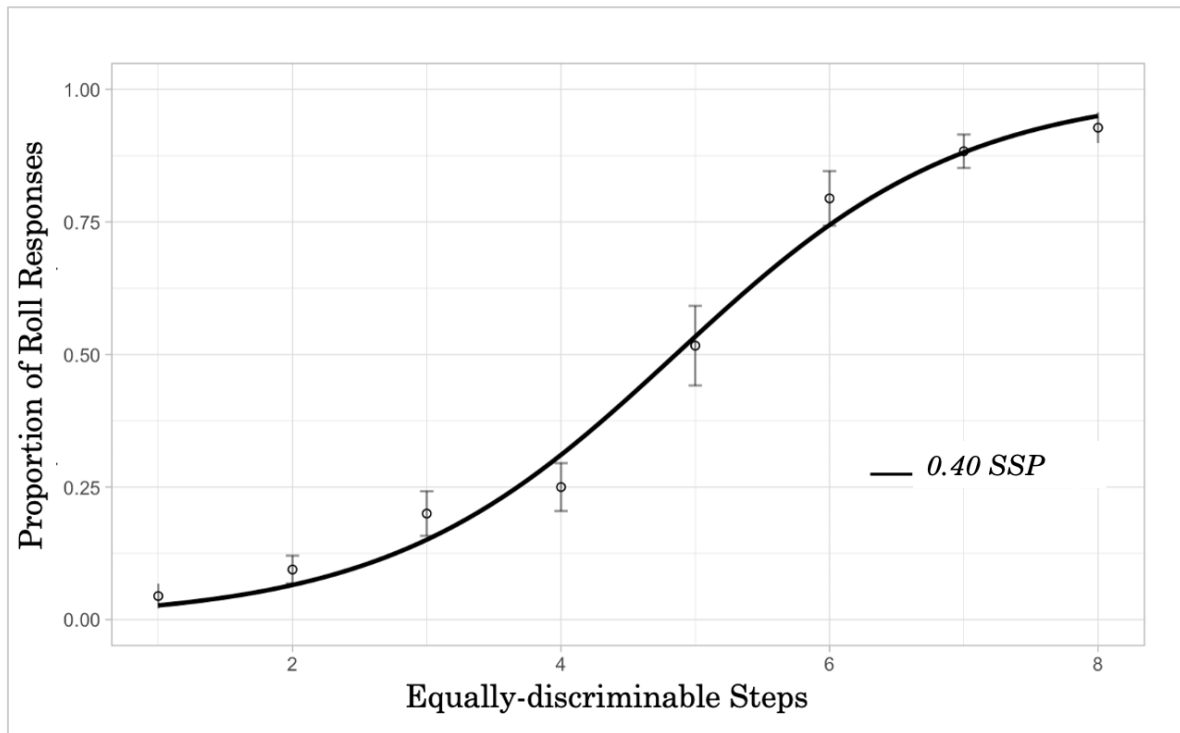
Figure S7. Average responses from the binary categorization task for sounds that are equally-discriminable in density and temporal irregularity. Each of the steps correspond to the following sounds, respectively: (1) the Starting sequence, (2) a sound with 16 bounce impulses, (3) a sound with 24 bounce impulses, (4) a sound with 32 bounce impulses, (5) a sound with 48 bounce impulses, (6) a sound with 112 bounce impulses, (7) a sound with 176 bounce impulses, and (8) a sound with 240 bounce impulses. Standard error of the mean is reflected by the error bars.