

O: 4-c[: F V[M: K -[[M\F: 8 eFD - IM I: d: I M`DZ -`
-K8J -g: d: K O -[[M\F: 8 eFDZ I-f-`FVK -K8 PI: -[cZ X
QPTbi] R
K M\FCK-I -PPZM4D F[`MO: >M`K8 FK (MC: IY[" D° `D: E
[F[1b<Z/ : [c8F: 8 [: d: Z-I e-ZKFK [CK-I[QZM\Fg d: E
DF4: [FZ K[74-Z DMK[7OF4g4]: O: II[7e DF`I: [R FK - P[gE
4DMFKCcF`F4 >Z-J : e M`HT &DF[-PPZM4D F[O-[: 8 M`D:
[c8g M`D: P-ZF4P-K[Y>Z: 8: [4ZP`FVK[M`D: [CK-I[
J Ff: 8 FK`M`e M8Ff: Z K` O-4-CZM`K8 [: Uc: K4 [OZ-ffi4
KM[: -K8 PcOIF4 C-Z8: KRT

Factors in environmental sound identification
&D. Z. 7F 4-K Q. -[[c] : 8`D` QVD

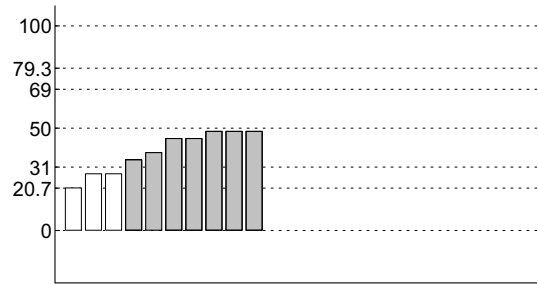
[ˈc8g7e: e ɦl -[ɦ ɦfː] k: ʒ e d ˈd: z ˈd: g p: z4 fɔ: ˈd: [ː
[mʌk8] -[4m fkc ʒm 4-z dnmk] Qd: k ˈdmʌcd -ɦ ˈd:
[mʌk8] ˈ: [ː] 8 -z z -l 4-z dnmk [mʌk8] d -z8 nk - 8-ɦg
o-[ɦ ɔg ʒm8 c[ː] ʒfɔ) : e ɦl ˈd: z ʌz j : -[cz ˈd: -cz : e
j : k ˈ-j nk ˈd: ɦfː] k: ʒ nk ˈd: j : j o ʒ d f p m : -4d m
ˈd: [ː [mʌk8] f k ˈd: 4 ˈ: ɔvɔg v4-z dnmkxt

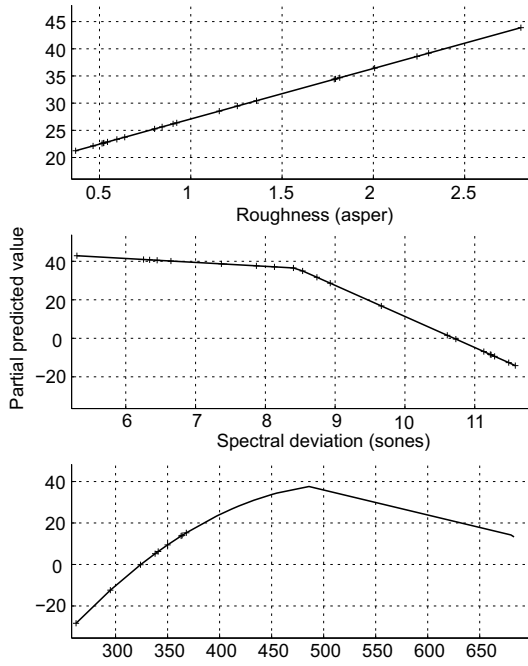
2.1. Experimental setup

Method

Participants: &e: K'gEeM4-Z dnmk [mʌk8] e: z 4dm: k [m-[
ˈm]-j p: ˈd: kfk: 4-[[: [mʌ-rk: 8 ʒm ˈd: [mʌrk] -[ɦ
rk ˈd: pʒ d f mʌ [ˈc8g q: : ˈd: ɦnʌ: z p-k: l mʌ ˈfɔcz b r t
&d: 4-z dnmk] e: z z 4mʌz 8 rk -k -k: 4dm4 4d-j o z q: :
102 ʌz ˈd: 8 ˈ-ɦ [mʌ ˈd: z 4mʌz fkc r t ɦ [mʌk8] ɦ-[: 8-pe
pʒ m f j -ˈ: ɦg @ j [t & d g d-8 o: k pʒ d f mʌ [ɦg : ɦc-ɦfɦ: 8
rk ɦmʌ8k: [[rk - pʒ ɦf j rk-zg : f p: ʒ f j : k t ɦ fː] k: ʒ e: z
-[ɦ 8 ˈm-8g] ˈd: l: d: l mʌ: -4d [mʌk8] [m ˈd-ˈ ˈd: g p: z
4 fɔ: 8 f -ˈ ˈd: [-j : ɦmʌ8k: [[-[- z ʒ z k4 [mʌk8] ɦɦ h
pɔz ˈnk: -ˈ 7[mʌk8

Stimuli: &e: K'gEeM4-Z dnmk [mʌk8] e: z 4dm: k [m-[
ˈm]-j p: ˈd: kfk: 4-[[: [mʌ-rk: 8 ʒm ˈd: [mʌrk] -[ɦ
rk ˈd: pʒ d f mʌ [ˈc8g q: : ˈd: ɦnʌ: z p-k: l mʌ ˈfɔcz b r t
&d: 4-z dnmk] e: z z 4mʌz 8 rk -k -k: 4dm4 4d-j o z q: :
102 ʌz ˈd: 8 ˈ-ɦ [mʌ ˈd: z 4mʌz fkc r t ɦ [mʌk8] ɦ-[: 8-pe
pʒ m f j -ˈ: ɦg @ j [t & d g d-8 o: k pʒ d f mʌ [ɦg : ɦc-ɦfɦ: 8
rk ɦmʌ8k: [[rk - pʒ ɦf j rk-zg : f p: ʒ f j : k t ɦ fː] k: ʒ e: z
-[ɦ 8 ˈm-8g] ˈd: l: d: l mʌ: -4d [mʌk8] [m ˈd-ˈ ˈd: g p: z
4 fɔ: 8 f -ˈ ˈd: [-j : ɦmʌ8k: [[-[- z ʒ z k4 [mʌk8] ɦɦ h
pɔz ˈnk: -ˈ 7[mʌk8





[Mk8]T&D: [K:e [Mk8] D-8'MZ [P: 4`eM4NK[Z-FK[T
 ~FZ]7'D: g D-8'M[D-Z`D: [-J: P: Z4 P'c-I 8FJ: K[FVK
 -[`D: Z 4VZ8: 8NK: [7-K8`MD-d: -J NZ: :f: K8: 8 Z-KC:
 M-d-lc: [`D-K`D: PZ dFVd[Ig`]: [: 8 [Mk8]7FK NZ: Z`M
 Fk: [FC-]: `D: Z-I-`FVK[DFP] O`e:: K J: J O: Z[DFP -CZ: E
 J: K`-K8 -4Vd[F4I 8 [4ZP`M]T% 4NK87`D: g D-8`MO:
 P: Z4 P'c-Ilg 4IM: `M'D: 4-: QMf: [M: fF]FKC 4-Z DNVK
 [Mk8]7FK NZ: Z`MKMO: [: `P-Z >M`D: : fF]FKC MK: [T
 ~: 4-c[: `D: Z [cl` M`D: PZ dFVd [`c8g 102[DVd: 8`D-`
 IF]: K: Z] P: Z4 Fd: `D: J: 4D-KFJ 4-c[FKC`D: [Mk87e:
 `MMH 4-Z `MPZ [: Zd: `D: [: -[P: 4]T

%gK'D: [FhFK [Mk8] >cl?IIFKC`D: [: 4NK[Z-FK] -I[M
 D: IP: 8 c[`M: [` - PM[FOI: J: `DNBVMGg >AZ`D: 8 [FK
 M:K:e 4-Z DNVK [Mk8]T

3.1. Creation of a new set of sounds

&D: `DZ: 8 [4ZP`M] 4VZ I-: 8 eFD`D: P: Z4 P'c-I 8FE
 J: K[FVK] [D-Z 8Og`D: 4-Z DNVK[-Z Z I-: 8`M'D: [P: 4E
 `Z-I PZMP: ZF [M`D: [Mk8] QP: 4Z-I 4 K ZV8-K8[P: 4Z-I
 8 dF-`FVKR-K8`M[DNZE: Z] `J PNV-I PZMP: ZF [QMfODE
 K: [[Rf+: `d: K`DF I-]: ZPZMP: Zg 4-K O: [: : K -[[P: 4Z-I7
 [FK4 F J -gZ [cl` >M`D: J F]ckFKCM`D: D-Z] NKf4P-ZE
 `F-I] M`D: [P: 4ZcJ T&Dc[7e: 4-K -[[cj: `D-`D: P: Z4
 4 Fd: 88F[FJ H-ZFF [O`e:: K`D: 4cZ: K` 4-Z DNVK [Mk8]
 -Z O-[: 8NKlg NK [P: 4Z-I -K8 D-Z] NKf4 8FF: Z K4 [T K8
 e: 4-K >ZD Z -[[cj: `D-`D: [: [Mk8] [D-Z F8 K'FE
 4-I]: J PNV-I PZMP: ZF [7-K8 P-ZF4cl-Z]g D-d: -K F8 K'F4-I
 `J PNV-I: Kd: IMP: T&D: Z >AZ 7`MAZ -: K:e [Mk8] 4IM]:
 `M'D: 4cZ: K` MK: [7e: D-d: `MAZ -: [Mk8] eFD`D: [-J:
 `J PNV-I: Kd: IMP: T`f: K8FKC`D: Z-KC: M`D: `FJ OZ 8FE
 J: K[FVK] 4-K`D: Z Og O: -4DF: d: 8Og J M8cl-`FKC`D: [P: 4E
 `Z-I -K8 D-Z] NKf4 PZMP: ZF [T

Synthesis method

`-Z DNVK[7 IFH J M] M J c[F4I FK[ZcJ: K[7 4-K O:
 `DNfCD M-[-K: f4F-`FVK J: 4D-KFJ QD: J: J OZ-K: 7[: `K
 FkMdFOZ-`FVK Og -K: l: 4ZM: 4D-KF4-I NZ PK: cj -`F4 [g[E
 `J R7-K8 - Z [NK-`M OD: PI-: M`D: DNVKRT&DZ: PD: E
 KM: K- -Z eNZD 4NK[F8: ZFKCT`FZ]7F J -g O: -[[cj: 8
 `D-`D: Z [NK-`M7-4FKC IFH - ?I]: ZD-[- [ZNVK FAcE
 : K4: NK`D: [P: 4Z-I: Kd: IMP: 7-K8`D: Z Og7MK`D: [P: 4E
 `Z-I 4 K ZV8-K8[P: 4Z-I 8 dF-`FVK M`D: [Mk8]T% 4NK87
 `D: P-ZF4cl-Z: f4F-`FVK J: 4D-KFJ M`D: 4-Z DNVK[>AZ: [`D:
 J: J OZ-K: `MdFOZ-: eFD- K: -Z]g [Uc-Z e-d: J Md: E
 J: K T&Dc[7D: [Mk8] PZM8c4: 8D-d: - d: Zg ZF4D-K8 D-ZE
 J NKf4[P: 4ZcJ FK[: -8g [-]: T/ M: d: Z7eD: K 4-Z DNVK[
 -Z KM?Z] Ig?f: 8`M'D: QM8g M`D: 4-Z Q DF4D M4cZ
 ->: Z`D: 4-ZD-[O: K 8Zfd: K >AZ- e DF: R7`D: 8 dF4: F] KM
 >Z: `MdFOZ-: FK`D: PZMP: Ze-g7e DF4D 4-c[: [`D: >K8-E
 J: K-I >Z Uc: K4g `MJ Md: [IFCD]lg QD: Z >AZ 8 `cKFKC`D:
 4DNZ8] eD: K DNVK[-Z J M:K: 8 FK `e M] M`DZ: [Rf&DF
 [IFCD]lg [DF>[`D: >Z Uc: K4F: [M`D: P-ZF-I] >M - P: Z: 4
 D-Z] NKf4 [: ZF [T&DF] PD: KM: KMK F] -[[cj: 8`MO: Z E
 [PNK]FOI: >AZ`D: ZM8CDK: [[M`D: [Mk8]T&DFZ87IF]: KFKC
 4-Z >clg `M'D: 4-Z DNVK [Mk8] Z d: -I[`D-`D: D-Z] NKf4
 [: -8g [-]: `H [`FJ: `MO: 4M: : [-OIF]D: 8 -K8`MZ E
 I: -[: T`cZD: Z] NZ 7e: J FCD [c[P: 4`D-`D: [: `Z-K[F: K`
 P-Z [M`D: [Mk8]7-K8 P-ZF4cl-Z]g`D: KMKED-Z] NKf4

KM]: 7-Z d: Zg FJ PNV-K`>AZ`D: Z 4MCKFVK M-4-Z DNVK[T
 ~: 4-c[: `D: P: Z4 Fd: 88F[FJ H-ZFF [O`e:: K`D: 4cZ: K`
 4-Z DNVK [Mk8] 8MKM Z lg NK -Kg`J PNV-I PZMP: Zg7e:
 4-K`D: Z >AZ -[[cj: `D-`D: [: PZMP: ZF [-Z F8 K'F4-I >AZ
 -II`D: [Mk8] M`D: 4-: QMfT&D: g J c[`O: H P' F8 K'F4-I
 >AZ`D: [gK'D: [Fh: 8 [Mk8]7F>e: e-K`D: J `MO: P: Z4 PE
 `c-Ilg 4IM: `M'D: Z 4VZ8: 8NK: [T

&DF] -K-Ig[F] M`D: [Mk8 PZM8c4 FVK J: 4D-KFJ M`D:
 4-Z DNVK[I: 8c[`MPZMPM]: - [gK'D: [F] J M8: I FK >M ZP-Z[6

3 T K: -Z]g D-Z] NKf4: f4F-`FVK [Mk8] 7J -8: M-
 [cj M`N KNZ -IFh: 8 [FKc]M8]7D: >Z Uc: K4g M8e DF4D
 -Z FK: C: ZJ cl`FP: [i M- >K8-J: K-I >Z Uc: K4g i
 -88: 8`M-K FK-D-Z] NKf4Fg`J: Z] f]T&D: : f4F-`FVK F]
 `D: K6 sum_{i=0}^N sin Q_i + f]RT

3`T `J PNV-I: Kd: IMP: Tj QR 8? KFKC`D: `J PNV-I
 : dMf: FVK M-: -4D M`D: [FKc]M8]T
 3`M> @ „0 <`A p* !“`D`o 0 •

† % † J M&I >M`D: 8F`-K4 Q`e:: K[`F] clFi -K8j
PM]`cl-: [4M J M& 8FJ : K[FVK[[D-Z 8 Og -II [`F] clF7[P: E
4F?4-`ZFC: [7M`specificities 7P-ZF4cl-Z`M -4D[`F] clc[7
-K8I-: K`4-[: [M[cOG 4[T&D: [: 4I-[: [D-d: 8Ff: Z K`
[-IF: K4 [MZe: FCD[>M: -4D M`D: 4M J M& 8FJ : K[FVK[
-K8 >M`D: e DMt [:`

4. Experiment 3: Agreement on the membership of synthesized sounds

&D: [: K: e [Mk8[-Z PZ [: K: 8 Rk - b ~ : fP: ZFJ : K
[FJ H-Z`MD: Mk: Z PMZ: 8 Rk % 4 Rk bTfK MZ Z`M: [`D:
4Mk[F]: K4g M`D: [: J: -[cZ [7e: Rk4c8 Rk `D: `D:
bb Z 4MZ 8[Mk8[`]: [: 8 Rk `D: ?Z` : fP: ZFJ : K`T

4.1. Experimental setup

&D: : fP: ZFJ : K `MMHPI-4 8cZKc`D: [-J : [: [Rk M: fE
P: ZFJ : K bT &D: P-ZF4P-K[^ Q.C-K : FD: Z e FD: fP: ZFJ
J : K b7M eFD: fP: ZFJ : K aT&D: MZ Z Q fPTb ~ fPTa
d[T` fPTa ~ fPTbRe-[4Mk: ZD-I-K4 8-4ZM[`D: P-ZF4E
FP-K[Tz Mk: M`D: J D-8 `H K P-Z Rk `D: PZ dRk[: fE
P: ZFJ : K OT&D: -PP-Z`c[-K8`D: PZM: 8cZ e: Z : f-4lg
`D: [-J : -[Rk [: 4Rk bT&D: CL [gk`D: [Rr 8[Mk8[e: Z
` : [: 8-[e: II -[`D: bb Z 4MZ 8[Mk8[T

4.2. Results

Participant strategies and consistency of the measure

&D: [: ` Rk4c8: 8 ZMCDlg -[J -Kg Z 4MZ 8-[[gk`D: `F4
[Mk8[T&D: I-` : Ze: Z 8 [Rk: 8`M: fPIMZ `D: IFJ F[M
`D: P: Z4 P`c-I [P-4 7[Me: : fP: 4: 8 `D-` - IM M`D: J
eMl8e e

% 4Nk8lg7F 4-K O. -[[cj : 8`D` - ZM8`Z-ffi4 [Fc-`FVK
 eMl8 IM4 : Z`D. -J OFCcFg M4 [M : [Mk8[Tfk8 : 87F>-
 [Mk8D. -Z8 FK - I-ONZ-`Mg 4-K O. 4Nk>c[: 8eFD- J c[FE
 4-I FK[`ZcJ : K [Mk87k8`D. J M4 [MeD. K`DF I-ONZ-E
 `Mg F[IM4 : 8 FK - FK[`Fc`FVK 8 dM 8`MU c[F47F 4-K O.
 -[[cj : 8`D` `D. [-J : [Mk8D. -Z8 FK - ZM8`Z-ffi4 [Fc-E
 `FVK eMl8D-d: I: [4D-K4 `MD. 4Nk>c[: 8eFD- `ZcJ P. `
 4-IIT [KMt 8 Og (MC: I 1b<27IF): KFKC`Me -ZKFKC [FK-I[
 FK 4Nk: f` 4-K FJ PZM: `D. cKfdM4-I K`cZ M4`D. [: [FCE
 K-I(T) : 4-K`D. Z >M4 -[[cj : `D` M4Z Z[cl[-Z J M4
 4Nk[: Zd`Fd: `D-K`D. Z -I [Fc-`FVK T

KMD. Z FK: Z [`FKC ?K8FKC M4 M4Z : fP. ZJ : K[F[`D`
 IF): K: Z[8MKMc[: `D. [-J : P. Z4 Pc-I 8EJ : K[FVK[eD. K
 `D. g D-d: `MG8CP`DK8[FJ H-Zfg O.`e:: K`D. [Mk8[7
 -K8 eD. K`D. g D-d: `M4` : CNZh - [Mk8 -[- 4-Z DNkT
 fk8 : 87D. `FJ 9Z [`c8g Z PNV: 8 FK 1OZZ d: -I: 8`DZ : P. ZE
 4 Pc-I 8EJ : K[FVK[4NkZ I-: 8`M4M4CDK: [[7[P. 4Z-I 4 KE
 `ZM8 -K8 [P. 4Z-I 8 dF-`FVK T) D. K IF): K: Z[D-8`M4` : E
 CNZh: `D. [-J : [Mk8[7M4Z-K-Ig[: [4Nk4c8 8`D` `D. g
 D-8 O-[: 8`D. FZ G8CJ : K[NK ZM4CDK: [[7[P. 4Z-I 8 dF-E
 `FVK -K8 8]a

