Appendix

# S1 Section. Brushing duration of each dental surface

S1.1 Subsection. Modeling

Several participants skipped some regions altogether in some or all brushing sessions. Therefore, the brushing durations of any dental surface was often equal to zero, a statistical phenomenon referred to as zero-inflation. Zero-inflation for brushing duration distribution of MaxRO is shown in Fig. S1.

Chart, histogram

Description automatically generated

Fig. S1: Zero-inflated distribution of brushing duration on MaxRO.

As a result, we fit a zero-inflated negative binomial regression model for the amount of time (measured in counts of 25 Hz samples) spent brushing each dental surface, with a log-link and a negative binomial outcome distribution for the count submodel and a logistic link and a Bernoulli outcome distribution for the zero-inflation submodel. Both submodels had fixed effects for tooth surface, mouth side, and jaw, and random effects on the intercept by session nested in participant, to account for participant-to-participant and session-to-session differences in overall brushing duration, and participant-specific overdispersion parameters to account for participant-to-participant differences in residual variance. The count submodel also included participant-specific random effects for tooth surface, mouth side, and jaw. We attempted to add participant-specific random effects for tooth surface, mouth side, and jaw in the zero-inflation submodel, but the estimation algorithm failed to converge for that extended model.

The brushing duration of participant , in session , of dental surface {MaxRO, MaxRB, MaxAB, MaxLB, MaxLO, MaxRL, MaxAL, MaxLL, ManRO, ManRB, ManAB, ManLB, ManLO, ManRL, ManAL, ManLL} is modeled as follows:

We used the following parameterization of the negative binomial distribution:

Hence:

It should be noted that larger values of correspond to smaller variances.

We modeled as follows:

In the preceding expressions, denote the the sets of maxillary, occlusal, lingual, anterior, and gauche (left) regions, respectively; e.g., {MaxRO, MaxRB, MaxAB, MaxLB, MaxLO, MaxRL, MaxAL, MaxLL} and {MaxRO, ManRO, MaxLO, ManLO}.

## S1\_2 Subsection. Parameter Estimates

The AIC for this model was 18,598.76, which was 69,183.57 less than a zero-inflated Poisson model with the same fixed and random effects. The BIC for this model was 18,865.64, which was 69,116.85 less than the zero-inflated Poisson model with the same fixed and random effects.

Tables below summarizes the estimated parameters for the count and zero-inflated submodels.

S1\_1 Table. Estimated fixed effects of count submodel for brushing duration of each dental surface

| Parameter | Log-Mean | SE | 95% CI | p |
| --- | --- | --- | --- | --- |
| : Intercept | 5.33 | 0.11 | (5.12, 5.54) | < .001 |
| : Surface = Lingual | -0.78 | 0.22 | (-1.21, -0.35) | < .001 |
| Surface (Occlusal) | -0.80 | 0.16 | (-1.13, -0.48) | < .001 |
| Side (Anterior) | -0.01 | 0.09 | (-0.19, 0.17) | 0.892 |
| Side (Left) | -3.29e-03 | 0.08 | (-0.15, 0.15) | 0.966 |
| Jaw (Maxillar) | 0.09 | 0.14 | (-0.18, 0.37) | 0.508 |

S1\_2 Table. Estimated fixed effects of zero-inflation submodel for brushing duration of each dental surface

| Parameter | Log-Odds | SE | 95% CI | p |
| --- | --- | --- | --- | --- |
| (Intercept) | -4.25 | 0.43 | (-5.09, -3.41) | < .001 |
| Surface (Lingual) | 3.04 | 0.23 | (2.59, 3.49) | < .001 |
| Surface (Occlusal) | 3.47 | 0.25 | (2.98, 3.96) | < .001 |
| Side (Anterior) | 0.17 | 0.19 | (-0.20, 0.53) | 0.363 |
| Side (Left) | 0.13 | 0.14 | (-0.16, 0.41) | 0.381 |
| Jaw (Maxillar) | 0.68 | 0.13 | (0.42, 0.94) | < .001 |

S1\_3 Table. Estimated participant-specific overdispersion parameters of count submodel for brushing duration of each dental surface

| Parameter | Coefficient | SE | 95% CI | p |
| --- | --- | --- | --- | --- |
| Participant 1 | 1.23 | 0.12 | (1.00, 1.46) | < .001 |
| Participant 2 | 1.55 | 0.14 | (1.29, 1.82) | < .001 |
| Participant 3 | 1.16 | 0.13 | (0.91, 1.40) | < .001 |
| Participant 4 | 0.84 | 0.14 | (0.58, 1.11) | < .001 |
| Participant 5 | 0.64 | 0.13 | (0.38, 0.90) | < .001 |
| Participant 6 | 0.74 | 0.16 | (0.43, 1.05) | < .001 |
| Participant 7 | 1.05 | 0.19 | (0.68, 1.43) | < .001 |
| Participant 8 | 0.77 | 0.12 | (0.54, 1.00) | < .001 |
| Participant 9 | 0.56 | 0.12 | (0.31, 0.80) | < .001 |
| Participant 10 | 0.98 | 0.11 | (0.75, 1.20) | < .001 |
| Participant 11 | 0.72 | 0.14 | (0.44, 0.99) | < .001 |
| Participant 12 | 0.94 | 0.12 | (0.70, 1.18) | < .001 |

S1\_4 Table. Estimated standard deviations of random effects of count submodel for brushing duration of each dental surface

| Parameter | Coefficient |
| --- | --- |
| SD (Intercept: Participant) | 0.34 |
| SD (Intercept: Participant:Session) | 9.56e-05 |
| SD (SurfaceLingual: Participant) | 0.68 |
| SD (SurfaceOcclusal: Participant) | 0.54 |
| SD (JawMaxillar: Participant) | 0.47 |
| SD (SideAnterior: Participant) | 0.26 |
| SD (SideLeft: Participant) | 0.22 |

Table S1.5. Estimated standard deviations of random effects of zero-inflated submodel for brushing duration of each dental surface

| Parameter | Coefficient |
| --- | --- |
| SD (Intercept: [*Session:Participant*](Session:Participant)) | 0.12 |
| SD (Intercept: Participant) | 1.20 |

S1\_6 Table. Estimated participant-level random effects of count submodel for brushing duration of each dental surface

| Participant # | Parameter | Estimate | Std. Error | Pr(>|z|) | 2.5 % | 97.5 % |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | (Intercept) | 0.132 | 0.141 | 0.347 | -0.143 | 0.408 |
| 2 | (Intercept) | 0.363 | 0.140 | 0.010 | 0.087 | 0.638 |
| 3 | (Intercept) | -0.008 | 0.152 | 0.958 | -0.306 | 0.290 |
| 4 | (Intercept) | 0.506 | 0.167 | 0.003 | 0.178 | 0.834 |
| 5 | (Intercept) | -0.305 | 0.181 | 0.091 | -0.660 | 0.049 |
| 6 | (Intercept) | 0.091 | 0.166 | 0.584 | -0.234 | 0.416 |
| 7 | (Intercept) | -0.225 | 0.206 | 0.275 | -0.629 | 0.179 |
| 8 | (Intercept) | -0.273 | 0.162 | 0.092 | -0.589 | 0.044 |
| 9 | (Intercept) | -0.473 | 0.177 | 0.007 | -0.820 | -0.127 |
| 10 | (Intercept) | -0.114 | 0.155 | 0.459 | -0.417 | 0.188 |
| 11 | (Intercept) | 0.496 | 0.185 | 0.007 | 0.134 | 0.858 |
| 12 | (Intercept) | -0.267 | 0.158 | 0.091 | -0.575 | 0.042 |
| 1 | SurfaceLingual | 0.188 | 0.239 | 0.431 | -0.280 | 0.657 |
| 2 | SurfaceLingual | 0.498 | 0.236 | 0.034 | 0.037 | 0.960 |
| 3 | SurfaceLingual | 0.401 | 0.240 | 0.095 | -0.070 | 0.872 |
| 4 | SurfaceLingual | -0.593 | 0.264 | 0.025 | -1.110 | -0.076 |
| 5 | SurfaceLingual | -0.276 | 0.257 | 0.282 | -0.779 | 0.227 |
| 6 | SurfaceLingual | -0.794 | 0.425 | 0.061 | -1.627 | 0.038 |
| 7 | SurfaceLingual | -0.951 | 0.869 | 0.274 | -2.654 | 0.752 |
| 8 | SurfaceLingual | 0.547 | 0.251 | 0.029 | 0.055 | 1.039 |
| 9 | SurfaceLingual | 0.940 | 0.262 | <0.001 | 0.426 | 1.453 |
| 10 | SurfaceLingual | 0.496 | 0.245 | 0.043 | 0.016 | 0.975 |
| 11 | SurfaceLingual | -1.015 | 0.304 | 0.001 | -1.610 | -0.420 |
| 12 | SurfaceLingual | 0.504 | 0.249 | 0.043 | 0.015 | 0.992 |
| 1 | SurfaceOcclusal | 0.312 | 0.194 | 0.108 | -0.069 | 0.693 |
| 2 | SurfaceOcclusal | 0.091 | 0.225 | 0.686 | -0.350 | 0.533 |
| 3 | SurfaceOcclusal | -0.996 | 0.257 | <0.001 | -1.499 | -0.492 |
| 4 | SurfaceOcclusal | -0.545 | 0.253 | 0.032 | -1.042 | -0.048 |
| 5 | SurfaceOcclusal | -0.824 | 0.259 | 0.001 | -1.332 | -0.315 |
| 6 | SurfaceOcclusal | 0.567 | 0.218 | 0.009 | 0.140 | 0.994 |
| 7 | SurfaceOcclusal | 0.109 | 0.297 | 0.714 | -0.474 | 0.692 |
| 8 | SurfaceOcclusal | 0.390 | 0.214 | 0.068 | -0.029 | 0.809 |
| 9 | SurfaceOcclusal | -0.311 | 0.259 | 0.229 | -0.819 | 0.196 |
| 10 | SurfaceOcclusal | 0.569 | 0.208 | 0.006 | 0.161 | 0.977 |
| 11 | SurfaceOcclusal | 0.301 | 0.236 | 0.201 | -0.161 | 0.764 |
| 12 | SurfaceOcclusal | 0.266 | 0.209 | 0.204 | -0.144 | 0.677 |
| 1 | JawMaxillar | -0.148 | 0.164 | 0.365 | -0.469 | 0.172 |
| 2 | JawMaxillar | -0.046 | 0.164 | 0.781 | -0.366 | 0.275 |
| 3 | JawMaxillar | -0.084 | 0.168 | 0.615 | -0.414 | 0.245 |
| 4 | JawMaxillar | -0.340 | 0.193 | 0.079 | -0.719 | 0.039 |
| 5 | JawMaxillar | -0.476 | 0.193 | 0.014 | -0.854 | -0.097 |
| 6 | JawMaxillar | 0.190 | 0.195 | 0.330 | -0.192 | 0.573 |
| 7 | JawMaxillar | 1.404 | 0.236 | <0.001 | 0.941 | 1.866 |
| 8 | JawMaxillar | -0.033 | 0.177 | 0.850 | -0.380 | 0.313 |
| 9 | JawMaxillar | 0.001 | 0.198 | 0.996 | -0.387 | 0.389 |
| 10 | JawMaxillar | -0.097 | 0.172 | 0.571 | -0.434 | 0.240 |
| 11 | JawMaxillar | -0.264 | 0.212 | 0.212 | -0.679 | 0.150 |
| 12 | JawMaxillar | -0.107 | 0.177 | 0.544 | -0.453 | 0.239 |
| 1 | SideAnterior | 0.177 | 0.139 | 0.203 | -0.095 | 0.448 |
| 2 | SideAnterior | -0.031 | 0.130 | 0.813 | -0.285 | 0.223 |
| 3 | SideAnterior | -0.009 | 0.143 | 0.951 | -0.289 | 0.271 |
| 4 | SideAnterior | 0.020 | 0.162 | 0.901 | -0.297 | 0.338 |
| 5 | SideAnterior | 0.335 | 0.186 | 0.072 | -0.030 | 0.699 |
| 6 | SideAnterior | -0.426 | 0.271 | 0.116 | -0.958 | 0.105 |
| 7 | SideAnterior | -0.464 | 0.230 | 0.043 | -0.914 | -0.014 |
| 8 | SideAnterior | 0.024 | 0.148 | 0.872 | -0.265 | 0.313 |
| 9 | SideAnterior | 0.088 | 0.168 | 0.600 | -0.241 | 0.418 |
| 10 | SideAnterior | 0.236 | 0.151 | 0.118 | -0.060 | 0.533 |
| 11 | SideAnterior | -0.116 | 0.184 | 0.529 | -0.477 | 0.245 |
| 12 | SideAnterior | 0.170 | 0.148 | 0.248 | -0.119 | 0.460 |
| 1 | SideLeft | -0.009 | 0.112 | 0.934 | -0.229 | 0.210 |
| 2 | SideLeft | -0.204 | 0.120 | 0.090 | -0.439 | 0.032 |
| 3 | SideLeft | 0.086 | 0.125 | 0.489 | -0.159 | 0.331 |
| 4 | SideLeft | -0.034 | 0.149 | 0.817 | -0.326 | 0.257 |
| 5 | SideLeft | 0.293 | 0.158 | 0.065 | -0.018 | 0.603 |
| 6 | SideLeft | -0.074 | 0.154 | 0.631 | -0.375 | 0.227 |
| 7 | SideLeft | -0.313 | 0.200 | 0.118 | -0.705 | 0.080 |
| 8 | SideLeft | 0.091 | 0.122 | 0.458 | -0.148 | 0.329 |
| 9 | SideLeft | 0.290 | 0.134 | 0.030 | 0.028 | 0.552 |
| 10 | SideLeft | -0.025 | 0.120 | 0.836 | -0.261 | 0.211 |
| 11 | SideLeft | -0.321 | 0.171 | 0.061 | -0.657 | 0.015 |
| 12 | SideLeft | 0.249 | 0.137 | 0.068 | -0.019 | 0.518 |

S1\_7 Table. Estimated participant-level random effects of zero-inflated submodel for brushing duration of each dental surface

| Participant # | Parameter | Estimate | Std. Error | Pr(>|z|) | 2.5 % | 97.5 % |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | (Intercept) | -1.467 | 0.449 | 0.001 | -2.347 | -0.587 |
| 2 | (Intercept) | 0.430 | 0.396 | 0.278 | -0.347 | 1.207 |
| 3 | (Intercept) | -0.306 | 0.405 | 0.450 | -1.101 | 0.488 |
| 4 | (Intercept) | 0.541 | 0.396 | 0.172 | -0.235 | 1.318 |
| 5 | (Intercept) | 0.151 | 0.399 | 0.704 | -0.631 | 0.933 |
| 6 | (Intercept) | 1.162 | 0.397 | 0.003 | 0.385 | 1.939 |
| 7 | (Intercept) | 2.496 | 0.414 | <0.001 | 1.684 | 3.308 |
| 8 | (Intercept) | -1.389 | 0.445 | 0.002 | -2.261 | -0.516 |
| 9 | (Intercept) | -0.091 | 0.402 | 0.821 | -0.879 | 0.697 |
| 10 | (Intercept) | -1.765 | 0.471 | <0.001 | -2.688 | -0.842 |
| 11 | (Intercept) | 0.796 | 0.396 | 0.044 | 0.021 | 1.572 |
| 12 | (Intercept) | -0.399 | 0.407 | 0.327 | -1.197 | 0.399 |

From the ratio of the estimated standard deviations for participant and session level random effects on the intercept, , we can see that within-participant variability (session-to-session) is much smaller than between-participant variability, on the log-mean scale.

# S2 Section. Duration of excessive brushing pressure on each dental surface

S2\_1 Subsection. Modeling

As in Section S1, we fit a zero-inflated negative binomial model; both the zero-inflation and count submodels include fixed effects for tooth surface, side, and jaw, and random effects on the intercept by participant and session. Extended models adding participant-level random effects on tooth surface, side and jaw and participant-specific overdispersion parameters failed to converge.

Hence:

is modeled as:

The AIC for this model was 1,252.2, which was 274.6 less than a zero-inflated Poisson model with the same fixed and random effects. The BIC for this model was 1,346.7, which was 269.0 less than the zero-inflated Poisson model with the same fixed and random effects.

S2\_2 Subsection. Parameter Estimates

Tables below summarizes the estimated parameters for the count and zero-inflated submodels for excessive brushing pressure duration.

S2\_1 Table. Estimated fixed effects of count submodel for excessive brushing pressure duration on each dental surface

| Parameter | Log-Mean | SE | 95% CI | p |
| --- | --- | --- | --- | --- |
| (Intercept) | 2.12 | 0.30 | (1.53, 2.71) | < .001 |
| Surface (Lingual) | 0.01 | 0.29 | (-0.56, 0.58) | 0.971 |
| Surface (Occlusal) | 0.54 | 0.22 | (0.10, 0.98) | 0.015 |
| Side (Anterior) | 0.04 | 0.32 | (-0.58, 0.66) | 0.889 |
| Side (Left) | -0.04 | 0.20 | (-0.44, 0.37) | 0.862 |
| Jaw (Maxillar) | -0.10 | 0.21 | (-0.51, 0.30) | 0.612 |

S2\_2 Table. Estimated fixed effects of zero-inflation submodel for excessive brushing pressure duration on each dental surface

| Parameter | Log-Odds | SE | 95% CI | p |
| --- | --- | --- | --- | --- |
| (Intercept) | 4.87 | 0.93 | (3.04, 6.69) | < .001 |
| Surface (Lingual) | 0.93 | 0.34 | (0.27, 1.60) | 0.006 |
| Surface (Occlusal) | -1.01 | 0.29 | (-1.59, -0.44) | < .001 |
| Side (Anterior) | -0.20 | 0.37 | (-0.93, 0.52) | 0.583 |
| Side (Left) | -0.38 | 0.27 | (-0.91, 0.14) | 0.151 |
| Jaw (Maxillar) | 0.59 | 0.24 | (0.11, 1.07) | 0.016 |
|  |  |  |  |  |

S2\_3 Table. Estimated standard deviations of random effects of count submodel for excessive brushing pressure duration on each dental surface

| Parameter | Coefficient |
| --- | --- |
| SD (Intercept: <Session:Participant>) | 0.27 |
| SD (Intercept: Participant) | 0.38 |
| SD (Residual) | 2.06 |

S2\_4 Table. Estimated standard deviations of random effects of zero-inflation submodel for excessive brushing pressure duration on each dental surface

| Parameter | Coefficient |
| --- | --- |
| SD (Intercept: <Session:Participant>) | 0.69 |
| SD (Intercept: Participant) | 2.39 |

S2\_5 Table. Estimated participant-level random effects of count submodel for excessive brushing pressure duration on each dental surface

| Participant # | Parameter | Estimate | Std. Error | Pr(>|z|) | 2.5 % | 97.5 % |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | (Intercept) | 0.289 | 0.232 | 0.213 | -0.166 | 0.743 |
| 2 | (Intercept) | -0.002 | 0.380 | 0.996 | -0.747 | 0.743 |
| 3 | (Intercept) | -0.002 | 0.380 | 0.996 | -0.747 | 0.743 |
| 4 | (Intercept) | -0.002 | 0.380 | 0.996 | -0.747 | 0.743 |
| 5 | (Intercept) | -0.158 | 0.302 | 0.600 | -0.750 | 0.434 |
| 6 | (Intercept) | -0.599 | 0.349 | 0.086 | -1.283 | 0.084 |
| 7 | (Intercept) | -0.002 | 0.380 | 0.996 | -0.747 | 0.743 |
| 8 | (Intercept) | 0.206 | 0.346 | 0.552 | -0.473 | 0.885 |
| 9 | (Intercept) | -0.002 | 0.380 | 0.996 | -0.747 | 0.743 |
| 10 | (Intercept) | -0.080 | 0.254 | 0.753 | -0.578 | 0.418 |
| 11 | (Intercept) | 0.277 | 0.254 | 0.276 | -0.221 | 0.775 |
| 12 | (Intercept) | -0.022 | 0.324 | 0.947 | -0.656 | 0.613 |

S2\_6 Table. Estimated participant-level random effects of zero-inflated submodel for excessive brushing pressure duration on each dental surface

| Participant # | Parameter | Estimate | Std. Error | Pr(>|z|) | 2.5 % | 97.5 % |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | (Intercept) | -3.737 | 0.938 | <0.001 | -5.576 | -1.898 |
| 2 | (Intercept) | 1.594 | 1.576 | 0.312 | -1.494 | 4.682 |
| 3 | (Intercept) | 1.594 | 1.576 | 0.312 | -1.494 | 4.682 |
| 4 | (Intercept) | 1.594 | 1.576 | 0.312 | -1.494 | 4.682 |
| 5 | (Intercept) | -1.269 | 1.002 | 0.205 | -3.233 | 0.695 |
| 6 | (Intercept) | -2.172 | 0.963 | 0.024 | -4.060 | -0.284 |
| 7 | (Intercept) | 1.594 | 1.576 | 0.312 | -1.494 | 4.682 |
| 8 | (Intercept) | -0.329 | 1.089 | 0.763 | -2.463 | 1.805 |
| 9 | (Intercept) | 1.594 | 1.576 | 0.312 | -1.494 | 4.682 |
| 10 | (Intercept) | -2.207 | 0.956 | 0.021 | -4.082 | -0.333 |
| 11 | (Intercept) | -2.842 | 0.944 | 0.003 | -4.693 | -0.992 |
| 12 | (Intercept) | -0.717 | 1.044 | 0.492 | -2.762 | 1.328 |

Also, the estimated value for overdispersion parameter was 0.72.

# S3 Section. Total active brushing duration of each brushing session

S3\_1 Subsection. Modeling

We fit a negative binomial regression model for the total active duration of each brushing session (measured in counts of 25 Hz samples), with a log-link and random intercepts by participant ID. We also included a participant-specific overdispersion parameters to account for participant-to-participant differences in residual variance

Hence:

We model as follows:

The AIC for this model was 1,802.112, which was 8,098.558 less than a zero-inflated Poisson model with the same fixed and random effects. The BIC for this model was 1,841.137, which was 8,065.108 less than the zero-inflated Poisson model with the same fixed and random effects.

## S3\_2 Subsection. Parameter Estimates

The estimated parameters are summarized in the tables below.

S3\_1 Table. Estimated fixed effects of total active brushing in each brushing session

| Parameter | Log-Mean | SE | 95% CI | p |
| --- | --- | --- | --- | --- |
| (Intercept) | 7.71 | 0.04 | (7.63, 7.79) | < .001 |

S3\_2 Table. Estimated participant-specific overdispersion parameter of total active brushing in each brushing session

| Parameter | Coefficient | SE | 95% CI | p |
| --- | --- | --- | --- | --- |
| Participant1 | 5.34 | 0.51 | (4.34, 6.34) | < .001 |
| Participant2 | 3.95 | 0.49 | (3.00, 4.91) | < .001 |
| Participant3 | 4.32 | 0.48 | (3.37, 5.26) | < .001 |
| Participant4 | 3.78 | 0.47 | (2.86, 4.71) | < .001 |
| Participant5 | 0.97 | 0.52 | (-0.05, 1.99) | 0.064 |
| Participant6 | 2.97 | 0.47 | (2.06, 3.89) | < .001 |
| Participant7 | 4.10 | 0.48 | (3.17, 5.04) | < .001 |
| Participant8 | 3.19 | 0.47 | (2.27, 4.10) | < .001 |
| Participant9 | 2.21 | 0.46 | (1.30, 3.12) | < .001 |
| Participant10 | 5.24 | 0.51 | (4.24, 6.23) | < .001 |
| Participant11 | 3.68 | 0.47 | (2.76, 4.60) | < .001 |
| Participant12 | 2.86 | 0.46 | (1.95, 3.77) | < .001 |

S3\_3 Table. Estimated random effect standard deviation of total active brushing in each brushing session

| Parameter | Coefficient |
| --- | --- |
| SD (Intercept: Participant) | 0.12 |

S3\_4 Table. Estimated participant-level random effects of total active brushing in each brushing session

| Participant # | Parameter | Estimate | Std. Error | Pr(>|z|) | 2.5 % | 97.5 % |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | (Intercept) | 0.172 | 0.048 | <0.001 | 0.078 | 0.266 |
| 2 | (Intercept) | 0.185 | 0.061 | 0.003 | 0.065 | 0.305 |
| 3 | (Intercept) | -0.021 | 0.052 | 0.684 | -0.123 | 0.081 |
| 4 | (Intercept) | 0.045 | 0.059 | 0.438 | -0.069 | 0.160 |
| 5 | (Intercept) | -0.145 | 0.154 | 0.346 | -0.446 | 0.156 |
| 6 | (Intercept) | -0.085 | 0.069 | 0.222 | -0.220 | 0.051 |
| 7 | (Intercept) | -0.028 | 0.054 | 0.604 | -0.133 | 0.078 |
| 8 | (Intercept) | -0.064 | 0.065 | 0.322 | -0.192 | 0.063 |
| 9 | (Intercept) | -0.095 | 0.088 | 0.277 | -0.267 | 0.076 |
| 10 | (Intercept) | 0.124 | 0.048 | 0.010 | 0.030 | 0.219 |
| 11 | (Intercept) | -0.029 | 0.058 | 0.617 | -0.143 | 0.085 |
| 12 | (Intercept) | -0.071 | 0.071 | 0.318 | -0.210 | 0.068 |

To find out the between- and within-person variabilities in active brushing duration, we have summarized the mean and standard deviations estimated from the model and calculated empirically from the samples in the table below:

S3\_5 Table. Participant-specific estimates of active brushing duration

| Participant | sample mean (seconds) | sample var (seconds^2) | sample sd (seconds) | lambda (samples) | lambda (seconds) | kappa | model var (seconds^2) | model sd (seconds) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 107 | 58.2 | 7.63 | 2646 | 106 | 209 | 57.8 | 7.6 |
| 2 | 110 | 195 | 14 | 2680 | 107 | 52.2 | 224 | 15 |
| 3 | 87 | 103 | 10.1 | 2180 | 87.2 | 75.1 | 105 | 10.2 |
| 4 | 93.9 | 171 | 13.1 | 2330 | 93.2 | 44 | 201 | 14.2 |
| 5 | 46.7 | 477 | 21.8 | 1927 | 77.1 | 2.63 | 2263 | 47.6 |
| 6 | 79.3 | 292 | 17.1 | 2046 | 81.9 | 19.6 | 345 | 18.6 |
| 7 | 86.3 | 113 | 10.6 | 2166 | 86.6 | 60.6 | 127 | 11.3 |
| 8 | 81.9 | 287 | 16.9 | 2088 | 83.5 | 24.2 | 291 | 17.1 |
| 9 | 74.9 | 486 | 22 | 2025 | 81 | 9.15 | 720 | 26.8 |
| 10 | 101 | 59.9 | 7.74 | 2522 | 101 | 188 | 58.2 | 7.63 |
| 11 | 86.1 | 192 | 13.8 | 2163 | 86.5 | 39.6 | 192 | 13.9 |
| 12 | 80.5 | 368 | 19.2 | 2074 | 83 | 17.4 | 399 | 20 |

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