SUPPLEMENTARY MATERIAL

corresponding to:

Development of motor control and behaviour in Asian elephants in the Kabini elephant population, southern India

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Details of various behaviours

We present here, a list of various behaviours and their categorisation, and photos of different kinds of behaviours. We recorded a total of 85 different calf activities. We classified behaviours into four behavioural classes: a) feeding, b) grooming, c) resting, and d) social interaction, play, exploration related behaviours. Four out of these 85 activities were physiological (yawning, hiccupping, urinating, and defecating) and were not classified under any of the above-mentioned behavioural classes. Based on the level of competence of behavioural execution by a calf, the 81 behaviours were classified into four behavioural stages namely, a) preparatory calf behaviour, b) preparatory adult behaviour, c) calf-specific behaviour, and d) adult-like behaviour (see Supplementary Table 1).

Supplementary Fig. S1. Calves and juveniles of different age classes showing feeding related behaviours belonging to four behavioural stages. a) investigate food in a conspecific’s mouth and b) taking grass from a conspecific belong to preparatory adult behaviour; c) locating nipple in the correct direction and d) locating the nipple in the wrong direction belong to preparatory calf behaviour; e) coprophagy, f) sucking from a non-mother conspecific, g) holding the nipple, and h) sucking from the mother belong to calf-specific behaviours; and, i) plucking and collecting grass, j) chewing on grass, k) calf on the left drinking water using the mouth and l) drinking water using the trunk.
Supplementary Fig. S2. Adult-like grooming related behaviours shown by calves and juveniles. a) spraying dust/grass onto oneself, b) rolling in grass, c) wallowing in mud, and d) bathing.

Supplementary Fig. S3. Resting behaviours shown by calves can be categorized into two behavioural stages. a) leaning on a conspecific while resting belongs to preparatory adult behaviour; b) trying to sit down, c) sitting down, and d) lying belong to adult-like behavioural expression.
Supplementary Fig. S4. Social interactions (which includes play and explorative behaviours) of calves and juveniles belong to three behavioural stages: behaviours like a) climbing on a conspecific, b) investigating an inanimate object, c) chewing one’s own trunk, d) playing with an object, and, e) trying to bite/chew any part of a conspecific, belong to the calf-specific category; f) raising one’s head to place it on a conspecific belongs to preparatory adult behaviour; and, behaviours like, g) placing trunk tip in the mouth of a conspecific, h) sniffing the ground, i) smelling dung and j) checking a conspecific, belong to adult-like behaviours.
### SUPPLEMENTARY TABLE 1

**NAMES OF BEHAVIOURS, THEIR DESCRIPTIONS, BEHAVIOURAL CLASSES, AND BEHAVIOURAL STAGES**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the behaviour/activity</th>
<th>Behaviour code</th>
<th>Behaviour/activity description</th>
<th>Behavioural class</th>
<th>Behavioural stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Attempt to feed</td>
<td>ATF</td>
<td>Attempt to feed on grass/browse but not successfully.</td>
<td>Feeding related</td>
<td>Preparatory adult behaviour</td>
</tr>
<tr>
<td>2</td>
<td>Coprophagy</td>
<td>COP</td>
<td>Eat elephant dung.</td>
<td>Feeding related</td>
<td>Call-specific</td>
</tr>
<tr>
<td>3</td>
<td>Drink</td>
<td>DRK</td>
<td>Drink water using trunk to suck up water and deliver to mouth.</td>
<td>Feeding related</td>
<td>Adult-like</td>
</tr>
<tr>
<td>4</td>
<td>Drink with mouth</td>
<td>DRM</td>
<td>Use the mouth directly to drink from the water surface.</td>
<td>Feeding related</td>
<td>Preparatory adult behaviour</td>
</tr>
<tr>
<td>5</td>
<td>Feed</td>
<td>FED</td>
<td>Feed on grass/browse.</td>
<td>Feeding related</td>
<td>Adult-like</td>
</tr>
<tr>
<td>6</td>
<td>Walk-pluck</td>
<td>WSP</td>
<td>Sniff the ground for food or pluck grass while walking.</td>
<td>Feeding related</td>
<td>Adult-like</td>
</tr>
<tr>
<td>7</td>
<td>Investigate food</td>
<td>INV</td>
<td>Investigate a conspecific’s food (in its mouth)/smell the grass that another individual is</td>
<td>Feeding related</td>
<td>Preparatory adult behaviour</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>scraping off, but NOT take the other animal’s food (which is TGC).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Push mammary gland</td>
<td>NPH</td>
<td>Push at a conspecific’s (usually the mother’s) mammary gland using the head.</td>
<td>Feeding related</td>
<td>Preparatory calf behaviour</td>
</tr>
<tr>
<td>9</td>
<td>Pull nipple</td>
<td>NPL</td>
<td>Pull at or holding a conspecific’s (usually the mother’s) nipple.</td>
<td>Feeding related</td>
<td>Preparatory calf behaviour</td>
</tr>
<tr>
<td>10</td>
<td>Search for nipple correctly</td>
<td>NPR</td>
<td>Try to locate a conspecific’s (usually the mother’s) nipple in the correct orientation,</td>
<td>Feeding related</td>
<td>Preparatory calf behaviour</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>between the forelegs. This includes sniffing in the direction of a nipple also.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Search for nipple in the wrong direction</td>
<td>NPW</td>
<td>Try to locate a conspecific’s (usually the mother’s) nipple in the wrong direction, between the hind legs, or to suck between the hind legs.</td>
<td>Feeding related</td>
<td>Preparatory calf behaviour</td>
</tr>
<tr>
<td>12</td>
<td>Allosuck</td>
<td>SUA</td>
<td>Suck on the mammary glands of an allomother.</td>
<td>Feeding related</td>
<td>Call-specific</td>
</tr>
<tr>
<td>13</td>
<td>Suck from female</td>
<td>SUF</td>
<td>Suck on the mammary glands of a female conspecific other than the mother or allomother.</td>
<td>Feeding related</td>
<td>Call-specific</td>
</tr>
<tr>
<td>14</td>
<td>Suck from mother</td>
<td>SUM</td>
<td>Suck on the mammary glands of the mother.</td>
<td>Feeding related</td>
<td>Call-specific</td>
</tr>
<tr>
<td>15</td>
<td>Take grass from a conspecific</td>
<td>TGC</td>
<td>Take grass from a conspecific’s scraped-off grass pile.</td>
<td>Feeding related</td>
<td>Preparatory adult behaviour</td>
</tr>
<tr>
<td>16</td>
<td>Take grass from a spot</td>
<td>TGS</td>
<td>Pluck grass from the same spot where a conspecific (usually the mother or allomother) is already feeding.</td>
<td>Feeding related</td>
<td>Preparatory adult behaviour</td>
</tr>
<tr>
<td>17</td>
<td>Alert</td>
<td>ALR</td>
<td>Stand still on alert with the ears spread out.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>18</td>
<td>Avoid</td>
<td>AVO</td>
<td>Turn away/walk away/run or stop fighting with other calves and move away when being</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>approached by the other calf’s mother or allomother.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Avoid and show back</td>
<td>AVB</td>
<td>Turn away and present the back (subordinate behaviour), including spreading legs or</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>standing still to be checked.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Chase birds</td>
<td>CHB</td>
<td>Chase after or shoo away birds by lashing out with the trunk.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>21</td>
<td>Chew</td>
<td>CHE</td>
<td>Try to chew or bite any body part of a conspecific but not in dominance.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>22</td>
<td>Chew trunk</td>
<td>CHT</td>
<td>Roll trunk and place in own mouth or chew trunk or stick on the trunk tip.</td>
<td>Social interaction, play, exploration</td>
<td>Call-specific</td>
</tr>
<tr>
<td>23</td>
<td>Check</td>
<td>CHQ</td>
<td>Check a conspecific but not in dominance.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>24</td>
<td>Extend trunk</td>
<td>EXT</td>
<td>Extend trunk towards a conspecific.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>25</td>
<td>Head butt</td>
<td>HBT</td>
<td>Head butt another calf such that the two heads meet straight on and not one over the other (this is prolonged like the trunk wrestling of adults, but the trunks are not intertwined).</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>26</td>
<td>Hit with head</td>
<td>HIT</td>
<td>Raise head to place it on a (usually young) conspecific’s head and then bring down the</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>head on the other individual’s head with some force.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Kick conspecific</td>
<td>KIC</td>
<td>Kick a conspecific.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>28</td>
<td>Kick object</td>
<td>KIO</td>
<td>Kick an inanimate object or at birds.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>29</td>
<td>Kick air</td>
<td>KKA</td>
<td>Kick out in the air.</td>
<td>Social interaction, play, exploration</td>
<td>Preparatory adult behaviour</td>
</tr>
<tr>
<td>30</td>
<td>Lash</td>
<td>LSH</td>
<td>Lash out with the trunk towards a conspecific or heterospecific.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>31</td>
<td>Place</td>
<td>PLC</td>
<td>Place the trunk on an inanimate object on the ground to smell and investigate (this</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>excludes smelling dung). This is different from play. Here, the object is not lifted off</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>from the ground although the object may be touched or turned.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Play climb</td>
<td>PCL</td>
<td>Climb on or roll over a conspecific in play.</td>
<td>Social interaction, play, exploration</td>
<td>Call-specific</td>
</tr>
<tr>
<td>33</td>
<td>Play mount</td>
<td>PLM</td>
<td>Mount another individual from behind in play.</td>
<td>Social interaction, play, exploration</td>
<td>Preparatory adult behaviour for males</td>
</tr>
<tr>
<td>34</td>
<td>Play with object</td>
<td>PLO</td>
<td>Play with grass, sticks (including biting sticks), or other objects.</td>
<td>Social interaction, play, exploration</td>
<td>Call-specific</td>
</tr>
<tr>
<td>35</td>
<td>Raise head in play</td>
<td>PRH</td>
<td>Raise head and try to place on another individual (even if unsuccessfully) in play and</td>
<td>Social interaction, play, exploration</td>
<td>Preparatory adult behaviour</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>not with force.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Pass</td>
<td>PTS</td>
<td>Pass from one side to the other of an adult or subadult through the space between</td>
<td>Social interaction, play, exploration</td>
<td>Call-specific</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>that conspecific’s trunk and forelegs or under the belly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Play with trunk</td>
<td>PWT</td>
<td>Play with one’s own trunk (all trunk motions are included in this).</td>
<td>Social interaction, play, exploration</td>
<td>Call-specific</td>
</tr>
<tr>
<td>38</td>
<td>Push</td>
<td>PSH</td>
<td>Push with head against any part of the body, other than the head, of another individual.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>39</td>
<td>Roar</td>
<td>ROR</td>
<td>Produce a deep prolonged laryngeal call.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>40</td>
<td>Rub</td>
<td>RUB</td>
<td>Rub against a conspecific and not in dominance.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>41</td>
<td>Rumble</td>
<td>RUM</td>
<td>Emit a continuous resonant laryngeal call.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>42</td>
<td>Run</td>
<td>RUN</td>
<td>Run (usually in the absence of social interaction).</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>43</td>
<td>Shake head</td>
<td>SHK</td>
<td>Shake head when disturbed or scared.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>44</td>
<td>Shove</td>
<td>SHO</td>
<td>Use the body to shove against another individual’s body.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>45</td>
<td>Slide</td>
<td>SLD</td>
<td>Slide off an adult’s or subadult’s leg to eventually lie down.</td>
<td>Resting</td>
<td>Preparatory adult behaviour</td>
</tr>
<tr>
<td>46</td>
<td>Smell dung</td>
<td>SMD</td>
<td>Smell dung.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>47</td>
<td>Sniff conspecific</td>
<td>SNF</td>
<td>Sniff near the genitals of a conspecific but without contact, and not in dominance.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>48</td>
<td>Sniff air</td>
<td>SNI</td>
<td>Sniff the air, including in the direction of a conspecific or heterospecific.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>49</td>
<td>Walk-sniff</td>
<td>SNW</td>
<td>Raise trunk and sniff the air while walking.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
<tr>
<td>50</td>
<td>Sniff oneself</td>
<td>SON</td>
<td>Sniff itself.</td>
<td>Social interaction, play, exploration</td>
<td>Adult-like</td>
</tr>
</tbody>
</table>
### NAMES OF BEHAVIOURS, THEIR DESCRIPTIONS, BEHAVIOURAL CLASSES, AND BEHAVIOURAL STAGES

<table>
<thead>
<tr>
<th>Behavior Code</th>
<th>Behavior</th>
<th>Description</th>
<th>Behavioral Class</th>
<th>Behavioral Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDC</td>
<td>Turn towards call</td>
<td>Turn towards the direction of a call from a conspecific.</td>
<td>Social interaction</td>
<td>Adult-like</td>
</tr>
<tr>
<td>TMP</td>
<td>Trumpet</td>
<td>Emit a loud sound (usually ascending in frequency) through the trunk.</td>
<td>Social interaction</td>
<td>Adult-like</td>
</tr>
<tr>
<td>TOU</td>
<td>Touch</td>
<td>Use trunk to touch a conspecific on its head (but not the mouth which would be TRM) or body (but not genitals which would be CHK or CHQ), and not in dominance (dominance would be TCH).</td>
<td>Social interaction</td>
<td>Adult-like</td>
</tr>
<tr>
<td>TRM</td>
<td>Trunk in mouth</td>
<td>Place trunk tip in the mouth of a conspecific.</td>
<td>Social interaction</td>
<td>Adult-like</td>
</tr>
<tr>
<td>TRP</td>
<td>Trip</td>
<td>Fall down or trip while walking.</td>
<td>Social interaction</td>
<td>Preparatory adult behaviour</td>
</tr>
<tr>
<td>TTW</td>
<td>Twine trunk</td>
<td>Entwine trunk with that of a conspecific but not in dominance.</td>
<td>Social interaction</td>
<td>Adult-like</td>
</tr>
<tr>
<td>PIC</td>
<td>Pick</td>
<td>Try to pick up an object (other than grass).</td>
<td>Social interaction</td>
<td>Preparatory adult behaviour</td>
</tr>
<tr>
<td>HLD</td>
<td>Hold</td>
<td>Hold an object in the trunk.</td>
<td>Social interaction</td>
<td>Adult-like</td>
</tr>
<tr>
<td>CRL</td>
<td>Circle</td>
<td>Walk around in a circle (spin around).</td>
<td>Social interaction</td>
<td>Adult-like</td>
</tr>
<tr>
<td>SFT</td>
<td>Shift</td>
<td>Shift the body or trunk without moving away from the spot such that it ends physical contact with a conspecific.</td>
<td>Social interaction</td>
<td>Adult-like</td>
</tr>
<tr>
<td>WTG</td>
<td>Wait</td>
<td>Turn towards the direction of a conspecific and wait for it to follow or stop while walking and wait for a conspecific to join.</td>
<td>Social interaction</td>
<td>Adult-like</td>
</tr>
<tr>
<td>BPS</td>
<td>Being pushed</td>
<td>Being pushed by a conspecific. This code is used when the calf is not showing any behaviour of its own but is going through the interaction initiated by a conspecific.</td>
<td>Social interaction</td>
<td>Adult-like</td>
</tr>
<tr>
<td>HCU</td>
<td>Hiccup</td>
<td>Sudden jerking movement of a calf's head and trunk (appears involuntary) accompanied by a sound.</td>
<td>Physiological</td>
<td>Not applicable</td>
</tr>
<tr>
<td>LEN</td>
<td>Lean</td>
<td>Stand or sit leaning on a conspecific.</td>
<td>Resting</td>
<td>Preparatory adult behaviour</td>
</tr>
<tr>
<td>LIE</td>
<td>Lie down</td>
<td>Lie down on the ground.</td>
<td>Resting</td>
<td>Adult-like</td>
</tr>
<tr>
<td>SIT</td>
<td>Sit</td>
<td>Sit down with hindlegs bent and the rear resting on the ground.</td>
<td>Resting</td>
<td>Adult-like</td>
</tr>
<tr>
<td>SQT</td>
<td>Squat</td>
<td>Bend hindlegs and prepare to sit.</td>
<td>Resting</td>
<td>Adult-like</td>
</tr>
<tr>
<td>STD</td>
<td>Stand</td>
<td>Stand still relaxed.</td>
<td>Resting</td>
<td>Adult-like</td>
</tr>
<tr>
<td>YAW</td>
<td>Yawn</td>
<td>Slow opening of the mouth, followed by the mouth being in a wide-open posture for a brief time, and subsequent quick closure of the mouth.</td>
<td>Physiological</td>
<td>Not applicable</td>
</tr>
<tr>
<td>SRT</td>
<td>Stretch</td>
<td>Stretch body usually after getting up or before lying down.</td>
<td>Resting</td>
<td>Adult-like</td>
</tr>
<tr>
<td>GUP</td>
<td>Get up</td>
<td>Try to get up to sitting or standing position after lying down.</td>
<td>Resting</td>
<td>Adult-like</td>
</tr>
<tr>
<td>BTH</td>
<td>Bathe</td>
<td>Lie down in the water.</td>
<td>Grooming related</td>
<td>Adult-like</td>
</tr>
<tr>
<td>DEF</td>
<td>Defecate</td>
<td>Defecate.</td>
<td>Grooming related</td>
<td>Adult-like</td>
</tr>
<tr>
<td>ESP</td>
<td>Extract and spray</td>
<td>Use trunk to extract liquid from the pharyngeal pouch and spray it on oneself.</td>
<td>Grooming related</td>
<td>Adult-like</td>
</tr>
<tr>
<td>FLY</td>
<td>Switch flies</td>
<td>Keep away flies using the tail or trunk.</td>
<td>Grooming related</td>
<td>Adult-like</td>
</tr>
<tr>
<td>ROL</td>
<td>Roll</td>
<td>Roll in the mud or on grass.</td>
<td>Grooming related</td>
<td>Adult-like</td>
</tr>
<tr>
<td>SCR</td>
<td>Scratch</td>
<td>Scratch itself with the trunk, leg or tail.</td>
<td>Grooming related</td>
<td>Adult-like</td>
</tr>
<tr>
<td>SKO</td>
<td>Scratch against</td>
<td>Scratch itself with an inanimate object or rub itself against a stump or tree.</td>
<td>Grooming related</td>
<td>Adult-like</td>
</tr>
<tr>
<td>SPL</td>
<td>Splash</td>
<td>Use trunk to splash water onto itself.</td>
<td>Grooming related</td>
<td>Adult-like</td>
</tr>
<tr>
<td>SPR</td>
<td>Spray</td>
<td>Spray dust onto itself using the trunk.</td>
<td>Grooming related</td>
<td>Adult-like</td>
</tr>
<tr>
<td>SPU</td>
<td>Splash urine</td>
<td>Splash a conspecific's urine onto itself.</td>
<td>Grooming related</td>
<td>Calf-specific</td>
</tr>
<tr>
<td>TLS</td>
<td>Beat tail</td>
<td>Beat tail against a stump or tree.</td>
<td>Grooming related</td>
<td>Adult-like</td>
</tr>
<tr>
<td>TWT</td>
<td>Touch itself</td>
<td>Use trunk to touch itself on any part of the body except inside mouth (which is CHE).</td>
<td>Grooming related</td>
<td>Adult-like</td>
</tr>
<tr>
<td>URI</td>
<td>Urinate</td>
<td>Urinate</td>
<td>Physiological</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

**SUPPLEMENTARY TABLE 1 (CONTINUED)**

**Details of calves/juveniles sampled for observing trunk motor control and lateral bias (see over)**

The identities and age-sex categorisation of calves/juveniles sampled for observing lateralisation in trunk use are shown below.
## SUPPLEMENTARY TABLE 2

**THE IDENTITIES AND AGE-SEX CATEGORISATION OF CALVES/JUVENILES SAMPLED FOR OBSERVING LATERALISATION IN TRUNK USE AND THE TIME FOR WHICH THEY WERE SCORED**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name</th>
<th>Sex</th>
<th>Age class (months)</th>
<th>Duration scored (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Althea_2015_F</td>
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<td>&gt;12</td>
<td>1200</td>
</tr>
<tr>
<td>2</td>
<td>Emerald_2016_F</td>
<td>Female</td>
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<td>899</td>
</tr>
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<td>3</td>
<td>Genette_2017_F</td>
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<td>&lt;3</td>
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<tr>
<td>4</td>
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<td>5</td>
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<td>Female</td>
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<tr>
<td></td>
<td>Hannah_2016_F</td>
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<td>301</td>
</tr>
<tr>
<td>6</td>
<td>Ilaena_2016_F</td>
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<td>3-6</td>
<td>300</td>
</tr>
<tr>
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<td>6-12</td>
<td>300</td>
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<td>6-12</td>
<td>600</td>
</tr>
<tr>
<td>9</td>
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<tr>
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</tr>
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<td>Marlene_2015_F</td>
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<tr>
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<td>Marlene_2015_F</td>
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<td>&gt;12</td>
<td>300</td>
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<td>300</td>
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<td>Female</td>
<td>&lt;3</td>
<td>303</td>
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<td>Suhrita_2016_F</td>
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<tr>
<td>16</td>
<td>Zarini_2015_F</td>
<td>Female</td>
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<td>300</td>
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<td>17</td>
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<td>300</td>
</tr>
<tr>
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<td>Alena_2017_M</td>
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<td>600</td>
</tr>
<tr>
<td>18</td>
<td>Camila_2016_M</td>
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<td>300</td>
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<td>Camila_2016_M</td>
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<td>904</td>
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<td>Male</td>
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<td>23</td>
<td>Namrata_2017_M</td>
<td>Male</td>
<td>3-6</td>
<td>600</td>
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<td>24</td>
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<tr>
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<td>903</td>
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<tr>
<td>28</td>
<td>Valerie_2016_M</td>
<td>Male</td>
<td>&lt;3</td>
<td>602</td>
</tr>
<tr>
<td></td>
<td>Valerie_2016_M</td>
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<td>3-6</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>Valerie_2016_M</td>
<td></td>
<td>&gt;12</td>
<td>300</td>
</tr>
<tr>
<td>29</td>
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<td>Male</td>
<td>&lt;3</td>
<td>303</td>
</tr>
<tr>
<td></td>
<td>Vanessa_2015_M</td>
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<td>600</td>
</tr>
<tr>
<td>30</td>
<td>Zerad_2015_M</td>
<td>Male</td>
<td>3-6</td>
<td>300</td>
</tr>
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<td></td>
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<td></td>
<td>6-12</td>
<td>302</td>
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</tbody>
</table>
Results of repeated measures ANOVAs to examine the effect of multiple sampling days of the same calves/juveniles within the same age class

As explained in the main text, since our dataset included repeated observations on the same individuals within and across age classes, we carried out repeated measures ANOVAs on the variable examined for lateralisation (such as logit proportion of clockwise successful or unsuccessful trunk movement, logit proportion of right side trunk placement in the mouth, etc.) by the same individuals, across days but within the same age class (<3 months old, 3-6 months, 6-12 months, and >12 months). If there was no variability across days sampled within the same age class, one sample from each individual during that age class could be used to construct the distributions of lateral bias index or strength. Results from the different repeated measures ANOVAs are given in the tables below. There was no significant effect of day of sampling (for individuals in the same age class) on the logit proportions of clockwise successful and unsuccessful trunk movements, right side mouth placement, and right side body touch, and there was only borderline significance of day when the logit proportion of straight trunk movement was considered.

SUPPLEMENTARY TABLE 3
RESULTS OF REPEATED MEASURES ANOVAS ON THE LOGIT PROPORTION OF CLOCKWISE SUCCESSFUL TRUNK MOVEMENT BY THE SAME INDIVIDUALS, ACROSS DAYS BUT WITHIN THE SAME AGE CLASS

<table>
<thead>
<tr>
<th>Effect</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>2.774</td>
<td>1</td>
<td>2.774</td>
<td>0.068</td>
<td>0.798</td>
</tr>
<tr>
<td>Sex</td>
<td>118.050</td>
<td>1</td>
<td>118.050</td>
<td>2.880</td>
<td>0.108</td>
</tr>
<tr>
<td>Error</td>
<td>696.763</td>
<td>17</td>
<td>40.986</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day</td>
<td>2.486</td>
<td>1</td>
<td>2.486</td>
<td>1.343</td>
<td>0.262</td>
</tr>
<tr>
<td>Day x sex</td>
<td>0.357</td>
<td>1</td>
<td>0.357</td>
<td>0.193</td>
<td>0.666</td>
</tr>
<tr>
<td>Error</td>
<td>31.457</td>
<td>17</td>
<td>1.850</td>
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<td></td>
</tr>
</tbody>
</table>

Effect | SS   | df | MS   | F    | P    |
<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>6.326</td>
<td>1</td>
<td>6.326</td>
<td>0.118</td>
<td>0.736</td>
</tr>
<tr>
<td>Age class</td>
<td>9.901</td>
<td>3</td>
<td>3.300</td>
<td>0.062</td>
<td>0.979</td>
</tr>
<tr>
<td>Error</td>
<td>804.911</td>
<td>15</td>
<td>53.661</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day</td>
<td>4.931</td>
<td>1</td>
<td>4.931</td>
<td>3.066</td>
<td>0.100</td>
</tr>
<tr>
<td>Day x age class</td>
<td>7.689</td>
<td>3</td>
<td>2.563</td>
<td>1.593</td>
<td>0.233</td>
</tr>
<tr>
<td>Error</td>
<td>24.125</td>
<td>15</td>
<td>1.608</td>
<td></td>
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</tr>
</tbody>
</table>

The analysis was carried out with sex and age class as categorical factors separately for want of adequate sample size to examine them in a combined manner.

SUPPLEMENTARY TABLE 4
RESULTS OF REPEATED MEASURES ANOVAS ON THE LOGIT PROPORTION OF CLOCKWISE UNSUCCESSFUL TRUNK MOVEMENT BY THE SAME INDIVIDUALS, ACROSS DAYS BUT WITHIN THE SAME AGE CLASS

<table>
<thead>
<tr>
<th>Effect</th>
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<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
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<td>185.131</td>
<td>5.725</td>
<td>0.033</td>
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<tr>
<td>Sex</td>
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<td>1</td>
<td>70.891</td>
<td>2.195</td>
<td>0.162</td>
</tr>
<tr>
<td>Age class</td>
<td>100.515</td>
<td>3</td>
<td>33.505</td>
<td>1.036</td>
<td>0.409</td>
</tr>
<tr>
<td>Sex x Age class</td>
<td>124.719</td>
<td>3</td>
<td>41.573</td>
<td>1.286</td>
<td>0.321</td>
</tr>
<tr>
<td>Error</td>
<td>420.389</td>
<td>13</td>
<td>32.338</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day</td>
<td>0.620</td>
<td>1</td>
<td>0.620</td>
<td>0.096</td>
<td>0.761</td>
</tr>
<tr>
<td>Day x sex</td>
<td>0.592</td>
<td>1</td>
<td>0.592</td>
<td>0.092</td>
<td>0.766</td>
</tr>
<tr>
<td>Day x age class</td>
<td>22.347</td>
<td>3</td>
<td>7.449</td>
<td>1.159</td>
<td>0.363</td>
</tr>
<tr>
<td>Day x sex x age class</td>
<td>41.034</td>
<td>3</td>
<td>13.678</td>
<td>2.128</td>
<td>0.146</td>
</tr>
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<td>Error</td>
<td>83.573</td>
<td>13</td>
<td>6.429</td>
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</tbody>
</table>

Sex and age class were used as categorical factors. Significant results are marked in bold.

SUPPLEMENTARY TABLE 5
RESULTS OF REPEATED MEASURES ANOVAS ON THE LOGIT PROPORTION OF STRAIGHT TRUNK MOVEMENT BY THE SAME INDIVIDUALS, ACROSS DAYS BUT WITHIN THE SAME AGE CLASS

<table>
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</tr>
</thead>
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<td>107.389</td>
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<td>0.000</td>
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<td>0.137</td>
<td>0.066</td>
<td>0.801</td>
</tr>
<tr>
<td>Age class</td>
<td>85.597</td>
<td>3</td>
<td>28.532</td>
<td>13.795</td>
<td>0.000</td>
</tr>
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<td>Sex x Age class</td>
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<td>3.167</td>
<td>1.531</td>
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</tr>
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<td>26.988</td>
<td>13</td>
<td>2.068</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day</td>
<td>7.877</td>
<td>1</td>
<td>7.877</td>
<td>4.919</td>
<td>0.045</td>
</tr>
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<td>Day x sex</td>
<td>4.134</td>
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<td>4.134</td>
<td>2.582</td>
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</tr>
<tr>
<td>Day x age class</td>
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<td>3</td>
<td>0.495</td>
<td>0.309</td>
<td>0.818</td>
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<tr>
<td>Day x sex x age class</td>
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<td>5.409</td>
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<td>20.818</td>
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<td>1.601</td>
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</table>

Sex and age class were used as categorical factors. Significant results are marked in bold.

SUPPLEMENTARY TABLE 6
RESULTS OF REPEATED MEASURES ANOVAS ON THE LOGIT PROPORTION OF RIGHT SIDE MOUTH PLACEMENT BY THE SAME INDIVIDUALS, ACROSS DAYS BUT WITHIN THE SAME AGE CLASS

<table>
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<th>P</th>
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</thead>
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<td>53.590</td>
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<td>Sex</td>
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<td>81.157</td>
<td>3.331</td>
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<td>14</td>
<td>24.367</td>
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<tr>
<td>Day</td>
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<td>1</td>
<td>3.384</td>
<td>0.535</td>
<td>0.476</td>
</tr>
<tr>
<td>Day x sex</td>
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<td>6.803</td>
<td>1.073</td>
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</tr>
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<table>
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<th>F</th>
<th>P</th>
</tr>
</thead>
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<td>32.321</td>
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<tr>
<td>Day</td>
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<td>1</td>
<td>3.038</td>
<td>0.428</td>
<td>0.525</td>
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<tr>
<td>Day x age class</td>
<td>3.185</td>
<td>2</td>
<td>1.592</td>
<td>0.224</td>
<td>0.802</td>
</tr>
<tr>
<td>Error</td>
<td>92.367</td>
<td>13</td>
<td>7.104</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The analysis was carried out with sex and age class as categorical factors separately for want of adequate sample size to examine them in a combined manner.
Effect of age, behavioural class, and individual identity on behaviour duration

As mentioned in the main text, we carried out a GLM to examine the effects of age-class and behavioural class of calf action (fixed factors) and calf identity (random factor) on behaviour duration. We found no significant effect of age-class ($F_{2,181}=1.658, P=0.193$), behavioural class of calf action ($F_{3,181}=1.986, P=0.118$) or interaction between age class and behavioural class of calf action ($F_{6,181}=1.490, P=0.184$) on behaviour duration (see Supp. Fig. 5).

### Supplementary Table 7

**RESULTS OF REPEATED MEASURES ANOVAS ON THE LOGIT PROPORTION OF RIGHT SIDE BODY TOUCH BY THE SAME INDIVIDUALS, ACROSS DAYS BUT WITHIN THE SAME AGE CLASS**

<table>
<thead>
<tr>
<th>Effect</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
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<td>7.663</td>
<td>1.381</td>
<td>0.254</td>
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<td>Sex</td>
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<td>Error</td>
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<td>19</td>
<td>5.550</td>
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<td></td>
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<td>3.646</td>
<td>0.375</td>
<td>0.547</td>
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<tr>
<td>Day x sex</td>
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<td>4.648</td>
<td>0.478</td>
<td>0.498</td>
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<tr>
<td>Error</td>
<td>184.577</td>
<td>19</td>
<td>9.715</td>
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<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Effect</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
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<td>4.708</td>
<td>0.715</td>
<td>0.409</td>
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<td>0.458</td>
<td>0.507</td>
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<tr>
<td>Day x age class</td>
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<td>0.017</td>
<td>0.997</td>
</tr>
<tr>
<td>Error</td>
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<td>17</td>
<td>11.098</td>
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</tr>
</tbody>
</table>

The analysis was carried out with sex and age class as categorical factors separately for want of adequate sample size to examine them in a combined manner.

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Supplementary Fig. S5. Average duration of calf action under feeding, grooming, resting, and social interaction, play, and exploration behavioural classes by calves <3 months, 3-6 months, and 6-12 months old. Error bars are 95% CI.