Critique of the Article “Left-Side Cradling: Similarities and Differences Between Apes and Humans”

“Left-side Cradling: Similarities and Differences Between Apes and Humans” looks at the phenomenon of left-side cradling or holding an infant on the left side of the body. Studies have shown that human females have a strong, cross-cultural tendency to cradle infants on the left side of the body regardless of left- or right-handedness (Chamberlain et al. 77). There is less evidence for left-side cradling in other primates. Previous studies have been less than conclusive (77). The study by Manning, Heaton, and Chamberlain looks at fifty-two mother-infant pairs of captive apes in hopes of finding this trend among non-human primates as well (77).

In this study cradling was defined as “ventral holding of infants (77)” and the head of the infant was recorded as being on the mother’s left side, right side, or on the midline (77). The position of the head was the only variable noted (77). The observation was excluded if the head was on the mother’s abdomen or leg or if the infant was suckling, since in humans left-side cradling is independent of suckling (78). The researchers used activity sampling with instantaneous observations made every fifteen seconds (78). Differences between observers in the recorded number of times of left-side
cradling were less than two percent (78). The differences occurred when the researchers disagreed whether or not the infant’s head was located on the midline or laterally (78).

The sample, which incorporated data previously published by two of the researchers, consisted of twenty chimpanzee mother-infant pairs, fifteen gorilla pairs, eight orangutan pairs, and nine gibbon pairs (78). The number of observations of left-side, right-side, and midline cradling were recorded, then the percentages for each side were found after the midline observations were excluded (78). For the chimpanzees, the mean percent for left-side cradling was seventy-five percent, and eighty percent of the females cradled the infant on the left side more than fifty percent of the time (78). Using a two tailed binomial test and the hypotheses $H_0 : p = 0.5$ and $H_a : p \neq 0.5$ produced $P = 0.004$, well below the 0.05 level commonly used to denote significance (78). Thus, there strong evidence that cradling is not split equally between the left and right side. Gorillas had an overall tendency toward the left side of seventy-four percent, and eighty-seven percent of the mothers cradled the infant on the left side more than fifty percent of the time (78). Using the same two-tailed binomial test, gorillas have a $P$-value equal to 0.003, also below the 0.05 level, so there is strong evidence that gorillas do not cradle their infants on both sides equally (78). Orangutans and gibbons had less conclusive numbers. The mean percent of left-side cradling in orangutans was fifty percent, and only five of the eight females (sixty-two percent) cradled the infant on the left side more than fifty percent of the time (78). For gibbons, the overall tendency toward the left side was sixty-seven percent, and seven of the nine pairs (seventy-eight percent) cradled the infant on the left side more than half the time (78). The two-tailed binomial test gave $P = 0.18$ which is above 0.5, so this data cannot be said to be significant and there is no
evidence that gibbons prefer the left or right arm for cradling their infant (78).

All four species of primates cradled male infants on the left side more frequently than female infants (78). Using the Mann-Whitney test, this tendency was significant in gorillas ($U = 46, n = 15, P < 0.05$), but not significant in chimpanzees, orangutans, and gibbons (78, 81). It is possible that by examining this tendency to hold male infants on the left side more frequently than females, a type I error could be found for the gorillas, but the researchers find this unlikely since all four species show a greater left-side frequency for male infants (81). The researchers found no correlation between infant age and side preference among chimpanzees ($r = 0.14$), gorillas ($r = -0.07$), and gibbons ($r = -0.2$) (81). Orangutans, however, showed strong correlation between increasing left-side cradling and increasing infant age ($r = 0.89$) (81).

Looking at human populations in North America, Asia, and Africa produces a mean percent of seventy-eight percent for left-side cradling, very close to that of chimpanzees and gorillas (human’s closest relatives) (81). The gibbon mean of sixty-seven percent may have been inflated by the fact that six of the nine infants in the sample were male (81). Orangutans seem to spend less time cradling their infants and instead prefer to carry their infants on the back of the neck (81). Thus, the only groups with strong evidence for a left-side cradling preference are humans, chimpanzees, and gorillas. This could be explained by the fact that humans, chimpanzees, and gorillas are primarily terrestrial, so they need a care pattern which can “enable them to monitor infant well-being quickly and accurately with their peripheral vision while assessing risks from their own or other species (82).” Gibbons and orangutans are primarily arboreal which may
reduced predation pressure and decrease the need to securely cradle the infant ventrally with a left-side bias (82).

Although the data seemed to show that chimpanzees did not cradle infants on the left side significantly more, other studies could refute this, meaning both gorillas and chimpanzees would have a sex bias (81). Data for humans on this tendency are sparse, but it has been noted to some extent (81). The authors pose two possible explanations for the higher left-side cradling rates for male infants. If primate male infants are more restless than female infants, the male infants may be cradled on the left because this enables the infant to hear the mother’s heartbeat, which has a soothing effect (81). Holding the infant on the left side may also make it easier for the mother to assess the well-being for her child (81). She is then better able to respond to any distress from the infant (81). The reason for this is because most of the sensory input from the left visual and auditory fields is processed in the right hemisphere, which is where much of the emotional decoding of facial expression and voice intonation occurs (81). Left-side cradling may be stimulated by perception of the infant through the left eye (81-82). The sex bias in cradling may be the result of a higher infant mortality rate in males (82). This rate is especially high for inexperienced mother, and the male mortality rate can be reduced by high quality maternal care from experienced mothers (82).

There are a few problems with the study. Only captive apes were used. Cradling frequency and left-side bias could be different for animals in the wild. The only primates studied were apes. The prosimians, Old World monkeys, and New World monkeys were ignored. These are more distantly related to humans than the apes, but to make any statement about primates in general, these groups must be studied as well. The sample
size was relatively small, with fewer than ten pairs for the orangutans and gibbons. To more confidently state the conclusions drawn here, the researchers should have a larger sample of all the species. Also, the number of observations varied considerably between mother-infant pairs, but this issue is addressed in the article. The researchers found that total sample size per mother-infant pair did not affect their tendency to deviate from an equal number of left and right observations. Other factors which were stated in the article which could have effected the sample but were not taken into account were the gender of the infant and whether the mother was young and inexperienced or had taken care of multiple children. Finally, the significance test used was a two-tailed test, meaning that the null hypothesis was only tested against the hypothesis of a probability not equal to 0.5 instead of a probability greater than 0.5.

In conclusion, the evidence obtained from this sample supports a left-side bias among chimpanzees and gorillas as among humans, but gives no significant evidence for this bias among orangutans and gibbons. All four species have a tendency to cradle male infants on the left side more frequently than female infants. This may also be characteristic of humans, but not enough data are known to be sure. The study has a few problems especially with the chosen sample and sample size, but the results should not be discredited. The evidence supports left-side cradling in three of the most closely related species pointing to a possible link between this tendency and the primarily terrestrial lifestyles of humans, chimpanzees, and gorillas.
Works Cited