

## Lateral Preferences in Adult Embracing: A Test of the “Hemispheric Asymmetry” Theory of Infant Cradling

O. H. TURNBULL

L. STEIN

M. D. LUCAS

*Department of Psychology*

*University of the Witwatersrand, South Africa*

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**ABSTRACT.** Women’s preference for cradling infants leftwardly has been proposed (Manning & Chamberlain, 1990, 1991) as resulting from the specialization of the right hemisphere for the perception and expression of emotion. On the basis of this theory, adult embracing, which has many features in common with infant cradling, should also show a leftward tendency. Lateral preferences in adult embracing were investigated in laboratory and natural observation studies. The results show that, as with infant cradling, lateral preferences in embracing predominate in women and are unrelated to handedness. However, the results of both studies show that men tend toward a preference to embrace rightwardly—the direction opposite from that predicted on the basis of a “hemispheric asymmetry” account of embracing.

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A LEFTWARD PREFERENCE in women’s cradling of infants has been consistently reported regardless of age or parental status, in all societies so far investigated (Saling & Cooke, 1984), and even in the great apes (Manning & Chamberlain, 1990). An early explanation of this lateralized behavior in humans suggested the importance of the lateral position of the heart (Salk, 1960)—an account that has been widely criticized (see Lucas, 1991, for review). A popular explanation relates to the prominence of right handedness, but the direction of cradling seems to be unrelated to handedness (Bruser, 1981). A more recent explanation, that of “hemispheric asymmetry of function” (Manning & Chamberlain, 1990, 1991), relies on evidence

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*L. Stein is now at the Department of Genetics, University of the Witwatersrand, and M. D. Lucas is now at the Department of Psychiatry, University of the Witwatersrand Medical School.*

*Address correspondence to O. H. Turnbull, who is now at the Department of Psychology, King’s College, Aberdeen University, Aberdeen, AB9 2UB, Scotland.*

of the specialization of the right hemisphere for the perception and expression of emotion (Campbell, 1982). Manning and Chamberlain (1990, 1991) proposed that cradling the infant leftwardly would allow the mother to interpret the infant's behavior through her left visual and auditory field, as well as presenting the more expressive side of her face to the infant. It follows from this hypothesis that, in any behavior involving the expression of emotion, the left side would be the one preferred for the placement of the "other." Adult embracing is one such lateralized behavior.

Lateralized preferences in embracing for adult humans seem to have never been investigated. However, an explanation based on the "hemispheric asymmetry" account of cradling would predict that embracing should share many features with those exhibited when adults cradle infants. Both activities, for example, involve close body contact and the expression of positive emotion to the other, in a situation where there is no cultural basis for a lateral preference. Manning and Chamberlain's (1990, 1991) hypothesis would predict that both cradling and embracing would engage similar, right-hemisphere-mediated, emotional experiences. Thus, if the right-hemisphere specialization for emotion does underlie lateral cradling preferences, and if human embracing taps emotional experiences similar to those of cradling, then human embracing should exhibit a leftward preference.

### Method

To investigate lateral preferences in human embracing, we conducted two studies.

#### *Study 1: Natural Observation*

Adults were observed embracing in the arrivals lounge of an international airport. The participants were not aware that they were being observed. *Embracing* was defined as an interaction in which one participant (A), while facing another (B), embraced B by placing his or her head on B's shoulder and holding B with both arms. Interactions were excluded when they involved A's placing only one arm around B's shoulder, or when A held B by the shoulders without placing his or her head lateral to B. Interactions involving children were also excluded because of possible associations with the cradling of infants. The laterality of an embrace was defined as *leftward* if the head of B was to the left of A. (Note that a lateral embracing preference is symmetrical because, in the position described earlier, the head of A would also be to the left of B.) The inverse pattern defined *rightward* embracing. A total of 321 embraces were observed: 114 female/female, 174 female/male, and 33 male/male.

#### *Study 2: Laboratory Study*

First-year biology students were asked to embrace their neighbor during a laboratory practical. The same criteria as those described earlier were applied to

define lateral embracing preferences. Those excluded were nonvolunteers (some men objected to male/male embracing). Fifty-one embraces were observed: 14 female/female, 24 female/male, and 13 male/male.

### Results

The results were analyzed with a chi-square test for independence. In the natural-observation study, the female/female group showed a significant rightward bias (74 right, 40 left),  $\chi^2(1, N = 114) = 10.14, p < .01$ , as did the female/male group (100 right, 74 left),  $\chi^2(1, N = 174) = 3.89, p < .05$ . There was no significant effect in the male/male group (16 right, 17 left),  $\chi^2(1, N = 33) = 0.03, p > .05$ .

In the laboratory study there was a significant rightward bias in the female/female group (13 right, 1 left),  $\chi^2(1, N = 14) = 10.20, p < .01$ . However, there was no significant effect in the female/male group (8 right, 6 left),  $\chi^2(1, N = 14) = 2.67, p > .05$ , or in the male/male group (8 right, 6 left),  $\chi^2(1, N = 14) = 0.70, p > .05$ .

### Discussion

The findings of the present study demonstrate, in both a natural-observation and a laboratory setting, a significant ( $p < .01$ ) preference of women to embrace other women to the right. The rightward preference in embracing is in the direction opposite from that observed in the cradling of infants, where leftward cradling is preferred. This result may be interpreted as a challenge to the "hemispheric asymmetry" account of cradling preferences—that is, that the leftward cradling bias is a result of a right-hemisphere specialization for the perception and expression of emotion (Manning & Chamberlain, 1990, 1991). This argument is backed by a recent failure to demonstrate a direct relationship between laterality of cradling and the right-hemisphere specialization for emotion (Lucas, Turnbull, & Kaplan-Solms, 1993). Alternatively, the failure to demonstrate a leftward bias in embracing may be because there is no intrinsic link between embracing and cradling as lateralized behaviors. This argument, however, does not explain why humans who are embracing show a clear lateral preference, rather than showing no lateral bias. Furthermore, it does not explain some other features of the data collected on embracing preferences, which show similarities to those reported for the lateral cradling bias.

An obvious possibility for explaining the rightward direction of the lateral-embracing preference is a relationship between embracing and handedness. It was possible to test this in the laboratory study, the group of interest being the female/female group, which had demonstrated a rightward embracing preference. Of these 28 women, 26 were right handed, and all but two of these embraced rightwardly. The two left handers also embraced rightwardly; this result showed

that direction of embracing was unrelated to handedness; test for independence,  $\chi^2(1, N = 28) = 1.033, p > .05$ . This result is similar to those that have been demonstrated for the cradling of infants, where lateral preferences in cradling have shown no relationship to handedness (Bruser, 1981).

A final similarity between the results of the present study on adult embracing and previous findings in the cradling literature relates to the sex difference in lateral-embracing preference. The rightward preference in embracing was less evident in female/male interactions, and not present at all in the male/male embracing group. This result was found in both the natural observation and in the laboratory. The sex difference in the strength of a lateral bias in embracing was similar to that previously observed in the cradling of infants, where men failed to show a lateral preference (Lockard, Daley, & Gunderson, 1979; Turnbull & Lucas 1991).

The findings suggest that the lateral-embracing preference may itself be an interesting phenomenon, quite apart from being a useful test of Manning and Chamberlain's (1990, 1991) hypothesis. Women show a clear lateral-embracing preference, which appears to be unrelated to a simple indicator of laterality such as handedness. An explanation based on handedness would also not predict the sex difference in lateral-embracing preference—just as handedness fails to explain the sex difference in cradling preference (Lockard, Daley, & Gunderson, 1979; Turnbull & Lucas, 1991). Finally, the rightward direction of the embracing preference suggests that its basis cannot be merely subsumed within an explanation of the cradling bias. One final possibility is that the rightward embracing bias is a product of some culture-specific preference, of which we are not consciously aware. Such cultural origins for the cradling bias have been excluded by the testing of cradling preference in many societies (Saling & Cooke, 1984), and adult embracing could clearly be investigated in a similar manner.

#### REFERENCES

- Bruser, E. (1981). Child transport in Sri Lanka. *Current Anthropology*, 22, 288–290.
- Campbell, R. (1982). The lateralisation of emotion: A critical review. *International Journal of Psychology*, 17, 211–229.
- Lockard, J. S., Daley, P. C., & Gunderson, V. M. (1979). Maternal and paternal differences in infant carry: U.S. and African data. *The American Naturalist*, 113, 235–246.
- Lucas, M. D. (1991). *Laterality of cradling in relation to non-dominant hemispheric functions*. Unpublished master's dissertation, University of the Witwatersrand, Johannesburg.
- Lucas, M. D., Turnbull, O. H., & Kaplan-Solms, K. L. (1993). Laterality of cradling in relation to perception and expression of facial affect. *The Journal of Genetic Psychology*, 154(3), 347–352.
- Manning, J. T., & Chamberlain, A. T. (1990). The left-side cradling preference in great apes. *Animal Behaviour*, 39, 1224–1227.
- Manning, J. T., & Chamberlain, A. T. (1991). Left-side cradling and brain lateralisation. *Ethology and Sociobiology*, 12, 237–244.

- Saling, M. M., & Cooke, W. (1984). Cradling and transport of infants by Southern African mothers: A cross-cultural study. *Current Anthropology*, 25, 333–335.
- Salk, L. (1960). The effects of the normal heartbeat sound on the behaviour of the newborn infant: Implications for mental health. *World Mental Health*, 12, 168–175.
- Turnbull, O. H., & Lucas, M. D. (1991). Lateral cradling preferences in males: The relationship to infant experience. *The Journal of Genetic Psychology*, 152(3), 375–376.

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