This article was downloaded by: [New York University]

On: 22 November 2014, At: 15:49

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954

Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK

The Pedagogical Seminary

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/vzps20>

Comparative Observations on the Development of Movements

Mrs. Kathleen Carter Moore

Published online: 28 Aug 2012.

To cite this article: Mrs. Kathleen Carter Moore (1901) Comparative Observations on the Development of Movements, The Pedagogical Seminary, 8:2, 231-238, DOI: [10.1080/08919402.1901.10533028](https://doi.org/10.1080/08919402.1901.10533028)

To link to this article: <http://dx.doi.org/10.1080/08919402.1901.10533028>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden.

COMPARATIVE OBSERVATIONS ON THE DEVELOPMENT OF MOVEMENTS.

By Mrs. KATHLEEN CARTER MOORE.

The classification of movements adopted for these studies does not make any pretensions to comprehensiveness.

The children, a boy and girl, were vigorous and healthy, and no effort was made in either case to teach the movements, although for purposes of verification they were sometimes provoked.

BOY.¹

EYE MOVEMENTS.—We did not make any experiments in fixating and following, but on the 2nd day his eyes followed a bright, moving object, and observations made on the 8th day showed that he was able to fixate and to follow.

Turning the head to follow with the eyes was first observed on the 38th day.

HEAD MOVEMENTS.—3rd day. The head was lifted several successive times.

Turning the head from side to side was observed on the 4th day, and had become habitual by the 5th week.

In the beginning of the 6th week he was able to balance his head for a few moments at a time; but head balance was not well established till the 17th week.

SITTING.—14th week. He made active efforts to sit, and often cried if laid down after having been held

GIRL.

EYE MOVEMENTS.—On the 2nd day her eyes once followed the illuminated and slowly moving face of the nurse who leaned over her. She could not, however, be induced to repeat the action.

When four and a half days old repeated experiments with a lighted candle in a dark room established beyond a doubt her ability to fixate and to follow with her eyes. These experiments were successfully repeated on the 6th day, the candle being held some fifteen inches from her.

On the 8th day she followed with eyes and head the flame of a gas jet, above and in front of her and distant some six feet.

HEAD MOVEMENTS.—No corresponding record of early head movement.

Turning the head was observed on the 8th day, and had become habitual by the 6th week.

In the 3rd week she was able to balance her head for a few moments; but head balance was not well established till the 25th week, when she could also in sitting balance her trunk.

SITTING.—12th week. She began to try to hold her body erect when held in a sitting or a reclin-

¹ I do not here repeat in detail many of the observations upon the boy because they are recorded in *The Mental Development of a Child.*—K. C. Moore.

in a sitting position. From this time he made daily efforts to raise himself from a reclining to a sitting position. He could succeed in raising his head and shoulders a little way. At last in the 23rd week he succeeded in rising from a reclining to a sitting position, which he maintained for a few moments.

39th week. He became able to sit alone and unsupported upon a hard, flat surface.

TURNING AND ROLLING.—3rd day. He turned his body half way over. Thereafter at intervals he turned himself from the side to the back, from the face to the back, and from the back to the side.

In the 17th week it became easy and habitual to him to turn over.

29th week. He began to roll over and over when upon the floor, thus getting from one part of the room to another.

CREEPING.—28th week. He made his first efforts at creeping. When placed upon the floor he rolled over upon his stomach, raised his body upon his arms, and kicked vigorously. Five days later he succeeded in drawing his legs under his body to raise himself, but they slipped and precipitated him forward. Nothing daunted by the hurt received, he continued his efforts.

In the 32nd week he raised his body upon his arms and tried to push himself forward with his feet.

46th week. Finally, having learned to raise his body upon arms and legs, he succeeded in going forward. Thus he laboriously acquired, one by one, the adjustments necessary to locomotion upon hands and knees.

65th week. He gave up creeping, walking instead.

STANDING AND WALKING.—16th week. He began to use his feet to push himself upward when

ing position. Unlike her brother she did not make repeated and persistent efforts to raise her body.

17th week. She easily raised herself from a reclining to a sitting position, and maintained herself therein for a few moments.

37th week. She became able to sit alone and unsupported upon a hard, plane surface.

TURNING AND ROLLING.—No early observations of turning corresponding to these.

5th week. She made a number of unsuccessful attempts to turn from her side to her back.

She did not easily and habitually turn (when lying) till the 41st week.

This habit she never acquired. She was not, however, placed upon the floor at so early an age, but she did not display the same tendency to roll.

CREEPING.—32nd week. With no observed tentative efforts, she when sitting upon a bed, got over upon her hands and knees, and strained forward, but did not creep, to reach my extended hands.

37th week. When placed upon the floor she got onto her hands and knees, and took steps with her hands, but not with her legs.

39th week. With comparatively little previous effort she started to creep forward.

55th week. She gave up creeping.

STANDING AND WALKING. 9th week. She began to push with her feet when held in an upright

raised from the bed upon which he lay.

31st week. When held in an upright position he stood for a minute. He did not stand alone as a preliminary to walking alone, although previous to walking alone he sometimes stood without assistance for a few seconds, if helping hands were taken away.

47th week. Holding to a chair he pulled himself to his feet, and took two steps sidewise.

55th week. Walking forward with assistance in balancing was accomplished.

60th week. He took three steps alone. In the 61st week he was able to walk as far as seven feet.

ARM AND HAND MOVEMENTS.¹
He opened his hands on the 6th day and often afterwards.

5th week. Late on this week he began to grasp and to hold the clothing of a person by whom he was held.

5th week. He grasped a finger placed within his palm, and drew it towards his face.

6th week. He began to remove his hands from beneath the covers.

11th week. The thumb was used in opposition to the other fingers.

12th week. He used the forefinger in grasping (with the thumb).

12th week. He began to reach.¹

15th week. He did much fin-gering of objects.

position the feet touching something.

19th week. When held in an upright position she sprang to her feet and stood for a minute. Standing alone developed with walking alone.

42nd week. Holding to a chair which lay on its side, she pulled herself to her feet and walked side-wise along it.

42nd week. She walked forward with assistance in balancing.

53rd week. Having been walking around the chairs, etc., she suddenly one day began to walk alone.

ARM AND HAND MOVEMENTS.
On the 3rd day she opened her hands and frequently thereafter held them so.

14th day. She clutched the edge of the bath tub and held it firmly. She clutched her father's coat as he was lifting her, maintaining her hold. By the 6th week she too grasped the clothing of a person by whom she was held; but only when induced thereto by a motion of her own body, such as that of being lifted or carried.

4th week. She grasped a finger placed within her palm and drew it towards her face.

5th week. She began to free her hands from the covers.

9th week. She used her thumb in opposition.

I observed no such use of the forefinger till the 33rd week.

9th week. Incipient reaching was observed, the hands moving towards an object upon which the eyes were fixed.

If clothing which she held was removed from her hand, she was soon found to have resumed her hold.

¹ Fuller observations on Arm and Hand movements are recorded in *The Mental Development of a Child*.

- 12th week. She was one day lying on my arm, her right side towards me, when she put out her right hand twenty-eight successive times to touch my shirt waist. The tips of her fingers were drawn across the surface touched. The left hand and arm were quiet and flexed, the fist closed.
- 13th week. She fingered whatever came within her reach.
- 15th week. Her own hands were now a source of interest and pleasure to her, and also the mittens in which they were sometimes encased.
- 18th week. The reaching habit and adjustments were well established.
- 16th week. She employed a similar method in feeling.
- Adjustment.—17th week. She could take a "gum ring" put it to her mouth, and hold it there while she chewed on it. She could grasp a teaspoon by the middle of the handle and successfully get the bowl to her mouth.
- 19th week. It became habitual to her to give her hands into those extended to her. When she wore mittens she could not be induced to do this.
- 22nd week. When making extraordinary efforts to reach, her feet moved also.
- 33rd week. The hands were used simultaneously and separately for the first time.
- The forefinger was now much employed, poking into little holes, etc.
- In picking up a small object the forefinger approached and touched it first, the hand then closed over it.
- Small things were sometimes held between the thumb and forefinger.
- 36th week. When lying on her back she sometimes put both hands and feet up to her bottle.
- 49th week. About this time she began to use the thumb extensively as an organ of touch, and for pointing.
- 62nd week. She now seemed to use the right hand more than the
- 17th week. He began to display an interest in his own hands.
- 18th week. About this time the reaching habit and adjustments were well established.
- 20th week. He felt of objects by drawing across their surface his finger tips and nails.
- 25th week. He acquired the habit of giving the hands.
- 26th week. Both hands and feet were used as organs of prehension and active touch.
- 33rd week. The hands were first used simultaneously to perform different acts.
- In the 44th week he began to use a similar method in getting hold of a small object (a bread crumb for example).

Adjustments.—72nd week. About this time a favorite amusement (devised by himself) was the fitting of a cylindrical stick into the bore of a spool.

SUCKING THE THUMB.¹ His thumb was in his mouth on the 1st day.

10th week. After many tentative efforts, he acquired the coördinations, and the habit was established.

He at first sucked either thumb, but in the 18th week when the left was encased in a stall, he sucked neither.

By the 24th week he could suck either thumb when the other wore the stall.

left, but was not, and is not now (at 2½ yrs.) markedly right-handed.

Adjustments.—66th week. She succeeded after having tried almost daily for three weeks, in getting the end of a shoe lace through the eye hole of a shoe.

SUCKING THE THUMB.—From the 6th week she displayed a tendency to suck the hands; but only when sleepy. If the hands were covered with a shawl she tried to free them. She was observed to suck the knuckle of the thumb of the right hand, the thumb being enclosed in the fist. If the right hand were covered, the left free, she did not try to suck either knuckle.

9th week. When permitted the uncovered use of her hands, she easily and successfully got her thumb into her mouth, but could not long retain it there. Thus almost without tentative efforts she acquired the coördinations. With her also in the 10th week the habit was well established.

She sometimes sucked her forefinger, and her thumb and forefinger. She sucked only the thumb or forefinger of the left hand, had no difficulty in getting it to her mouth and holding it there, and sucked when hungry or sleepy.

She was observed to raise her covered hand towards her mouth, look at it, lower it, and make at that time no further attempt to suck. This action she repeated three times at intervals, during perhaps half an hour.

She began to hold the left thumb outside the closed fist, the right one inside as before.

11th week. The left hand having been kept covered, she began to suck the forefinger of the right hand.

While she was sucking the thumb of one hand, the other hand maintained the symmetry of movement. It was raised toward the face, and minor flexions and extensions of arm, hand and fingers occurred.

¹ For fuller notes of boy see *The Mental Development of a Child*, p. 12.

16th week. He dropped the thumb to take the breast.

IMITATIVE MOVEMENTS.¹—38th week. In this week I saw for the first time a conclusive proof of the imitation of the action of another person, when he took from my hand two spoons which I had been clapping together and awkwardly reproduced the performance.

ADAPTIVE MOVEMENTS.—Early in the third week he began to show some ability to find the breast again if he had lost his hold upon it while nursing.

19th week. He got his dress up over his face, and could not get it down, so he turned his head and thus removed his face from beneath the dress.

22nd week. When he saw approaching the spoon from which he received his water, he seized it by the handle and drew it towards his mouth.

44th week. When trying to get from a sitting position to his hands

When prevented from sucking she did not fret for the thumb.

13th week. When placed near the breast, having her thumb in her mouth, she took out her thumb and seized the breast.

Ultimately she lost all tendency to suck her thumb, the habit having been constantly combatted.

IMITATIVE MOVEMENTS.¹—16th week. The first attempt at imitation was evinced one day when her father was playing with her. Holding her in front of him, he alternately approached and withdrew his face to the side of hers, making for her amusement a snorting noise. We then observed her (after I know not how many performances of his) advance her head towards his uttering a long, deep *ă-ă-ă*. He repeated his actions and she hers some ten times.

By the 25th week she was able to imitate the very simple actions of another person, such as the knocking of a spoon against a saucer, etc.

ADAPTIVE MOVEMENTS.—By the 4th day she had the ability to find the breast if it had slipped from her mouth, although her eyes were closed she moved her mouth with accuracy back to the place at which it had been.

16th week. As she was lying on her father's arm her brother went to her and began to kiss her cheek noisily. She tolerated a few kisses, then turned her head to hide it in her father's breast, putting out her hand and uttering a scolding *ă*. When he withdrew she turned to look at him, but each time she perceived him approaching she hid her face and warded him off. The performance was repeated ten times.

29th week. A bottle of milk was brought to her, she never having seen a nursing bottle. She immediately began to reach eagerly for it. It was handed to her in such a way that she might grasp it where she pleased

¹ From these records I have excluded responsive sounds which occur very early (5th to 8th week).

and knees, in order to reach a chair, he fell and hurt his nose, his hands being too close to his knees to balance. Shortly afterwards he repeated the attempt, first placing the right hand upon the floor, as far away from himself as he could reach, leaning over and recovering his position several times, each time placing the hand a little further away, then turning, he threw his weight upon this hand, holding the other in readiness to place beside it as he turned, and successfully got into the required position.

and used it as she would. She took it in her hands, and at once put the nipple in her mouth, upon which, however, she chewed rather than sucked.

42nd week. As she put all small objects into her mouth we had to watch her and repeatedly take them out. She, therefore, watched us, and slipped them in when we were not looking. Before this she had hastily crept away when she saw some one coming to clean out her mouth. If she perceived that she was observed she sometimes spit out what she had, or lowered the raised hand containing what she was about to put in.

The following are a few of the points brought out by a comparison of the foregoing recorded observations.

The development of muscular control proceeded by the group method; but control over the groups of muscles was not always acquired according to the same plan. For example, the boy could balance his head before he could his trunk, but the girl did not obtain full mastery over the muscles necessary to head balance till she could balance her trunk, which, however, she was able to do successfully somewhat earlier than her brother.

The groups of muscles developed in both cases in an order somewhat as follows:

Eyes and neck (for turning the head), hand and arm (for grasping and reaching), neck and trunk (for balancing the head and sitting), trunk, arm and leg (for creeping), trunk and leg (for walking, rising, stooping, etc.).

All impulses to muscles were first diffuse and tended to be symmetrical; but gradually became restricted to the groups to which they specially pertained. The diffusion of the impulses was particularly noticeable in the case of the boy, who developed a number of distinct movements as side-issues or accessories to the conventional ones. As an illustration of this, witness the history of hand and arm movements.

Impulses to arms were at first distributed symmetrically, to both arms and hands, and to both legs. The children sometimes supplemented arm and hand with leg and foot movements. The boy, however, developed an independent use of the feet as organs of prehension, which the girl never did.

One point of difference between the children is noteworthy. He displayed a greater number and variety of spontaneous movements than she did; and, as the records will show, possessed a greater number of body movements; for example, he

had a method of locomotion which she did not have, the ability to roll at an earlier age, and the aforesaid leg and foot movements.

A movement beginning early was sometimes perfected early, as head balance was by the boy. But the fact that it was begun early was not a certain indication that it would be attained early. Creeping, for example, was begun by the boy in the 28th week and persevered in, at intervals, till the 46th week; but not begun by the girl till the 32nd week, yet attained in the 39th.

The boy seemed to acquire a movement at the cost of a greater number of efforts than the girl did, see for example records of sitting, creeping and thumb-sucking.

Attitudes are some indication of the developing activity. This is especially true of hand attitudes, which change with the development of active touch.

What is commonly known as "feeling the feet," was displayed by the girl seven weeks earlier than by the boy, and she could stand as well in the 19th week as he in the 31st.

Stepping sidewise preceded stepping forward (girl 42nd, boy 47th week). She could walk alone when eight weeks younger than he was when able to walk alone. It is here possible that his direct use of the feet in walking may have been side-tracked by the use of the feet as organs of prehension.

Although I watched carefully for the first act of conscious imitation I observed no conclusive example in the case of the boy before the 38th week, while in the 16th week the girl gave undoubted proof of imitation, and in the 25th week, some thirteen weeks earlier than he, such actions had become habitual to her. Again in adaptive movements she was more precocious and more skillful than he. Both children felt of objects by drawing finger-tips and nails across the surfaces (boy 20th, girl 15th week); with both the forefinger was used extensively as an organ of touch, and the girl later (46th week) used the thumb in place of the forefinger. Each independently developed a method of picking up small things (boy 44th and girl 33rd week) which was later replaced by a more skillful adaptation (taking the thing between thumb and forefinger). They used the hands separately—that is wholly asymmetrically—in the 33rd week. What the girl attained was accomplished with fewer tentative efforts (compare the thumb-sucking and reaching series), and perhaps there is a correlation between this and her fewer spontaneous movements, her less diffuse impulses.

It is noteworthy that both acquired rather early a fine adjustment, and delighted to make it.