

Recording System of Infant Oral Response during Regular Feeding Session*

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sucking recording system feeding

The sucking response is often used as a dependent variable in the study of infant behavior. Nevertheless, few attempts have been made to systematically investigate sucking within the context in which this response gets its original significance and adaptive function: nutrition. This might come partially from a lack of technical devices to make this kind of investigation feasible, without interfering with the bonding atmosphere that usually takes place between baby and caretaker during feeding sessions. A system has been designed to record the oral response of the infant during bottle-feeding.

The system consists of a portable and otherwise convenient device mounted on a standard bottle that allows study of this type of response within the familiar environment of the bottle-fed baby, avoiding the usual laboratory constraints (Figure 1).

The device is constructed as follows: Four strain gauges are connected to form a Wheatstone bridge and are glued on both sides of a rubber restraint which is tightened around the circular base of the bottle's rubber nipple (Figure 2A). The rubber restraint is made of a normal rubber nipple that has been truncated at 10 mm from its base. The connecting order of the strain gauges is indicated in Figure 2B. Figure 2C shows the assembly of the device on a regular bottle.

When no pressure is applied upon the nipple, the signal output of the resistance bridge has a null value, thus changing when a positive pressure is applied commensurate with the amount applied. The resulting signal output is amplified, and can be recorded on an FM tape recorder or can drive a graphic chart display.

Two output signals can be recorded via the amplifier: (a) the *AC component* (Figure 3A), which corresponds to the signal one can obtain by using

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Figure 1. Feeding session of an infant, the oral response recording device being mounted on the bottle.

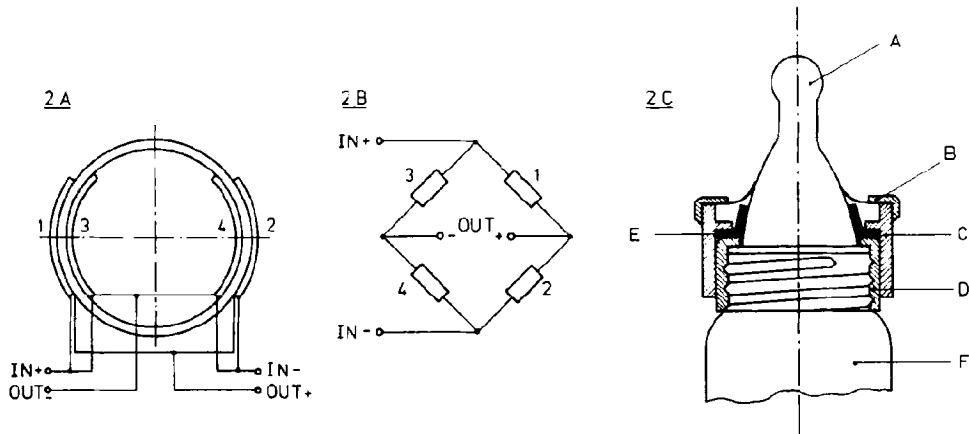


Figure 2A. The two pairs of strain gauges glued on both sides of the rubber restraint.

Figure 2B. Connecting order of the strain gauges that constitutes the Wheatstone bridge.

Figure 2C. Mechanical display of the device: (A) rubber nipple, (B) hood and protecting joint that can be sterilized, (C) plastic support, (D) standard nipple fixation, (E) rubber restraint, (F) regular bottle.

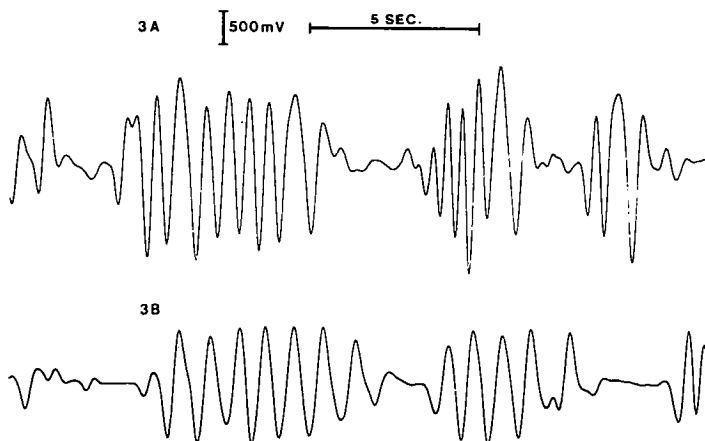


Figure 3A. Polygraph record of the AC output signal component that translates the sucking response of an infant tested with the present system.

Figure 3B. Polygraph record of the output signal that translates the sucking response of an infant using the air pressure variation technique.

the classic recording of "air pressure variation" in a nonfeeding situation (illustrated in Figure 3B), and (b) the *DC component* (filtered at 0.2 HZ), which translates the variation of strength of the nurse's pushing in or pulling out of the bottle from the baby's mouth during feeding. As shown in Figure 4, this variation can be used to document an aspect of the nurse-infant dialogue during the feeding session.

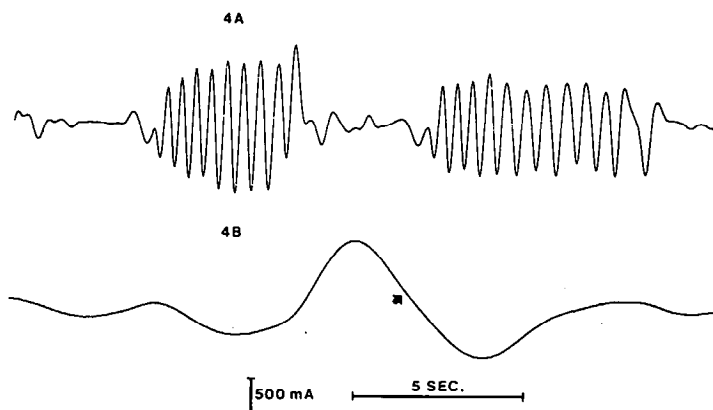


Figure 4A. AC component of the output signal that translates the sucking response of a 2-week-old infant.

Figure 4B. DC component of the output signal. The arrow indicates a variation that corresponds to a "push in" movement applied by the nurse upon the bottle. Note that this movement of the caretaker leads to a consecutive reactivation of the infant sucking response. (Figure 4A).