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COMMUNIQUÉ DE PRESSE NATIONAL | PARIS | 16 MARCH 2015

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Embargoed until 17 March 2015, 11:00am Paris time.

## **Bodysuit or sleep sack? That is the serious question.**

**Scientists at the Laboratoire Éthologie Animale et Humaine (CNRS/Université de Rennes 1), working in collaboration with a neonatologist from Brest University Hospital, observed the effect of preterm babies' clothing on their behavior. Newborns placed in a sleep sack were less active and touched parts of their bodies less frequently than those dressed in a simple bodysuit. The scientists suppose that the former may have been more stressed for two reasons: their movements were hampered, so that comforting self-touching was less frequent. This study is published on 17 March 2015 in *Scientific Reports*.**

It is well known, particularly from animal studies, that early experiences of life can have long-lasting effects on the emotional and social development of individuals. Scientists at the Laboratoire Éthologie Animale et Humaine were thus able to show that the wrapping and manipulation of foals in certain stud farms just after birth had long-term behavioral effects<sup>1</sup>. However, in human infants, the possible immediate or longer-term consequences of routine practices<sup>2</sup> remain a matter of debate. This is particularly true for preterm babies, whose behavioral expression may be less visible.

In a new study carried out in collaboration with the Neonatal Medicine Department at Brest University Hospital, the research team looked at the effect of clothing on the behavior of preterm newborns. Premature infants (born before 38 weeks of pregnancy) move from a closed incubator to an open cot under a radiant warmer. When they are able to regulate their temperature, the warmer is switched off and they are clothed in pyjamas and a cardigan and placed in a sleep sack (attached over the shoulders) instead of a simple bodysuit. Video recordings enabled the scientists to study the behavior, over several hours (spread over two to four days), of 18 preterm infants aged 34 to 37 weeks post-conception. Nine of them, still under the radiant warmer, were dressed in a bodysuit (allowing them freedom of movement), while the other half were wearing the pyjamas, cardigan and sleep sack.

The newborns in bodysuits proved to be more active than those in the sleep sack; their arms were more frequently bent and their hands more often in contact with their environment or head (the only accessible part of the body). The newborns in sleep sacks tended to have their arms extended and hands closed, and did not touch anything. Raising their arms in all these items of clothing appeared to require too much physical effort for these babies weighing less than 2 kg.

Yet infants are known to reduce their stress levels through self-touching. In hospitalized preterm newborns, deprived of any frequent tactile contact with a parent, it could even constitute a crucial mode of compensation. Furthermore, having their movements hampered increases the levels of stress in individuals, giving them a feeling of impotence. By preventing this contact and imposing a physical



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constraint, the pyjama-cardigan-sleep sack combination could therefore have a dual impact not only in terms of immediate discomfort but also perhaps of emotional and motor development. To verify this hypothesis, the research team is now planning to explore the behavioral effect of sleep sacks on a larger group of preterm babies in the longer-term. The present study nevertheless underlines the importance of paying more attention to routine practices, even if they appear harmless, during the perinatal period.

(1) In some stud farms, foals are rubbed vigorously and lengthily all over the body by a human, following delivery. The objective is to create an "impregnation" so that the animal will no longer be fearful of human contact. In the course of several studies, the research team at the EthoS laboratory was able to show that this is in fact not the case. Furthermore, this handling proved stressful for the foal and had numerous harmful consequences: it induced a non-secure relationship with the mare, as well as increasing stress during weaning, hampering the foal's integration in a group of young horses, and inhibiting movements during stressful situations. (Henry et al, 2009, PlosOne; Durier et al, 2012, Frontiers in Psychology)

(2) This expression refers to the standard "care" that is always given to newborns, such as weighing, bathing, changing diapers or screening for diseases by collecting a blood sample.

## Illustration



### Sketches of the two clothing options.

Left: baby dressed in a bodysuit and light wrapping.

Right: baby wearing pyjamas and a cardigan and placed in a sleep-sack.

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[phototheque@cnrs.fr](mailto:phototheque@cnrs.fr).

## Bibliography

**Unexpected behavioural consequences of preterm newborns' clothing**, Virginie Durier, Séverine Henry, Emmanuelle Martin, Nicolas Dollion, Martine Hausberger, Jacques Sizun. *Scientific Reports*, 17 March 2015. DOI : 10.1038/srep09177

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