



Antichoice organizations have used the claim that fetuses can feel pain to back up their attempts to limit access to abortion.

Fetal Pain?

By Stuart W.G. Derbyshire, Ph.D.

NEBRASKA RECENTLY PASSED a law to prevent abortion after 20 weeks gestation on the basis that maturing fetuses experience pain and therefore abortion after 20 weeks is cruel and should be banned. Many commentators have observed that the Nebraskan interest in preventing cruelty as a basis to prevent abortion goes beyond the state's legal interest in protecting viable life as a basis

to prevent abortion. The latter interest in viability was a key tenet of *Roe v. Wade*. There are at least two problems to untangle. The first relates to the nature of pain and how to decide whether the fetus can ever be said to feel pain. The second relates to the proper role of scientific investigations and discussions in deciding social policy.

CAN A FETUS FEEL PAIN?

There are two related but separate ways to address whether the fetus feels pain. The first way is to ask what neural structures are necessary for pain and then to

ask when those structures develop. Pain is not possible before the necessary neural structures are in place. The second way is to ask, what the psychological content of pain is and then to ask when that psychology develops; pain is not possible before the necessary psychological content is in place.

Examining the development of neural pathways is an attractive approach because it provides substantive answers to the question that can be identified with physical measurements such as images of the brain. In contrast, psychological measures are less substantive. Psychology

STUART W.G. DERBYSHIRE is senior lecturer at the School of Psychology at the University of Birmingham.

involves questions of subjectivity and meaning that cannot be identified with physical measurements. For this reason, most commentary on fetal pain has focused on measurements of neurobiology. Ultimately, however, both neurobiology and psychology have to be addressed together because it is not possible to decide what neural structures are necessary for pain without some conception of “the pain” for which they are necessary.

THE NEURAL BASIS FOR PAIN AND THE NEURAL DEVELOPMENT OF THE FETUS

Since the late 1980s it has been increasingly possible for neuroscientists to look directly at the working brain. Technolo-

gists to argue that cortical areas are necessary for pain.

The question of fetal pain can therefore be partially addressed by asking when cortical areas become functional in the fetal brain. Around eight weeks gestational age (GA), as the fetal period begins, the developing fetus is approximately 4 cm (1.5 in) long, has similar features to the later stage fetus and has begun to move. At this stage, touching around the mouth will result in movement away, indicating the presence of some early sensory detection. At eight weeks GA, however, the fetal brain is profoundly immature and there are no identifiable cortical areas. Cells in the skin that can detect tissue damage and are necessary for pain also

cortical areas. Clear evidence of cortical activity during auditory stimulation has been recorded from around 26 weeks GA. Cortical responses have also been recorded in premature neonates of 25 weeks GA following a noxious heel lance. By around 24-26 weeks GA, therefore, it can be assumed that tissue damage causes a cortical response and that the minimal necessary connections for pain are in place.

WHAT IS PAIN?

Typically people do not describe their pain with reference to the activity in cortical areas but with reference to the intensity of the pain and how unpleasant it feels. Pain has a psychological content

The Nebraska law is deeply problematic, however, for a very different reason.

The Nebraska law uses science in an attempt to avoid a difficult social, moral and political question.

gies such as positron emission tomography (PET) and functional magnetic resonance imaging (fMRI) provide structural and functional images of the human brain. That means neuroscientists can observe how the brain looks and also which brain areas are active when the volunteer performs an action, has a thought or feels a sensation such as pain. A series of studies has demonstrated that volunteers experiencing pain activate a large number of neural structures including the lower, subcortical, areas of the brain and the higher, cortical areas of the brain. Imaging studies inform us that these areas are *involved* in pain but not that they are *necessary* for pain. When the cortical areas of the brain are inactivated because of sleep, general anaesthetic or a coma state, however, pain is generally considered impossible. Although contentious, the combined results of imaging experiments and observations of what happens when activity in cortical areas is suppressed lead most neurosci-

do not develop until at least 10 weeks GA.

After 10 weeks there is evidence of connections between the cells dedicated to detecting tissue damage and subcortical areas. Between 12 and 18 weeks there is the appearance of a developmental cortical structure called the subplate that receives connections from subcortical areas. Some commentators have suggested that this represents the minimally necessary connections for pain. The subplate, however, is a transient brain structure that serves a necessary maturational role. Neurons connect into the subplate and are then held for several weeks before they connect into the mature cortical areas that develop above the subplate. The subplate dissipates and vanishes as the cortical areas mature. Most neuroscientists believe that a maturational structure, such as the subplate, cannot perform a mature function, such as the delivery of pain sensation.

Between 24-32 weeks we can see the substantial growth of connections into

and is a subjective experience. The International Association for the Study of Pain has officially defined pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.... Pain is always subjective.”

The IASP definition indicates that pain does not have primacy over subjectivity, existing before and *in addition* to subjectivity, but is experienced *through* subjectivity. Pain is a part of knowledge and it is impossible to think of pain without taking account of the whole complex of traits by which we are characterized. By this definition pain is not something that will appear as soon as the required cortical areas are active because pain relies upon a higher cognitive functioning and self awareness that require a protracted period of psychological development. The IASP definition, therefore, appears to rule out the possibility of fetal pain at any gestational age.

There is considerable merit in the IASP definition of pain and in the broader idea

that pain is a form of knowledge but there is also a reasonable disquiet in denying a rawer, more primitive, form of pain. A useful distinction might be drawn between just being in pain and *knowing that* I am in pain. Both an older infant and the fetus might be said to be in pain but only the older infant can experience *that he or she is in pain* and explicitly share the condition with others as an acknowledged fact of being. When we experience something we know that it is we who are experiencing it. People do not disappear or drown in sensation but remain self-located within it; our intuition of ourselves as particular things with particular location and experience is opened up by, rather than collapsed into, our senses. It is because we remain ourselves within sensation that we can make choices about how to behave. We may choose to be stoic or protest, for example, when we are injured by others.

If the fetus feels pain then what is felt is something raw and immediate. The pain is, and it is, merely because it is; this simple immediacy constitutes the truth of its existence. If the fetus has any experience at all then it will live those experiences without explicit relationship to them. The experiences will not embed in any general understanding or knowledge system (because no such understanding or system yet exists). The fetus will not know what it is experiencing and with no self-intuition to be opened up by sensation, the fetus will collapse and disappear within sensation. The fetus cannot make choices about how to behave and cannot, for example, launch a protest against the surgeon or choose to be stoic.

It is very difficult to conceive of any feeling that is fully divorced from understanding or knowledge because our everyday sensory experience is always embedded in a context. A touch, for example, might be a warning or the prelude to an embrace or it might be an intrusion (and so a little frightening) or welcome (and so a little exciting) and so on. A touch is never *just* a touch; nobody can experience a touch that is pure and detached from the totality of their being

and circumstance. Similarly, nobody hears a pure sound, smells a pure smell or sees a pure object. There is a loss when any sensation or feeling is removed from the situation in which it is attached. What gets lost is the conception of sensation as a subjective experience along with more subtle and complex notions of how social factors and psychological development impinge on the experience. Subjectivity and knowledge contaminate everything that is felt. The fetus may feel something raw and immediate but older infants and adults feel something much more. And once the immediacy of sensation is lost there can be no recovery of innocence.

FETAL PAIN AND ABORTION

The necessary neural structures for pain are developed and functional from about 24-26 weeks GA. Although neural development is continuous and not absolute, based on this evidence fetal pain is not possible before 24 weeks GA. According to the IASP definition, pain requires subjectivity and higher cognitive functions that are not available to the fetus and so pain is not possible at any stage of gestation. Defining pain as something more immediate and raw might have some merit but that makes any fetal pain experience far removed from what is experienced in the older infant and adult.

Based on what is known regarding neural development and pain, the Nebraska law can be viewed as at least a reach both because the timing is off (banning abortion from 20 weeks GA) and because it is unreasonable to equate pain as we typically know it with what the fetus might experience. The Nebraska law is deeply problematic, however, for a very different reason. The Nebraska law uses science in an attempt to avoid a difficult social, moral and political question.

Traditionally the question of abortion has been addressed through arguments about bodily sovereignty and individual rights. At every stage of gestation the fetus is intimately bound up in the woman's physiology and is very much a part of her body. Proponents of abor-

tion argue that nobody should be allowed to force a woman to do something with her body that she does not want to do. On the other hand, opponents of abortion point to the fact that the fetus has the potential to go on and become an independent entity in its own right and nobody should be allowed to prevent that progress. Whether or not the fetus feels pain does not resolve these arguments. If the fetus feels pain then we may still support abortion in the interests of defending bodily sovereignty. Similarly, if the fetus does not feel pain we may still prevent abortion in the interests of defending future life.

The same problem also holds with respect to viability. Technological advances mean that the fetus can survive outside the womb at a slightly earlier age than before but that fact does not resolve the question of abortion. At every stage of pregnancy up to full term it is the case that viability is protected by the fetus remaining alive and inside the womb. When dealing with a wanted pregnancy it is precisely the point to facilitate viability by keeping the fetus inside the womb and deploying medical assistance whenever the baby is born. When dealing with an unwanted pregnancy it is precisely the point to stop viability by removing the fetus from the womb and deploying medical assistance to prevent a live birth whatever the stage of pregnancy.

The neural structures for pain are not available before 24 weeks GA and the psychological experience of pain as we experience it is never available to the fetus. People do not experience pure sensation because they have subjectivity, history and context that are only available postnatally. The fetus does not have subjectivity, history or context and so, if it experiences sensation at all, it must experience pure sensation that is alien to us and will be forever lost through development. None of this can help us decide what we should do with regards to unwanted pregnancy. The issue of unwanted pregnancy involves social, moral and political issues that cannot be resolved by science or technological advance. ■