3.4 Animal Studies of Attachment: Lorenz and Harlow

AQA 7182 · about 60 minutes · Write-in edition

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions.

1 Explain what is meant by Lorenz's 'critical period' in the context of gosling imprinting, and give one consequence if imprinting does not occur during this period.

(Total for Question 1 is 2 marks)

2 Outline the procedure of Lorenz's 1935 study of imprinting in greylag goslings, naming the key experimental manipulation and how goslings were exposed to the 'first moving object'.

(Total for Question 2 is 4 marks)

3 Outline Lorenz's extension of imprinting to sexual imprinting and give one example of how early imprinting influenced later mate preferences in his observations with greylag goslings.

(Total for Question 3 is 2 marks)

4 Outline the procedure of Harlow's 1958/59 studies with rhesus monkeys reared with wire and cloth surrogate mothers, naming the key experimental manipulation and how contact and feeding were separated.

(Total for Question 4 is 4 marks)

5 Outline the main findings from Harlow's surrogate mother studies, including the role of contact comfort and the consequences of maternal deprivation for later social and sexual behaviour in rhesus monkeys.

(Total for Question 5 is 4 marks)

6 Ethics and validity: Harlow's mother-deprivation procedure caused distress to infant monkeys. Identify two ethical issues raised by Harlow's studies, and for each explain why it is an ethical problem and how modern ethical safeguards in animal research would address it.

(Total for Question 6 is 6 marks)

7 Evaluation: Discuss one problem of generalising from Lorenz's results with greylag goslings to human attachment, one practical value of Harlow's findings for understanding human child-rearing or animal husbandry, and one limitation of applying those findings. For each point, explain why it matters.

(Total for Question 7 is 6 marks)

8 Discuss what animal studies have shown about attachment. Refer to Lorenz and Harlow and evaluate applicability to humans.

(Total for Question 8 is 16 marks)

9 Explain two long-term behavioural consequences for rhesus monkeys that experienced maternal deprivation in Harlow's studies, naming specific adult behaviours observed.

(Total for Question 9 is 4 marks)

Mark scheme · 3.4 Animal Studies of Attachment: Lorenz and Harlow

Question 1

explains critical period as a short, biologically determined time after hatching when imprinting can occur oe — **B1**

gives consequence such as the gosling not forming a normal attachment, which can lead to later social or mating problems oe — **B1**

Answer: The critical period is a short biologically determined time after hatching when imprinting must occur; if imprinting does not occur then the gosling may fail to form a normal attachment and can have social or mating difficulties later.

Question 2

states that eggs were divided so some goslings hatched with the mother and others hatched in an incubator with Lorenz present oe — **M1**

states that Lorenz acted as the first moving object seen by incubator-hatched goslings oe — **M1**

states that after hatching the goslings followed the first moving object seen, whether that was the mother or Lorenz oe — **M1**

makes clear this was a controlled comparison between natural maternal imprinting and imprinting on a human experimenter oe — **A1**

Answer: Eggs were split so some goslings hatched with their natural mother and others hatched in an incubator where Lorenz was the first moving object they saw; incubator-hatched goslings followed Lorenz while mother-hatched goslings followed their mother, showing a controlled comparison of first-object exposure.

Question 3

states that Lorenz suggested imprinting can influence later mate choice, called sexual imprinting oe — **B1**

gives an example such as goslings reared to follow Lorenz later attempting to mate with human-shaped objects or showing preference for mates with similar features to the first object oe — **B1**

Answer: Lorenz argued imprinting influenced later mate choice, sexual imprinting; for example, goslings that had imprinted on a human later showed courtship behaviour directed at humans or preferred mates with features similar to the first object.

Question 4

states infant rhesus monkeys were reared with two surrogate mothers, one made of wire and one covered in cloth oe — **M1**

states that in some conditions the wire mother provided milk while the cloth mother provided no milk, separating contact comfort from feeding oe — **M1**

states that researchers measured which mother the infants spent more time with, and their response to a frightening stimulus while with each surrogate oe — **M1**

clarifies this allowed comparison of the importance of contact comfort versus food as the basis for attachment oe — **A1**

Answer: Baby rhesus monkeys were reared with two surrogate mothers, a wire one and a cloth-covered one; in critical conditions the wire mother provided milk while the cloth mother provided comfort but no milk. Harlow measured time spent with each and behaviour when frightened to compare contact comfort and feeding as attachment bases.

Question 5

reports that infant monkeys preferred the cloth-covered surrogate to the wire surrogate, even when the wire surrogate provided milk oe — **M1**

states that contact comfort was shown to be more important than feeding in forming an attachment oe — **M1**

states that maternally deprived monkeys later showed social and sexual deficits, such as rock-clinging, poor social skills, and impaired parenting behaviour oe — **M1**

may mention long-term emotional and social problems in adulthood following early maternal deprivation oe — **A1**

Answer: Monkeys consistently preferred the cloth surrogate and used it as a secure base, showing that contact comfort was more important than feeding in attachment. Monkeys reared without a real mother developed social and sexual deficits and poor parenting in adulthood.

Question 6

identifies ethical issue 1: causing psychological harm and distress to infant monkeys oe	**M1**
explains why this is a problem, e.g. monkeys showed signs of long-term emotional harm, which is a welfare concern and would be unacceptable under current standards oe	**A1**
states a modern safeguard addressing this, e.g. harm minimisation, ethics review boards requiring clear justification and prohibiting unnecessary distress oe	**M1**
identifies ethical issue 2: lack of informed consent and use of sentient primates with high cognitive capacity oe	**M1**
explains why this is a problem, e.g. nonhuman primates have complex social needs and cannot consent, raising strong moral obligations to avoid experimentation that impairs welfare oe	**A1**
states a safeguard, e.g. replacement, reduction and refinement (the 3Rs), and stricter rules that limit use of primates and require alternatives where possible oe	**A1**

Answer: Issue 1: causing psychological harm and distress to infant monkeys, which is problematic because it produced long-term welfare damage; modern safeguards include ethics review and harm-minimisation rules that would generally prevent such procedures. Issue 2: using sentient primates without consent, problematic because primates have complex social needs and deserve strong protection; modern safeguards include the 3Rs (replace, reduce, refine) and strict controls on primate research, favouring alternatives.

Question 7

identifies a problem of generalisation from Lorenz to humans, e.g. species differences in cognition and attachment mechanisms between birds and humans oe	**M1**
explains why this matters, e.g. imprinting in precocial birds is a rapid, innate process that may not map onto the more prolonged, reciprocal human caregiver-infant interactions oe	**A1**
identifies a practical value of Harlow's work, e.g. highlighting the importance of tactile comfort and early caregiving for healthy social development, with implications for childcare and animal rearing oe	**M1**
explains why this matters, e.g. it influenced reforms in institutional care, foster parenting and advice to caregivers about responsive physical contact, improving outcomes for children and animals oe	**A1**
offers a balanced comment or limitation on the practical application, e.g. caution that direct translation from monkeys to humans must account for ethical and contextual differences oe	**M1**
explains the limitation, e.g. human social environments and cognitive factors are more complex, so applications should be adapted and empirically tested rather than assumed to transfer directly oe	**A1**

Answer: Problem of generalising: birds show rapid, innate imprinting that differs from the prolonged, reciprocal attachment processes in humans, so Lorenz's findings may not map directly onto human attachment. Practical value of Harlow: demonstrated the importance of tactile comfort and responsive caregiving for social development, influencing improvements in childcare and animal husbandry; however, application must be cautious because human contexts and ethical standards differ from experimental monkey rearing.

Question 8

Level 4 Knowledge of Lorenz and Harlow is accurate and detailed. Evaluation is thorough and balanced, showing a range of strengths and limitations and integrating application to humans effectively. The answer is well organised, uses appropriate terminology, and shows clear, supported judgements about what animal studies can and cannot tell us about human attachment.	**13-16**
Level 3 Knowledge of the two studies is clear with some detail. Evaluation is present and generally effective, but may not be fully balanced or may miss some links to human attachment. Application to humans is present but may be less consistently developed. The answer is mostly coherent and uses specialist terms appropriately.	**9-12**
Level 2 Knowledge is basic and may be incomplete or partially inaccurate. Evaluation is limited or one-sided. Application to humans is attempted but underdeveloped. The answer may lack structure and precise use of terminology.	**5-8**
Level 1 Very limited knowledge and evaluation. Responses are brief, disorganised, or largely descriptive without analysis or application to humans. Specialist terminology is mostly absent or incorrect.	**1-4**
Level 0 No creditable content.	**0**

Indicative content:

- AO1: Lorenz found that greylag goslings imprint on the first moving object seen shortly after hatching, suggested a short critical period and claimed imprinting is often irreversible and influences later social and sexual behaviour (sexual imprinting).
- AO1: Harlow reared rhesus infant monkeys with cloth and wire surrogate mothers, separated comfort from feeding, and found infants preferred the cloth mother for comfort; maternally deprived monkeys later showed social withdrawal, abnormal sexual behaviour and poor parenting.
- AO2: Both studies demonstrate the importance of early social experience and caregiving in shaping later behaviour: Lorenz shows a biologically timed mechanism in precocial birds, Harlow shows tactile comfort is crucial for emotional security in primates.
- AO3: Strengths include careful experimental control allowing causal inferences, clear operationalisation of variables (first moving object, contact comfort), and striking, replicable behavioural effects that stimulate further research and practical applications such as improved animal husbandry and child-care practices.
- AO3: Limitations include problems of generalisability across species: differences in species' development and cognition mean imprinting in birds may not reflect human attachment, and ethical concerns in Harlow's primate work limit direct translation to human contexts; both studies may lack ecological validity relative to natural rearing conditions.
- AO3: Ethical evaluation of Harlow: the experiments caused significant distress and long-term harm to primates, conflicting with modern animal welfare standards and complicating the moral use of such evidence in explaining human attachment.
- AO3: Methodological considerations include the artificial laboratory settings, potential observer bias, and that animal models simplify complex human social and cognitive processes; yet animal studies allow experimental manipulations impossible with humans and can indicate causal mechanisms worthy of further human-based research.
- AO3: Overall judgement could argue animal studies are valuable for illustrating basic biological and social mechanisms in attachment and for generating hypotheses, but conclusions about humans must be cautious, supported by converging evidence from human observational and experimental research.

Question 9

identifies one long-term consequence, e.g. impaired social behaviour or inability to form normal social bonds in adulthood oe	**M1**
explains with an example, e.g. deprived monkeys showed social withdrawal, rock-clinging and failure to interact normally with peers, which indicates disrupted social development oe	**A1**
identifies a second long-term consequence, e.g. poor parenting or abnormal sexual behaviour in adulthood oe	**M1**
explains with an example, e.g. maternally deprived females were poor mothers, sometimes neglecting or abusing their offspring, showing transgenerational effects oe	**A1**

Answer: Maternal deprivation produced impaired social behaviour in adulthood, such as social withdrawal and rock-clinging, and disrupted sexual/parenting behaviour, with deprived females often showing poor or abusive maternal care, indicating long-term developmental damage.