

# HASSETT ET AL.

## AIMS

1. To see if biological factors are the root of sex differences in children's toy preferences [TPs], for example from prenatal hormone exposure rather than socialising.
2. To see if male & female rhesus Ms have similar TPs to human babies despite not having interacted with them.

## RESEARCH METHODOLOGY

Experiment; investigated the effect of sex on TPs. The Ms were observed in their normal enclosure [natural environment]; all lived together for 25 years. The researchers controlled their environment by positioning the toys while keeping the Ms indoors. The Ms were observed by video recordings of them in their outdoor enclosure.

## DESIGN & VARIABLES

Since two groups of Ms [males & females] were observed, IDM.

IV: sex of the Ms, naturally occurring & determined by the physical appearance of their sex organs.

DV: whether they interacted with plushies or wheel toys more.

Their age & pre-established social rank were recorded whenever a M interacted with a toy. Their social ranks were established by observing grooming behaviour: M grooming: lower rank, M being groomed: higher rank.

## SAMPLE

135 Ms at Yerkes National Primate Research Centre Field Station, comprised of infant & adult Ms. 14 Ms had been previously researched on & exposed to prenatal hormones so they did not participate in this. 39 babies [<3 months old] weren't included as their sex could not be determined. 82 Ms remained [F61, M21] & 34 interacted with toys more than 5 times [23F, 11M] so they were included in the analysis.

## PROCEDURE

7 25min observations were done in the enclosure. 1 wheeled toy & 1 plushie were kept 10 metres apart while the Ms waited indoors. They were counterbalanced; in half the trials, the wheeled toy was placed on the right side & the plushie on the left, & in the other half it was the opposite. This was done to ensure the Ms preferred the actual toy instead of the part of the enclosure it was in.

These toys were selected in terms of how interactive they are; what could be done with them instead of just traditionally "male"/ "female" toys. There were 6 wheeled toys ranging from 16-46 cm: wagon, truck, car, construction vehicle, shopping cart & dump truck. There were 7 plush toys as well, from 14-73 cm: Winnie the Pooh, Raggedy Ann, Scooby-Doo & 4 soft toys: a koala, armadillo, teddy & a turtle.

Each toy was recorded by a video camera to observe interactions. 2 observers watched the recordings & used a behavioural checklist to categorise the interactions. They recorded their data on an app called "Handobs" on a "palm pilot" [like a cell phone]. They recorded the start & end timings of each interaction & calculated the duration in seconds. The M's sex, age & rank were also recorded for each interaction.

Ambiguous behaviours were discussed until categorised; The behavioural checklist included:

Touching, brief & extended

Holding

Sitting on

Dragging

Carrying

Manipulating

Sniffing

Mouthing/gnawing

Destroying

Jumping away

Throwing them away

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## RESULTS

The avg duration & frequency of interactions were calculated. Next, by adding up the avgs, the researchers totalled the number of interactions & how long they lasted for each toy type [wheeled/plush]. It was found that most of the Ms didn't interact with the toys at all. A few interacted with the toys only for a couple of seconds & fewer interacted for longer & more often.

### Male Ms preferred wheeled toys

Male Ms preferred wheeled toys over plush on avg [9.77 vs. 2.06]. On further analysis it was found that 77% of the males preferred wheeled toys, 9% preferred plushies & 18% didn't show a preference. These preferences were unrelated to age & rank.

### F Ms didn't show consistent preferences

There was no significant difference between the preference towards wheeled or plushies for female Ms [wheeled: 7.97, plushies: 6.96]. There was no difference between how often the males & females played with the wheeled toys. 30% preferred plushies, 39% preferred wheeled & 30% didn't visibly prefer anything. Females who didn't show a preference were lower on the hierarchy but no rank difference between females who preferred wheeled vs. plushies.

### duration of interactions

Females played with wheeled toys for a shorter time than males on avg [1.27 mins vs. 4.76 mins], & played with plushies for a longer time than males on avg [1.49 mins vs. 0.53 mins]. Some of the males played with wheeled toys for a lot longer than the others, as suggested by the standard deviation. The females had larger individual differences in how long they spent playing with the toys. However, on avg, there wasn't too much of a difference in the time spent interacting with either toy type [1.49 mins for plush & 1.27 mins for wheeled].

### Social rank & TP

There was a positive correlation between social rank & how much they interacted with each toy type; high-rank Ms interacted with more toys. For females, especially, the higher the rank, the more time was spent playing with the plushie.

## CONCLUSIONS

Biological differences may be why human infants prefer sex-typed toys, & rhesus Ms show similar preferences, even without clear gender differences. TPs in Ms & humans "reflect hormonally influenced behavioural & cognitive biases" which interact with learning experiences in their social environment.

## ETHICAL ISSUES

Hassett followed all ethical guidelines for animal experimentation, by following the National Institutes of Health's *Guide for the Care & Use of Laboratory Animals*. Yerkes National Primate Research Center is overseen by Emory University Institutional Animal Care & Use Committee. The Ms lived in their 25m<sup>2</sup> enclosure, had constant access to water & were fed M chow twice a day & fresh fruits & vegetables twice a day. Temp was controlled when they were indoors & since they were living in captivity for so long, they knew the keepers & were not put under any extra stress.

## METHODOLOGICAL ISSUES

### RELIABILITY

Each behaviour on the checklist had a description of it, allowing both observers to categorise the behaviours similarly. The list is clear about issues like "sitting on half the toy", improving the reliability of the conclusions drawn.

In one of the trials, a M unexpectedly ripped apart a soft toy so the trial was cut short to 18 minutes long. The observers could not determine the Ms' preference for the toys as one of them was destroyed, so the reliability of the observations was compromised.

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## VALIDITY

25-minute trials repeated 7 times with different variations of the toys allowed clearer conclusions to be drawn about the preference of the type of toy, so factors like Ms preferring a colour or size of the toy were negated.

Since the Ms were used to being recorded, the video cameras were natural to them. A human observer may have affected the spontaneity of the interactions; the Ms may have played lesser if the stress of being watched was present. They may have also played more to receive a reward, so the usage of cameras improves validity.

## OBJECTIVITY & SUBJECTIVITY

Heavy usage of quantitative data, recorded on a palm-pilot & in seconds for easy avg calculation. The numerical data & their comparison prevented subjective interpretation.

Since the observers were familiar with the Ms, their knowledge of the M's gender/characters may have affected the validity of the study. Furthermore, the observers may have increased subjective analysis resulting in different conclusions from people unfamiliar with Ms.

## GENERALISATIONS & ECOLOGICAL VALIDITY

Fewer male Ms, as most were either babies or had been experimented on previously; so generalisation should be made carefully. Interactions could be due to Ms' rank & age.

Ms may survive in captivity & show different preferences. These Ms were captive & so curious.

## ISSUES & DEBATES

Human TP may be influenced by nature & bio differences, with male Ms showing a preference for wheeled toys over plush toys. Female Ms showed no clear preference, & their interactions with wheeled toys were influenced by social rank & testosterone levels; nurture, as the higher the social rank of a female, the longer they played with the toy.

The study suggests that children's brains may influence their TPs, shaping their skills & future talents. Boys are drawn to toys with moving parts, while girls prefer plush toys with faces. Parents can use these toys to develop empathy & visuospatial skills, such as empathy through imaginative play.

## ASSUMPTIONS

Sex differences in TPs were seen in monkeys without socialisation to these toys, so this behaviour can be explained in terms of the effect of genetic and evolutionary differences between the sexes.

SIMILARITIES	DIFFERENCES
D&K & Hassett investigated biological factors assumed to be caused by nature	Hassett used animals while Holzel used humans
Hassett & Holzel used independent measures.	Hassett studied Ps while they were awake, D&K studied Ps while they were asleep.

  

STRENGTHS	WEAKNESSES
Observation used a behavioural checklist to record monkey behaviour, making it reliable.	Possible subjective bias as observers knew the monkeys.
Qt data in recording time spent with toys was objective	Human play may differ from monkey play, so conclusions cannot be generalised to humans.

## Abbreviations

Toy preferences: TPs

Monkeys: Ms

Male/female: M/F