RNIB Statistics 1997
1.8% population registerable
0.32% registered blind
0.27% registered partially sighted
0.04% of registerable population under 15 years of age

Why study blindness?
Vision is the dominant sense in human experience
– major role in unifying information from other senses; integration; coordination
– social interaction; NVC; attachment
– main focus of study in perceptual and cognitive psychology (most theories based on visual tasks)

Infancy
Perception and Motor Skills
Vision important for the coordination and integration of senses
– vision provides detailed spatial information used to build up ‘maps’ for other senses
– Info on location and nature of sounding objects not available to blind infants

Reaching
– Age at onset of reaching:
  Sighted - 3 months
  Blind - 9 months
– N.B. delay reaching to an object cf. to a sound: sighted children do not reach for hidden sounding object until 9 months.
– But no adaptive substitution of sound for vision in blind infants.

Gross Motor Development
– postural skills - no delay
– self-initiated mobility - delay

So what does this tell us about perceptual and motor development?
– reaching, crawling, walking develop in response to external stimuli
– goal-directed behaviours
– vision specifies existence/location of objects directly
– sounds are less effective specifiers of objects

Alternative Explanations for Delay
Motor Restriction
– blind babies tend to prefer supine position
– may limit opportunity for exercising limbs

Opportunity
– possible relationship between opportunity for exploration given to blind children and development of reaching etc.

Early Social Interactions
Preisler (1995)
– compared the interactions of blind and deaf infants with their mothers, between 6 and 18 mths
– Lack of visual responsiveness in blind infants is a barrier to intersubjectivity
– Blind delayed relative to deaf in inclusion of objects into play
– Parents of blind infants find it more difficult to incorporate objects into play smoothly, due to lack of eye gaze direction as cue to attention: object has to be in contact with blind child or be audible to become a topic of joint attention between infant and caregiver. Such situations must be actively produced.

– Deaf infants develop within normal range, using visual signals to produce and read joint attention cues. Protoconversational synchrony produced through vision and touch.

Rattray (1999)
– combinations of blind and sighted infant and mother
– transition from primary to secondary intersubjectivity smoother with sighted mothers and least smooth in VI mother/sighted infant dyad

Early Childhood
Understanding Objects
Hatwell (1966)
– bank of Piagetian tasks
– different pattern of development from sighted

Cromer (1973)
– no differences between blind and sighted children on three conservation tasks
– on volume task blind non-conservers always said that wider container contained more whereas sighted children always said the opposite

Simpkins & Grube (1982)
– confirmed Hatwell’s results
– found delays of up to 8 years cf. Sighted
– training study over 2 years improved performance of experimental blind group cf. sighted and untrained blind controls

Ochita (1994)
– reviewed large body of Piagetian tasks
– supported and extended Hatwell’s findings
– no blind/sighted difference for formal operational tasks

Summary
– blind children seem to be delayed in development of tasks involving concrete engagement with objects
– little or no delay in verbal or logical reasoning tasks
– little or no delay in formal reasoning tasks

Understanding People
Congenital Blindness and Autism
– has been noted that some blind children show autistic-like behaviours (e.g. Fraiberg, 1977)
– Hobson’s (1995) theory of autism emphasises the role of vision in forming intersubjective relationships between infants and caregivers
– basis of Theory of Mind

Brown, Hobson & Lee (1997)
– assessed congenitally totally blind children on CARS, BCDP and DSM-III-R scales for autism
– just under half the children scored high on autism scales
– most of these also had low IQ scores

Minter, Hobson & Bishop (1998)
– two adapted false belief tasks
  – teapot task
  – boxes task

Simon Ungar 2002
– some blind children failed FB at 4 years
– results not clearcut: some children perform well, others poorly
– not consistent with Hobson’s account

Cupples (1999)
– confirmed Minter et al. findings that SVI children are often delayed in acquiring ToM
– pattern of results for SVI different from autistic
– tested older children with ‘second order’ ToM tasks (strange story vignettes, Happé, 1995)
– delays cf. Sighted children matched for VMA

Summary
– some evidence for similarities with autism
– precise pattern of development does not mirror autism
– lack of vision can impair social understanding especially in children with lower IQ
– BUT: need to rule out proximal explanations
– possible link between literal sense of ‘perspective’ and ‘point of view’ and their metaphorical sense – do you need to understand the first before acquiring the latter?

Understanding Space
Beglow (1991)
– studied young visually impaired children’s representations of the layout of their homes and neighbourhoods.
– Totally blind, partially sighted and sighted children.
– two age groups (mean ages: 4.7 and 6.0 years)
– asked to point to locations in their homes and neighbourhoods.
– pointing responses were scored according to three criteria:
  Euclidean: “as the crow flies” direction
  Route: direction along the first segment of the functional route to the location.
  Neither: neither of these directions.
– partially sighted and sighted children mastered tasks within fifteen month period (mostly on first session)
– totally blind children failed to master most of tasks within study period
– totally blind children more often pointed along the route to each location (route response) rather than towards the location itself (Euclidean response)

Ungar, Blades & Spencer (1996)
– tested blind children’s judgements of relative distance between nine locations in their school using the method of ‘triadic comparisons’.
– Two error scores calculated:
  Euclidean: difference between child’s estimate and true “crow’s flight” distance.
  Functional: difference between child’s estimate and the “shortest route” distance on the ground.
– children tend to respond on the basis of their functional experience of the environment rather than from an integrated representation.

Ungar et al. (1994)
– blind children learned a layout of objects in a large room. Asked to estimate directions between locations.
– early, totally blind children’s errors higher than children with residual vision.

Summary
– So, seems that children who have never had sight tend not to form fully integrated representations of their environment.
– BUT: in these and other studies, some blind children perform similarly to sighted children – so can’t be lack of vision per se that causes difficulties – more able children must have acquired compensatory strategies for comprehending space

Summary & Implications
Lack of vision does not affect overall intellectual ability (e.g. I.Q.)
Specific problems with:
– reasoning tasks which involve figurative content
– social understanding
– large-scale spatial tasks
Focus for Intervention
– early developmental environment; structuring experiences in space with objects; facilitating interactions with others
– enhancing experience of spatial structure of environment (e.g. tactile maps, Sonicguide)

References


Simon Ungar 2002