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Infants' Social Cognitive Knowledge

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Introduction

Social cognition refers to thoughts and beliefs that individuals and groups hold concerning how and why people act as they do. The ability to interpret one's own and other people's actions in terms of internal and mental states that motivate human behaviour is central to social cognition. Much past work has demonstrated that there are significant developments in children's ability during the preschool period to use psychological states to predict, describe and explain behaviour.[1,2,3] This chapter reviews recent evidence that suggests the basic foundations of these abilities can be traced back to infancy.

Subject

By the end of the first two years of life, infants are adept at understanding basic goals, intentions, perceptions and emotional expressions, as well as simple preferences and dispositions. These socio-cognitive abilities are the building blocks for more mature aspects of social cognition, such as theory-of-mind (see Astington[4] and Miller[5] chapters). Moreover, early socio-cognitive capacities contribute to learning across a range of domains, such as language learning,[6,7] imitative learning,[8] causal learning,[9] and representational understanding.[10]

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Problems

Because infants cannot undertake language-based tasks, researchers must rely on novel and innovative non-verbal methods to tap early social cognition. These methods, which typically capitalize on infants' social behaviour (either occurring in a natural or an experimental context),[11,12] and infants' visual responses to simple social events,[13] have yielded a wealth of information regarding early social cognition. However, as the findings from these methods are often open to multiple interpretations,[14] converging methods are needed to gain an accurate picture of social cognition in infancy.

Research Context

Infants' early social cognitive understanding is inferred via their spontaneous or elicited social behaviour in naturalistic and laboratory settings, and via their visual and manual responses to simple social events presented in the context of experimental paradigms. Carefully controlled experiments, with a range of different manipulations are necessary to reduce the number of potential alternate interpretations of research findings.

Key Research Questions

1. What is the range of socio-cognitive understandings that infants possess? How are these understandings similar to, and different than, the understandings of older children and adults?
2. To what extent do infants possess a sophisticated mentalistic understanding of other people's actions (e.g., understand behaviour in terms of psychological states) versus a more simple behavioural understanding (e.g., understanding behaviour in terms of contingencies and rules)? How can we distinguish between these different levels of understanding?
3. Are certain aspects of social cognition innate? If so, which ones?
4. What factors or experiences drive developmental change in early social cognitive understanding?
5. Are early social cognitive abilities universal or culturally specific? To the extent that there is variability in social cognition across cultures, when and how do these differences arise?

Recent Research Results

Recent work suggests that there are advances over the first two years of life in infants' understanding of goals and intentions, their understanding of perceptions and emotions, and their understanding of preferences and dispositions.

One integral aspect of social cognition involves the ability to construe action as motivated by goals and intentions. By 6 months of age, infants view simple actions, such as reaching for and grasping an object as goal directed.[15] Over the course of the next 6 months they identify the goal of increasingly complex actions and action sequences.[16,17] By this age, infants can also differentiate between accidental and intentional actions,[13] and recognize that only animate agents (and not inanimate objects) possess goals and intentions. [15]

Another important aspect of social cognition involves recognizing the meaning of perceptual acts and emotional expressions. Starting at 9 to 12 months of age, infants appear to understand simple perceptual experiences and recognize the value of different emotional expressions. For example, infants recognize that an adult looking at a toy with her eyes open is having a perceptual experience, but an adult looking at a toy with her eyes closed is not.[18] Moreover, infants can use an experimenter or parent's emotional expression to decide whether or not to approach a novel toy,[19] or engage in a novel activity.[20]

The ability to know how personal characteristics influence behaviour is also a critical aspect of social cognition. Between 12 and 15 months infants begin to understand simple dispositions and preferences. For example, at this age infants expect an agent to continue to pursue a prior behaviour or activity when placed in a novel context.[21,22] Moreover, infants appreciate that preferences and dispositions are personal: they understand that different people can like different things.[23]

Research Gaps

One critical question for future research concerns the mechanisms, factors and experiences that underlie developments in early social cognition. Current work is beginning to demonstrate how specific experiences that infants have as actors and observers in the world serve as a catalyst for acquiring specific aspects of social cognitive knowledge.[24] For example, infants' ability to perform specific goal-directed acts (e.g., using a reaching tool to obtain an out-of-reach toy), appears to contribute strongly to their ability to understand the goal of these acts when produced by others.[25] A second question concerns how innate sensitivities that infants possess

may interact with environmental experience to produce development. Finally, ongoing research is investigating the neural processes underlying early social cognition. The answer to these questions will not only contribute to our understanding of what changes in early social cognition, but will also inform how developmental change occurs.

Conclusions

Whereas researchers once thought that social cognition was uniquely the province of older children, it is now evident that infants possess a range of social sensitivities and early social cognitive understandings that provide the foundation for later, more mature aspects of social cognition. Infants' social cognitive understanding appears to become increasingly abstract over the first two years of life: they understand the visible goals to which action is directed, prior to understanding simple perceptual and emotional states that drive behaviour, before understanding how ongoing personal tendencies motivate actions. Recent work reveals that achieving each of these understandings is not an all-or-none phenomenon. Rather, development may proceed one action or social event at a time, in a piecemeal fashion.[26] This developmental picture raises the possibility that additional factors, such as language, are required to achieve the more explicit and integrated social cognitive understanding of people and their behaviour that older children possess.

Critically, however, infants' early social cognitive knowledge has consequences not only for their social interactions, but also for learning across domains. Infants use their knowledge of goals, intentions, perceptions, emotions, dispositions and preferences to engage in language learning,[6,7] imitative learning,[8] and understanding cause and effect.[9]

Implications for Parents, Services and Policy

Research suggests that developments in early social cognitive understanding are driven, at least in part, by opportunities to act on the world and watch others act. These findings suggest that live social interactions that feature a combination of action and observation on the part of infants are important for the development of early social cognitive skills, and, by extension, for learning more broadly. Recent work has also begun to explore the specific conditions that facilitate infants' and children's understanding of other people's behaviour. These studies have demonstrated that contexts in which adults act as collaborative partners to children,[27] accompany their behavior by verbal explanations,[28] and/or provide a preview of the goal of an

activity prior to demonstrating the activity produce the best learning.[29]

Knowledge of early socio-cognitive milestones can also be helpful for diagnosis and remediation of developmental disorders that are marked by social deficits, such as autism.

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