Learning from learners

Rachel Wu with the latest in our series for budding writers (see www.bps.org.uk/newvoices for more information)

immerse myself in three disciplines: research, music and art. I am a Postdoctoral Fellow at the University of Rochester, after receiving my PhD in cognitive development from Birkbeck, University of London in 2011. I was also a violinist in a rock band (The OutsideRoyalty), and completed a degree in fine art and design at The Institute, Middlesex University in 2011. My passion for mastering methods and techniques in different fields serves as a personal case study for cognitive development research. Studying the learning strategies of infants, arguably the best learners, not only helps us understand them, but also provides insights into lifelong learning.

How do infants learn?

Since the 1990s, cognitive development research continues to uncover learning strategies employed by infants. In the first year of life, infants learn an amazing amount of information — for example what objects are, why objects disappear and reappear, what words mean, and how to move around in their environment. Infants are capable of much more than we originally thought. Besides having to learn many things in a short amount of time, infants also have a unique problem of figuring out what to learn. The first step in our line of work compared how infants learn with different cues and found that by eight months of age, infants learn better from people than from objects, and from other cues that may direct their attention, such as a bright flashing light (Wu et al., 2011; Wu & Kirkham, 2010). In these studies, we showed infants two videos on a computer screen, with a face turning to one object, flashing lights over an object, or no cue over either object. While both the face and flashing lights helped infants pick out an object to learn by directing their attention to it (when no cue was presented), a ‘did-study’ strategy, with only the face helped infants learn about the object. Our ongoing work investigates how infants learn from different perspectives.

Another interesting area of research emerging in infant development is how to acquire the knowledge of one skill correlates or even helps with learning another. This can happen within one domain (e.g., vision), or across domains (e.g. motor and vision). In one study, Quinn and Bhattacharya (2000) found that young infants could use one way of grouping visual features together to learn a new way of grouping them. Another study by Soska et al. (2010) showed that infants who could support themselves while sitting on their own were better at understanding the 3-D nature of objects, presumably because these self-sitting infants had had more and different types of experience manually exploring objects compared to their non-sitting peers.

Besides learning from experts and learning many skills simultaneously, a constraint that infants have to deal with is the lack of an extensive back-log of previous experience that adults can rely on when learning. But in infancy, infants are actually better than adults at learning new skills because they cannot impose previously learned structure onto incoming information. For example, when infants learn a language, they first seem to identify key building blocks of that language (e.g. words, sounds). They cannot, like adults, map foreign words and grammatical structure onto known equivalents in a familiar language (e.g., book = libro in Spanish) because infants do not have a familiar language. Another critical aspect is that infants learn to master everyday survival skills (e.g. walking, talking), which often are not present in other species (e.g. birds, insects). For example, when infants learn to acquire skills that are not essential (e.g. a hobby). Perhaps the total commitment that infants display when learning is the difference between fully mastering versus simply acquiring a skill. Finally, infants are extreme explorers; they possess qualities that are often lost by adulthood: curiosity, novelty seeking, always learning (and adapting) without much hesitation, and perhaps most importantly, being not afraid of failing. These critical characteristics of infant learning work together with powerful learning mechanisms (e.g. learning patterns and structure) to produce the best learner. While we still possess the ‘beginner’s mind’ (Simonton, 2008), we have lost the youthful characteristics of people in the first year of life.

Working with infants younger than 12 months of age is tricky because they have to learn by directing their attention to appropriate events. One very important cue is people. When infants do not know what to learn, people can direct infants’ attention to particular things in the world and help them learn appropriate information. While the fact that people do this is not a new discovery, we (and others asking similar questions) are investigating how infants learn from people in the first year of life.

The Dilemma of the Naïve Learner (2011)

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Application of infant learning during adulthood

How adults learn to master new methods and techniques in multiple fields has two main similarities to how infants learn: cross-pollination to draw new links, and maintaining an informative explorative state by building multiple lines of expertise while preserving the sense of being a learner. Both of these effects are incredibly beneficial not only for the infant (as described above), but also for the adult learner.

Mastering creative skills for art in adulthood is similar to how infants have to learn. In learning how to create traditional forms of art, one of the key skills is knowing what to look for, which is difficult to teach explicitly and is achieved via full immersion. From my observations, full immersion without imposing too much previously learned structure on new information (similar to the infant strategy) seems to be an important factor influencing whether adult students succeed. The students who just ‘went with it’ did well, while the students who struggled were those who

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thought much too about what they were doing. I also encouraged me to take multiple classes simultaneously using different techniques (e.g. sculpting, painting, and drawing) to achieve a bandwagon effect and improve my artistic skills exponentially.

Compounding the course load increased my commitment to art, while also encouraging me to take multiple classes simultaneously. The instructors on my art course also encouraged me to take multiple classes simultaneously. Perhaps a humble experience that keeps our egos in check. Learning in adulthood, however, seems to be a luxury given increasing pressure not to fail by producing successful products. Academically, requires researchers to be experts in specific areas usually in one field, a sort of art school philosophy. This leads to the question of what we lose as adults if we are constantly learning. We often forget previously learned information because it is replaced with newly learned material. Would we not learn anything at all if we were too deep in our time is spent in too many areas? With such potential pitfalls, the benefit of a balanced, critical balance between exploring and exploiting what is in the environment — the dilemma of the learner (for an interesting account of this balance, see Ferris, 2012). On one hand, learners should not lose focus, but on the other hand, they should not have tunnel vision. The aim of my future research program is to understand different learning strategies for negotiating this balance and how they impact the learner at different stages of development. Stay tuned.