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Self-
regulation

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Editorial

Self-regulation in early childhood education (ECE)

David Whitebread

In recent years there has been an enormous expansion of interest in the development of self-regulation in pre-school and primary aged children. This arises from the clear evidence of its early emergence, its crucial significance in relation to all aspects of development, and the extent to which it is and can be influenced by early experience. In this special issue, we present four examples of areas of children's activity in ECE settings which can dramatically influence the development of young children's self-regulation.

In this introductory article I want to set out what is meant by self-regulation, some of the evidence indicating why it is so significant for development, and examining the role of playful experience and early language development in its early emergence.

What is meant by self-regulation

Perhaps the most widely accepted definition of self-regulation is that set out by two pioneers in this area of research just over 20 years ago. According to Dale Schunk and Barry Zimmerman, self-regulation is:

The process whereby students activate and sustain cognitions, behaviours, and affects, which are systematically oriented toward attainment of their goals.

(Schunk and Zimmerman, 1994:309)

So, in other words, self-regulation comprises a set of abilities which enable an individual to be in control of their own cognitive and emotional mental processes. As regards young children, developing these abilities starts from birth and moves them from being purely reactive to events (eg opening their mouth when food arrives) and dependent on others to undertake any task (eg feeding), to being proactive and able to independently undertake tasks in strategic ways which work for them (eg to obtain food they like and put it in their mouths themselves). Developing

a functionally good level of self-regulation comprises two main categories of ability, referred to as "executive functions" and "metacognition". A useful metaphor here is that of riding a bike. For a bike to work well it needs to be well-oiled, have brakes that work, have its tyres pumped up to a good pressure and so on. Similarly, to be highly self-regulating, a child needs to have a brain that works efficiently ie has good executive functioning. In an influential integrative review of the most up-to-date research in this area, Garon, Bryson and Smith (2008) concluded that the key executive functions in the human brain appear to be:

- ▶ control of attention (focusing on relevant rather than irrelevant information and being able to switch attention when what is relevant changes)
- ▶ working memory (holding information in mind while updating, manipulating or reconstructing it), and
- ▶ inhibitory or effortful control (stopping an initial, impulsive, automatic or perceptually attractive response and replacing it by another).

In addition, however, even the most efficient bike goes nowhere unless someone sits on it who has a plan or a goal to go somewhere and starts to make decisions, and to co-ordinate the movement of the pedals, the handlebars, the brakes and so on, to make sure that the chosen destination is reached. At the level of the brain, these processes are those referred to as metacognition, and they consist of two complementary types of mental process related to "monitoring" how the task is going and using this feedback to inform processes "controlling" what actions are taken to move towards the goal or destination. Through these processes children develop a growing repertoire of mental strategies for undertaking any task, and the experience to enable them to choose the most appropriate strategy to use when faced with a new situation. When a child first tries to ride

a bike, steering and balancing and pedalling all at the same time is impossible, but with support, encouragement and opportunity, the task is increasingly mastered and all situations approached with confidence. In much the same way, adults can support, encourage and provide opportunities for young children to develop their self-regulatory abilities.

A delightful example of the early metacognitive abilities of which young children are capable, when tasks are placed in meaningful contexts, can be found in Istomina's (1975) study of young children's memory performance in a scenario involving shopping for a tea party. In this extract, a young 5-year-old, Alochka, demonstrates very accurate monitoring of her own memory performance and the ability to change to a more effective strategy when she realises that her initial approach is not working:

Alochka A. (5 years, 2 months) was busily engaged in preparing lunch, and several times reminded the experimenter that she needed salt.

When it was her turn to go to the store, she asked, with a busy expression on her face:

"Z. M., what should I buy? Salt?"

The experimenter explained to her that this was not all and named four more items that were needed. Alochka listened attentively, nodding her head. She took the basket, the permission slip and money and went off, but soon came back.

"Z. M., I have to buy salt, milk, and what else?" she asked. "I forgot"

The experimenter repeated the items. This time Alochka repeated each word after the experimenter in a whisper and, after saying confidently, "Now I know what I had forgotten," went off.

In the store, she went up to the manager and, with a serious expression, correctly named four items, with slight pauses between each.

"There is something else, but I forgot" she said.

(Istomina, 1975: 25-6)



Figure 1.

Alochka demonstrates very active monitoring of her memory performance, and the ability to change strategies (from “listened attentively, nodding her head” to “repeated each word after the experimenter in a whisper”) in this playful context.

Why the early development of self-regulation is so important

There is now ample evidence of the significance of developments in young children’s self-regulation, both in relation to educational achievements and wider considerations related to emotional wellbeing and life outcomes.

Over the last 20 to 30 years the weight of evidence has been gradually accumulating to establish that metacognitive and self-regulatory abilities are the most powerful single predictor of learning, make a unique contribution to learning performance beyond that accounted for by traditionally measured intelligence, and are a key area of weakness for many children with learning difficulties. In a recent longitudinal study, McClelland et al (2013) showed that children’s self-regulatory abilities at age 4 were a significantly stronger predictor of academic achievement and emotional wellbeing by at age 25 than a range of other developing abilities, including early literacy and numeracy achievements. The crucial role played by self-regulation has been extensively researched in relation to the development of an increasingly wide range of domains. These include reasoning and problem-solving (Whitebread, 1996; 1999), mathematics (de Corte et al, 2000), reading and text comprehension (Maki and McGuire, 2002) and writing (Hacker, Keener and Kirchner, 2009). In their edited volume concerned with the wider applications of metacognition, Perfect and Schwartz (2002) include contributions related to eyewitness reports, autobiographical memory, unconscious plagiarism, aging and Alzheimer’s disease.

Bronson (2000) provided a very useful, comprehensive review of research concerned with the early development of cognitive, emotional, motivational and social aspects of self-regulation in children, particularly in relation to educational contexts, up to the end of primary, or elementary schooling. In the last decade, this has been extensively supplemented by

work, particularly focused on the emergence of early executive functioning, on the role of early parenting upon early metacognition and self-regulation, and on the impact of early self-regulation on children’s early school experiences. Rimm-Kaufman et al (2009), for example, showed that the level of executive functioning and self-regulation at entry to kindergarten predicted what they termed as “adaptive classroom behaviours”. These included behavioural self-control, such as persistence and resisting distractions, and cognitive control, such as engagement in tasks, and working towards a goal. In turn, these behaviours predicted learning outcomes by the end of the kindergarten year. Denham and Burton (2003) showed that emotional regulation in pre-school predicted young children’s peer status, their creation and maintenance of friendships, their academic competence, self-image and emotional well-being.

The educational significance of metacognitive and self-regulatory abilities is further established by the many interventions aimed at developing metacognitive and self-regulatory skills, at all educational levels, showing large effect sizes on learning and study skills, and a range of academic attainments (Dignath et al, 2008; Hattie, 2009). As a consequence of this accumulated evidence, there has been an explosion of work in this area within developmental and educational psychology. The four other articles in this journal set out some powerful examples of recent self-regulation interventions in pre-school and the early years of primary schooling. In the final section of this introduction to this special edition, I want to conclude, therefore, by setting out some broad general principles for the effective support of young children’s self-regulation.

How we can support children’s self-regulation in early childhood education

There is increasing evidence, including that provided by the four studies reported in this edition of the Early Education Journal, that young children’s development of self-

regulatory abilities is crucially supported by play experiences and by oral language development.

Play helps in two ways. First, it provides a powerful context for the development of oral language skills, which in turn support self-regulation. Christie and Roskos (2006) have reviewed evidence that a playful approach to language learning, as opposed to formal instruction, offers the most powerful support for the early development of phonological and literacy skills. At the same time, a recent study of 120 toddlers in New England showed strong relationships between vocabulary size at 14, 24 and 36 months and a range of observed self-regulatory behaviours – for example, the ability to maintain attention on tasks and to adapt to changes in tasks and procedures (Valloton and Ayoub, 2011). In some recent studies in my own research group we have further explored the impact of collaborative group play and open-ended activities involving collaborative decision-making and LEGO building. Our findings suggest that such playful collaborative activities powerfully support young children’s abilities to express their ideas, explain their reasoning and talk about their own learning and, in turn, significantly improve their self-regulatory abilities (Pino-Pasternak, Basilio and Whitebread, 2014).



Figure 2.

Second, playful activities provide young children with direct opportunities to practice and develop their self-regulatory abilities. In an observational study carried out in 32 Foundation Stage classrooms in Cambridgeshire, we collected around 700 “events” which evidenced a wide range of self-regulatory behaviours, and of co-regulation and shared regulation when children were working in pairs and in groups (Whitebread et al, 2005; 2007). Of these events, 59.6% contained evidence of emotion regulation and 67.4% evidence of some aspect of cognitive regulation. These behaviours included children controlling their attention and resisting distraction, regulating their emotions in order to collaborate effectively with peers, speaking about what

they had learnt, giving reasons for choices and decisions, and developing their own ways of carrying out tasks. The analysis of the contexts in which these regulatory behaviours occurred showed that they were significantly more present when the children were engaged in a range of playful activities, including physical play, pretence or play with objects.

Finally, it is clear that the manner in which adults interact with young children can facilitate their self-regulatory development. Even with very young children, practices which support their autonomy, and provide practical and emotional support to enable the child to undertake tasks independently, are very powerful in their support of the children's self-regulation development. I want to finish by describing a particular incident I witnessed, while filming in one Cambridgeshire nursery class, which perfectly exemplifies this.

Zac, aged 3, was desperately keen to engage in some "firemen" role play with his friend and wanted to wear the fireman's outfit. He had successfully put on the helmet, but was experiencing much more difficulty with the jacket (see Figure 1). He attempted to locate the sleeves by holding the jacket upside and by putting one arm in and twisting it this way and that, resulting in ever greater bodily contortions, but without success. Throughout this process, Zac's teacher watched him closely, but did not intervene until he asked for help, being sensitive to his wish to persevere independently with the problems presented by the jacket. When asked for help, she encouraged him with physical modelling of what he needed to do, and with smiles and verbal support for his efforts but, significantly, did not touch the jacket at any point. Zac responded to her advice and encouragement, maintaining determination and persistence and eventually succeeded in finding the second sleeve and getting the jacket on. Zac and his teacher then enjoyed a shared "thumbs up" celebration of a goal achieved (Figure 2). The sense of achievement evident in Zac's response to this episode tell us everything we need to know about why supporting children to be self-reliant, self-motivating and self-regulating is such a key part of the work of all early childhood educators.

The remaining four articles in this edition of Early Education provide further rich examples of practices with young children which have been demonstrated to support their growing self-regulatory abilities. Shirley Larkin reports on the power of activities requiring children to make decisions. Sue Robson describes practical ways to support children's self-regulation development through talk. Lisha O'Sullivan reviews a study of self-regulation development through complex social pretend play, supported by adult involvement. Antonia Zachariou reports on the powerful influence of music and musical play in providing

powerful support for children's self-regulatory abilities. We hope readers will find this edition of the Early Education Journal an inspiring and valuable read.

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References

- Bronson, M.B. (2000). *Self-regulation In Early Childhood*. New York: The Guilford Press.
- de Corte, E., Verschaffel, L. and Op't Eynde, P. (2000). Self-regulation: a characteristic and a goal of mathematical education. In M. Boekarts, P.R. Pintrich and M. Zeidner (eds.), *Handbook Of Self-Regulation*. San Diego, CA: Academic Press.
- Denham, S. A. and Burton, R. (2003). *Social and emotional prevention and intervention programming for preschoolers*. New York: Springer.
- Dignath, C., Buettner, G. and Langfeldt, H-P. (2008). How can primary school students learn self-regulated learning strategies most effectively? A meta-analysis of self-regulation training programmes. *Educational Research Review*, 3, 101-129.
- Garon, N., Bryson, S. E. and Smith, I. M. (2008). Executive function in preschoolers: A review using an integrative framework. *Psychological Bulletin*, 134(1), 31-60.
- Hacker, D.J., Keener, M.C. and Kircher, J.C. (2009). Writing is applied metacognition. In D.J. Hacker, J. Dunlosky and A.C. Graeser (eds.), *Handbook of metacognition in education*. New York: Routledge.
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. London: Routledge.
- Istomina, Z.M. (1975). The development of voluntary memory in preschool age children. *Soviet Psychology*, 13, 5-64.
- Maki, R.H. and McGuire, M.J. (2002). Metacognition for text: findings and implications for education. In T.J. Perfect. and B.L. Schwartz (eds.), *Applied Metacognition*. Cambridge: Cambridge University Press.
- McClelland, M.M., Acock, A.C., Piccinin, A., Rhea, S.A. and Stallings, M.C. (2013). Relations between Preschool Attention Span-Persistence and Age 25 Educational Outcomes. *Early Childhood Research Quarterly* 28, 2, 314-24.
- Perfect, T.J. and Schwartz, B.L. (eds.) (2002). *Applied Metacognition*. Cambridge: Cambridge University Press.
- Pino-Pasternak, D., Basilio, M. and Whitebread, D. (2014). Intervention and classroom contexts that promote self-regulated learning: Two intervention studies in United Kingdom primary classrooms. *Psyche*, 23(2), 1-13.
- Rimm-Kaufman, S. E., Curby, T. W., Grimm, K. J., Nathanson, L. and Brock, L.L. (2009). The contribution of children's self-regulation and classroom quality to children's adaptive behaviours in the kindergarten classroom. *Developmental psychology*, 45(4), 958.
- Schunk, D. H. and Zimmerman, B. J. (1994). *Self-regulation of learning and performance: Issues and educational applications*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Valotton, C. D. and Ayoub, C. (2011). Use your words: The role of language in the development of toddlers' self-regulation. *Early Childhood Research Quarterly*, 26(2), 169-181.
- Whitebread, D. (1996). The development of children's strategies on an inductive reasoning task. *British J. of Educational Psychology*, 66, 1, 1-21.
- Whitebread, D. (1999). Interactions between children's metacognitive processes, working memory, choice of strategies and performance during problem-solving. *European Journal of Psychology of Education*, 14, 4, 489-507.
- Whitebread, D., Anderson, H., Coltman, P., Page, C. , Pino Pasternak, D. and Mehta, S (2005). Developing Independent Learning in the Early Years. *Education 3-13*, 33, 40-50.
- Whitebread, D., Bingham, S., Grau, V., Pino Pasternak, D. and Sangster, C. (2007). Development of metacognition and self-regulated learning in young children: The role of collaborative and peer-assisted learning. *Journal of Cognitive Education and Psychology*, 6, 433-55.

Making decisions and developing metacognition

Shirley Larkin

Introduction

How many decisions did you make today? According to internet sources an adult makes around 35,000 decisions in a day (www.Quora.com), but of course this is a guesstimate and it is almost impossible to know. What we can be surer about is that young children make far fewer decisions and that most of the time adults make decisions on behalf of children. Yet developing the skills of making good decisions is crucial to regulating learning and behaviour. Teachers often comment that a child who is being disruptive is making poor decisions, making the wrong choices in pursuit of some goal. The goal may be driven by the need for attention or a way of defending the self from something which is difficult, scary or threatening.

Anna Freud (1937) showed that the decision to act in a certain way may not always be conscious and that we engage in what she called ego-defence mechanisms when we feel stressed or anxious. At their most mature these defences can include using humour or looking at the situation from a different perspective, but at their most immature they include acting out and denial. Learning how to deal with complex cognitive and emotional states is a crucial part of developing as a self-regulating learner.

One of the elements of models of self-regulated learning is the development of metacognitive processes. In his seminal paper John Flavell (1979) described a model of metacognition which is still used in research today. He distinguished between metacognitive knowledge, which he

described as knowledge about our own (or others') thinking processes, and monitoring and regulating our thinking. Knowledge of thinking develops with age and like all other knowledge (eg knowledge of science, maths, literature etc.) knowledge of thinking also develops with experience. So we come to know more about ourselves as thinkers and about thinking in general as we get older and experience different situations which require different and more complex thinking.

The regulation of our thinking processes is ongoing, not always conscious and we may not always act rationally on the internal messages we are hearing. A classic example of this is when skilled readers come across an unfamiliar word and suddenly become aware of the monitoring process. At this point we are faced with a decision about what to do next. Some possibilities are: to ignore the word and continue reading, to stop and look the word up, to write the word down to check later. The decision-making process requires us to make judgements based in part on what we perceive the goal of the reading to be. Judgements are beliefs about something and these can be true or false. The decisions we make can be valid regardless of whether our judgements are true or not; as long as we believe the judgement to be true we can make a perfectly logical decision based on that premise (Koriat and Goldsmith, 1996).

When Flavell outlined his theory of metacognition at the end of the 1970s he ended with a wish that his theory would be used in education not only to achieve better grades but also to enable people to make "better and wiser life decisions" (1979:911).

This has always seemed to me to be the purpose of developing metacognition and becoming a self-regulated learner. So in the next two sections I suggest some skills that good decision makers need and some ways in which we might encourage decision making and metacognition in early years classrooms.

Decision making

Different models of decision making emphasise different skills. For example, Klaczynski's (2004) dual processing model includes the "analytic" system which is conscious and reflective. This level of processing includes metacognitive knowledge and conscious metacognitive monitoring. Thus, we might weigh up the costs and benefits of a decision drawing on what we know about ourselves or others. The second level of the model is termed "experiential" and this is less likely to be conscious. Thus we may make decisions based on instinct or feeling without knowing why we are doing so. Klaczynski suggests that this is the way most everyday decisions are made and that we make better decisions if we stop and reflect first or "metacognitively intercede" as Klaczynski puts it. It is also suggested that this ability develops with age especially in early adolescence, but research on thinking skills interventions tells us that skilled educators can intervene in the normal cognitive developmental processes to facilitate metacognition and self-regulated learning at earlier ages.

A slightly different model of decision making, the "Self-Regulation Model" (Byrnes, 2011) arose from the comparison between the



decision making skills of successful and less successful adults. Byrne has suggested that decision making includes four processes:

- ▶ setting a goal
- ▶ listing ways to accomplish the goal
- ▶ evaluating the options
- ▶ implementing the best one.

It is clear that we do not always follow these processes fully nor in a logical manner and that may be perfectly reasonable given the decision we have to make, plus we make many decisions hardly thinking about them at all. For example, at breakfast we scan the table for food, see the apple and the banana and without consciously thinking about it we pick up the banana. Obviously if we had to spend the time consciously aware of the goal, “I am hungry and it is breakfast time, I should eat”; aware of the options “there are apples and bananas available”; evaluating the options “I like both but an apple will take longer to eat and I don’t have time, plus a banana is softer and more comforting at this time of day”; implementing the decision “I will eat the banana” – we would never have time to act on any decisions we made.

Byrne goes on to suggest that other factors come into play when we make decisions. For example, people who are very knowledgeable are likely to be able to produce a large list of options and people who are less experienced or knowledgeable may not understand the consequences of their decisions. There are also individual differences in working memory capacity which have an effect. Working memory allows us to hold a number of different options in our minds at the same

time so that we can compare them. This ability differs in different people although Siegler (1991) showed that there is a human limit of about eight to ten variables that anyone can compare in their mind at any given time.

In the real world decision making is highly complex because decisions happen within complex contexts and what may be a good decision for one person may not be so good for another. However the research shows us that there are some common features which seem to make for more successful decision making.

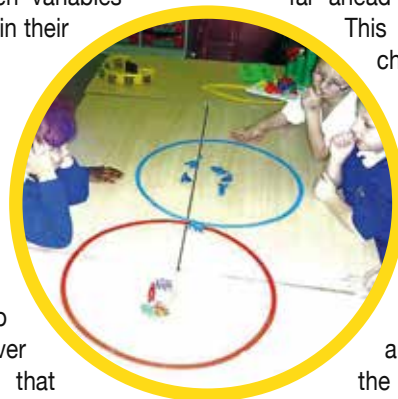
Facilitating decision making

If we want to develop children’s metacognitive ability and enhance their decision-making skills then we need first to pose problems which require decisions. How many activities in your classroom currently require children to make actual decisions rather than simple choices?

An activity which requires decision making may not have a right or wrong answer and should include some sense of doubt. The Let’s Think Programme (2001), developed by Adey, Robertson and Venville, which I worked on as a researcher, has a large number of activities for children around 5-years-old. The activities tend to be undertaken in groups of six children working together and the groups are made up of children who are mixed in terms of ability range but with the

gap between them being a moderate one. This is important because it alleviates the stress of working with others who are so far ahead or so far behind oneself.

This can be demotivating for children of both high and low ability.



One of the activities (seen in the picture) requires children to sort a range of toy animals in various ways. First there is a simple problem to sort the animals by colour. This gets the children used to identifying

the animals and allows them to play with the equipment. The problem is then couched as a story. For example, the zoo keeper now wants us to sort the animals into two circles. She wants the blue animals in one circle and the dinosaurs in the other circle. The problem arises because one of the blue animals is also a dinosaur and the children must come to a joint decision about what to do with this animal. In this case there is a solution (mathematical one of overlapping sets), that the two circles are brought together to create a space in which the blue dinosaur can be in both circles at the same time. A second activity has no particular answer. This one involves giving the group a set of equipment (eg a ball, a rope, a hoop etc) and the task is to create a game using all of the equipment. The game must be one that they can all play and that they can then teach to other children. The decisions they need to make in this activity are complex and require a good deal of option listing and evaluation. It is often a



good idea to make activities as authentic as possible. For example, have children decide on a class trip and what they might do when they get there.

The first element of good decision making centres around understanding the goal and the context. This is a metacognitive process because it involves understanding whether or not you understand. It is important to check that children really do understand the task. One way to enhance metacognition is to ask if the task is like any other they have done before. If it is they can then draw on the strategies they used in the previous task to help them with this one. Drawing out similarities between tasks develops their metacognitive knowledge base and will ensure that they do not start with a blank slate each time in a trial and error fashion. To develop self-regulating learners we need to encourage the questions we pose to become questions that children ask themselves.

The second element of good decision making is the ability to list a range of possible options and to evaluate those in relation to the goal of the task. We can encourage this by creating activities which are firstly complex enough to require a range of options to be evaluated and by creating activities which produce some element of doubt or cognitive conflict. A good example of this is when something does not meet with our expectations so we may find that the smallest object is the heaviest or that a set of objects which appear to be the same on the outside behave differently when we roll them away (because they have different amounts of rice on the inside). One activity which creates this conflict is putting a set of pebbles in order of size. If we set a group of six young children on this activity it will not be very long before they come to the conclusion that size is not a fixed idea.

So it depends on how we understand the initial task – are we putting them in order by height, length, weight? As one child in a group I did this activity with said after 15 minutes of discussion with others in the group “You know, we don’t even know what big is”.

The third element of decision making is understanding the consequences of implementing the decision. This can be difficult to achieve in classroom settings but stories provide useful examples of real world consequences of poor decision making. So we can focus on alternative decisions that characters could have made and what the outcome might then be. Another way to focus on consequences is to provide more realistic activities and provide space for children to predict the consequences of various options.

Older children can be encouraged to engage in a discussion about what a decision is and what makes it different from a choice. This could lead to a categorisation of different types of decisions perhaps from simple to complex. Teachers might also consider teaching children the four elements of decision making:

- ▶ understanding the problem
- ▶ generating options
- ▶ evaluating options
- ▶ implementing the decision.

We might add in reflecting on the consequences.

Finally to encourage self-regulated learning it is important that children get to practise decision making skills without adult oversight. It is too easy for adults to intervene. However where adults do play a crucial role is in devising complex, authentic and

collaborative activities whose outcomes have real consequences; encouraging children to practice decision making and thereby helping to develop children’s metacognitive and self-regulatory abilities.

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References

- Adey, P., Robertson, A., & Venville, G. (2001). *Let’s Think! A Programme for Developing Thinking in Five and Six Year Olds*. Slough: Nfer Nelson.
- Brynes, J.P., (2011). *The Nature and Development of Decision Making, A Self-Regulation Model*, New York, Routledge.
- Flavell, J. H. (1979). Metacognition and Cognitive Monitoring. *American Psychologist*, 34(10), 906-911.
- Freud, A. (1937). *The Ego and the mechanisms of defense*. London, Hogarth Press and Institute of Psycho-Analysis.
- Jacobs, Janis, E., and Klaczynski, Paul, A., (2005) (Eds). *The development of judgement and decision making in children and adolescents*, Mahway, New Jersey, Lawrence Erlbaum Associates.
- Klaczynski, P., (2004). A dual-process model of adolescent development: Implications for decision making, reasoning and identity. *Advances in Child Development and Behaviour*, Vol 32, 73-123.
- Koriat, A., & Goldsmith, M. (1996). Monitoring and control processes in the strategic regulation of memory accuracy. *Psychological Review*, 103(3), 490.
- Larkin, S., (2010). *Metacognition in Young Children*, London, Routledge.
- Siegler, R.S. (1991). *Children’s Thinking*, (2nd Edition), Englewood Cliffs, N.J. Prentice-Hall.

“I thought in my head and then I done it”: the significance of talk for young children’s self-regulation and metacognition

Sue Robson, University of Roehampton

The ability to talk about and reflect on our mental processes is fundamental to the development of self-regulation and metacognition, and adults in early childhood settings are ideally placed to support young children in becoming more aware of how they learn. Here I want to look at the significance of talk of all kinds – both to oneself and to others – during activities, and also later, when children are given opportunities to reflect on what they have learned. Throughout, there are examples from a range of studies of children aged 3-6 years, which can be read about in Robson (2012, 2016) and Robson and Rowe (2012).



Rosy: *Big blob, big blob.*

Private speech: talking to ourselves

Children often talk to themselves as they go about their lives. Why might such self-talk be valuable? Vygotsky (1978) suggests that self-talk, or private speech, is critical to the development of self-regulation. In his view, children’s thinking and actions are initially guided, and regulated, by others as they talk and interact. Such talk helps them to make sense of their world. Children then learn to use talk for themselves, as self-commentary in problem-solving. Over time this verbal thinking starts to take place internally, but in the early childhood years much of it is there for us to hear.

The example of Rosy, aged 4, shows her using private speech to comment on what she is doing, but also to clarify and support her thinking. Whilst painting, she has folded her wet painting in half:

Rosy: *Press, press, press (pressing in quick rhythmic motions each time she says the word, she then picks her painting up, unfolds it, and smiles). Wheeee!*

(She picks up the green bottle of paint, upends it and lets a long stream of paint fall onto her picture.)

Her instruction to herself to “press, press, press” shows her reminding herself of a useful strategy for accomplishing her self-set task, whilst “big blob” functions both as a plan (I need a big blob here) and a comment on the outcome. Her gleeful “Wheee!” is both motivational comment and a form of self-assessment, as she expresses her satisfaction with the outcome.

Private speech is more prevalent in early childhood than at any other time in life (Mead and Winsler, 2015), although it can resurface in both older children and adults, and may be particularly evident when we face more challenging or novel tasks. Taber, for example, provided a running commentary in song as he made sense of a new computer painting programme. Interestingly, his singing slowed down significantly when he needed to concentrate more.

There seem to be clear benefits for children in using private speech. It may help them to complete tasks more successfully, partly because talking to oneself can help guard against distractions (Mead and Winsler, 2015). It may also help in regulating emotions – telling oneself to “calm down”, for example, and motivation – reassuring oneself that “I

can do this” – just look at high-performing athletes muttering to themselves as they prepare to compete.

What does this mean for practitioners working with young children? First, it may be valuable to support children’s self-talk as they complete a task. Asking young children to be very quiet may even have a negative effect on performance (Mead and Winsler, 2015). Second, attention to what children are actually saying may be valuable in gauging their thinking. Finally, it may be reassuring to hold in mind the idea that children’s use of private speech is most prevalent when tasks are at an appropriate level of challenge, providing a useful indicator that practitioners are planning appropriately.

Talking about thinking and knowing

Here I want to look at talk in two different contexts, both significant for the development of young children’s self-regulation. The first context is the talk that takes place as children are involved in an activity. The second occurs when children are asked to reflect on what they have been doing, very often with an adult as a talk partner.

Looking at the first context, Mercer (2013) emphasises the importance of adults helping young children to be aware of talk as a powerful tool for thinking, recommending the benefits of both adult-child(ren) and peer discussion. Dialogue between adults and children may be especially valuable for supporting children’s analysis of their ideas and activities, and for their reflections on themselves as thinkers (Robson, 2012). Mercer (2013) identifies a number of valuable strategies, including the use of open-ended questions, ensuring sufficient time for children to make extended comments in whole class discussions, and asking children to comment on each other’s views.

In order to talk about our thinking we need to have the vocabulary to do so, and the acquisition of language about the mind, and mental states, is central to the development of metacognition and self-regulation (Schneider, 2010). What does this kind of talk look like?

It includes words about cognition, such as “think”, “know”, “remember” and “forget”, as well as language about intentions, decisions and emotions.

In our research children frequently used common terms like “can”, such as Joshua’s “I can help you, I can build a ship”, and “know”, such as Alyra’s comment “I don’t know what its real name is”. However, they also used other terms, such as Toby’s expression “I got the idea”, and Reuben’s confession that he was “a bit confused”, or that his friends “were not even concentrating”. They talked about themselves “learning”, and self-assessed, using expressions such as “I’m good at doing this”. The class teacher frequently used such metacognitive language with them. She exhorted them to “think about your learning”, and asked them questions such as “What do you have to remember?”. She praised them for “good thinking” and even “good theory”. This kind of adult talk, and modelling of metacognitive language, may be significant in supporting its acquisition by children (Perry, 2013). Whitebread, Pino-Pasternak and Coltman (2015) document a project with children aged 5 and 6 years in which the class teacher’s systematic use of cognitive and metacognitive vocabulary had a clear impact on the children’s self-regulation, particularly in a child assessed as having lower self-regulation than her peers.

Adults, then, have an important role to play in supporting and encouraging young children to think and talk about their learning. Whitebread et al (2015) emphasise the importance of developing a culture that supports collaborative talk and joint participation, giving children opportunities to share ideas in a process of socially shared regulation. We found that child-initiated activities often provided the richest opportunities. Children’s comments in child-initiated activities showed a wider variety of strategies than those in adult-initiated activities, and were often concerned with negotiation, collaboration and ensuring successful continuation of an activity. This extract shows these aspects in the actions and talk of both boys (aged 4):

Orin is playing outside in the sandpit, he has some “spaceman” figures in the sand. Joshua walks over.

Joshua: (shouting) *Let’s play with the aliens! I think he will feel happy if we play with them (picking up a toy).*

Orin: *We got one bit of the.. the... (points at the sand).*

Joshua: (walks over to a trolley storing sand toys) *I think we need some sticks.*

Orin: *Shall we dig?*

Joshua: *Yeah, we should. I’ll get the sticks to make a hole.*

Orin: *Shall we dig a big hole?*

Joshua negotiates his entry to the game, saying “Let’s play!”, with his comment that the spaceman figures would “feel happy” seemingly aimed at persuading Orin. Orin’s desire to continue is clear from his “shall we dig?”. Both boys make planning comments: “I’ll get the sticks” and “Shall we dig a big hole?” Joshua also shows his awareness of his own thinking, using the phrase “I think...” twice, including in his remark that “we need some sticks”, a further negotiating comment.

The second context, and one with strong potential for supporting explicit talk about thinking and learning, is when children reflect on what they have been doing in what are known as reflective dialogues, or metacognitive dialogues. Conducted between a child or children and an adult, the focus of the dialogue is on thinking and learning, and children’s reflections on what they know about themselves as learners. Pramling (1988), for example, asked 5- and 6-year-old children questions such as “How do you think that idea came into your mind?” and “How would you go about teaching other people all you have learned about?”.

In our research we used video-recorded episodes of children’s activities as the starting points for reflective dialogues between a child and an adult, inviting children to reflect and comment on their thinking, ideas and outcomes. These video-stimulated reflective dialogues were often more productive of metacognitive talk than the original activity itself. Interestingly, the more we did, the more frequent the children’s metacognitive talk became. Children commented on their own and their friends’ knowledge, as in Ashlyn’s comment, watching Simeoni in the video: “She didn’t know how to do it”.

They talked about their own and others’ ideas:

Rylan: *And it was my idea. This was my idea. Look at this, that bit was my idea.*

They also reflected on their knowledge, saying things such as “I taught myself”, or here, in Safi’s comment, watching a video in which the children were not wearing school uniform:

Safi: *That was muf, muf, that was mufti day. You know why I know it was mufti day?*

Adult: *How do you know that?*

Safi: *Because my nanny told me. I don’t dress, I don’t dress in jumper, and wear different t-shirt.*

Significantly, the talk that went on in the reflective dialogues often revealed ideas and intentions that were not apparent from observing the activity. One afternoon Bill was repeatedly sliding down the slide. He went inside and came back out with a pillowcase, which was snatched from his hand by another boy before he could do anything with it. In the reflective dialogue he revealed that he had intended to sit in the pillowcase and slide down in it, because he thought it would help him to go faster.

Whilst it is not practical for busy practitioners to do this all of the time, even occasional recordings, with a camcorder or smart phone, can be valuable for discussion and documentation, and for supporting children’s self-regulation. The shared viewing of videos provides an opportunity for joint meaning-making, giving children time to think about and analyse their own and other children’s thoughts and ideas. In so doing, the children’s learning and thinking may be made more visible to themselves as well as to the adults.

What kinds of activities are valuable?

Whilst all kinds of activities have rich potential for talk that supports self-regulation, there may nevertheless be some which afford more opportunities than others. Pretend play may be particularly supportive of both private speech (Krafft and Berk, 1998) and talk about thinking and knowing (Robson, 2016). In the example here, Sapphire (aged 4) and Amanda (aged 3) are engaged in pretence involving doll play:

Sapphire: (holding a bib) This is for baby, bibs are for babies (has difficulty fitting it on her doll, and takes it off and puts it on the floor) That doesn't work that one (Amanda bends down, picks it up and holds it out) No, that is for babies. That's your bib and this one is a baby's bib.

Amanda: *You know what, I don't have a baby.*

Sapphire: *No, you are the little baby and I am your mummy and this is your little sister. You are the big baby and this is your little sister.*

Amanda: *(crouching) Pretend I'm the little two year old baby. (Sapphire nods, Amanda puts hand on Sapphire's arm)...*

Sapphire: *You can't speak like a big girl cause you are the little baby.*

Amanda: *(talking like a baby) Baby go in there! (pointing to bedding in a plastic box).*

Sapphire: *I know that.*

Problem solving activities may also have self-regulated learning inherently built into them (Winne, 1997). Common to both problem-solving activities and pretend play are their relevance and interest for children, and the ways in which they embody complex tasks that address multiple goals and engage children in a range of cognitive and metacognitive processes, crucial to the development of self-regulated learning (Perry, 2013).



Perhaps the most important consideration, however, is not the content or context of an activity, but the opportunities children have for directing and managing what they do. As we saw earlier, child-initiated activities can be particularly valuable, often most noticeably for stimulating the kinds of metacognitive talk that supports children's efforts at planning, monitoring and controlling. Open-

ended activities may also provide the richest contexts for private speech, for example, possibly because such activities afford children more opportunities for setting new goals and challenges (Krafft and Berk, 1998).

By contrast, in adult-initiated and directed activities it may be that there is less need for children to self-regulate. We found that it was often children's perceptions of adults as managers and organisers which could lead them to relinquish control when adults were present, and it may be valuable for adults to try to ensure that they emphasise their co-player role with children.

What can practitioners do to support talk that fosters self-regulation?

Adults play a vital role in supporting young children's talk about their thinking and learning, in both adult-initiated/directed and child-initiated activities. In adult-directed activities, practitioners may particularly support young children's talk about their metacognitive knowledge, and the talk that goes on is often crucial in helping children towards successful completion of a task. At the same time, we found that in child-initiated activities children were clearer about what they were doing, and why, they generated more ideas and they used a wider range of strategies. They were also more likely to collaborate and help one another, and to comment on what they were doing.

The following list provides a summary of suggestions for adults in supporting and promoting young children's self-regulation and metacognition through talk:

- ▶ Consider how and when to get involved: being nearby rather than leading an activity may support children in talking through and solving problems without asking for adult help, and may encourage children to support one another (McInnes et al, 2010; Robson and Rowe, 2012).
- ▶ Model metacognitive language and mental state vocabulary.
- ▶ Encourage children's self-talk and private speech.
- ▶ Use open-ended questions: this may be particularly important to remember in adult-directed activities, where the evidence is that adults use them

less frequently than in child-initiated activities (McInnes et al, 2010).

- ▶ Ensure sufficient time for children to think about and make extended comments in group discussions.
- ▶ Invite children to comment on each other's ideas.
- ▶ Encourage children to explain/teach a task to another child and talk them through it (Desautel, 2009; Palincsar and Brown, 1984).
- ▶ Make time to revisit and review children's learning with them: ways of doing this can include dialogue, and use of photographs and video as prompts for discussion.
- ▶ Encourage children's self-evaluations (Perry, 2013).
- ▶ When giving feedback to children emphasise learning processes, strategy use, and perseverance, as this may support children's self-efficacy and ability to regulate motivation (Schunk, 1994).

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Social pretend play and self-regulation

Lisha O'Sullivan

Opportunities to learn through play are now recognised as a key component of high quality early childhood education. Complex and sustained play has been associated with positive outcomes in areas such as language, emergent literacy, mathematics and socio-emotional competence (Fisher et al, 2011). Play is also a context which provides children with countless opportunities to practice a range of important self-regulation skills during the early years. Data from the Cambridgeshire Independent Learning (C.Ind.Le) project, for example, provide extensive evidence of children engaging in self-regulation across a range of child-initiated playful activities (Whitebread et al, 2009).

Given the significance of self-regulation for children's overall wellbeing and achievement (McClelland et al, 2013), it is important that children have opportunities to engage in the types of play experiences which can benefit self-regulation in the early years. While all types of play can contribute to children's emerging ability to regulate their thinking and behaviour, social pretend play is believed to be particularly beneficial for this aspect of development (Whitebread and O'Sullivan, 2012; Bodrova and Leong, 2015).

Social pretend play and self-regulation

When children have opportunities to direct their own play, they frequently engage in shared pretence which has led to the preschool years being considered the high season of make-believe (Singer and Singer, 1990). While pretend play, in the broadest sense, involves "as if" behaviour that requires the "voluntary transformation of the here and now, the you and me and this or that, along with any potential action that these components of a situation might have" (Garvey, 1991:82), social pretend play involves "the integration of pretence into social interaction between partners" (Howes et al, 1992:47).



It was children's motivation to control their impulses as they act in accordance with social roles and rules which led Vygotsky to assert that pretend play created a "zone of proximal development" for self-regulation during the preschool years (Bodrova and Leong, 2015). Acting in accordance with social roles and rules requires self-control as children subsume immediate impulses in pursuit of longer-term play goals. When playing the role of a patient, for instance, it will be important to resist the impulse to play with the doctor's equipment as this would be a violation of the rules of the patient role and will, most likely, cause disruption to the play episode.

The mechanisms which support children acting in accordance with social roles and rules are of particular relevance for self-regulation.

Communication about the play, known as metacommunication, is the main mechanism through which children regulate their activity during shared pretence. When pretending together, children use both implicit (within-frame) and explicit (out-of-frame) metacommunication to plan, develop and coordinate make-believe roles and storylines (Whitebread and O'Sullivan, 2012). Explicit metacommunication or meta-play is easy to identify as it often involves overt reference to the pretence eg "pretend I am the Mom and you be the baby". Observations of children at play, however, reveal that much of their metacommunication is achieved through more implicit within-frame messages (Giffin,

1984). In the case of the previous example, a similar message could be communicated implicitly as, in character voice, the child might say "Hello baby, your mummy's here!"

Explicit metacommunication generally involves children communicating in a narrator's or director's voice while implicit metacommunication does not require children to temporarily break the play-frame. While explicit strategies are effective during the planning stages of play, implicit strategies are generally considered more effective once pretence has begun as they cause the least disruption to the play-frame.

As social pretence becomes more complex and collaborative, children become increasingly skilled at regulating both their own and others behaviour. Children learn to select explicit and implicit strategies more strategically as they engage in pretence episodes which involve planning and the development of rich complimentary roles and storylines.

Opportunities to practice self-regulation in social pretend play

As the potential of metacommunication to support self-regulation is relatively under-researched, we carried out a recent study investigating the extent to which 3- to 6-year-old children's metacommunication provides opportunities to practice self-regulation (O'Sullivan, 2015). This study involved video-recorded observations of 96 children engaged in naturally occurring social pretend play in nine Irish early years classrooms. Episodes of social pretend play were coded for overall play complexity using an extended version of Howes and Matheson's (1992) social pretend play scale. Metacommunication was coded as either involving explicit or implicit strategies using sub-categories drawn from Giffin's (1984) continuum of metacommunication options.

In line with earlier research (Giffin, 1984; Sawyer, 1997), the results of this study suggest that, irrespective of play complexity,

during social pretend play children use both explicit and implicit metacommunication to regulate their pretend play. More effective regulation of the play episode, however, was found to involve more strategic use of explicit and implicit strategies.

The C.Ind.Le coding framework for metacognition and self-regulation (Whitebread et al, 2009) was used to analyse the extent to which children's metacommunication involved self-regulatory behaviours. This framework provides an integrated model of self-regulation which incorporates:

- ▶ metacognitive knowledge - individuals' accumulated knowledge about personal, task and strategy variables affecting their cognitive performance
- ▶ metacognitive regulation - individuals' awareness and control of cognitive processes during activities
- ▶ emotional and motivational regulation - individuals' monitoring and control of emotions and motivation during activities.

Metacognitive knowledge

Making metacognitive knowledge explicit is an important aspect of self-regulated learning and there were many examples in our study of young children articulating their metacognitive knowledge during social pretence. Children, for instance, demonstrated their knowledge of cognition in general when communicating their awareness that they were, in fact, pretending.

Here Clara, overtly points out that Maggie's "pet mouse" is, in fact, a Mickey Mouse teddy while Maggie explicitly acknowledges that she is "pretending" and as such is not confined by the real identity of objects:

Maggie: *(holding up Mickey Mouse): "My, my pet mouse he was lost"*

Clara: *"Not a mouse, not just any mouse - it's Mickey Mouse!"*

Maggie: *"I'm pretending Clara, just pretending!"*

Children also demonstrated metacognitive knowledge when they made judgements about their own capabilities (eg a child pretending to write a shopping list gets a pen and paper and says "I know how to do this"). Metacognitive knowledge also incorporates knowledge of tasks and strategies eg a child collecting the items needed to work at a reception desk picks out a clock and says "I need it to say what time it is".

Metacognitive regulation

Congruent with earlier research on play and self-regulation, children demonstrated metacognitive regulation processes to a greater extent than metacognitive knowledge in social pretend play (Whitebread et al, 2009; Robson, 2010). It seems that during actual play, children are more invested in regulating their activity rather than reflecting upon the activity.

In the C.Ind.Le coding framework for metacognition and self-regulation metacognitive regulation involves the following four interconnected processes:

- ▶ planning
- ▶ monitoring
- ▶ control
- ▶ evaluation

A main advantage of child-initiated play has over more adult prescribed tasks is that in play children make their own plans. Opportunities to plan object transformations, roles and storylines in social pretend play allow children to practice the skills they will need when working towards more specific learning goals, later on, in more formal learning situations (Germeroth and Day-Hess, 2013).

Self-regulated learning also involves the complimentary processes of monitoring and control. Monitoring involves strategies such as keeping track of progress (eg a child making a "birthday cake" with play-dough might use private speech (that is, speech directed to themselves) to monitor progress through the required steps, thus: "I need a cutter, now the cake is ready, what's next? I need to put it in the oven").

Control strategies involve any behaviour related to a change in the way a task is being conducted as a result of monitoring. A child might, through monitoring, realise that they are having difficulty counting and as a result of this monitoring, employ a previously learnt strategy to support the cognitive activity of counting.

In the following example, Isobel demonstrates control strategies as she uses her fingers to help her count the "patients". Oliver is the Paramedic and is ringing ahead to "the hospital":

Oliver: *I have people that are sick*

Teacher: *how many have you who are sick?*

Oliver: 4

Teacher: *4 people ok*

Isobel: 3

Oliver: 4!

Isobel: 3!

Conor: No - 4

Isobel: *(counts again - pointing at each "patient" as she counts) 1,2,3, oh - 4!*

Metacognitive regulation also involves ongoing evaluation of progress. Children in the role of construction workers, for example, might evaluate the progress of their building and decide that the structure is now high enough.

Analysis of the data from our study also suggested that as play became more complex (involving more integrated roles and storylines) children demonstrated more extensive use of planning and control strategies. This is significant, as the capacity to use information gained from the monitoring and evaluation to control how an activity is being carried out is crucial to successful performance in more intentional learning situations (Whitebread, 2013). Engaging in the type of social pretence which involves planning, the development of rich complementary roles and integrated storylines seems to provide an optimal level of challenge within which children can practice more advanced self-regulation skills.

Emotional and motivational regulation

Successful regulation of activity also requires the ability to regulate emotional and motivational processes. While pretend play provides important opportunities for children to express emotions and to develop emotional understanding, it is also a context through which children practise monitoring and controlling emotions and motivation (Whitebread et al, 2007).

Monitoring of emotions might be evident when a child monitors their own feelings with regard to the role they have been assigned in pretend play and informs co-players "I don't want to be the baby anymore". When tasks are challenging, players might also employ strategies to control their own and co-players motivation. To regulate motivation during a building task for instance, a child might announce "keep going, we can do it!"

Self and social regulation processes in social pretend play

It is now widely accepted that social processes have a significant influence on self-regulation development. In order to investigate the extent to which this type of play promotes more social regulatory processes children's metacommunication was also analysed using Iiskala et al's (2004) model of the self and socially shared nature of regulatory processes. In this model regulatory processes are conceived as fluctuating between:

- ▶ self-regulation
- ▶ co-regulation
- ▶ socially shared regulatory process

While self-regulation involves intra-personal regulation, such as when children use private speech to guide their behaviour, co-regulation and socially shared regulation involve inter-personal regulation.

Co-regulation involves regulation processes directed towards a specific co-player. This is often evident when one player does not behave in accordance with the roles or scenario being played out. A shopkeeper, for instance, might remind the customer that they "forgot to pay for the groceries". Co-regulation in play ultimately supports self-regulation as the customer who was reminded to pay for their groceries might be expected to pay unprompted in the future as they internalise the rules of the customer role.

Socially shared regulation involves group regulation of joint activity. When the play is truly collaborative, the talk is related to joint planning rather than being directed at anyone in particular and is characterised by the use of "we" (eg "We have to take the baby to the doctor").

In the following example the children are making a volcano in the sand tray and the talk is clearly related to joint planning rather than being directed at anyone in particular:

Frank: *We need to make it even bigger*

Dean: *Ya look (starts putting more sand on top)*

Frank: *We have to make it even bigger*

Dean: *We need a big path going all around*

Frank: *Ya that's why we have to do more, more paths*

Dean: *More paths, it might be dangerous*

Frank: *And and we have special things to not burn!*

Shared regulation processes are believed to be particularly helpful as they reduce individual cognitive load and require children to articulate their thinking to co-players.



The pattern emerging from our research suggests that during social pretend regulation processes fluctuate among self-, co- and socially shared. Despite the social nature of this type of play, some metacommunication serves as much to guide personal behaviour as to provide information to co-players. More complex play, however, was found to involve more socially shared regulation of pretend episodes. More complex play, as would be expected, requires children to have a greater understanding of the perspectives of others and to be more capable of subsuming personal goals to the collective goals (eg having to decide to take on a more subordinate role such as that of a baby so that the episode can continue).

The influence of adult involvement on self-regulation

How practitioners plan for and organise play clearly influences the opportunities children have to practice self-regulation. Providing adequate time, an enriched environment and stimulating play materials can all encourage children to regulate their own activity. Given that self-regulation skills are highly teachable, sensitive interactions with adults have an important role in scaffolding young children's emerging self-regulation skills.

Part of our research on social pretend play and self-regulation involved investigating how adult involvement in child-initiated social pretend play influenced the children's self-regulation. While adult involvement has been found in some previous studies (eg Whitebread et al, 2009) to impact negatively on opportunities to practice certain aspects of self-regulation, our results suggested that when adults participated as co-players, and allowed children to remain in control of the play, their involvement did not necessarily reduce opportunities to practice self-regulation. It seems that who initiates the play

may have more of an impact on children's opportunities to regulate the play than the actual presence or absence of adults. Robson (2015), for example, found that when activities are adult-initiated children are less invested in outcomes and can cede control to adults to a greater extent than when activities are self-initiated.

In our study, when adults joined in the play children still predominantly engaged in metacognitive regulation processes. Adult involvement did, however, support the children to engage more in socially shared regulation of their pretend play. During social pretend it may be important that adults scaffold children's collaboration, as developing shared understanding can be more challenging when dealing with imaginative as opposed to real meanings.

Effective pedagogy for supporting self-regulation in play

In order to identify how practitioners can become involved in play without taking responsibility for regulating the play, adult interactions were analysed using Whitebread and Coltman's (2011), principles of effective pedagogy for self-regulated learning. Within this model, developed from the C.Ind.Le data, effective pedagogy for self-regulated learning is characterised by interactions which:

- ▶ provide emotional warmth and security
- ▶ promote feelings of control
- ▶ provide cognitive challenge
- ▶ stimulate articulation of learning.

While extensive evidence was found of interactions which promoted emotional warmth and security, feelings of control and cognitive challenge, there was less evidence of interactions which stimulated articulation of learning. This latter aspect appears to be more readily supported during reflective discussions outside the play (for example, through video-stimulated recall – see the article by Sue Robson in this edition).



The provision of emotional warmth and security

The provision of emotional warmth and security encourages children to feel connected with others and to feel that their efforts are valued (Whitebread and Coltman, 2011). When adults provide emotional warmth and security children feel competent in taking control of their own activities and are encouraged to adopt a healthy approach to challenge. Practitioners can promote emotional warmth and security through:

- ▶ encouraging children to participate in social pretence
- ▶ accepting children's play themes even if these are sometimes ambiguous
- ▶ being willing to engage enthusiastically and playfully within the frame of pretence episodes.

Promoting feelings of control

Children clearly need to remain in control of their play if it is to function as a context for practising self-regulation. Overly intrusive adult interactions can reduce children's control over their play or stop play altogether. Given that children may be accustomed to practitioners making decisions during adult-led activities, in play, children should be encouraged to make their own decisions.

In this example the educator, rather than solving the dispute, encourages the children, who are working at reception in the Travel Agents, to solve the problem themselves:

Jason: *I'm not finished and he keeps on taking my seat (at reception)*

Practitioner: *Well you will have to sort it out because I don't work here. I'm just a customer.*

Jason: *He won't let am he won't let me*

Practitioner: *Well you will have to ring the manager.*

Through this response the practitioner, operating within the frame of the pretence episode, encourages the children to try and solve the problem for themselves. During play, practitioners can promote children's feelings of control through:

- ▶ allowing them to make decisions about roles and storylines
- ▶ encouraging them to seek support from co-players if they have a problem
- ▶ communicating that they are now in character rather than in practitioner or regulator role.

Providing cognitive challenge

In educational contexts it is important that children are supported in extending their

play as play which becomes stuck will not provide the same level of challenge as more sustained and complex play. Adult guidance which provides adequate cognitive challenge is characterised by the contingency of the support - not too much or too little, just the right level of support to extend the play (Whitebread, 2010).

Practitioners can promote cognitive challenge through:

- ▶ asking open-ended questions eg "what type of a cake are you baking?"
- ▶ encouraging children to apply previously learnt strategies in play eg encouraging children to apply emergent mathematical and literacy skills in the context of their play.

Stimulating articulation of learning

During play itself, adults can support articulation of learning through subtly modelling self-commentary (eg in a shop pretend episode the practitioner might say "I cannot decide what to buy") and explicit metacommunication strategies (eg "what could we use for the pretend car?").

In the following example the practitioner helps make explicit Maggie's rationale for wanting her co-players to wear "life-jackets" (painting bibs) when going on the boat (empty sand-tray). In the context of social pretend play, such strategies are often useful in providing co-players with more information about what is going on.

Maggie: *A life jacket, Louise, wear a life jacket*

Educator: *Oh good idea Maggie, they are very important*

Maggie: *I'm going to have that one (takes a bib)*

Educator: *OK*

Maggie: *and Mary is going to have that one*

Educator: *Do you want this life jacket? (to Mary)*

Maggie: *Well I'm going to have my life jacket (Mary does not accept the "life-jacket")*

Educator: *Good idea Maggie, it will keep you safe in the water won't it?*

However, as complex pretence activity appears to provoke metacognitive regulation to a greater extent than articulation of learning, opportunities which encourage articulation of learning outside of the play can be particularly beneficial in complementing learning occurring during play. Supporting children to think and talk about their play is an important aspect of pedagogy aimed at

promoting articulation of learning (Whitebread et al, 2015). Children can be supported to think more deeply about their play through:

- ▶ modelling self-commentary
- ▶ modelling explicit metacommunication strategies
- ▶ encouraging planning for play orally, through drawing or through emergent writing
- ▶ engaging children in conversations following their play.

Conclusion

This research on social pretend play and self-regulation provides further evidence that playful learning experiences provide extensive opportunities to practice self-regulation. Independent play with peers is clearly important as the onus is on children themselves to regulate their play activity. Sensitive adult guidance, however, can further the potential of play to support self-regulation.

Practitioners can promote self-regulation through engaging in interactions which reflect the principles of effective pedagogy for self-regulated learning. Such interactions will encourage children to articulate the knowledge they gain from monitoring and evaluating their play which, in turn, should support them selecting planning and control strategies which effectively progress the play episode. Furthermore, supporting children to articulate their understanding also seems to have a role in supporting them to engage in more socially shared regulation of the play. The potential of play to promote self-regulation can be further enhanced when opportunities to plan for and review play are used to encourage children to become more aware of how and why they use various strategies during the play itself.

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Music and self-regulation in young children

Antonia Zachariou

Why is music such a powerful experience for young children?

Music would appear to be a trivial pastime to the layperson, who might question this article's focus on exploring the musical facet of self-regulation. Nevertheless, a wealth of research suggests that music is fundamental in human lives and development and musical play is a powerful context to support young children's developing self-regulatory abilities.

Musicality is an innate ability in children. All children possess a musical brain. Evidence of the foetus responding to musical sound from the last months of pregnancy supports this. Infants are "musical connoisseurs", qualified as such from as early as birth. This is due to their precocious listening skills, excellent memory for music and interest in expressive musical performances. Infants can detect differences in pulse, pitch, rhythm, harmony and melody, and often their musical skills outperform those of adults (Trehub, 2007).

Music plays a unique role in both the individual and social development of human beings. Studies of early infant socialisation have shown that the very first interactions (proto-conversations) between infants and caregivers are inherently musical in character. They reveal fascinating biological predispositions, in both the infant and the caregiver (Papousek, 1996; Trevarthen, 2000), for the proto-conversations which occur between adults and infants from the very first weeks after birth. These illustrate that a sense of rhythm and intersubjectivity (shared understanding) is apparent at this very early stage of development. This is a universal phenomenon as all around the world mothers speak to infants with similar rhythms and intonation and infants move in sympathy.

Furthermore, musicality is significant because it allows for interpersonal coordination and because children use music for emotion construction and regulation. Children are attracted to communication by musical features. There is also evidence that as the mother expresses feelings towards the child, the child responds with synchronous vocal, bodily and gestural rhythmic patterns. This communication can have an impact on the

emotional state of the infants and their level of engagement in communication. This shows that young infants' musicality is extremely important for the functioning of language and their socio-emotional development.

Music's beneficial effects

The beneficial effects of music in the area of emotional development are manifested in a multitude of studies. Research by Gerry, Unrau & Trainor (2012) compared 6-month-old infants who participated in a six-month long, weekly, active participatory music-making programme to same age infants who participated in a passive musical experience programme. At the end of the study, infants in the active musical experience group showed lower levels of distress, were easier to soothe and would smile and laugh more.

Music allows children to express their feelings, cope with them and maintain their emotional and social balance. Music is also considered a useful way to express and enhance happiness and positive energy. More specifically, musical play can often be intrinsically motivating for children and offer positive experiences that allow the child to build self-esteem while taking risks. Parents whose children took part in musical play sessions on a weekly basis for six weeks reported that their children had become more confident (Fairchild & Karousou, 2013).

Musical activities with children also enhance their prosocial behaviour. In a study by Kirschner and Tomasello (2010), 4-year-old children either participated in a musical play condition or took part in the same task without the musical elements. Following this, the researchers observed an increase in subsequent spontaneous cooperative and helpful behaviour among the musical play participants. As the researchers hypothesised, this could be explained through the shared intentionality that this joint music making experience required.

Music and self-regulation

From a very young age, during proto-conversations, intersubjectivity (where adult and child jointly attend to the same object or event) emerges as an essential attribute for successful communication (and thus musicality). At the same time, this

intersubjectivity is also considered to be the basis on which metacognitive or self-regulatory development is constructed. Hence, a direct link between musicality and self-regulation could be argued in that they both have their origins in episodes of joint attention during these early proto-conversations between infants and their caregivers.

There is only some very limited research showing how music is linked to young children's self-regulation. Most of this derives from studying young children's musical play. Musical play is a universal phenomenon and, therefore, any indications of self-regulation in it acquire great importance. The first indication of self-regulation taking place during musical play came from ethno-musicological studies. When describing the activities taking place during musical play, researchers have often presented self-regulatory behaviours, without naming them as such. An example of this is Harwood's (1998) description of how children learn by observing more able children when playing and then singing along *sotto voce*. She also describes children shadowing the actions of more able peers (imitating) and rehearsing between performances. At the same time, the more adept players might be simultaneously playing and monitoring the novices' performance. This suggests that in musical play children apply self-regulatory strategies and that they also monitor, control and evaluate their progress.

More support for this comes from a recent study looking at the relationship between children's self-regulation and musical play (Winsler et al., 2011). The participants were 3- and 4-year-old children. Half of the children were participating in music and movement classes, while the rest had not experienced structured early childhood music classes. The children's self-regulation was assessed through laboratory self-regulation tasks. The children who participated in music classes showed better self-regulation. They also used more self-regulatory language in the form of private speech, a strategy which was positively associated with their performance. They were also more likely to use singing or humming to themselves as a facilitative strategy while engaging in a delay of gratification task (such as the famous

marshmallow task). In this case, this strategy was linked to inhibiting their desire to open a gift or call out to the experimenter. It was thus argued that the children participating in musical play sessions were more likely to successfully engage in strategies that would foster their self-regulation. The researchers hypothesised that this could be because children who participate in this form of music engagement might be able to use song, music and dance as cultural tools for directing their behaviour.

In my own studies of children's self-regulation during musical play (Zachariou & Whitebread, 2015; Zachariou & Whitebread, under review), we observed 6- to 8-year-old children during musical play sessions implemented in their classrooms. These studies established that musical play affords opportunities for self-regulation to emerge. The regulatory behaviours observed most frequently were the planning and monitoring of cognitive behaviours and the monitoring of emotions and motivation. On an important note, during musical play, socially shared regulation (where children work together to achieve a shared, social goal) was more frequently observed than self-regulation (where an individual child monitors and controls their own performance). Thus children were more likely to co-construct their goals and their regulation, an ability related to more positive results in collaborative tasks, of which group music making in musical play is a powerful example.

How to develop musical activities to support children's self-regulation

This section puts forward some suggestions for developing musical activities to support children's self-regulation. In doing so, it brings together insights from literature on contexts promoting regulatory development and on contexts promoting musicality and musical play.

In brief, to support self-regulation, musical activities should:

- ▶ be meaningful and interesting to the children
- ▶ be challenging and open-ended
- ▶ afford opportunities for children to control the level of challenge and engage in assessment
- ▶ emphasise personal progress and look at mistakes as opportunities for learning
- ▶ provide opportunities for collaborative group work and various kinds of peer-tutoring
- ▶ allow children to play with friends

- ▶ promote interdependence within the tasks
- ▶ allow long, unbroken periods of time
- ▶ allow music activities without the teacher.s' involvement
- ▶ give the initiative to children

First, if the activities are to support music's full potential for regulatory behaviours, they have to be ecologically valid and meaningful to the children. Children show more self-regulation in activities that they have initiated. For this reason, children should be enabled to initiate their own musical activities. If the teacher aims to introduce some more teacher-initiated musical activities in the classroom, she can be inspired by the children's interests as illustrated in their free musical play.

The teacher should be finely attuned to the children's interests and activities, observe, and potentially participate if that would be beneficial for the situation. In order to extend learning, these activities should be based on processes of shared musical engagement with a more experienced partner, whether a peer or an adult. If the teacher is developing the activities, she should have the freedom to develop and modify them according to the children's preferences and capabilities. Therefore, rigid, recipe-like repertoires of activities would not be the preferable option (ideas for musical activities are presented at the end of this article).

For self-regulatory abilities to be encouraged, the activities should be interesting, challenging and open-ended, affording opportunities for children to control the level of challenge and engage in assessment. The teacher should be encouraging a mastery-oriented approach emphasising personal progress and looking at mistakes as opportunities for learning. At the same time a positive emotional environment should be fostered in the classroom. In my own research, most of the activities were purposefully designed to encourage the children to engage in musical activities, but were open-ended and allowed the children to take the activity to any direction they would like.

For example, one activity started with their teacher discussing with the children a picture of a farm, what they would expect to see and the sounds that they would hear on a farm. The teacher then asked the children, each one on their own, to think of a song (one or two lyrics), that would fit with/describe this picture. Each child had different ideas, but the teacher encouraged and supported all the ideas within a positive emotional environment.

Musical activities should be devised to provide ample opportunities for collaborative group work and various kinds of peer-tutoring. Collaborative forms of learning have been shown to enhance regulatory behaviour in classroom situations. Group-work is also ideal for two reasons in relation to musical play. First, social interactions among children in musical play oblige them to externalise and articulate their ideas and conceptions to the other children. This is valuable in itself, but also facilitates the identification of the children's regulatory behaviours by their teacher (Iiskala et al., 2004). Second, group work enables children to engage more productively in musical activities (Marsh, 2008). An example of how this can be achieved is the continuation of the above-mentioned activity. After the children took their time to think of a short song for the picture of the farm, the teacher encouraged them to work in groups of threes and create a fuller song (see Figure 1).



Figure 1: The children here are engaging in singing play. They are creating their own song, with the aid of finger puppets. They are building on each other's ideas and planning, monitoring, controlling and evaluating their behaviour, emotions and motivation.

When children are playing with music in groups, it is preferable that these are "friendship groups". My research has indicated that children are more playful and productive when working with friends. When working in friendship groups, children also engage in higher quality collaboration and higher levels of regulatory behaviour. The example in Figure 2 indicates how difficult it can be for children to establish a shared understanding, when not playing with friends. In addition to this, children could be encouraged to play in small groups of two or three. This is the children's preferred group size when given the option. At the same time, my research identified musical play in dyads, but also individual play as the most productive context for self-regulation.

Ideas for fun musical activities

Singing play	The teacher does a call and response game when she sings something and the children have to echo exactly what she said.
Movement play	The teacher tells the children that they should imagine they are all toys, in a chest. Today is a magical night when music starts playing and the toys start waking up and moving to the music. Then the music plays and children dance to this (repeating the music two to three times). The teacher then tells the children that they can play in groups of three and dance together to the music (either as one toy or finding a way to put their different toys together). Suggested musical piece: L'autre valse d'Amelie by Yann Tiersen.
Hand-clapping games	The teacher encourages the children and allows them time to play different hand-clapping games they know. She encourages them to teach each other different hand-clapping games if needed.
Circle games	While the children (sitting in a circle) are singing a song, their task is to move the tambourine around the circle with an egg shaker in it, without it making any noise. If the egg shaker makes noise, the song stops and it starts again from the child who made a noise. Several repetitions. The game can then become more difficult. Two tambourines in the circle, each one with an egg shaker in it. They are both moving in the same direction.
Instrumental play	After having discussed an image (eg of the circus, the jungle), the teacher asks children to create music for the image – each one on their own with their musical instruments. Then the teacher asks the children to create music for the image in groups of three.



Figure 2: Example of two children not playing in a friendship group. Their musical play is not successful nor productive because each of them (see hand gestures) is suggesting a different type of hand-clapping game and they cannot establish intersubjectivity (shared understanding).

Additionally, as previously discussed, when designing tasks to evoke socially-shared regulation a key ingredient is the need for interdependence within the tasks. Musical play's inherent characteristics promote interdependence in the group. Musical play "has the potential to intensify the intersubjective experience" (ie a sharing of intentions, emotional and cognitive processes amongst subjects) between the players, based on the atmosphere it induces and the underlying cognitive mechanisms that are required for successful musical play (Rabinowitch, Cross, & Burnard, 2012:118). Thus, when designing/promoting musical activities, every effort should be made to

accentuate and fully exploit this characteristic of musical activities (see Figure 3).



Figure 3: An example of a musical activity with high interdependency. The children have to pass the tambourine around with an egg shaker in it, without it making any noise. For the children to be successful in the game, everybody has to successfully, so the group's and game's success depends on each individual's success.

Finally, it is important that children have long, unbroken periods of time and plenty of space to play with sounds, practise and explore (Pound, 2010). Children should have the freedom, time and space to explore music. My research also indicated that most of the regulation takes place when the teacher is absent. Therefore, it is worth experimenting with taking a step back and allowing children to engage in musical activities without adult supervision. At the same time, in cases of

References

- Fairchild, N. and Karousou, R. (2013). *Final report- An Evaluation of the Boogie Mites Early Years Music Education Programmes in respect of parents and practitioners*. Commission by Boogie Mites UK Ltd. Retrieved from <http://eprints.chi.ac.uk/1100>
- Gerry, D., Unrau, A. and Trainor, L.J. (2012). Active music classes in infancy enhance musical, communicative and social development. *Developmental Science*, 15(3), 398–407.
- Harwood, E. (1998). Music learning in context: A playground tale. *Research Studies in Music Education*, 11(1), 52–60.
- Iiskala, T., Vauras, M. and Lehtinen, E. (2004). Socially shared metacognition in peer-learning? *Hellenic Journal of Psychology*, 1, 147–178.
- Kirschner, S. and Tomasello, M. (2010). Joint music making promotes prosocial behaviour in 4-year-old children. *Evolution and Human Behaviour*, 31(5), 354–364.
- Marsh, K. (2008). *The musical playground: global tradition and change in children's songs and games*. Oxford: Oxford University Press.
- Papousek, H. (1996). Musicality in infancy research: biological and cultural origins of early musicality. In I. Deliège & J. Sloboda (Eds.), *Musical beginnings: Origins and development of musical competence* (pp. 37–55). Oxford: Oxford University Press.
- Pound, L. (2010). Playing music. In J. Moyles (Ed.), *The excellence of play* (pp. 139–153). Maidenhead: Open University Press.
- Rabinowitch, T.C., Cross, I., & Burnard, P. (2012). Music group interaction, intersubjectivity and merged subjectivity. In D. Reynolds & M. Reason (Eds.), *Kinesthetic empathy in creative and cultural practices* (pp. 109–120). Bristol, UK: Intellect.
- Trehub, S. (2007). Infants as musical connoisseurs. In G. McPherson (Ed.), *The child as musician: A handbook of musical development*. (pp. 33–49). USA: Oxford University Press.
- Trevarthen, C. (2000). Musicality and the intrinsic motive pulse: evidence from human psychobiology and infant communication. *Musicae Scientiae*, 3(1), 155–215.
- Trevarthen, C. (2012). Communicative musicality: The human impulse to create and share music. In D. Hargreaves, D. Miell, & R. MacDonald (Eds.), *Musical imaginations. Multidisciplinary perspectives on creativity, performance and perception* (pp. 259–284). New York: Oxford University Press.
- Winsler, A., Ducenne, L. and Koury, A. (2011). Singing one's way to self-regulation: The role of early music and movement curricula and private speech. *Early Education and Development*, 22(2), 274–304.
- Zachariou, A. and Whitebread, D. (under review). A new context affording for self-, co- and socially-shared regulation: the case of musical play.
- Zachariou, A. and Whitebread, D. (2015). Musical play and self-regulation: Does musical play allow for the emergence of self-regulatory behaviours? *International Journal of Play*, 4(2), 116–135.

poorly self-regulated children scaffolding by the teacher was found to be valuable. It is thus crucial for the teacher to provide sensitive support and scaffolding when needed, but also feel confident and able to take a step back when it is not.

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References

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- Desautel, D. (2009). Becoming a Thinking Thinker: Metacognition, Self-Regulation, and Classroom Practice, *Teachers College Record*, 111(8) pp.1997-2020, Available at: HYPERLINK “http://www.tcrecord.org” <http://www.tcrecord.org> ID number 15504.
- Krafft, K.C. and Berk, L.E. (1998). Private Speech in Two Preschools: Significance of Open-Ended Activities and Make-Believe Play for Verbal Self-Regulation, *Early Childhood Research Quarterly*, 13(4) pp.637-58.
- McInnes, K., Howard, J. Miles, G. and Crowley, K. (2010). Differences in adult-child interactions during playful and formal practice conditions: An initial investigation, *The Psychology of Education Review*, 34(1) pp.14-20.
- Mead, D.L. and Winsler, A. (2015). Children’s Private Speech. In S.Robson and S. Flannery Quinn (eds.) *The Routledge International Handbook of Young Children’s Thinking and Understanding*. Abingdon, Oxon: Routledge, pp.150-162.
- Mercer, N. (2013) Classroom talk and the development of self-regulation and metacognition. In D. Whitebread, N. Mercer, C. Howe and A. Tolmie (eds.) *Self-regulation and Dialogue in Primary Classrooms. British Journal of Educational Psychology Monograph Series II: Psychological Aspects of Education – Current Trends*, No.10. Leicester: British Psychological Society.
- Palincsar, A.S. and Brown, A.L. (1984). Reciprocal teaching of Comprehension-Fostering and Comprehension-Monitoring Activities, *Cognition and Instruction*, 1, pp.117-75.
- Perry, N.E. (2013). Understanding classroom processes that support children’s self-regulation of learning. In D. Whitebread, N. Mercer, C. Howe and A. Tolmie (eds.) *Self-regulation and Dialogue in Primary Classrooms. British Journal of Educational Psychology Monograph Series II: Psychological Aspects of Education – Current Trends*, No.10. Leicester: British Psychological Society.
- Pramling, I. (1988). Developing Children’s Thinking About Their Own Thinking, *British Journal of Educational Psychology*, 58, pp.266-78.
- Robson, S. (2012). Children’s experiences of creative thinking. In H. Fumoto, S. Robson, S. Greenfield and D.J. Hargreaves, *Young Children’s Creative Thinking*, London: Sage, pp.93-106.
- Robson, S. and Rowe, V. (2012). Observing young children’s creative thinking: engagement, involvement and persistence, *International Journal of Early Years Education*, 20(4) pp.349-64.
- Robson, S. (2016). Self-regulation, metacognition and child- and adult-initiated activity: Does it matter who initiates the task? *Early Child Development and Care* 186(5): 764-784.
- Schneider, W. (2010). Metacognition and Memory Development in Childhood and Adolescence. In H.S. Waters and W. Schneider, (eds.) *Metacognition, Strategy Use, and Instruction*, New York, NY: Guilford Press, pp.54-81.
- Schunk, D.H. (1994). Self-Regulation of Self-Efficacy and Attributions in Academic Settings. In D.H. Schunk and B.J. Zimmerman, (eds.) *Self-Regulation of Learning and Performance*, Hillsdale, N.J.: Lawrence Erlbaum Associates, pp.75-99.
- Vygotsky L., (1978) *Mind in Society*, Harvard, MA: Harvard University Press.
- Whitebread, D., Pino-Pasternak, D. and Coltman, P. (2015). The role of language in the development of metacognition and self-regulation in young children. In S.Robson and S. Flannery Quinn (eds.) *The Routledge International Handbook of Young Children’s Thinking and Understanding*. Abingdon, Oxon: Routledge, pp.199-214.
- Winne, P. H. (1997). Experimenting to Bootstrap Self-Regulated Learning, *Journal of Educational Psychology*, 89(3) pp.397-410.

References

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- Bodrova, E. and Leong, D. J. (2015). Vygotskian and post-Vygotskian views on children’s play. *American Journal of Play*, 7(3), 371-388.
- Fisher, K., Hirsh-Pasek, K., Golinkoff, R. M., Singer, D. G. and Berk, L. (2011). Playing around in school: Implications for learning and educational policy. In A. Pellegrini (Ed.), *The Oxford handbook of the development of play* (pp. 341-377). Oxford: Oxford University Press.
- Garvey, C. (1991). *Play (2nd ed)*. London: Fontana Press.
- Germeroth, C. and Day-Hess, C. (2013). *Self-regulated learning for academic success: How do I help students manage their thoughts, behaviours and emotions?* Denver, MA: ASCD arias.
- Giffin, H. (1984). The coordination of meaning in the creation of a shared make-believe reality. In I. Bretherton (Ed.), *Symbolic play the development of social understanding* (pp. 73-100). Orlando: Academic Press.
- Howes, C. and Matheson, C. C. (1992). Sequences in the development of competent play with peers: Social and social pretend play. *Developmental Psychology*, 28(5), 961-974.
- Howes, C., Unger, O. and Matheson, C. (1992). *The collaborative construction of pretend: social pretend play functions*. New York: State University of New York Press.
- Iiskala, T., Vauras, M. and Lehtinen, E. (2004). Socially shared metacognition in peer learning? *Hellenic Journal of Psychology*, 1(2), 147-178.
- McClelland, M. M., Acock, A.C., Piccinin, A., Rhea, S.A. and Stallings, M.C. (2013) Relations between preschool attention span-persistence and age 25 educational outcomes. *Early Childhood Research Quarterly*, 28(2), 314-324.
- O’Sullivan, L. (2015). *Preschool children’s social pretend play: Its trajectory and the role of adult involvement* (Unpublished Doctoral Dissertation, University of Cambridge).
- Robson, S. (2010). Self-regulation and metacognition in young children’s self-initiated play and reflective dialogue. *International Journal of Early Years Education*, 18(3), 227-241.
- Robson, S. (2015). Self-regulation, metacognition and child- and adult- initiated activity: Does it matter who initiates the task? *Early Child Development and Care*, 185(11), 1-21.
- Sawyer, K. R. (1997). *Pretend play as improvisation: Conversations in the preschool classroom*. New Jersey: Lawrence Erlbaum Associates Publishers.
- Singer, D. G., & Singer, J. L. (1990). *The house of make-believe*. Cambridge MA: Harvard University Press.
- Whitebread, D. (2010). Play, metacognition and self-regulation. In P. Broadhead, J. Howard and E. Wood (Eds.), *Play and Learning in the Early Years* (pp. 161-176). London: Sage.
- Whitebread, D. (2013). Self-regulation in young children: Its characteristics and the role of communication and language in its early development. In D. Whitebread, N. Mercer, C. Howe and A. Tolmie (Eds.), *Self-regulation and dialogue in primary classrooms. British journal of educational psychology monograph series II: Psychological aspects of education-current trends* (pp. 35-44). Leicester: British Psychological Society.
- Whitebread, D., Bingham, S., Grau, V., Pino-Pasternak, D. and Sangster, C. (2007). Development of metacognition and self-regulation in young children: The role of collaborative and peer assisted learning. *Journal of Cognitive Education and Psychology*, 6(3), 433-455.
- Whitebread, D., & Coltman, P. (2011). Young children as self-regulating learners. In J. Moyles, J. Georgeson and J. Payler (Eds.), *Beginning teaching: Beginning learning: In early years and primary education* (pp. 122-138). Maidenhead: Open University Press.
- Whitebread, D., Coltman, P., Jameson, H. and Lander, R. (2009). Play, Cognition and Self-regulation: What exactly are children learning when they learn through play? *Educational and Child Psychology*, 26(2), 40-52.
- Whitebread, D. and O’ Sullivan, L. (2012). Preschool children’s social pretend play: Supporting the development of metacommunication, metacognition and self-regulation. *International Journal of Play*, 1(2), 197-213.
- Whitebread, D., Pino-Pasternak, D. and Coltman, P. (2015). Making learning visible: The role of language in the development of metacognition and self-regulation in young children. In S. Robson & S. Flannery Quinn (Eds.), *The Routledge international handbook of young children’s thinking and understanding* (pp. 199-214). Abingdon: Routledge.

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