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Personalization and Creativity

Chapter 7 suggested that personalized books can positively impact on children's cognitive outcomes and parent-child dynamics. While the previous chapter was specifically concerned with personalized books, in this chapter, the focus is expanded to show how personalization impacts on children's creative skills with a range of resources. I consider personalized education in terms of the 5As (children's autonomy, authorship, aesthetics, attachment and authenticity), and I define creativity in terms of children's individual and collaborative creativity, as well as their ability to engage in possibility thinking (as per Professor Anna Craft's definition). I note the alignments and misalignments between these aspects of creativity and the 5As and consider the aspects of creativity that the research on personalization could usefully adopt. Given that personalization is a new field of study in early childhood, its development could benefit from the body of knowledge generated for creativity. I use an empirical example from my own research to illustrate the many levels at which the 5As relate to child's individual and parent-child collaborative creativity.

The relationship between personalization and creativity

Personalization and creativity have become buzzwords in the technology and education sectors in the twenty-first century and are often used side by side to describe an educational innovation or a technology-based project. However, unlike personalization, creativity enjoys a rich body of literature concerning its definition, boundaries, pedagogies and evidence of educational impact. In contrast to personalized education, creative education has been studied for many decades, and children's creative skills are considered an essential part of children's education (although the extent of the actual teaching and assessment of creative skills in public schools is questionable). The UK Select Committee on Digital Skills stated the following in relation to creativity:

- Creative subjects should be on an equal level as the sciences.
- Creative skills can be applied to sciences – creativity is beyond the boundaries of the teaching of creative subjects.
- Creativity has a socialization agenda, helps learning and boosts engagement with the world – makes us curious.

(Available online from: <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/digital-skills-committee/digital-skills/oral/11622.html>)

Before attempting to discuss the relationship between creativity and personalization, it is important to agree on a working definition of creativity. In the section ‘What Is Creativity?’ I detail what we mean by a ‘creative individual and creativity’ as a term. This allows us to draw parallels between personalized as an attribute and personalization as a notion or concept.

What is creativity?

Creativity was earlier considered a special skill reserved for the art industry and those who ‘create’ art, such as musicians, painters or dancers. This earlier understanding of creativity implied that it is an ability, or a set of discrete skills. For example, in music, a musician is considered creative if she/he can demonstrate originality and musical sensitivity (Leman, 1999). Increasingly, however, creativity is considered an everyday skill, something all children can do – they can be creative in their problem-solving; they can be creative thinkers and tinkerers (makers). This definition implies that creativity is about imagination, about openness to solve a new problem or find an alternative route to reach an end goal. Is such a creativity something that is inherent and something all children are born with or is it something that needs to be taught and nurtured (such as children’s reading skills)? The view dominant in the UK National Curriculum has been on the nurture side, that is, that creativity is a skill that can be developed with the right amount of support and guidance from others. In this respect, creativity shares some dilemmas related to the ‘three As’ of authenticity, authorship and autonomy of personalization.

Creativity as a set of skills

Creativity understood as a set of skills that can be taught by building on knowledge of others and nurtured through others’ input is somewhat in tension with the definition of creativity as the ability to produce something original and unique. In this definition, a creative work would be more accurately described as an amalgam of others’ influences rather than a self-contained, straightforward piece. Similarly, if we believe that creativity could, and should, be taught and nurtured in children, then we need to consider the judicious balance between autonomy and authorship and between guidance and collaboration in creative instruction.

This brings us to the distinction concerning the ways in which we could measure and evaluate creativity and whether this is even possible or desirable. In business and applied fields, creativity is typically measured through the final product – if a painting or a gadget is considered to be new, original or innovative, it is likely its value will be gauged in terms of its ‘creative’ potential. In education, there is a focus on the product but also on the process through which the product was created. It would be rare for a teacher to praise a student’s essay as creative without asking the student *how* they

produced it – the teacher will want to establish the student's independent and unique contribution to the final product so that they can build a picture of the student's skills and abilities. Surely, both business and education consider the process and product of creativity but they place different emphasis on the two.

In addition to evaluating the creative process leading to a creative product, we can measure the creative capacity of an individual. This is similar to personalized products and the capacity of an individual to author an authentic piece. Assuming that there is such a thing as a creative profile of an individual, we should be able to measure it and evaluate whether one person is more creative than another person. In psychology, tests and procedures have been developed and standardized to evaluate creativity, for example the Torrance Tests of Creative Thinking. This test is based on scores from individuals who draw pictures from a curved shape and then write stories about their pictures. Another popular measurement of creativity includes the divergent thinking approach and ratings (including the ratings of teachers, parents, peers and in work environments, colleagues and supervisors) for judging a certain product or act of creativity. These measures presuppose that a piece of creativity is manifested in a final product, act or activity, and that it can be therefore rated on a scale or through a questionnaire. Other measures focus on qualitative descriptions, criterion-based evaluations or independent judgements of artists and researchers. The eclectic mix of approaches to the measurement of creativity might inspire future approaches to the assessments concerning personalized learning: quantitative tests measuring the extent or presence of the individual 5As as well as qualitative appraisals of the processes involved in authorship, autonomy and so on might produce equally enriching insights.

Creativity as a collaborative process

Another inspiration that can be gleaned from the creativity studies concerns the micro/individual level of creative processes, that is, the individual and collaborative nature of creativity. Culture plays an important role in this choice: Batey and Furnham (2006) point out that while the traditional definition of creativity in Western culture focused on something that is 'given', in Eastern culture creativity is viewed as 'the expression of personal truth or self-growth' (p. 356). The notion of individualism and its counterpart – reciprocity – is related to the fourth A of aesthetics and Oulasvirta and Blom's personalization theory (see Chapter 5). Oulasvirta and Blom (2008) outline that people make their own objects aesthetically appealing, not just for personal interest but because they want to communicate their feelings to others and to affirm to them their emotions, values and experiences. One could say that very similar factors are at play when an artist produces a piece of art – the process of authoring creative works is predicated on an audience awareness and the desire to share an artistic piece with others. In their edited book *Collaborative Creativity: Contemporary Perspectives* (2004), Dorothy Miell and Karen Littleton elaborate on these points. Miell and Littleton adopt a socio-cultural approach to understanding creativity and reciprocity. From this perspective, there is an intertwined, undividable influence of culture and context on each individual producing something new (or creative). Miell and Littleton argue that all creative acts are collaborative acts. This is because individuals are shaped

by their environments and previous experiences, and, consequently, their acts are a reflection of what they learnt and experienced in the institutions they attended, the books they read and films they watched, and the interpersonal relationships they have.

Collaborative creativity has recently become very popular in art-based practice. Collaborative creativity can give rise to interdisciplinary work and can lead to hybridization of traditional forms and contents. For instance, collaborative creativity in poetry has inspired the merging of poetry with films (the so-called film poetry or video poetry), poetry with photographs ('poetography') or poetry mixed with prose in poetic novels. Collaborative creativity is also a popular approach in many technology- and innovation-oriented companies, which aim to nurture a culture of shared thinking and encourage their employers to co-construct and 'co-create' new products together. In these environments, efforts are being made for employees to collaborate during business retreats or in shared, open-plan offices inviting discussion and collaboration. The rationale for adopting a collaborative creativity approach can be found in theoretical or ontological assumptions, but also on the practical level. *Collaboratively* produced objects and experiences build on previous knowledge and entail the creative thinking that preceded the new production. Such a process encourages critical discussion and reflection on what has been produced before. It is linked to the need to create products and artefacts, which are of appeal to more than a few individuals. Such collaboratively produced products are part of a business model that draws on crowdsourcing and democratic production strategy – both being popular approaches in the twenty-first century.

Evidently, in a collaborative creativity process the question of individual authorship, personal aesthetics, ownership of the final product and other As remain open to discussion. The structure of some institutions (such as schools) and organizations (such as business companies) affect how these questions are approached. Hierarchical structures often prevent individuals to have their creative ideas recognized or even developed. The field and area of work (e.g. a fashion school vs. education school) also affect the expectations and demands placed on individuals' expression of creativity. These factors definitely ring true for personalization, and from the above considerations we could deduce that collaboratively produced personalized products could provide new avenues in the personalization research and practice of personalized education, and they could reveal new possible combinations between personalized education and other forms of learning (to allow hybridization like the one we can observe in art practices).

However, as with all educational phenomena, effective application of creativity and personalization will work as long as they are aligned with their assessments. It goes without saying that if we want to see a change to the way personalized and creative education happens in public schools, we need to make a change to assessment too. Currently, teachers across the world are being held accountable for their ability to teach children according to national assessment guidelines and their performance is judged by the children's success in national league tables. These tables and tests pay lip service to creativity and children's autonomy, authorship or authentic contribution to content. This makes the implementation of personalized and creative education – no matter how well defined – difficult.

In the next section, I move onto considering some key theoretical frameworks developed for creativity. This provides further insight into the links between personalization and creativity.

Key theoretical frameworks guiding the creativity research

The classic creativity work in the social psychology area is the creativity framework developed by Amabile in 1983. Part of the framework (and definition of creativity) is the consideration of the abilities and factors that influence a creative process. Amabile (1983) argues that some social factors can decrease and some personal characteristics can increase creativity. Both factors have been the subject of extensive research. For example, external reinforcement systems such as rewards, organizing competitions or external evaluations have been found to decrease creativity (see, for example, Choi, 2004). However, as mentioned in the previous section, whether certain personality characteristics are indeed more prevalent among more creative individuals is unclear and largely depends on how we measure creativity. While the popular cliché of an absent-minded artist holds true for certain creative expressions, a more research-based characterization of a creative individual lists some specific personal characteristics. Feist's (1998) meta-analysis of personality for scientific and artistic creativity specifies the characteristics of autonomy, introversion, drive, self-confidence and self-acceptance, but also being a dominant, often hostile and impulsive person. This characterization might help with the practical application and evaluation of creativity. On the other hand, social scientists embody a different ontological model of creativity, one in which creativity is not fixed and measurable, but something in the process of constant construction and refinement. For instance, de Certeau (1984) described creativity as 'bricolage' (adopting the term from Levi-Strauss, 1966) and others emphasize the creative process in which people appropriate things, ideas and concepts to reclaim their own creative space (Maigret, 2000).

It could be that just as some scholars believe that creativity can be measured and some argue it cannot be precisely specified, in the study of personalization we will see the emergence of two competing camps. It could also be that in some areas of personalization, the boundaries between disciplines become more porous. In the area of digital personalization or technology-mediated personalization, interdisciplinary research is already happening. This is because technology has challenged the definitions, measurements and manifestations of many phenomena, including creativity and personalization. As Sefton-Green and Buckingham (1998, p. 59) write: 'The use of new technologies can blur the distinctions between these narrower and broader conceptions of production and of creativity: what counts as a "text" or indeed as a creative work of art-becomes subject to a wide variety of definitions.' Thus, it might be that digital personalization will not only blur the disciplinary boundaries but also revive the interest in some essential questions of what personalization is and helps us develop a more fully theorized notion of personalization. This has been the trajectory for creativity, where technology has fuelled the interest in the topic and challenged the traditional definition of creative skills and abilities. In the pursuit of the definition of

creativity, I got interested in these questions myself and conducted a study in which we looked at children's creativity with a range of text-making resources, including new technologies. This study provided some insights about the nature of digitally mediated creativity and its relationship to two of the 5As of personalization: authorship and autonomy.

Children's creativity: Authorship and autonomy

Dr Mona Sakr and I carried out a study regarding how different resources (digital and non-digital technologies) affect a child's individual as well as parent-child collaborations (see Kucirkova & Sakr, 2015). The actual activity undertaken with the digital and non-digital resources was text-making, based on Kate Pahl's (2003) study of children's text-making at home. Our text-making activity included four main activities: taking photographs, creating collages, drawing and emergent writing.

We wanted to compare parent-child text-making mediated by digital resources as compared with non-digital resources and look at the child's individual as well as parent-child collaborative creativity. We chose four currently popular resources for young children's text-making at home: crayons, collage, iPad and a desktop PC. For the iPad context, we chose the Our Story app, given my experience of studying other children using it for a variety of purposes. For the computer programme, we chose the software Tuxpaint, which is a drawing/collage-making programme. The crayons context provided the parent and child with a set of standard colour crayons and sheets of white A4 paper. The collage context included a range of materials, such as glitter, trimmings, ribbons, scissors, crayons, pieces of coloured and blank paper, craft sticks and others. The shared characteristic of all four resources was that they enabled the authoring of open-ended original content, that there were no specific templates to be filled out, and that the child and her parent were free to create any and as many creative artefact(s) they wished. For the two digital resources (iPad and PC), the final text could include sounds in addition to imagery or letters.

So that we could examine the parent-child interaction in detail and in relation to the four different resources (rather than in relation to different parent-child pairs), we chose the single case study method. The study participants were a 3-year-old girl Monika (pseudonym) and her father, who was 35 years old at the time of the study. The study was conducted in the child's grandparents' house (the father's parents' house), where Monika used to spend the evenings during the week. The case study consisted of eight episodes during which the father and child engaged in text-making with one of the four resources (two times for each resource) for about twenty minutes (minimum ten and maximum thirty minutes). The interaction was videotaped by Mona, who placed the camera in one of the corners of the room and quietly observed the sessions, taking notes of her observations.

Our analysis included Mona's field notes, but mostly focused on the video data. We analysed the video transcript using thematic deductive analysis, with frequency measures and vignette descriptions. We found that the different text-making resources provided different opportunities for the child's individual creativity and

for the joint parent–child collaborative creativity. It was not about whether a text-making activity was digital (i.e. iPad and PC) or not (i.e. crayons or collage), but about the specific features of the individual resources. Notably, even though all text-making resources supported open-ended activity, the child followed an internal script with some resources and not with others. For instance, when using crayons, Monika did not simply author what she spontaneously thought of at that moment, but she intentionally chose colours and shapes to achieve a specific drawing. She wanted to have her face and body drawn in the way she had seen it drawn before and insisted her father helped her with the drawing. For example, she asked him to draw an ‘oval face’ because she believed that all drawn faces should be oval. In another session, Monika asked her father to help her choose the crayon, which would product the exactly same pink as was the colour on her dress. Interestingly, Monika did not have these expectations with the unrealistic and abstract texts she created with Tuxpaint™, or with the Our Story app or collage resources. It seemed to be the case that the schemas and socio-cultural expectations related to drawing with crayons are much more influential than those available for other resources. It could also be that the familiarity with a given resource influenced Monika’s creative dispositions and her perception of authentic authoring. While drawing with crayons was a frequent activity at home and in the preschool, text-making with the Our Story app or Tuxpaint™ was not. This might be why the girls’ openness to authentic, new and original content was greater with the less familiar resources.

In our data analysis, we also noticed other issues at play when considering the four different technologies and creativity. Namely, the father seemed to be more involved and more willing to provide support with tux paint and the iPad app than with the non-digital resources. Again, this could be because of the socio-cultural expectations. There is a perceived need on the part of many adults that young children could break or damage technologies and, so, they are often more restrictive with children’s playful exploration of these. The higher cost of technologies might warrant a precautionary concern, although, according to my many home- and school observations, young children are very careful and good at handling technologies. In fact, they are often the ones who remind adults to charge the device or to put on protective cover. An alternative explanation is that the father used the digital context as an opportunity to showcase his skills and teach Monika some digital competences. Perhaps he thought that Monika might now know how the technologies work or felt more comfortable supporting his daughter with the digital resources than with crayons and collage. Regardless of the reasoning behind the father’s behaviour, the fact remains that the child’s authorship and autonomy in creating something new were supported to a different extent by the father, depending on whether a digital or non-digital text-making resource was used. This influenced the creative process and the final product created at the end of the process. One might argue that it influenced the extent to which the process and final product were creative and personalized.

In addition to these influential factors, Mona and I also considered the relationships between making mistakes with different text-making resources and how these relate to the manifestations of individual and collaborative creativities. While it is quite difficult

to erase a mistake with crayons (e.g. removing an undesirable line with a rubber), it is very easy with the tux paint programme or the Our Story app (a simple click or tap removes a line or entire image). In collage, on the other hand, rather than removing an unwanted action, the parent and child decided to build on top of it and added more colour or materials to dissimulate an unwanted line or scribble. The possibility to easily delete and edit a line supports risk-taking, which is an essential prerequisite for autonomy and authorship. Therefore, although often not considered by research, the extent to which products and experiences can and cannot be modified and edited might be a useful analytical lens not only of creativity but also when considering the 5As. In another close parallel, aesthetics and children's creativity are closely aligned, as illustrated in the next section.

Children's creativity: Aesthetics and attachment

Let us consider another extract from the Kucirkova and Sakr (2015) study – this time with a specific focus on aesthetics. In this extract, the father and his daughter are choosing pictures from the photo gallery in the Our Story app. There are dozens of pictures taken by the girl, many of which seem very similar to each other as they are of the same object and of similar quality. Yet, the child seems to know exactly what she is looking for, as can be seen in this short parent–child exchange:

Monika leans over and touches the screen: 'I want to choose!'

Father leans back: 'ok!'

Father starts swiping through the pictures, the girl stops him: 'Hey – that one!'

Father: 'That one? ... so shall we put the washing machine in?'

The girl nods eagerly: 'That one'

Father: 'Ok'

(Transcript adapted from Kucirkova & Sakr, 2015)

The extract shows that the father enabled child's autonomy by giving her a choice of pictures. He then honours the child's choice, based on the child's own aesthetic preferences. This in turn has increased the child's perceived authorship of the story and attachment to it. The short extract also illustrates how the parent and child negotiated agency and ownership of the resource (iPad) and how they discussed the individual and shared nature of the text-making activity. These elements are crucial for enabling creativity, but they are also intimately linked to personalization.

Drawing on Oulasvirta and Blom's theory of personalization behaviour, I maintained that aesthetics are closely linked to collaboration and reciprocity. In the example studied here, the child made some aesthetic choices that were clearly not only based on her subjective perceptions, but on her desire to produce something that her father would perceive as nice or beautiful too. Similarly, the father was keen to ensure their final text is something the child likes. In all four text-making contexts we studied, there was evidence of collaborative creativity and renegotiations of power and aesthetic preferences. Consider this example from the Crayons context:

- Father: So which is our piece of paper? Are we going to draw together or do you want to draw alone?' The father reaches over to Monika and hands her a piece of blank paper.
- Child: 'We're going to draw together'
(...a few minutes later)
- Father: 'What else shall we draw on the rug to make it really pretty?'
- Child: 'We can draw a rainbow'
- Father: 'Wow'
- Child: 'A rainbow mat' Monika takes out a crayon and begins colouring
The father is surprised: 'A rainbow mat?'
- Child (drawing eagerly): 'Yeah'
- Father: 'With all the different colours of the rainbow? That's a clever idea.' He picks up one crayon and starts adding yellow to Monika's picture.
- Child: (with eyes fixated on the paper as she fills it up with colours): 'Yah, you can do black too in the rainbow.'
- Father (first surprised, then admits with a smile): 'That's a clever idea, an unusual rainbow.'
- (Adapted from Kucirkova & Sakr, 2015)

This example illustrates that creativity could be understood as the 'opportunity for exploratory and combinatory play' (Craft, McConnon, & Matthews, 2012, p. 2). This opportunity provides children with a 'combination of relevance, ownership and control' (Jeffrey & Craft, 2004, p. 82), and these three aspects are closely related to aesthetics and attachment.

Children's creativity and authenticity

At the beginning of this chapter, I discussed the ways creativity is measured and evaluated (in terms of product or process). In this section, I consider the extent to which the photographs produced by the child could be described – as creative or not creative. The first extract relates to the child's use of the iPad, at the beginning of the text-making activity with the Our Story app. In this episode, the child is taking photographs around the house, which she wants to later use for her own story. The father lets the child manipulate the iPad camera on her own, following her around the house. At this point, Mona had to take the stationary camera and follow Monika through the house too. The embodied participation of the parent and child in the activity is noteworthy. It is also interesting to see the extent to which the father supported the child's independent picture-taking and honoured her agency in the activity.

The father and child are in the corridor. The child looks at the corridor through the iPad's camera. At first, the father is very much directing the child.

- Father: 'You can take as many as you like ... but don't go so close to things because the camera can't see it because it's too dark, look that's it, you've got to ... now try and get the baby seat, the car seat, see the car seat.'

Child: 'Let's take a picture of that Hoover.'

Father: 'Ok, let's go over to the Hoover, we have to go over to the Hoover, you have to walk to the Hoover.'

1.5 minutes later the parent and child are in the bathroom. In the bathroom, the child repositions the iPad to take a photo of the tumble dryer which is next to the washing machine. She takes a photo, then quickly shifts the position and takes a photo of the spin drier, takes another picture, then leaves the bathroom. The father stands closely behind her but doesn't comment until she's finished.

Father: You're getting everything aren't you?

Monika smiles and takes a photo of the bathroom door. (3:36)

(Adapted from Kucirkova & Sakr, 2015)

In our article, Mona and I describe the child's behaviour in this episode using the creativity framework of 'possibility thinking', developed by Professor Anna Craft and her colleagues (Cremin, Burnard, & Craft, 2006). In my reading of Craft's books and studies, I closely identified with this conceptualization of creativity because it does not just capture the immediate and visceral, but also captures 'what might be' (Craft, 2000). Possibility thinking is about being able to ask questions, engage in the process of immersion, innovation, risk-taking and acting as a self-determined and intentional person. From this perspective, the child in the above-mentioned short example is immersed in the activity and innovative in choosing to take a close-up of the Hoover or washing machine. She takes risks in positioning the camera close to the object – that is, not following her father's instructions to step back. She is clearly engaged in a self-determined and intentional activity.

Similarly, we could describe the child's behaviour in this activity using the 5As framework: From the 5As perspective, the concepts of possibility thinking (child's agency, engaging in critical reflection and risk-taking, being imaginative, innovative and self-determined) all relate to the notions of autonomy and authorship. The child is in this instance an independent photo-maker; she is the author of the photographs. She consciously chooses how she takes the photographs, paying attention to the overall appearance (or aesthetics) of her pictures. She 'owns' the activity (attachment) and in the end produces authentic (as in original and unique) photographs. As such, she *personalizes* the activity to her own abilities and preferences. It would be hard to decide whether the theoretical framework of possibility thinking or of the 5As has more explanatory power in this context. Both are plausible and both bring to the fore different facets of the child's behaviour. One facet of the 5As – authenticity – merits further attention, given the problematic relationship between authenticity and creativity.

The independent, child-initiated manipulation of the device is similar to the child's authoring of a written piece of text or a digital story. By exploring the different objects around her through the camera lens, Monika gets a unique perspective on the space around her. The iPad camera allows her to easily capture her impressions and immediately record these in the form of a photograph. Within a few minutes, Monika takes dozens of pictures, many of which appear blurry or are of the same object. If we

were to evaluate these pictures as creative or not, the discussion will hit a controversial point: are children's pictures inherently authentic and therefore creative or are they simply evidence of the child's immature creative ability?

Mona and I considered this question in detail in Sakr and Kucirkova (2016). We outlined how children's art-making is often considered in terms of schemata and 'linear narratives' (see MacRae, 2011 for details) and how such an approach can be problematic if we consider the transitory, fragmentary and disconnected pictures taken by the child during her wandering in the house. Furthermore, if we analyse the child's pictures applying traditional quality markers of photographs, the child's blurry pictures of the same object might appear as immature and underdeveloped. An alternative viewpoint would be that schematic and realistic representations of the outside world are related to adult art-related criteria, but not to the child's perspective. In Sakr and Kucirkova (2016), we develop a case that considers children's creativity and art-making from a Deleuzian perspective (2004). This perspective can challenge and enrich our understanding of how children construct the 'here' and 'now' of their authentic experience and the world around them. While stillness and linear progression through space are criteria typically applied to adult photography, they might position children's efforts within the discourses of deficiency and apprenticeship. Therefore, 'instead of thinking in terms of schematic representation and linear narrative, we have suggested that the Deleuzian concepts of sense-making and the rhizomatic structure of experience can help to shift our perceptions of children's photography and the way in which children construct the "here" and "now" through their photographic practices' (p. 70). Given the close relationship between 5As and possibility thinking, perhaps a similar stance could be adopted when trying to evaluate and measure the extent to which an object could be considered as authentic or not. The evaluation measures should not centre on established linear narratives of art but rather situated, non-hierarchical evaluation criteria. This conclusion is closely linked to my concern related to quantitative measures of personalization, as raised in Chapters 3 and 7.

Overall, this case study illustrates that the distinction between digital and non-digital resources is not helpful when it comes to the evaluation of creativity and personalization – the two are influenced by factors which are medium free, such as the access points or the social schemas available for a given activity. Also, none of the four resources was neutral – it had certain characteristics and its creative potential was apparent through the way in which the parent and child leveraged it. This conclusion builds on the notion of *affordances* of technologies, a notion worth considering in more detail in relation to creativity and the 5As.

Affordances of technologies for creativity and the 5As

'Affordance' is probably the most overused and misused term when it comes to technology and education. I don't have the space to explain these difficulties in detail here but it is worth mentioning that there are several applications and definitions of the term 'affordance'. I build on the definition developed by Gibson in 1986 and later

elaborated by Kress (1993, 2010). In these, affordance refers to the physical properties of an object *as well as* the socially established or personally learned practices associated with an object. As we explain in our article (Flewitt et al., 2014): ‘The term “affordance” is not merely a matter of perception, but refers to the materially, culturally, socially and historically developed ways in which meaning is made with particular semiotic resources’ (p. 109). As a socio-constructivist, I cannot think of the affordances of an iPad as neutral; they exist and are either positive or negative, depending on how they are taken up by those who use them. This is clearly illustrated in the following extract where the parent and child use the iPad audio-recording feature together. The father supports the child’s use of the microphone; his positive encouragement enhances the iPad’s multimedia affordances.

Father: ‘Now we’re going to record our words... I guess we’re going to tap that.’

Child: ‘That looks like an ice cream’ M points at the microphone icon.

Father: ‘It’s also a microphone. ‘Before we press this button, we need to think what we’re going to say about this photo.’

Child: ‘Daddy and me?’

Father: ‘Ok’ Father’s gaze returns to the iPad. ‘Ready?’ The father presses the recording icon.

Child: ‘Daddy and me.’ The child speaks with her mouth close to the screen.

Father: ‘Excellent. Now we’re going to do the next photo. What did we do together?’

This example illustrates that in addition to the affordances of a resource, the adult’s behaviour during the child’s manipulation of the resource largely influences the expression of possibility thinking, notably the extent to which the child asks questions and determines the flow of the activity. We could apply this logic to personalization and consider how the affordances of personalized resources are taken up by parents and children, and how the socio-cultural expectations around, for example, audio-recording, interact with the personalization features of the Our Story app. In other words, what I am arguing here is that the presence of an audio-recording button does not support audio-recording on its own. In this example, the child felt shy at first and needed to be encouraged by her father to record her voice. The multimedia affordance of the app was significantly altered when the father intervened. As explained in the section ‘Children’s Creativity and Authenticity’, in the case of picture-taking, the father’s involvement negatively influenced the child’s authorship and autonomy, and in the case of audio-recording, it positively encouraged child’s authorship. The creative affordances of a tool are therefore orchestrated differently not only depending on the context of its use but also depending on the different agents present within this context.

Thus far, the literature seems to portray the creative affordances of digital tools as negative when these are used by the child independently and as positive if the use of the technology is mediated by a parent: ‘Parents see their role and that of the school as one of regulating the relatively anarchistic and risky creative affordances presented to children by new media and the virtual spaces youth now inhabit’ (Corbett & Vibert,

2010, p. 10). If, however, there is no caring parent around, the creative affordances of digital resources are – by some experts – believed to undermine the child's development; they can 'stunt' children's imagination (Cordes & Miller, 2000, online). This is different from the rhetoric applied to natural resources. For natural resources, the creative affordances are often perceived to be greater and multiple. For instance, Beasley (2015), who qualitatively analysed children's play in preschools, noted in her MPhil study that in addition to creative affordances of outdoor spaces there are also active affordances, multisensory affordances, affordances for connoisseurship and affordances for connections. I return to these contrasting viewpoints in Chapter 10, where I argue that a more nuanced perspective recognizes the interrelationship between the creative affordances of digital and non-digital technologies in children's lives, such as when technologies are taken on nature trips or employed for nature projects. Regarding the personalization–creativity relationship and the notion of affordances, the triple consideration of the context of use, agents present within the context and the characteristics of the resource, must go together for both personalized and creative learning. At the time of writing, there are many digital resources developed for young children's (in the developers' words) 'authentic engagement', 'independent use' or 'fun authoring'. This chapter was intended to help parents, teachers and scholars to critically examine the extent of children's genuine 'autonomy', 'authorship' or 'authenticity' and clarify what the terms mean in each context. Chapter 11 includes a reflection on teachers' possibility to nurture creative dispositions in children and the relationship between personalized education and creative pedagogies.

Summary

In this chapter I drew on the concept of creativity to indicate some possibilities for future theorization of personalization. The development of personalization as a field of study could borrow some of the thinking tools employed for the conceptualization of creativity. Notably, for children's autonomy and authorship, there are many important contextual elements, such as the parent's and child's familiarity with the resources; the availability of social scripts, the possibility to edit and erase an individual contribution during the creation process; and the presence of templates and guidance on the final product. For aesthetics, the notion of 'here and now' values for evaluating the authentic character of a new product is useful, as is the notion of reciprocity when it comes to children's aesthetic choices. Parent's support during the manipulation of a digital and non-digital resource provided an insight into the importance of distinguishing collaborative and individual authorship of new products. Lastly, a discussion of creativity and personalization reveals that it would be difficult to posit a staunch distinction between digital (technology-based) and non-digital resources.

The reflections in this chapter revealed many connections between creativity and personalization, but this is not to say that the two are the same. In alignment with my previous work (Kucirkova et al., 2016) I maintain that personalization and creativity

should be treated as stand-alone variables, that is to say as two separate factors of empirical and theoretical interest in early childhood. In the next chapter, I frame the personalization discussion from the psychology perspective, with a zoom-in on identity. Identity is another variable or subject of study that has parallels with, but is distinct from, the 5As of personalization.