THE DEVELOPMENT OF CHILDREN AS PHOTOGRAPHERS

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Summary

Photography is an important medium for communication and representation that is increasingly within the reach of children. Understanding how children develop competence in and knowledge of photography is, therefore, an important challenge for developmental psychology. The present paper reports an exploratory study of children of ages 7 – 15 years, using cameras and talking about their photographs. The results 1) identify some of the distinctive features of children's photography at different ages, 2) establish some functions of their image making, and, 3) set up some hypotheses about the development of both competence in taking photographs and understanding of photographic images.

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The problems typically given to children in studies of their cognitive development must seem decidedly old fashioned to technically aware youngsters. For instance, many studies still involve problems relating to water levels in drinking glasses, marbles that are moved from one basket to another, or sponges that look like rocks. While such tasks have justification in terms of theory construction and the structure of the world, it seems unlikely that they capture everything that there is to know about cognitive development and its manifestations. This point seems particularly apt given that new domains of knowledge and expertise are constantly being created with the help of modern technology. It is reasonable to ask what a student of cognitive development might find were she to study children of different ages exploring and using some of the products of technology such as cameras, mobile phones or video games. Probably, she would find reflected in children's age-related performances some of the familiar features of cognitive development, and possibly step changes in children's abilities at some of the familiar milestones. But there is also the intriguing possibility that technology may extend children's experience in ways that reveal new and hitherto unexamined facets of cognitive development. The present paper reports an exploratory study of children using cameras and commenting on the photographs, as a way of finding out what they can and cannot do and understand in relation to photography at different ages. The results will be compared with what is already known about children's development as viewers of images made by others, in order to examine the extent to which children's photography presents new phenomena for study in the field of cognitive development.

As a domain of technology, photography presents interesting possibilities for children of all ages. Children in developed societies are surrounded by photographic images in almost every aspect of their daily lives, so children's understanding of the medium can be said to have practical importance. With modern equipment it is also very easy for even total beginners to take photographs of reasonable technical quality; and given the chance most children show great enthusiasm for using cameras to take pictures. In the past, however, the significant costs of film photography have meant that it is has been only an occasional activity for most children. The development of good single use film cameras, and now digital technology, have recently made photography much more accessible to children than ever before.

Psychologists have, however, only lately begun to examine systematically children's understanding and use of photography from a developmental perspective. It is true that in a large number of psychology experiments over many years children have been given photographs to look at and respond to; but in most cases the experimenters have treated the images simply as convenient substitutes for the items represented, and not attempted to examine children's understanding of the photographs as photographs. There has, in contrast been very little research carried out on children's understanding of photographs, and similarly, there has been little previous work carried out to study children taking photographs (see Beilin, 1999 for a recent review).

An unpublished series of study by Sroka (1995) and reported by Beilin (1999) represents one of the very few attempts that we are aware of to examine systematically children's performance as photographers from a developmental perspective. In Sroka's

study, children of ages 3 to 8 years were set a number of tasks involving the taking of photographs. In one task, for example, children were shown a photograph of objects in a room, and asked to take a matching photograph (that "looks just like") the sample, using a Polaroid camera. In another task, children were given a sample photograph showing 6 objects set out on a table. They were asked to demonstrate their ability to "read" the photograph by recreating the arrangement shown in the photograph with a set of real objects. Then, with the objects set out so that they appeared as they did in the sample photograph, the children were next asked to take a matching photograph, using the Polaroid camera. This task required children to determine where to position the camera and how to aim it to produce the specified match. Beilin's (1999) account of the results indicates that the youngest children's attempts were fairly random, and only in children of age 5 years and older was there any success in reconstructing an array of real objects to match that shown in the photograph. Success at selecting the correct station point for a matching photograph tended to come even later; a difficulty that Beilin considered might be linked to children's difficulties in the coordination of perspectives (cf. Piaget's three-mountains task). While Sroka sought children's reactions to their efforts, Beilin (1999) did not comment on this aspect of the results in his paper.

In contrast to the highly controlled conditions of Sroka's studies, the present study employed a less constrained and more natural setting for the children's photography. In various ways we sought to free the children from the usual adult influences that might affect their photography, in order to maximize the chances of seeing the uses that the children themselves would make of the cameras, to examine their motivations for taking particular photographs, and to study their reactions to the resulting images.

Children of ages 4, 7, 11 and 15 years, and adults were each given a single-use camera to use as they pleased for a week. They were given a minimum of instruction on how to operate the camera (to avoid affecting the way in which they might use the camera), and the instructions stressed that they were to use their cameras exactly as they pleased. Letters to the children's teachers and parents also asked them not to influence the children's activities with their cameras. We decided to provide the children with single-use film cameras, because they were superior to the digital cameras then available on a variety of crucial dimensions (cost, image quality, ease and convenience of use by children). After the cameras had been returned and the films processed, the participants were presented with their photographs. They were then immediately interviewed about their use of the cameras, and their reactions to the resulting photographs. Separate coding schemes were developed to categorize the subject matter of photographs and the transcripts of the children's commentaries. These schemes enable us to examine a variety of questions about age-related characteristics of children's photography, including the kinds of subject matter they like to photograph, their motives in using the camera, and the criteria they use in judging photographs. In the present paper, however, we will concentrate on those aspects of the results that bear on children's understanding of photographic images, the relation of those images to the subject matter represented, and how those images are determined by the behavior of the photographer in using the camera.

In this regard, one developmental theme in particular seemed worth examining in the analysis of the results; namely the extent to which children conflated the photograph with the subject matter represented. Piaget (1926/1929) noted that young children can

have difficulty holding in mind the two distinct identities of an image and its referent, a phenomenon he termed iconic realism. This confusion can be manifested in several different ways. A number of studies, for example, have shown that up to the age of 4 years, children may judge that a picture will change to match changes in the thing it represents (Zaitchik, 1990, Robinson et al., 1994). Other studies (e.g., DeLoache & Burns, 1994) have found that children younger than 3 years may be unable to use a picture as clue in a hiding game if they have been prompted to attend to its properties as a thing in itself. Finally, Thomas et al (1994) have reported that children make mistakes in applying the appearance / reality distinction to pictures much as they do with trick objects (Flavell, Green & Flavell, 1986).

There were a number of ways in which we thought that a tendency to conflate a photograph and its referent might emerge in the behavior and in the comments of the children. The work of Parsons (1987) in studying children's responses to art, for example, suggested that younger children might judge a photograph they had taken very much in terms of its subject matter and with little regard to the composition and technical quality of the image. For such children, a photograph would be good if it represented something good, and a photograph would be bad if its subject matter was bad. It follows that such children would judge that the best way to improve a photograph would be to add more good subject matter, or remove bad subject matter. More speculatively, we wondered if children at this stage might consider that the more good things and details that were portrayed in a photograph, then the better that photograph would be. Older children and adults, in contrast, might consider that it was possible to have a good or interesting photograph of things that were in themselves not particularly likeable. It seemed very likely that younger children would consider a photograph to be transparent, so that in describing a photograph there would be a tendency to refer to the scene and events that were associated with the taking of the photograph, regardless of whether all these features were visible in the image. Finally, we thought that children who showed a tendency to conflate the image and the referent would also tend to overlook the role of the photographer in determining the contents of a photograph. Consequently, when asked how a photograph could be made different or better they would respond with suggestions about changing the scene in front of the camera, rather than with suggestions about how the photographer might change the camera position (station point) or its aim.

Method

Participants: The participants were all volunteers recruited to the following groups: 4-year-olds, 7-year-olds, 11-year-olds, adults with children, and childless adults. There were 6 male and 6 female participants in each group. The children were all recruited from schools and nurseries in South Birmingham that served predominantly middle class areas. The adults were recruited from the clerical and technical support staff of the University of Birmingham.

Apparatus: Each participant was given a single use camera (Kodak Funflash Gold 27 exposures). The camera controls consisted only of a shutter button, a thumb wheel to wind on the film, and a button to turn on the flash. The shutter and film winder were interlocked to prevent double exposures.

Procedure: After the required permissions and agreements as to the use of the photographs had been obtained, each participant was issued with a camera, given a brief explanation of the camera controls, and invited to use the camera to please him or herself for the following week. Children were given a letter for their parents as a reminder not to interfere. All participants were also told when and where to return the camera one week later.

When each camera was returned for processing an appointment was made for later in the day or, at latest, the following day for the return of the photographs and the associated interview. All interviews were conducted individually, usually with just one interviewer. In some of the interviews, a second interviewer was present to take notes. All interviews were audio-taped, and the tapes were subsequently transcribed for analysis.

At the start of the interview, each participant was given his / her photographs to look through. For each photograph they were asked to say briefly why they took it, and when. Then, the participant was asked, "Now, I'd like you to have a good look through all of the photographs, and can you pick out two photographs that you really like or you're really pleased with, and two that you don't like, or that you're disappointed with in some way?" If some of the children found this request a bit hard to take in (especially the young ones), they were asked to pick out two they liked first ('Lets start by going through and picking out the two that you like'), and then the disliked ones ('And now can you go back through and pick out two that you're disappointed with').

For each of the selected photographs in turn the participants were asked the same series of questions, starting with one of the liked photographs, then one of the disliked, then the other liked photograph, and finally the other disliked one. The questions related first to the context of the photography.

Where were you when you took this photograph?
Who were you with?
What was happening?

Then the participant was asked about his / her intention in taking the photograph.

What were you trying to do when you took this photograph?
Why did you take this photograph?

They were then asked to comment on the image.

Can you describe this photograph to me?
Can you tell me what you can see in the photograph?
What do you like / dislike about it?
Is there anything that you dislike / like about it?
If you could, how would you make this photograph different or better?

Finally, they were asked about the use they would make of the photograph.

What will you do with this photograph?

There then followed a set of questions that asked about participant's experiences and views of photography more generally.

Have you taken photographs before?
If yes, what sort of camera do you usually use?
Are the photographs that we have got here the same or different to the photographs you normally take?

What do you like to take photographs of?
How about your friends – do they take the same sort of photographs as you do, or different ones?
What about (your) children / parents – do they use cameras in the same way or differently to you?
Has your photography changed, as you got older? How?
What kinds of photographs do you wish you could take?

After all the questions had been answered, participants were asked if there were any photographs that they would like either to exclude from further consideration in the project, or that they would prefer not to be seen by others outside the project (even with anonymity assured).

Results and discussion

In total, 73 cameras were returned and 72 interviews included in this study (one 4-year old boy was excluded due to an additional week-long gap between his taking the photographs and returning the camera). Over 1500 photographs were coded as a result. The average number of photographs taken by each age group was as follows: 4 year olds – 23.58, 7- year olds – 24.17, 11- year olds – 22.08, adults without children – 21.58, adults with children – 20.58. Most people in each age group finished the film that they were given, and there was no statistical difference in these figures across the age groups. About half of the 4-year olds claimed to have had previous experience with using a camera, as did everyone from the other age groups, apart from one 11- year old boy, and one 7- year old girl.

Although we tried to create a relatively unrestricted situation in which our participants could use the cameras, the situation was obviously somewhat different to that in which they would normally take photographs. This was reflected in some of the comments made when we asked people whether the photographs that they had taken here were similar to or different from the sorts of photographs that they would usually take. Over half of the 7- and 11- year olds (14/24) said that at least some of their photographs were different, and almost all of the reasons given for this revolved around the sorts of situations that they would usually take photographs in – eight of the 7- and 11- year olds, for example, mentioned that they would normally take photographs on holidays, abroad or on outings. Slightly fewer of the adults (10/24) said that they felt that at least some of their photographs were different to usual, and the most common reason given for this was that they felt pressured, or forced, to take photographs in some way, particularly because of the relatively short time they felt that they had the camera for. It is worth noting, however, that many of our participants said that the photographs that they had taken were very similar to those that they would normally take.

We coded the material from this study in two ways. Firstly, we designed a content coding scheme that would allow trained coders unfamiliar with the material to classify the photographs in terms of their subject matter. Initially, all subject matter featured in the photographs was coded, following which the main subject matter of each photograph was coded separately. This allowed us to investigate what our participants had taken photographs of, and in what settings. Secondly, we devised a scheme for coding intentions that would allow trained coders unfamiliar with the material to code the

transcripts of the interviews in terms of the intentions of our participants when taking the photographs, and how they responded to the subsequent images. This allowed us to investigate our participants' photographic intentions (albeit retrospectively). All photographs were coded from the transcripts in terms of the photographers' intentions, and the selected (liked and disliked) photographs were also coded in terms of the participants' responses to them. This combination of coding allowed us to characterize the photography of each of the age groups.

The 4- year olds were limited in their photographic opportunities, with most of their photographs being taken in a domestic environment, in the home or nursery. Relatively few of their photographs were taken outdoors (about one quarter). A high proportion, about one third, of their photographs featured body parts, which, on closer inspection, turned out to be headless torsos – that is the trunks of people with the heads cut off. In fact, over 10% of all their photographs featured these headless people. Although all but one child had managed to take at least one successful portrait of people, there were also a high number of photographs in which part of the face had been cut off on the side of the photograph, again about 10% of the total. There was also little sign of any flexibility in the way that the children used the cameras - almost all photographs were taken in landscape orientation, and very few were judged to be at an unusual angle. In fact, surveying the pictures taken by this age group suggests that these children wandered around taking photographs at their eye level. They were obviously selective in what they photographed to some extent, as not everything they saw got photographed, and their photographs often seemed to feature either salient or emotionally significant subject matter (such as their parents). There seemed to be little variation in the way that they used the cameras, however. These children found difficulties in either remembering or expressing any rationale for taking the photograph – over half the children made no explicit response to the question 'Why did you take this photograph?' Of those that did respond, over half their answers revolved around the taking of the photograph as an act in itself, for example 'I wanted to take a photo'. Although these children could pick out photographs that they liked, they often could not say why they liked the photograph, and they often found it difficult to select photographs they disliked, even when prompted – 5 children refused to select any disliked photographs, and 3 children only selected one.

It is tempting to speculate that at least for some of the time, some 4 year olds were playing at being photographers, and had no explicit photographic intention on which they could reflect or report. The behavior of acting as a photographer in using the camera could sometimes be an end in itself. To the extent that a photograph was an (unintended) product of a child playing out a photographic role we would not expect such a child to have much recall of the photographic occasion. In turn, without such recall, there would be no basis for confusing the image and the scene or events photographed (transparency).

This restricted usage of cameras, and response to the photographs, would seem to undergo a large change between about 4- and 7- years of age. Our 7- year old sample showed a substantial jump in the number of photographs taken of unusual subject matter (x10), photographs taken at an unusual angle (x6), and photographs taken with the camera in portrait or other orientation (x9). In fact, the 7- year olds showed the highest proportion of photographs taken at an unusual angle, suggesting perhaps that they are looking at the world through the camera in a qualitatively different way to the 4- year olds. There was also more evidence of the 7- year olds imposing their photographic

viewpoint on their subject matter by staging and posing photographs. There had been little evidence to suggest that the 4- year olds were trying to set up or stage their photographs in any way, although some of the photographs clearly showed people reacting to their presence, for example by bending down to their height. The 7- year olds, however, had many photographs in which they had arranged the subject matter, often toys, in a certain way, and had the highest proportion of photographs judged to be posed. These were predominantly photographs featuring people, although there was also a huge jump in the proportion of humorous photographs taking, from less than one percent to nearly 20% of the total - the highest level for any age group, of which nearly three quarters were posed or staged. There was also a noticeable change in the way that the 7-year olds expressed themselves in response to our questions. Far more children here were able to talk about why they took their photographs – over half of the four year olds made no response to the intention question, compared with only 17% of the 7- year olds. The most common answers given by the 7- year olds revolved around either a reference to the subject matter of the photograph (e.g. 'I wanted a photograph of my dog'), or to the circumstances surrounding the taking of the photograph (e.g. 'Because I was playing with my friends'). The 7- year olds were also far more likely than the 4- year olds to verbally respond to their chosen photographs, generally again with reference to the subject matter of the photographs, (for example, 'I like that photograph because I like my dog'). It is worth noting that nearly 60% of the 4- year olds made no response here, compared to only 8% of the 7- year olds.

A large change between the 4- and the 7- year olds was in the way in which they used the cameras and how they took control of the photographic environment around them. The differences between the 7- and 11- year olds seemed to revolve around the context and subject matter of their photographs. Whereas the majority of photographs by the 4- and 7- year olds had been taken indoors, and in a domestic environment, the 11- year olds were taking more photographs outdoors, and in more 'natural' settings. Possibly as a consequence of this, they were taking fewer photographs of people, and there also seems to be a drop in the number of photographs taken of their personal possessions. The 11-year olds took the most photographs of natural phenomena, and the highest proportion of photographs judged to be of exhibition quality (about 6%). The way in which the 11- year olds responded to the photographs was similar to the 7- year olds in some ways – the 11-year olds were also likely to talk about their reasons for taking the photographs in terms of the subject matter portrayed, and to respond to their chosen photographs in terms of the subject. There was, however, an increasing awareness of the possibility of taking a photograph to 'capture something's appearance', and a far greater proportion of children (nearly half), talking about their image in terms of its formal properties, such as composition, framing and color.

We had included two groups of adults in our sample, those with and without children, as our piloting with parents had suggested that, in many cases, adults felt that their photography had changed with the advent of children, and that their subsequent photography was much more family-oriented. It is worth noting that there was an age difference between our two samples – the adults with children were, on average about 12 years older (Mean age = 44.2, range 24 to 57 years, compared with a mean age of 32.5 years, range 23 to 48 years for the adults without children). Perhaps unsurprisingly, these two groups of adults did take their photographs in different social contexts, with the

adults with children being more likely to be accompanied by their family at the time, and the adults without children being more often with their friends. In some ways, the photography of the childless adults was similar to that of the 15- year olds, with friends and groups of people being common subjects. That of the adults with children featured more children, and family, as with the younger children. In terms of their motives for taking the photographs, and their responses to them, however, both groups were very similar. Continuing the trend shown by the 15- year olds, by adulthood people can express a wider range of reasons for taking photographs, particularly to capture the appearance of something, to record an arrangement that they themselves have staged, to act as a reminder, and, for the first time, to 'create an aesthetic image'.

So, it can be seen that there were some interesting differences in the types of photographs produced at different ages, and an increased sophistication with age in the motivations expressed for taking the photographs, and the responses to the photographs as images in their own right. This has led us to a more in-depth consideration of two issues that emerged from our results.

One theme of obvious interest is the development of competency and flexibility in using the camera: We have seen that the 4- year olds produced a large number of photographs that we would consider as 'failures' – photographs of people with their heads cut off or their faces obscured, for example. The photographs in which part of the subject matter is cut off suggested that framing the picture may be a particular problem here, whilst the 'headless torsos' suggest that these young children might experience a particular difficulty in pointing the camera upwards. Indeed we found that almost all photograph taken by this age group were at eye level, with only nine photographs showing evidence of the child pointing the camera upwards. Combined with the fact that the camera was rarely used outside landscape orientation, and the lack of a stated intention when taking the photograph, we believe that the 4- year olds are essentially using the camera as an extension of their visual activities. That is, that the camera is an extension of 'looking' to them, with photographs being taken of subjects that catch their attention, being either visually or emotionally salient, and the implied belief that pressing the shutter button will lead to a photograph of 'what they can see'. We had speculated about the sort of early activities that photography might naturally emerge from. In addition to visual exploration and selective looking at items of interest, we thought that an interest in manipulating objects might help children to get to grips with the camera (although the film wind-on dial proved particularly hard for the 4- year olds to use). We also wondered whether the cameras might be incorporated into some play, or make believe, activities, but there was little evidence from the photographs to support this. Our current evidence suggests that children are using the cameras as an extension of their 'seeing' and 'looking' activities.

At some point between 4- and 7- years, the way in which children use cameras seems to change dramatically, with the 7- year olds now exerting some control over the subject matter that they photograph, for example by posing it. They are also showing far more variability in the positioning and orientation of the camera and now can express reasons for wanting to take a photograph, even when these just revolve around the subject matter. We can speculate on what might produce these changes, in developmental terms. Between the ages of 4- and 7-, children are acquiring an increasing knowledge of their relationship to the world and to others. This is displayed in some visual-perspective

taking tasks, such as the three mountains task (Piaget & Inhelder, 1946), in which children aged 4- to 5- years often assume that another's view from a different perspective is the same as their own (though other research e.g. Borke, 1975, has suggested that even three year olds might be capable of some versions of this task).

Another theme of interest is the development of the ability to consider the image produced separately from the scene photographed: We have seen that with the youngest children in our sample, the reasons given for taking a photograph (where one is given) tend to revolve around the subject matter of the photograph, and the way in which they respond to the photograph is also affected by the subject, (for example, I took the photograph because its of my cat. I like the photograph because I like my cat). The photographs are therefore judged as 'good' or 'bad' photographs dependent on whether the subject matter is liked or not, with consideration of the formal properties of the image itself starting to emerge around 7- year, and dramatically increasing by 11- years. Even at this age and with adults, however, the majority of photographs still provoke a response at least partly in terms of the subject matter. This 'subject-centred' approach with the young children has produced some interesting choices of and responses to photographs that we as adults might consider seriously flawed images. Amongst the liked photographs that children have chosen to discuss, we have seen those in which a substantial portion of the image is obscured, for example by a finger, photographs in which the main subject is so tiny as to be misjudged by our coders, and even a photograph in which the stated subject matter is missing entirely – yet these images have been seen as 'good' images by our children. We have asked our participants how they would change their photographs to improve them, and the youngest children, in particular, are very unlikely to suggest making any changes to their photographs. This may be either because they are satisfied with their photographs, because they cannot think of a way in which they could make the photographs better, or even because the notion of being able to change or improve an image, separate from the world, is inconceivable to them. By the age of 7-, children can suggest some changes to make – and at both 7- and 11- years the overwhelming majority of responses revolve around either adding good, or desired, features to make the photograph better, or removing bad or disliked features from the photograph to improve it. We believe that these findings support the notion of 'transparency', mentioned in the introduction, by which the photographs stand for the scene or subject matter that they represent, to young children, and are not considered as images in their own right.

To conclude, an observational and naturalistic methodology was adopted for the present study to facility the identification of themes and hypotheses for future research. It is evident that children's use of cameras and their developing competence and understanding in relation to photography should be of interest from both social and cognitive developmental perspectives. The next steps will likely involve more controlled experimental studies, designed to address some of the hypotheses and specific research questions that the present data suggest.

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