

Brief Report

Japanese Children's Reactions to Family Photographs: Associations with Mothers' Attachment Status

Kazuko Y. Behrens^{a,*} and Tomo Umemura^b

^aState University of New York Institute of Technology, Utica, NY, USA

^bThe University of Texas at Austin, Austin, TX, USA

This study examined differences in children's responses to their family photographs within a sample of Japanese 6-year-olds ($N = 44$), exploring associations with their mothers' attachment status. The differences in children's photo reactions were captured by a 5-point continuous scale to rate how engaged children were and how positively they responded to the photographs taken earlier with their mothers. Mothers' attachment security was assessed by the Adult Attachment Interview. The findings revealed that children of mothers with secure attachment status were significantly more engaged/positive in their photo reactions than were children of mothers with insecure attachment status. Implications of the findings and future research directions are discussed. Copyright © 2012 John Wiley & Sons, Ltd.

Key words: attachment; family photograph; AAI; Japanese children

A breakthrough in the field of attachment came in 1985 when Main, Kaplan and Cassidy introduced several new attachment measures, which included measures for 6-year-olds (e.g. Main-Cassidy 6th-year system, 1988; Kaplan-Main's Family Drawing system, 1986), and the now widely used Adult Attachment Interview (AAI: protocol, George, Kaplan, & Main, 1996; scoring and classification system, Main, Goldwyn, & Hesse, 2002). Six-year-olds' attachment security, assessed on the basis of these new measures, was found to be highly correlated with early attachment, assessed by the Strange Situation Procedure (SSP: Ainsworth, Blehar, Waters, & Wall, 1978). Mothers' attachment status, assessed by the AAI, was also strongly correlated with their children's attachment security as judged by the SSP. The work of Main et al. advanced the field in that attachment patterns in populations beyond infancy could now be assessed through measures of mental representations. Their study was the first to give empirical support to Bowlby's (1973) concept of internal

*Correspondence to: Kazuko Y. Behrens, State University of New York Institute of Technology, Utica, NY, USA. E-mail: kazuko.behrens@sunyit.edu

working models, which are believed to reflect a history of the relationships between the child and his or her attachment figure(s).

In the course of their investigations, Main et al. (1985) also tested the idea that children might exhibit varied reactions to their family photographs, according to the differing quality of attachment relationships. Main et al. reported that children's reactions to their family photograph did vary, and the differences were meaningfully related to attachment security as assessed by the SSP 5 years earlier. This part of the study, however, has not gained much attention, possibly because of the exploratory nature of the procedure, thus being less structured, extremely brief and with limited information. In the present study, we attempt to partly replicate the 1985 procedures with a new focus on children's reactions to photographs taken with their mothers.

The special meanings and unique properties associated with family photographs have long been recognized and used in various assessments across disciplines. For example, photographs are used in psychotherapy, with a claim that 'these emotions are recreated in present tense each time the photo is reviewed' (Weiser, 1984, p. 3). Blinn (1988) presented a pilot study in which family photographs were used to examine family social identities, comparing Japanese and American families. Blinn, based on extensive interviews about the practice of family photography, found meaningful cultural differences, for example, in the family roles played by husbands and wives and the dimension of expressiveness, when comparing Japanese and American families. Twine (2006) used photographs to conduct an ethnographic study of the experiences of interracial families. In psychiatry research, photographs of mixed valence (pleasant, unpleasant and neutral) have been shown to schizotypy and control groups (Najolia, Cohen, & Minor, 2011). Najolia et al. found group differences in the ratings (i.e. the schizotypy group giving less positive ratings for the positive stimuli than the control group) and associated words provided for the visual stimuli (i.e. the schizotypy group giving more negative words than the control group during the pleasant stimuli condition), indicating the schizotypy group's affective dysfunction specifically in response to pleasant conditions.

To our knowledge, no study since 1985 has specifically investigated children's reactions to their family photographs, exploring associations with attachment. Main et al. believed that using children's family photographs in the absence of their family members might be particularly useful to estimate their representations of relationships. They argued, 'Since the photograph could not respond to or control the child's response, the child's response to the photograph could not be simply an example of an interaction pattern being maintained over several years between child and parent' (p. 78). Given the clarity of the idea and the simplicity of the procedure that Main et al. (1985) described in their original study, it is somewhat surprising that no researcher has tested the replicability of their findings or the utility of their measure.

Recently, however, the idea of Main et al. (1985) was explored in a preliminary study in which mothers' electroencephalographic (EEG) activation patterns in response to a series of picture stimuli were examined against their AAI status (Behrens, Li, Gribneau Bahm, & O'Boyle, 2011). The visual stimuli consisted of photographs of mixed valence (pleasant, unpleasant, and neutral) as in the study of Najolia et al. (2011) and additionally participants' own family photographs. Although the findings were preliminary in nature, Behrens et al. (2011) were able to discriminate the mothers' EEG responses by their AAI status. For example, EEG activation patterns in response to viewing their own child's photographs were similar to the patterns recorded while viewing positive images (by mothers with a secure status) or negative

images (by mothers with an insecure status) at statistically significant levels. This indicates that family photographs do elicit reactions that systematically vary by AAI status at the neurological level, and that family photographs may evoke different emotional reactions depending on the quality of family interactive histories.

The current study explores whether we find differences in the way children react to photographs taken with their mothers and whether these differences can be discriminated on the basis of the mothers' attachment status. Specifically, we examine whether we can partly replicate what was reported in the study of Main et al. (1985), largely following their procedure, in a sample of Japanese 6-year-olds. However, this is the first study to examine links between patterns of 6-year-olds' photo reactions and their mothers' attachment status. We predict that children of mothers with secure AAI status show more engaged/positive reactions to their photographs with their mothers.

METHOD

Participants

Japanese mother-child dyads from Sapporo, Japan, participated as a part of a larger social development project (Behrens, Hesse, & Main, 2007). From the original sample ($N = 49$), one child was removed because of a developmental delay, and four cases were removed because of technical/procedural errors, leaving the final sample of $N = 44$. The sample included 22 first-born children and 16 boys ($M = 69.7$ months, range 61–81, $SD = 4.8$). Mothers were all married and none worked full time ($M = 35.3$ years, range 29–46; $SD = 3.7$). Thirty-five per cent were high school graduates, 10% had completed vocational training after high school, 40% had completed junior college, and 15% had completed a four-year college. This sample, with an average annual household income of approximately \$50 K, was considered middle class.

Procedures

Mother-child dyads came to a university laboratory converted to a playroom, and the dyad was asked by an examiner to pose for two Polaroid photo shots. As soon as the child seemed comfortable with the surrounding as judged by the mother, she left the room for the AAI. The child engaged in a number of tasks before the Polaroid photographs were presented to the child. The examiner suggested to the child, 'You know what? The photos might be ready now, let's take a look,' and retrieved the photographs that were kept by the examiner. The examiner placed one Polaroid photograph on the table, facing the child, saying 'Here we go' but without any specific comments or instructions to allow the child to freely examine it. The examiner then brought out the other photograph and simply asked the child to choose the one that he or she would like to take home.

Measures

Adult Attachment Interview

The standard AAI was administered to Japanese mothers in Japanese and transcripts were coded according to the classification manual (Main et al., 2002). Mothers were judged *secure* when they coherently discussed their childhood attachment experiences while demonstrating that they clearly value attachment relationships. Mothers were judged *insecure* if their discourse was characterized by overall

incoherence, marked by, for example, dismissing of attachment through idealization or derogation, or preoccupation by often extensive angry passages discussing attachment experiences. Mothers were also judged *insecure* when their discourse showed disorientation via a lapse in monitoring or reasoning regarding their experiences of loss or trauma, termed Unresolved (U), and/or evidence of contrasting discourse strategies or globally anomalous responses, termed Cannot Classify (CC). U/CC cases were combined together to be included in the *insecure* group.

The AAI is a well-validated measure, showing robust predictability of intergenerational transmission of attachment security (van IJzendoorn, 1995) with strong evidence of discriminant validity (e.g. Bakermans-Kranenburg & van IJzendoorn, 1993; Crowell et al., 1996; Sagi et al., 1994). Japanese transcripts were coded by a certified AAI coder (the first author). Agreement with another certified AAI coder, across 10 interviews, was 90%, $kappa = .78$, $p = .01$, for secure–insecure two-way analysis. Disagreements were discussed and resolved.

Photo reaction

Main et al. (1985) measured children's reactions to family photographs utilizing 9-point rating scales and discussed features of secure versus insecure reactions descriptively. We also utilized a rating scale. In developing our own coding system, we mainly considered the following three features: (1) physical response—whether or not children touch and/or hold a photograph; (2) affect—how positively/excitedly or negatively/unenthusiastically children engage in viewing the photographs; and (3) duration—how long (in seconds) children engage in the particular responses (e.g. touching and/or holding a photograph, exhibiting a particular affect). Some children's responses included enthusiasm, either physically (e.g. picking up a photograph, holding it for a while, or looking at it closely often with a smile), or verbally (e.g. making non-negative comments, often excitedly), whereas some children's responses failed to show any interests or were somewhat aversive (e.g. simply pointing to the photograph, flipping the photograph, or trying to hide the photograph). Some children also made negative comments about the photograph or failed to comply with the examiner's request to view and choose the photograph to take home.

Rating scale. A 5-point continuous rating scale was developed to capture the degree of *how* engaged or positive children's photo reactions are. Children who received 5 reacted to the photograph with apparent positive affect or excitement. Some examined the photograph closely and held it for a long period, engaging in active or elaborated conversations with the examiner about the photograph. Children who received 3 reacted to the photograph with some interest but with neutral affect. If these children touched or held the photograph, they did so only for a brief moment. Children who received 1 reacted to the photograph with notable negativity or were either entirely disengaged or uncooperative in viewing the photograph.

Convergent validity. To establish convergent validity for the photo reaction rating scale, we examined specific behavioural features (i.e. touch and/or hold) of children's photo reactions. Children who *touched* the photograph had significantly higher scores ($M = 3.86$; $SD = 1.22$) than children who did not ($M = 1.00$; $SD = 0.00$), $t(42) = 3.27$, $p = .002$. Children who *held* the photograph had significantly higher scores ($M = 4.00$; $SD = 0.95$) than children who did not ($M = 2.69$; $SD = 1.44$), $t(41) = 6.46$, $p < .001$. Furthermore, the *longer* the children held onto the photograph, the higher the rating they scored, $r = .35$, $p = .02$.

Inter-rater reliability. The second author, who was blind to any other information regarding the participating children, coded the entire sample. The first author

also independently coded the entire sample and was blind to any information about the children because of the randomization and renumbering of the sample identification numbers. The inter-rater reliability for 5-point scale was $\alpha = .92$, and the Person's correlation coefficient was $r = .85, p < .001$. We assigned the same scores on 28 cases (or 64%) and differed by a point on 15 cases (or 34%). We only had one case (or 2%) where we differed by 2 points. Disagreed cases were conferred and resolved.

RESULTS

Table 1 shows descriptive analyses with the result of the independent samples *t*-test analysis. Scores based on the 5-point rating system were not significantly related to family demographic information, including child's gender, child's age, mother's age and maternal education level. Thus, demographic information was not considered in the analysis. The analysis showed that children whose mothers were judged secure by the AAI had significantly higher (more engaged/positive) photo reaction scores than did children whose mothers' AAI status was insecure.

DISCUSSION

The current study investigated whether children's reactions to their family photographs can be distinguished, considering a physical component (touch, hold, etc.), an affect component (positivity, excitement, etc.) and the duration of a particular response. Specifically, we examined children's responses to photographs taken earlier with their mothers, in a sample of Japanese 6-year-olds. We found that children's reactions to the photographs did vary and that the differences were reliably captured by a rating scale we devised for this study.

We also replicated the findings of Main et al. (1985) at least partly in the current sample of Japanese children—more than two decades later—with some important differences. Whereas Main et al. reported that the children's reactions to the photographs were associated with their SSP security, we found that the children's reactions to the photographs were associated with their mothers' AAI status. Specifically, children of mothers with a secure status scored significantly higher (i.e. more engaged/positive reaction) than children of mothers with an insecure status, supporting our hypothesis. Because of a relatively high proportion of mothers with the U/CC status in the current

Table 1. Mothers' attachment security versus insecurity measured by AAI and their children's photo reaction rating scores

Categories			Photo reaction rating scale	
	<i>N</i>	%	<i>M</i>	<i>SD</i>
Two-way AAI group				
Secure	27	62	4.19	0.96
Insecure	17	38	3.00	1.54
Total/ <i>t</i> -values	44	100		$t = 3.15^{**}$

AAI, Adult Attachment Interview.

** $p < .01$.

sample (12 out of 17 insecure mothers were given a primary U/CC placement),¹ we also conducted a follow-up analysis examining the contribution of the U/CC status to the photo reaction. We found that the U/CC status was significantly related to lower photo reaction scores, as we expected ($t = 2.32, p < .05$). This finding suggests that mothers' U/CC status may be particularly important among insecure categories to differentiate their children's photo reactions.

This study is important because the idea that the representation of an attachment relationship might affect the way children react to their family photographs, originally proposed by Main et al. (1985), was supported, across time and culture. However, we did not examine links with the SSP as Main et al. did. Instead, we examined how the maternal security status might affect the way children respond to the photographs taken with their mothers because the AAI's high predictability of intergenerational transmission of attachment security to Japanese 6-year-olds has been recently reported (Behrens et al., 2007, Behrens & Kaplan, 2011). This study appears to further validate the versatility of the AAI being informative of children's immediate inner representations about the relationship in varied contexts.

It should be noted, however, that our coding system was never intended to serve as a new measure of child attachment security. Our theorization of this system being somewhat different from an attachment measure can be depicted in the following example. Main et al. judged children *secure* if they willingly accepted the photograph with a smile and interest but 'let go of the photograph casually following an inspection of a few seconds' (p. 90), even though they did not further discuss the point that children who examined the photograph longer were judged *insecure*. We gave a high rating score for children who spent a long time (i.e. longer than a few seconds) examining the photograph (often with non-negative comments), as an indication that the child is highly interested in the photograph that represents the mother-child relationship.

Still, some observations made by Main et al. were remarkably similar to what we observed. For example, we too found children who refused to accept the photographs or tried to avoid viewing them by flipping the photograph upside down or placing some object to cover the photograph. Some children also became notably agitated or distressed by showing stereotypical behaviours such as ear-pulling or hair twisting upon seeing the photographs. Overall, it is fascinating that we found such variations in the way that contemporary Japanese children responded to the photographs taken with their mothers, considering the sheer volume of photographs to which these children have been exposed.

Limitations in this study include, first of all, our sample size being small. Second, our coding system of photo reactions was newly developed for this sample and had not been tested in other samples; thus, the validity for this system has not yet been fully established. Therefore, the current findings should be considered preliminary. It will be illuminating to observe child's reactions if a photograph of the child alone and the mother alone are presented *separately* from that of the dyad to explore possible differences.

In sum, this is the first study that has attempted to replicate part of the procedure and findings originally presented in the mid-1980s. We introduced a new coding system of the photo reaction as a potential additional measure to complement concurrent measures of attachment. For researchers who may employ behavioural and/or representational measures of attachment for children in middle childhood, this measure can be easily added without any procedural complications. The classic Polaroid camera used in the original 1985 study can be easily replaced with a digital camera with instant photo printing capability. It is our hope that this study will

encourage researchers to consider utilizing family photographs as an informative tool not only for the attachment field but also across disciplines and fields.

Note

1. Even though the current middle class sample had a relatively high proportion of U/CC (23%), it does not differ significantly from a worldwide proportion of 19% that van IJzendoorn and Bakermans-Kranenburg (1996) have reported.

REFERENCES

- Ainsworth, M. D. S., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Erlbaum.
- Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (1993). A psychometric study of the Adult Attachment Interview: Reliability and discriminant validity. *Developmental Psychology*, *29*, 870–879. doi: 10.1037/0012-1649.29.5.870
- Behrens, K. Y., Hesse, E., & Main, M. (2007). Mothers' attachment status as determined by the Adult Attachment Interview predicts their 6-year-olds' reunion responses: A study conducted in Japan. *Developmental Psychology*, *43*, 1553–1567. doi: 10.1037/0012-1649.43.6.1553
- Behrens, K. Y., & Kaplan, N. (2011). Japanese children's family drawings and their link to attachment. *Attachment & Human Development*, *13*, 437–450. doi: 10.1080/14616734.2011.602252
- Behrens, K. Y., Li, Y., Gribneau Bahm, N. I., & O'Boyle, M. W. (2011). Electroencephalographic responses to photographs: A case study of three women with distinct adult attachment interview classifications. *Psychological Reports*, *108*, 993–1010. doi: 10.2466/02.07.09.21.PR0.108.3.993-1010
- Blinn, Y. (1988). The family photo assessment process (FPAP): A method for validating cross-cultural comparisons of family social identities. *Journal of Comparative Family Studies*, *19*, 17–35.
- Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation*. New York: Basic.
- Crowell, J. A., Waters, E., Treboux, D., O'Connor, E., Colon-Downs, C., Feider, O., . . . Posada, G. (1996). Discriminant validity of the Adult Attachment Interview. *Child Development*, *67*, 2584–2599. doi: 10.1111/1467-8624.ep9706060186
- George, C., Kaplan, N., Main, M. (1996). Adult Attachment Interview. Unpublished protocols, University of California, Berkeley.
- Kaplan, N., & Main, M. (1986). Instructions for the classification of children's family drawings in terms of representation of attachment. Unpublished manuscript, University of California, Berkeley.
- Main, M., & Cassidy, J. (1988). Categories of response to reunion with the parent at age 6: Predictable from infant attachment classifications and stable over a 1-month period. *Developmental Psychology*, *24*, 415–426. doi: 10.1037/0012-1649.24.3.415
- Main, M., Goldwyn, R., & Hesse, E. (2002). Adult attachment scoring and classification system. Unpublished manuscripts, University of California, Berkeley.
- Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. In I. Bretherton, & E. Waters (Eds.), *Growing points of attachment theory and research*. Monographs of the Society for Research in Child Development, *50*(1-2, Serial No.209), 66–104. doi: 10.2307/3333827
- Najolia, G. M., Cohen, A. S., & Minor, K. S. (2011). A laboratory study of affectivity in schizotypy: Subjective and lexical analysis. *Psychiatry Research*, *189*, 233–238. doi:10.1016/j.psychres.2011.07.012
- Sagi, A., van IJzendoorn, M. H., Scharf, M. H., Koren-Karie, N., Joels, T., & Mayseless, O. (1994). Stability and discriminant validity of the Adult Attachment Interview: A psychometric study in young Israeli adults. *Developmental Psychology*, *30*, 771–777. doi: 10.1037/0012-1649.30.5.771

- Twine, F. W. (2006). Visual ethnography and racial theory: Family photographs as archives of interracial intimacies. *Ethnic and Racial Studies*, 29, 487–511. doi: 10.1080/01419870600597909
- van IJzendoorn, M. H. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin*, 117, 3, 387–403. doi: 10.1037/0033-2909.117.3.387
- van IJzendoorn, M. H., & Bakermans-Kranenburg, M. J. (1996). Attachment representations in mothers, fathers, adolescents, and clinical groups: A meta-analytic search for normative data. *Journal of Consulting and Clinical Psychology*, 64, 8–21. doi: 10.1037/0022-006X.64.1.8
- Weiser, J. (1984). Phototherapy: Becoming visually literate about oneself, or Phototherapy??? What's phototherapy. *Phototherapy*, 4, 2–7.