



# USENIX Security '24 Artifact Appendix

## From the Childhood Past: Views of Young Adults on Parental Sharing of Children's Photos

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### A Artifact Appendix

#### A.1 Abstract

This artifact provides the responses to a questionnaire asking young adults about their perspectives on parental sharing of children's photos on social media. The artifact loads the raw questionnaire responses of the 382 participants of the study. The code processes the collected data and performs the statistical tests that answer the research questions. First, the code analyzes how participants perceive parental sharing of content about their children (RQ1). Subsequently, the code examines perceptions regarding parental sharing vary based on: (1) having had content about them shared by their parents during childhood (RQ2); (2) their relationship with the child in the photo (RQ3); and (3) being a parent (RQ4). The analyses involve several one-way ANOVA tests, post-hoc Tukey tests and a few Kruskal-Wallis tests focusing on the motives for sharing a photo, the scene depicted in the photo, the age of the child in the photo, and the audiences with whom the photo is shared.

#### A.2 Description & Requirements

##### A.2.1 Security, privacy, and ethical concerns

There are no security, privacy, and ethical concerns with the code provided code as it is very basic. The code processes the data to prepare the fields required for the analysis, conducts a series of statistical tests to answer the four research questions described in the paper, and generates three of the figures displayed in the paper (Figures 2, 3, and 4).

##### A.2.2 How to access

The artifact is available on Zenodo:

<https://doi.org/10.5281/zenodo.12211080>

The repository contains the following four files:

- **README:** Detailed instructions on how to use the code.
- **Data File:** A CSV file containing the raw data collected from the study participants.

- **Codebook:** Description of every field in the data.
- **R Code:** Script with the analysis of the paper findings.

##### A.2.3 Hardware dependencies

None.

##### A.2.4 Software dependencies

The script can run on any operating system. The only software required is R, which can be downloaded from <https://www.r-project.org/>. Running the script requires four R libraries: dplyr, tidyverse, ggplot2, and Cairo. The script has the necessary instructions on installing these libraries.

##### A.2.5 Benchmarks

None.

#### A.3 Set-up

##### A.3.1 Installation

The artifact can be installed by following these instructions:

- Download the code from this repository:  
<https://doi.org/10.5281/zenodo.12211080>
- Open the file `analysis.R` and replace the directory path within the file with the path of the directory in which the artifact is installed.

##### A.3.2 Basic Test

The basic test involves loading the data from the CSV file. First, execute the following command in the R environment to set the path to the directory containing the code:

```
setwd('<path of directory containing the code>')
```

Afterward, run the following code to load the dataset:

```
dataset = read.csv('questionnairdata.csv')
```

The output of this test should return a 'dataset' variable with 382 observations containing 228 columns.

## A.4 Evaluation workflow

### A.4.1 Major Claims

- (C1):** Photo sharing motives about typical social media use (i.e., ‘Keeping in touch with family/friends,’ ‘Archiving the childhood,’ and ‘Showing pride in the child’) are significantly more acceptable than motives driven by material outcomes (i.e., ‘Earning money by advertising’ and ‘Increasing online popularity’) or negative intentions (i.e., ‘Making others envious’). Results in paragraph 1 of section 4.1 and confirmed by experiment (E1).
- (C2):** Photo sharing motives connected to typical social media use were statistically significantly more acceptable than other motives. Results in paragraph 1 of section 4.1 and confirmed by experiment (E2).
- (C3):** The number of acceptable photo types were statistically significant different across four age groups (Infant/toddler, preschooler, middle childhood, teenager). Results in paragraph 2 of section 4.1 and confirmed by experiment (E3).
- (C4):** The number of acceptable photo types for the infant/toddler group was statistically significantly lower than that for the other three age groups and the number of acceptable photo types for the preschooler group was statistically significantly lower than that for middle childhood. Results in paragraph 2 of section 4.1 and confirmed by experiment (E4).
- (C5):** The level of acceptability for photo sharing across the four different audiences was statistically significantly different. Results in paragraph 5 of section 4.1 and confirmed by experiment (E5).
- (C6):** There were statistically significant differences between close friends and the other three audiences. Results in paragraph 5 of section 4.1 and confirmed by experiment (E6).
- (C7):** A statistically significantly higher proportion of participants who had experienced parental sharing of their photos during childhood chose the most popular parental sharing motive (i.e., ‘Keeping in touch with family/friends’) to be more acceptable than those who had not had their photos shared by their parents when they were children. Similarly, ‘Showing pride in the child’ and ‘Impression management’ were statistically significantly more acceptable motives for the participants who had experienced parental sharing of their photos during childhood. Results in paragraph 1 of section 4.2 and confirmed by experiment (E7).
- (C8):** For the preschooler and teenager groups, the participants who had experienced parental sharing of their photos during childhood selected statistically significantly more photo types as acceptable to share than those who had not had their parents share their photos during their childhood. Results in first part of paragraph 2 of section 4.2 and confirmed by experiment (E8).
- (C9):** For all age groups except infant/toddler, the participants who had experienced parental photo sharing during childhood selected a statistically significantly higher number of highly sensitive photo types as acceptable to share than the other participants. In contrast, a statistically significantly higher proportion of participants who had not had their photos shared by their parents during childhood found the photo types ‘Containing child’s objects or personal assets’ and/or ‘Event’ acceptable to share for the infant/toddler, preschooler, and teenager groups. Results in second part of paragraph 2 of section 4.2 and confirmed by experiment (E9).
- (C10):** The acceptability of sharing children’s photos with all audiences was statistically significantly higher for those who experienced parental sharing of their photos during childhood than those who had not. Results in paragraph 3 of section 4.2 and confirmed by experiment (E10).
- (C11):** There were no statistically significant differences across the three study conditions, indicating that the perceptions of young adults regarding the acceptability of various motives behind parental sharing of children’s photos seems independent of their relationship with the child in the shared photos. Results in paragraph 1 of section 4.3 and confirmed by experiment (E11).
- (C12):** There were statistically significant differences across the three study conditions for highly sensitive photo types for the teenager group. The number of highly sensitive photo types of teenagers acceptable to share for ‘anyone’s child’ was statistically significantly lower than that for ‘oneself as a child’ and for ‘one’s (real or hypothetical) child.’ Results in paragraph 2 of section 4.3 and confirmed by experiment (E12).
- (C13):** The number of moderately sensitive photo types acceptable to share for the infant/toddler age group was statistically significantly different across the three study conditions. These differences were statistically significant only when comparing the responses for ‘one’s (real or hypothetical) child’ with those for ‘anyone’s child’. Results in paragraph 2 of section 4.3 and confirmed by experiment (E12).
- (C14):** The relationship with the child in the photos has a statistically significant influence on the acceptability of sharing children photos with close friends, which was statistically significantly less acceptable for ‘one’s (real or hypothetical) children’ than for ‘oneself as a child’. Results in paragraph 3 of section 4.3 and confirmed by experiment (E13).
- (C15):** Non-parents selected a statistically significantly higher number of moderately sensitive photo types for the infant/toddler and preschooler age groups. Additionally, a statistically significantly higher proportion of non-parents found it acceptable to share photos across all age groups for the following photo types: event, containing child’s objects or personal assets, and child along

with other people. Results in Table 3 and paragraph 2 of section 4.4 and confirmed by experiment (E14).

- (C16): Parents rated the acceptability of sharing such photos with the following audiences statistically significantly higher than non-parents: friends/followers/connections, current/potential employers, and general viewers/public. Results in paragraph 3 of section 4.4 and confirmed by experiment (E15).

## A.4.2 Experiments

Before running the experiments, run the initial data processing code from `analysis.R` to process the data and prepare the dataframe required to run the experiments.

- (E1): *One-way ANOVA test for high-level motives.*

**Preparation:** *Execute code in the PREPARATION section of the block “Experiment E1.”*

**Execution:** *Execute code in the EXECUTION section of the block “Experiment E1.”*

**Results:** *Extract the F values and p values.*

- (E2): *Tukey test to compare high-level photo sharing motives.*

**Execution:** *Execute code in the block “Experiment E2.”*

**Results:** *Extract the lower and upper confidence intervals (CIs) and p values.*

- (E3): *One-way ANOVA test for high-level photo types for each age group.*

**Preparation:** *Execute code in the PREPARATION section of the block “Experiment E3.”*

**Execution:** *Execute code in the EXECUTION section of the block “Experiment E3.”*

**Results:** *Extract the F values and p values.*

- (E4): *Tukey test to compare photo types for each age group.*

**Execution:** *Execute code in the block “Experiment E4.”*

**Results:** *Extract the lower and upper CIs and p values.*

- (E5): *One-way ANOVA test for high-level audiences.*

**Preparation:** *Execute code in the PREPARATION section of the block “Experiment E5.”*

**Execution:** *Execute code in the EXECUTION section of the block “Experiment E5.”*

**Results:** *Extract the F values and p values.*

- (E6): *Tukey test to compare audiences.*

**Execution:** *Execute code in the block “Experiment E6.”*

**Results:** *Extract the lower and upper CIs and p values.*

- (E7): *One-way ANOVA tests for the influence of experiencing parental sharing of photos during childhood on the six groups of motives.*

**Execution:** *Execute code in the block “Experiment E7.”*

**Results:** *Extract the F values and p values.*

- (E8): *Statistical tests for the influence of experiencing parental sharing of photos during childhood on the number of photo types considered acceptable to share for each age group.*

**Preparation:** *Execute code in the PREPARATION section of the block “Experiment E8.”*

**Execution:** *Execute code in the EXECUTION section of the block “Experiment E8.”*

**Results:** *Extract the F values and p values.*

- (E9): *Statistical tests for the influence of experiencing parental sharing of photos during childhood on the selection of different photo types for each age group.*

**Execution:** *Execute code in the block “Experiment E9.”*

**Results:** *Extract the F values and p values.*

- (E10): *One-way ANOVA tests for the influence of experiencing parental sharing of photos during childhood on the selection of acceptable audiences.*

**Execution:** *Execute code in the block “Experiment E10.”*

**Results:** *Extract the F values and p values.*

- (E11): *One-way ANOVA tests for the influence of the three study conditions on the six groups of motives.*

**Execution:** *Execute code in the block “Experiment E11.”*

**Results:** *Extract the F values and p values.*

- (E12): *Statistical tests for the influence of the three study conditions on the selection of different photo types for each age group.*

**Execution:** *Execute code in the block “Experiment E12.”*

**Results:** *Extract the F values, p values, and CIs for the Tukey tests.*

- (E13): *One-way ANOVA and Tukey tests on the influence of the three study conditions on the selection of acceptable audiences.*

**Execution:** *Execute code in the block “Experiment E13.”*

**Results:** *Extract the F values, p values, and CIs for the Tukey tests.*

- (E14): *Statistical tests for the influence of having children on the selection of different photo types for each age group.*

**Execution:** *Execute code in the block “Experiment E14.”*

**Results:** *Extract the F values and p values.*

- (E15): *One-way ANOVA tests for the influence of having children on the selection of acceptable audiences.*

**Execution:** *Execute code in the block “Experiment E15.”*

**Results:** *Extract the F values and p values.*

## A.5 Notes on Reusability

Not applicable.

## A.6 Version

Based on the LaTeX template for Artifact Evaluation V20231005. Submission, reviewing and badging methodology followed for the evaluation of this artifact can be found at <https://secartifacts.github.io/usenixsec2024/>.