Title TBD

Kennedy Casey
University of Chicago
kbcasey@uchicago.edu

Elizabeth Mickiewicz
University of Chicago
lizmick9@uchicago.edu

Kimberly Shorter
University of Chicago
klshorter@uchicago.edu

Anapaula Silva Mandujano
University of Chicago
anapaula@uchicago.edu

Mara Duquette
University of Chicago
duquettemara@uchicago.edu

Mary Elliott
University of Texas at Dallas
maryle18@gmail.com

Elika Bergelson
Duke University
elika.bergelson@duke.edu

Marisa Casillas
University of Chicago
mcasillas@uchicago.edu

Abstract

Keywords:

Introduction

The artifacts of everyday life reflect our routines, aspirations, relationships, and much more. In particular, the objects that we regularly pick up and handle—a coffee cup, a laptop, a baby bottle—offer a window into the physical, social, and cultural contexts that shape our understanding of the world. In this paper, we explore patterns in object handling as a glimpse into everyday life at its roots, from early infancy until age four.

For young learners, objects and their associated activities form a critical source of input for social learning, including the ways in which children are exposed to language relating to those objects (yu/smithetc REFS; see also (**herzberg2021infant?**) for an overview of object play and motor learning). This object-centered input changes enormously across the first few years due to both maturational constraints and culture-specific caregiving practices. In early infancy, children have little ability to hold things or to control their posture, primarily experiencing objects through what others bring near to them (faces may make up a much greater proportion of their social input at this point; fauseyREF). However, later gains in manual dexterity and gross motor skill (e.g., sitting, crawling, walking) increasingly widen their ability to seek, reach, and grab a diversity of objects in their environment and give them greater control over what they handle, how, and for how long (REFS).

Separately, access to objects is shaped by culture-specific practices for carrying children, keeping them safe and warm, and scaffolding the development of valued capacities (e.g., word learning in many US families, walking in Kenyan Kipsigis families, (**super1976environmental?**)), all of which may slightly alter the course of motor development (see (**adolph2010motor?**) for an overview).

The array of objects available to children will also vary crossculturally, including: (a) objects spread via globalization (e.g., plastic bags), (b) objects that have a basic functional role that is similar across many contexts (e.g., spoon-like things for eating), and (c) objects are specific to people and places (e.g., the gourd and bombilla for drinking mate in much of South America, stemming from Guaraní and Tupí tradition). Take, for example, middle-class US family homes, which have been noted for their large quantities of possessions ("clutter"), much of which is designed specifically for children (e.g., toys and books (**arnold2017life?**)). We might infer based on this distribution of objects that much of what children do and talk about at home is tailored to what particularly interests them and thus children's worlds, in this sense, look very different from adults'. Recent work by Herzberg and colleagues (**herzberg2021infant?**) underscores this point; their study of object play in 13–23-month-olds showed that infants spent nearly 70% of their time with toys or a mix of toys and non-toys, with ˜100% of infants playing with children's books and stuffed animals and a total of 32 toy types appearing in $\geq$ 25% of infants' play. Non-toy play was also common, but still appeared to predominantly include infant-specific objects (e.g., sippy cups, baby spoons, high chairs, pacifiers). We would expect many of these items to be rare in other parts of the world, with much greater overlap between objects for infants and objects for adults (e.g., (**karasik2018not?**)).

Methods

Corpus

Manual annotation

Reliability

Results

Overall frequency statistics

Across the entire waking day, children handled an average of 21.16 unique objects (median = 20, SD = 15.2, range = 1–59), with no significant differences across sites (M_{Rossel} = 18.93, $M_{Tseltal}$ = 23.24, W = 350, p = 0.501). Only 20.83% of objects were present in both communities, but several shared objects were among the most frequently handled by children in both sites. In fact, among the top 25 most common objects, 11 were shared across sites.

The frequency of object categories was similarly divided across sites (Figure 1A). Children primarily handled miscellaneous synthetic objects (e.g., rope, guitar, shirt, etc.; M_{Rossel} = 32.01% of handling, $M_{Tseltal}$ = 37.5%) and food (M_{Rossel} = 28.58%, $M_{Tseltal}$ = 36.21%). For 45 of 56 children, the top category was either synthetic objects or food. Two-tailed Wilcoxon tests revealed only one significant category-level

difference between sites: children's handling of large or immovable objects (e.g., veranda, ladder, railing, etc.), where Rossel children handled these objects more frequently than Tseltal children (M_{Rossel} = 7.73%, $M_{Tseltal}$ = 3.31%, adjusted $p = 0.038$, ps for all other categories > 0.05), but these objects were still the least frequently handled in both sites.

During any given hour, children handled 5.26 objects from 2.79 different categories, on average (median = 4.5 objects, $SD = 3.92$, range = 1–18). A linear mixed-effects model with fixed effects of site, each of 6 object categories, and their interaction showed a significant main effect of the synthetic object category ($\beta = 0.52$, $SE = 0.2$, $t = 2.59$, $p = 0.01$) as well as an interaction between site and the synthetic object category ($\beta = 1.11$, $SE = 0.29$, $t = 3.88$, $p = < 0.001$) such that children handled more unique synthetic objects per hour than any other object category, and this effect was stronger for Tseltal children than for Rossel children (ps > 0.05 for all other main effects and interaction terms; Figure 1B).

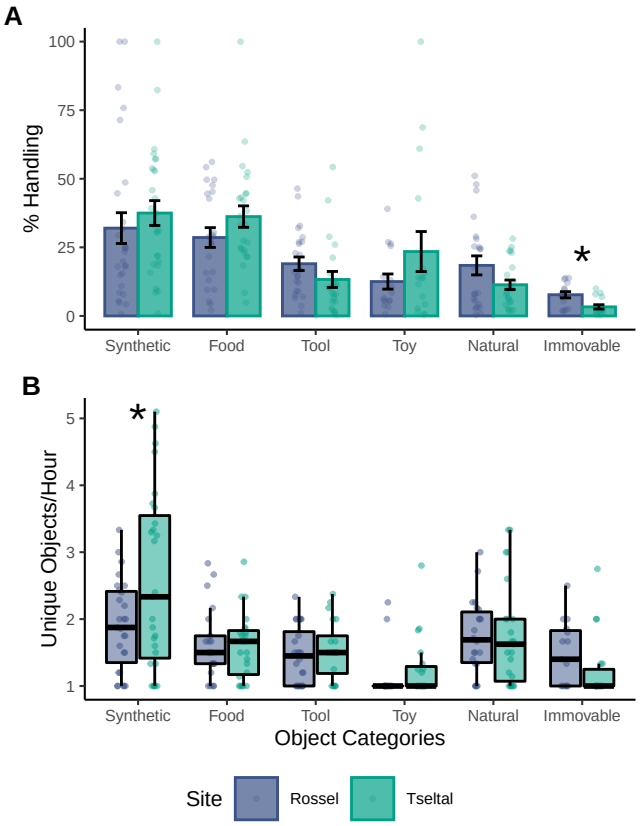

Figure 1: (A) Overall frequency of handling by object category. Points reflect percentages for individual children. (B) Count of unique objects handled per hour by object category. Points reflect means for individual children across all hours of recording.

Time of day effects

When we divide the day into morning, midday, and afternoon, we see largely stable rates of handling across all object categories (Figure 2). We ran individual linear mixed-effects models, which included fixed effects of site, time of day, and their interaction, for all 6 categories. The only significant result was a main effect of time of day for the tool category ($\beta = 0.18$, $SE = 0.08$, $t = 2.41$, $p = 0.019$), where these objects were most frequently handled in the afternoon in both sites. No other main effects or two-way interactions reached statistical significance. Additionally, we examined whether the number of unique objects handled per hour varied as a function of object category and time of day but found no significant main effects or two-way interactions (all ps > 0.05).

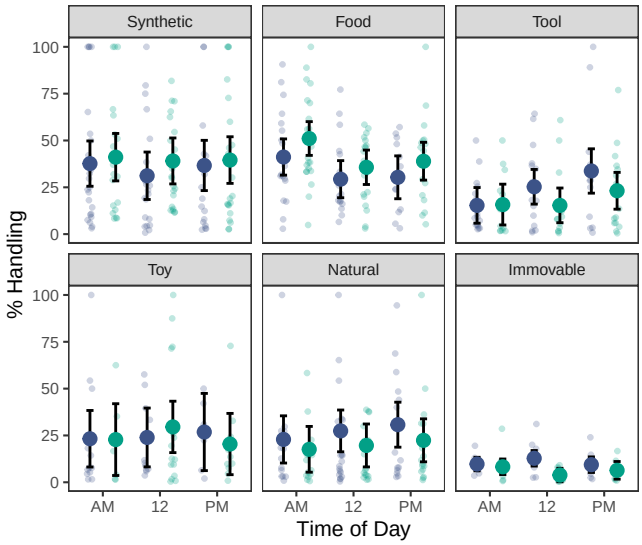

Figure 2: Frequency of handling by object category across different times of day. Point ranges reflect model-predicted mean percentage of handling and 95% confidence intervals. Individual points show raw percentages for each child.

Age effects

Discussion

References