Toys That Listen:  
A Study of Parents, Children, and Internet-Connected Toys

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Talking Toys Are Getting Smarter: Should We Be Worried?

Internet-connected talking dolls like Hello Barbie that can actually converse are bewitching kids but unsettling parents. Are they really the menace critics have made them out to be?
The Original “Smart” Toys
One of the Largest Hacks Yet Exposes Data on Hundreds of Thousands of Kids

Written by Lorenzo Franceschi-Bicchierai
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Banned In Germany: Kids’ Doll Is Labeled An Espionage Device

Bill Caprell
Research Questions

- What are the privacy expectations and concerns of parents for connected toys?
- What are children’s mental models of their privacy when interacting with the toy?
- What parental controls do parents wish to exercise?
User Study

Hello Barbie

Cognitoys Dino
# User Study Methods

- **Parent-Child pairs**
- Recruited by sharing announcement with local parent groups, emailing listservs, Facebook
- 9 Interviews conducted with 2 researchers

<table>
<thead>
<tr>
<th>Child &amp; Parent introduced to both toys</th>
<th>Parent</th>
<th>Child</th>
<th>wrap up</th>
</tr>
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<tbody>
<tr>
<td>~15 min</td>
<td>sets up Barbie through app, experiences web interfaces + interview</td>
<td>plays with Dino and then Barbie + interview</td>
<td>~5min</td>
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<td>~30 min</td>
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~15 min  ~30 min  ~5 min
Microphone, speaker, and tri-color LED lights embedded in the necklace

Press and hold down belt buckle to activate speech recognition. Note: Speech recognition is not ‘On’ unless pushed.
Hello Barbie website interface:

- Organized in “Conversations”
- Contains recordings of all interactions
- Encourages sharing on social media (Facebook, Twitter)
Gender neutral

Mouth lights up

Activation button
Interview Questions

Parent

What do you expect to be in the toy’s manual and privacy policy?

How do you feel about the ability to monitor what your child says to the toy?

Would you share what your child said to the toy on social media?

Child

What would you talk about with the toy?

Do you think the toy can remember what you say to it?

Would you tell the toy a secret?
Findings: Privacy

- Focuses on “Permission” giving
- Explains how they use recordings
  - To share with parent
  - Test and improve services and technologies
- Reassures: Do not use these to contact or advertise to children
“I would want to be present when they used it. I don’t think it’s something I would let my child use with somebody else unless I knew a lot more about it because it seems like it’s a little interactive, and I don’t know where this recording stuff is going. It feels permanent when you’re speaking into her, like is she recording me and who can see or get this information?”
Privacy: Parents on Recording

“My initial response is I don’t have time to go through all these. Like I’m not going to click and listen. I have to be sorting through all the photos she took of herself on my phone because my phone is always full. This is just one more pile of media I would have to determine what’s useful, should I save it, should I get rid of it, where should I put it? I think my initial inkling is don’t even look at it so you don’t have to make any decisions about what to do with it.”
Privacy: Children on Recording

“Hey, did you know that Barbie doll, when you’re all done, everything that you share with her would end up on the computer so we could talk about it? Would that make it fun for you?”

“That’s pretty scary.”
"I think past a certain age you need to respect your child’s privacy and idea that they might not want what they say to be shared amongst your gaggle of friends. I think for some people it works, for me personally it’s not something that I would use. ”

“The child is not consenting to the questions they ask Barbie to be shared on Facebook.”
Children’s Privacy Expectations
Do you think the toy can remember what you told it?

- Some
- Maybe
- Yes, but deletes it
- Yes
- No
- N/A
Children’s Privacy Expectations
Would you tell the toy a secret?

Yes

Maybe

No
Children’s Privacy Expectations

Do you think your parent could hear what you said to the toy?

- Probably
- Depends
- Probably not
- Maybe
- No
Toys vs. Other Connected Devices

Always ready, connected, and fast. Just ask.

Manage everyday tasks effortlessly
Recommendations

Security & Privacy

- Providing recording indicators
- Reevaluate the need to record and store
  - Data deletion practices
  - Local storage
Recommendations

Consider non-toys with child users
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