



CHILL OUT!

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Research from the Children and Infant Listening Lab at the University of Texas at Dallas

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The Children and Infant Listening Laboratory (CHILL) focuses on development of speech, language, hearing, and quality of life in children and adolescents with hearing loss.

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Identifying factors that underlie social well-being in children

My research focuses on how children with hearing loss develop speech production, language skills, and speech recognition, and how these skills come together to influence their quality of life. Children with hearing loss can develop communication, but vast variability exists in how well they perform and how they use these skills in real-world situations.

I always have been an outgoing person, but my

research over the past few years has become more social, too. This year's projects emphasize social aspects of communication in children with hearing loss—friendship, peer relationships, and bullying. These are REAL issues that families of children with hearing loss deal with every day. I know this from listening to the stories that professionals, clinicians, and families who work with children with hearing loss.

My goal is to identify risk and protective factors that underlie these social difficulties so we can develop targeted intervention to help children with hearing loss reach their maximum potential. With your help, I know we can do it.



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Teens with hearing loss get bullied more than their peers

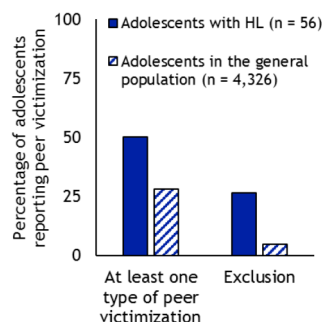
Approximately one-third of school-aged children experience peer victimization (i.e., bullying). Children with hearing loss have a higher risk of victimization due to differences from the general population physically (e.g., visibility of hearing aids or cochlear implants), communicatively (e.g., poorer communication skills versus hearing peers), and socially (e.g., difficulty making and maintaining friendships).

Our recently published study (Warner-Czyz et al., 2018) examined peer victimization in adolescents with hearing loss using a well-established survey to determine if having a hearing loss affects rate or type of victimization.

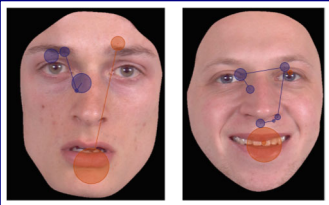
Participants included 56 adolescents with hearing loss (12-18 years, average age = 14.1 years), all of whom wore auditory technology (i.e., hearing aids or cochlear implants), communicated orally, and participated in mainstream education. We compared outcomes to published national data from the general population (DeVoe & Murphy, 2011).

Presence of hearing loss significantly affected prevalence of bullying. **Adolescents with hearing loss reported twice the rate of peer victimization (50% vs. 28%) and 4.5 times the rate of social exclusion (27% vs. 6%) compared to the general population.** One-fifth attributed the victimization to hearing loss or CI, but 45% did not know the underlying reason for victimization.

Future research will focus on factors underlying differences in social communication, including personality and emotion processing. We aim to identify risk and protective factors for peer victimization to develop intervention strategies for these teens.



One-half of pediatric cochlear implant users do not wear their device consistently (8 hours per day on average).



Eye tracking data show fixation time by circle size. Teens with typical hearing (in blue) dwell longer on the eyes. Adolescents with CIs (in orange) look longer to the mouth.

0-17

The ages (in years) of children with hearing loss needed for our studies looking at quality of life, peer relationships, and daily device use.

Hours of device use varies among young CI users

Consistent all-day use of a cochlear implant (CI) helps children with hearing loss access and develop listening and language skills, yet not all children wear their CIs all day.

A recent advancement in CI technology (*datalogging*) lets researchers and clinicians track the number of hours per day a person wears their CI.

Wiseman and Warner-Czyz (2018) examined trends in device use (average hours of daily CI use) for children

with CI and factors that coincided with inconsistent use (<8 hours/day). We reviewed clinical records of 72 children (0-18 years) and found **50% of children wore their device <8 hours per day**. Poorer device use was associated with:

- **Younger age;**
- **Younger age at CI activation;**
- **Presence of additional disabilities;** and
- **Lower maternal education** (less than college education).

We also found that young children (0-5 years) with fewer hours of use had poorer auditory and language skills.

These findings suggest that communication skills depend on consistent device use. Clinicians and professionals working with children with CI should use datalogging technology to counsel families through difficulties with CI device use and brainstorm potential solutions to attain consistent use for children.

Auditory status affects where teens look on a face

Inherent biases of cochlear implant (CI) users to visual cues—especially attention to the mouth to make up for degraded auditory input—may detract from important emotion cues in the upper face and eyes.

Warner-Czyz et al. (2019) examined emotion recognition in adolescents with CIs and hearing peers. Results showed **no**

difference in emotion recognition accuracy or response time by auditory status.

However, group differences emerged in *where* teens look on a face. Eye tracking scan paths show dwell time by circle size (see image). Even without auditory input, **teen CI users (in orange) focus more on the mouth than hearing peers**

(in blue). If this pattern persists in dynamic conversation, it could create an awkward social situation—perhaps contributing to peer problems (e.g., difficulty making friends, getting bullied) in teens with CI. Future studies will explore direct links between eye tracking data and social well-being in teens with CI.

Current studies in the CHILL research group

The CHILL team had a productive year, publishing 4 journal papers and 3 book chapters, and giving 10 podium presentations (with talks in Belgium, the UK, Spain, and Canada) and 3 poster presentations. We continue to look at several aspects of development in children with hearing loss.

1. Social communication in adolescents with and without hearing loss (11-17 years). This project examines the effect of

hearing and language on the ability to identify emotions (in photos and videos), peer relationships, and social well-being

2. Quality of life in children with CIs (8-11 years). This online study focuses on relationships with peers in school-aged children with and without hearing loss.

3. Role of music in the lives of teens with and without hearing loss (13-17 years). This project

asks questions about how often and why adolescents listen to music via a short online survey.

4. Device use in CI users (0-5 years). This study looks at how much young children with CI wear their devices and how that relates to their communication abilities.

Please contact us at callierchill@utdallas.edu for more information about any of these studies.