

UC Davis

UC Davis Previously Published Works

Title

Telehealth Frontiers: Social Telerobots in Developmental and Behavioral Pediatrics

Permalink

<https://escholarship.org/uc/item/3rp4j4nm>

Journal

Iproceedings, 8(1)

ISSN

2369-6893

Authors

Ahumada-Newhart, Veronica

Marcin, James

Publication Date

2022-08-22

DOI

10.2196/41060

Copyright Information

This work is made available under the terms of a Creative Commons Attribution-NonCommercial-NoDerivatives License, available at

<https://creativecommons.org/licenses/by-nc-nd/4.0/>

Peer reviewed

---

**Abstract**

# Telehealth Frontiers: Social Telerobots in Developmental and Behavioral Pediatrics

---

Veronica Ahumada-Newhart\*, MA, PhD; James Marcin\*, MPH, MD

Department of Pediatrics, Center for Health and Technology, University of California Davis Health, Sacramento, CA, United States

\* all authors contributed equally

**Corresponding Author:**

Veronica Ahumada-Newhart, MA, PhD

Department of Pediatrics

Center for Health and Technology

University of California Davis Health

4610 X St, Suite 2347

Sacramento, CA, 95817

United States

Phone: 1 916 734 2351

Email: [vahumada@ucdavis.edu](mailto:vahumada@ucdavis.edu)

---

**Abstract**

**Background:** COVID-19 has severely impacted health in vulnerable demographics. As communities transition back to in-person work, learning, and social activities, pediatric patients who are restricted to their homes due to medical conditions face unprecedented isolation. Prior to the pandemic, it was estimated that each year, over 2.5 million US children remained at home due to medical conditions. Confronting gaps in health and technical resources is central to addressing the challenges faced by children who remain at home. Having children use mobile telemedicine units (telerobots) to interact with their outside environment (eg, school and play, etc) is increasingly recognized for its potential to support children's development. Additionally, social telerobots are emerging as a novel form of telehealth. A social telerobot is a tele-operated unit with a mobile base, 2-way audio/video capabilities, and some semiautonomous features.

**Objective:** In this paper, we aimed to provide a critical review of studies focused on the use of social telerobots for pediatric populations.

**Methods:** To examine the evidence on telerobots as a telehealth intervention, we conducted electronic and full-text searches of private and public databases from 2010 onward. We included studies with the pediatric personal use of interactive telehealth technologies and telerobot studies that explored effects on child development. We excluded telehealth and telerobot studies with adult (aged >18 years) participants.

**Results:** In addition to telehealth and telerobot advantages, evidence from the literature suggests 3 promising robot-mediated supports that contribute to optimal child development—belonging, competence, and autonomy. These robot-mediated supports may be leveraged for improved pediatric patient socioemotional development, well-being, and quality-of-life activities that transfer traditional developmental and behavioral experiences from organic local environments to the remote child.

**Conclusions:** This review contributes to the creation of the first pediatric telehealth taxonomy of care that includes the personal use of telehealth technologies as a compelling form of telehealth care.

(*iproc* 2022;8(1):e41060) doi: [10.2196/41060](https://doi.org/10.2196/41060)

---

**KEYWORDS**

telehealth; social robots; technology; human development; health equity

**Conflicts of Interest**

None declared.

---

---