Demonstrating Consent Rings: Explicit Non-Verbal Consent Through Haptic Wearables as a Solution to Unwanted Sex Between Neurodivergent Partners

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(a) (b) (c)

Figure 1: Consent Rings are haptic wearables for exchanging non-verbal consent to sex: (a) a pair of consent rings, (b) consent to sex being exchanged through mutual haptic vibration on each wearer's ring (visual emphasis added), (c) Consent Rings connected to a Python-based Research & Reflection interface for ring wearers to view their interaction metrics.

Abstract

Neurodivergent individuals are at elevated risk of sexual violence. They often face distinct challenges in intimate communication, where difficulties in both verbal communication and social cue interpretation can lead to misunderstandings of consent and unwanted sexual activity. To make consent communication more accessible, we present Consent Rings: a system of symmetric haptic ring wearables designed by a team of neurodivergent researchers to facilitate unambiguous, non-verbal consent negotiation. The prototype operationalizes a haptic consent model, utilizing distinct vibration patterns in the rings to signal initiation, agreement, and revocation of consent to interpersonal behavior. Consent Rings recognize that consent is not permanent, thus the consent vibration decays over time, requiring active reconfirmation from both partners during interaction. We detail the hardware implementation of Consent Rings and a companion research interface to log consent metrics with wearer permission, laying the groundwork for empirical studies on haptic and accessible consent models.

CCS Concepts

• **Human-centered computing → Haptic devices**.

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1 Introduction

As the neurodivergent community becomes increasingly visible due to improved screening and self-identification [16], their distinct relationship with technology has come into focus. The term "neurodivergent" encompasses a range of neurological and developmental conditions, including autism spectrum disorder (ASD), ADHD, and learning disabilities [3]. Prior literature consistently demonstrates that neurodivergent individuals use forms of computer-mediated communication, such as social media and video games, at higher rates than the rest of the population [13, 16]. Research suggests this preference is driven by unique affordances of CMC, such as overt text-based communication as well as the absence of subtle body language cues that could be misinterpreted [8].

These affordances of CMC may benefit neurodivergent individuals in intimate or sexual contexts, where reliance on social cues can lead a person to incorrectly assume consent [4, 17], especially given that this population experiences sexual violence (i.e., nonconsensual sex) at significantly higher rates than the general population [6, 21]. While many of these instances of nonconsensual sex are

committed intentionally by perpetrators [6], a subset of these experiences have been attributed to sociocommunicative difficulties [1]. For instance, Bargiela et al. found that autistic women often comply with unwanted advances due to an inability to identify appropriate social cues to pause or refuse interactions once they have begun [1]. Research has also indicated that individuals with high-functioning autism may not comprehend a partner's lack of desire if verbal refusal cues are "insufficiently blunt" [15]. Barnett et al. explored strategies that adults on the autism spectrum implemented within intimate settings and found that participants would use nonverbal literal declarations, such as communicating through writing, when verbal communication was difficult due to heightened emotions, anxiety, or overstimulation [2].

Consequently, there is a need for supportive technologies that can bridge this sociocommunicative gap for neurodivergent individuals by providing unambiguous, non-verbal channels for consent negotiation. For these technologies to be created, they require underlying consent models, or prescriptive rules for how consent "should" be given and received. Previous HCI work on consent technology has advocated for the affirmative consent model [10, 11, 18, 22–24]. Also referred to as "yes means yes," affirmative consent prescribes explicit *verbal* consent between intimate partners. However, this model has been criticized for being unrealistic [5, 7, 25] and under-adopted [5, 9, 19, 20, 25], and provides no clear guidance for non-verbal communication [5, 25] or individuals who find primarily-verbal communication to be inaccessible.

We present Consent Rings, a system of symmetric haptic Bluetooth rings designed by a team of three neurodivergent researchers. Consent Rings exemplifies a haptic consent model, through which the asking for, giving, and denying of consent occurs through physical vibration rather than voice. We opted to manifest consent as physical sensation because of its popularity in other accessibility domains; for instance, the Deaf and Hard of Hearing communities use touch for communicating consent in sex [12], and the Blind community uses touch in social interactions more generally [14].

2 How Intimate Partners Use Consent Rings

Both intimate partners wear a Consent Ring, which has a single button and a haptic motor. Their use of the rings in an intimate encounter exemplifies a haptic consent model that has three stages: initiation, agreement, and continuation of consent. In the first stage, **initiation**, either partner can press the button on their ring to "initiate" consent exchange. When either ring's button is pressed, a 30-second period of low-intensity haptic pulses begins on both rings. The haptic pulse intends to jostle the attention of the other partner, encouraging them both to be curious about why the initiating partner clicked their ring's button: what interpersonal behavior are they asking consent for? This could be a verbal discussion, or it could be written on paper or text messaged between their phones, among other possibilities. In Figure 2, one neurodivergent partner prefers to discuss the specifics of their consent request to their partner on the couch through a mix of notepad writing and verbal communication. Once the partners have clarified what the behavior is that consent is being requested for, the partner who received the initial haptic pulse can decide whether to agree to or decline the consent initiation. If they agree, they simply hit the button on their own ring. If they decline, they would double-click the button on their ring, which would end the haptic pulse on both devices.

Figure 2: Consent initiation through Consent Rings: The partner on the left initiates consent exchange by clicking the button on their Consent Ring, which triggers a pulsing vibration on both users' Consent Rings. The pulsing intends to invite both partners to clarify what particular behavior the initiator is asking consent for.

If a partner agrees to consent initiation, stage two (**agreement**) begins. The low-intensity haptic pulse on each ring transforms into a higher intensity consistent haptic vibration, signifying an unambiguous agreement to the discussed activity. This vibration through the rings represents the consent agreement itself. See Figure 3 for an illustration.

Stage three (**continuation** of consent) happens continually during the agreed-to interpersonal behavior. The intensity of the consent vibration on each partner's Consent Ring will diminish over time, representing the ephemeral nature of consent, which requires sustained attunement to a partner's ongoing willingness to participate in the given behavior. The mutual haptic consent vibration will decay in strength over a 30-second period, eventually stopping altogether (representing an end of consent) unless both partners actively re-click the button on their respective Consent Rings to continue the consent vibration. If both partners re-click their ring's button the mutual vibration returns to full strength before it begins its decay again. This active reconfirming ensures that both partners are still comfortable with the act. Either partner can also actively **revoke** consent at any point in the interaction by double-clicking the button on their ring, which immediately stops the haptic vibration on both rings.

Figure 3: Partners agreeing to a sexual behavior through their Consent Rings. In the top image, the partner on the left initiates consent exchange by clicking the button on their Consent Ring, triggering a pulsating vibration on both partners' rings that invites discussion over the particular act that the initiating partner is asking for. In the bottom image, the receiving partner agrees to the discussed behavior by clicking the button on their own Consent Ring, which transforms the haptic sensation into a stronger, consistent vibration that physically represents consent agreement.

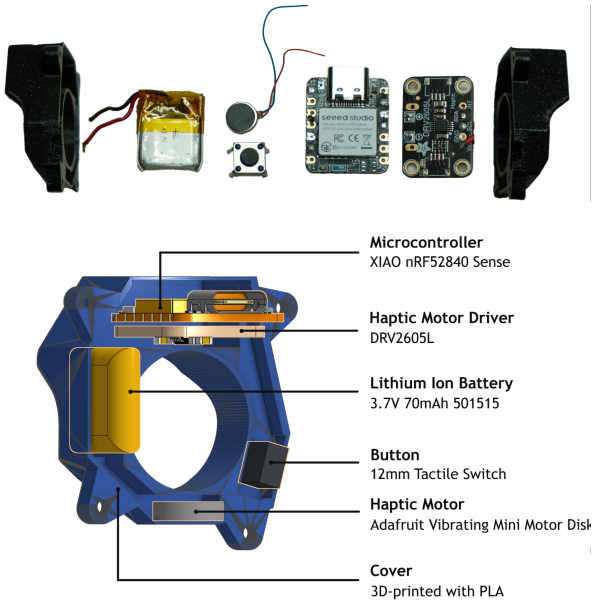

Figure 4: Consent Ring component layout. The top image is a deconstructed arrangement of the parts housed within a Consent Ring. The 3D rendering below that visualizes how the various components fit within the Consent Ring's custom-made housing.

3 Design and Development of Consent Rings

The Consent Rings were developed by three researchers who each self-identify as neurodivergent. The rings each use a Seeed Studio nRF52840 Sense, which contains a Bluetooth 5.0 module, and supports features such as audio and gesture recognition that can be used by developers. The Seeed Studio board is connected to a 3.7V 501515 70mAh Lithium Ion battery, which can be charged through the board's built in USB-C port. The board has accessible memory and can be programmed through a USB-C connection to a computer using Arduino's IDE. We used the Adafruit DRV2605L with Adafruit Vibrating Mini Motor Disc connected to the Seeed board for haptic feedback, allowing for different levels of vibration as well as programmable haptic effects. User input is captured with a 12mm tactile button connected to the board's input pins. The shells of the rings are a custom 3D-printed housing (1.4" x 1.5" x 1.2") and are printed from Prusament PLA.

We approached design and development of Consent Rings as both a practical device to be used in real-world settings, and also as a research and reflection tool that supports the collection and review of data from ring-use during sexual encounters. Data collection capability is turned off by default for wearer privacy, but can be activated through manual firmware updates by plugging the rings into our development computer. Alongside this, we developed a custom Python-based "Research & Reflection" interface that receives the interaction data from the rings through a USB-C connection, where interaction data can be offloaded for analysis. The interface tracks metrics related to consent such as time of interaction, duration of interaction, reconfirmations of consent during an interaction, number of initiations from each ring, and method in which the consent agreement was ended (active revocation through double-clicking the ring's button or natural decay of the consent vibration). This functionality allows Consent Rings to support empirical studies of haptic consent models and serves as a retrospective tool for reconstructing participant experiences during post-use interviews. Users could also use the interface for personal reflection on their sexual experiences with their partner; an activity encouraged as an aftercare technique in other consent technology literature [22].

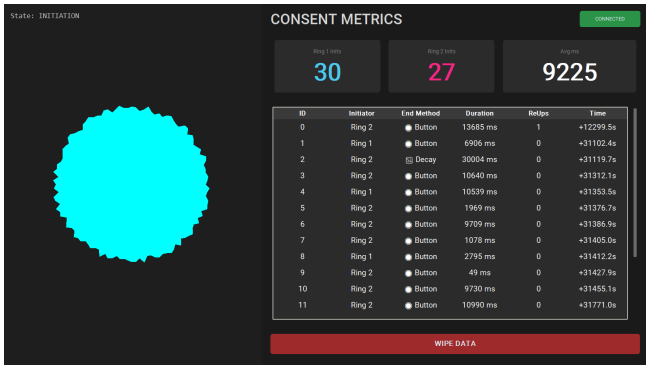

Figure 5: Interaction metrics displayed on the Consent Ring's Research & Reflection interface

4 Conclusion

In this interactive demo we present a prototype of Consent Rings, wearable ring devices that support the asking for, giving, and denying of consent to interpersonal behavior through haptic vibration. The ring's design is motivated by the relative inaccessibility of verbal- and body language-based consent communication by individuals who are neurodivergent; a population that is also disproportionately victims of sexual violence (nonconsensual sex). Consent Rings can be used both for personal enjoyment and as an empirical research tool through a permission-dependent data reflection interface.

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References

[1] Sarah Bargiela, Robyn Steward, and William Mandy. 2016. The Experiences of Late-diagnosed Women with Autism Spectrum Conditions: An Investigation of the Female Autism Phenotype. *Journal of Autism and Developmental Disorders* 46 (2016), 3281 – 3294. https://api.semanticscholar.org/CorpusID:17054584

[2] Jessica Penwell Barnett and Eleanor Maticka-Tyndale. 2015. Qualitative Exploration of Sexual Experiences Among Adults on the Autism Spectrum: Implications for Sex Education. *Perspectives on Sexual and Reproductive Health* 47, 4 (2015), 171–179. doi:10.1363/47e5715

[3] Nicole Baumer and Julia Frueh. 2021. What is neurodiversity? https://www.health.harvard.edu/blog/what-is-neurodiversity-202111232645

[4] Laina Y. Bay-Cheng and Rebecca K. Eliseo-Arras. 2008. The Making of Unwanted Sex: Gendered and Neoliberal Norms in College Women's Unwanted Sexual Experiences. *The Journal of Sex Research* 45, 4 (2008), 386–397. doi:10.1080/00224490802398381 PMID: 18937130.

[5] Braeden Burger, Devin Tebbe, Emma Walquist, Toby Kind, and Douglas Zytko. 2025. Saying No to "Yes Means Yes": Limitations of Affirmative Consent for Mitigating Unwanted Behavior Online According to Women and LGBTQIA+ Stakeholders. In *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25)*. Association for Computing Machinery, New York, NY, USA, Article 106, 17 pages. doi:10.1145/3706598.3713236

[6] Fabienne Cazalis, Elisabeth Reyes, Séverine Leduc, and David Gourion. 2022. Evidence That Nine Autistic Women Out of Ten Have Been Victims of Sexual Violence. *Frontiers in Behavioral Neuroscience* Volume 16 - 2022 (2022). doi:10.3389/fnbeh.2022.852203

[7] Jena Nicols Curtis and Susan Burnett. 2017. Affirmative Consent: What Do College Student Leaders Think About "Yes Means Yes" as the Standard for Sexual Behavior? 12, 3 (2017), 201–214. doi:10.1080/15546128.2017.1328322

[8] Kristen Gillespie-Lynch, Steven Kapp, Christina Shane-Simpson, David Smith, and Ted Hutman. 2014. Intersections Between the Autism Spectrum and the Internet: Perceived Benefits and Preferred Functions of Computer-Mediated Communication. *Intellectual and Developmental Disabilities* 52 (12 2014). doi:10.1352/1934-9556-52.6.456

[9] Terry Humphreys and Ed Herold. 2007. Sexual Consent in Heterosexual Relationships: Development of a New Measure. 57, 3 (2007), 305–315. doi:10.1007/s11199-007-9264-7

[10] Jane Im, Jill Dimond, Melody Berton, Una Lee, Katherine Mustelier, Mark S. Ackerman, and Eric Gilbert. 2021. Yes: Affirmative Consent as a Theoretical Framework for Understanding and Imagining Social Platforms. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* (Yokohama Japan, 2021-05-06). ACM, 1–18. doi:10.1145/3411764.3445778

[11] Una Lee and Dan Toliver. 2017. Building Consentful Tech.

[12] Vanessa Letico, Mary Iliadis, and Reece Walters. 2025. De(a)fining consent: Exploring nuances of offering and receiving sexual consent among Deaf and Hard-of-Hearing people. *Criminology & Criminal Justice* 25, 2 (2025), 444–462. doi:10.1177/17488958221120887

[13] Micah O. Mazurek. 2013. Social media use among adults with autism spectrum disorders. *Computers in Human Behavior* 29, 4 (2013), 1709–1714. doi:10.1016/j.chb.2013.02.004

[14] Troy McDaniel, Sreekar Krishna, Vineeth Balasubramanian, Dirk Colbry, and Sethuraman Panchanathan. 2008. Using a haptic belt to convey non-verbal communication cues during social interactions to individuals who are blind. In *2008 IEEE International Workshop on Haptic Audio visual Environments and Games*. 13–18. doi:10.1109/HAVE.2008.4685291

[15] Prianka Mehzabin and Mark A. Stokes. 2011. Self-assessed sexuality in young adults with High-Functioning Autism. *Research in Autism Spectrum Disorders* 5, 1 (2011), 614–621. doi:10.1016/j.rasd.2010.07.006

[16] Kantar Monitor. 2025. Spotlight on Neurodiversity. https://www.understood.org/en/research-and-surveys/kantar-monitor-spotlight-on-neurodiversity

[17] Charlene Muehlenhard, Terry Humphreys, Kristen Jozkowski, and Zoe Peterson. 2016. The Complexities of Sexual Consent Among College Students: A Conceptual and Empirical Review. *Journal of sex research* 53 (04 2016), 1–31. doi:10.1080/00224499.2016.1146651

[18] Josef Nguyen and Bonnie Ruberg. 2020. Challenges of Designing Consent: Consent Mechanics in Video Games as Models for Interactive User Agency. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (Honolulu HI USA, 2020-04-21). ACM, 1–13. doi:10.1145/3313831.3376827

[19] Mary Kirtley Righi, Katherine W. Bogen, Caroline Kuo, and Lindsay M. Orchowski. 2021. A Qualitative Analysis of Beliefs About Sexual Consent Among High School Students. 36, 15 (2021), NP8290–NP8316. doi:10.1177/0886260519842855

[20] Erin J. Shumlich and William A. Fisher. 2018. Affirmative sexual consent? Direct and unambiguous consent is rarely included in discussions of recent sexual interactions. 27, 3 (2018), 248–260. doi:10.3138/cjhs.2017-0040

[21] Jamie A. Snyder. 2015. The Link Between ADHD and the Risk of Sexual Victimization Among College Women: Expanding the Lifestyles/Routine Activities Framework. *Violence Against Women* 21, 11 (2015), 1364–1384. doi:10.1177/1077801215593647 PMID: 26155795.

[22] Yolande Strengers, Jathan Sadowski, Zhuying Li, Anna Shimshak, and Florian 'Floyd' Mueller. 2021. What Can HCI Learn from Sexual Consent?: A Feminist Process of Embodied Consent for Interactions with Emerging Technologies. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* (Yokohama Japan, 2021-05-06). ACM, 1–13. doi:10.1145/3411764.3445107

[23] Douglas Zytko and Jonathan Chan. 2023. The Dating Metaverse: Why We Need to Design for Consent in Social VR. 29, 5 (2023), 2489–2498. doi:10.1109/TVCG.2023.3247065

[24] Douglas Zytko and Nicholas Furlo. 2023. Online Dating as Context to Design Sexual Consent Technology with Women and LGBTQ+ Stakeholders. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (Hamburg, Germany) *(CHI '23)*. Association for Computing Machinery, New York, NY, USA, Article 339, 17 pages. doi:10.1145/3544548.3580911

[25] Douglas Zytko, Devin Tebbe, Braeden Burger, Emma Walquist, and Meryem Barkallah. 2025. Beyond Affirmative Consent: Creating Alternative Models for Consent to Computer-Mediated Sexual Activity Through Social VR for Online Dating. *Proc. ACM Hum.-Comput. Interact.* 9, 7, Article CSCW377 (Oct. 2025), 34 pages. doi:10.1145/3757558