PrivyGuard: Reclaiming Digital Childhood by Rethinking Consent, Design, and Child Voice

A White Paper from The LOVE Lab: Child Futures Innovation Playspace

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Learn more or explore the prototype: www.childfutures.ca/privyguard

Executive Summary

Children are growing up in an unprecedented era where their digital identities are tracked, monetized, and manipulated, often without their awareness or meaningful consent. They are growing up in a world where their digital footprints begin before they can walk. With increasing concerns over data privacy, algorithmic exposure, and manipulative online experiences, the urgency to develop tools that protect and empower children online has never been greater. By age 13, companies have already gathered an estimated 72 million data points on an individual child (UNICEF, 2021).

Despite global efforts like COPPA in the U.S. (Federal Trade Commission, 2023) and GDPR-K in Europe (European Parliament & Council, 2016), most regulations place the burden on parents, overlooking the critical need to directly educate and empower children with digital literacy, privacy awareness, and informed decision-making skills. As governments around the world reconsider and, in some cases, lower the digital age of consent, children are increasingly expected to provide informed consent for systems they developmentally cannot understand (Privacy Commissioner of Canada, 2023; European Data Protection Board, 2024).

This is not just a policy problem—it's a developmental and ethical crisis.

PrivyGuard™ addresses this gap as an AI-powered privacy mentor that helps children and families make sense of digital privacy, rights, and risks through relationally attuned, developmentally grounded conversations. Grounded in the Neurorelational Love Model™, the Love Loop™ (Martyn, in development-a), and the L.O.V.E.ai™ model (Martyn, in development-b)—our healing model for digital trust and emotional safety. PrivyGuard is designed to:

- Decode terms of service and app permissions into simple, child-friendly language
- Provide a Kid-Friendly Privacy rating for app safety
- Support informed consent, digital literacy, and critical thinking through gamified, interactive learning
- Leverage play-based learning as a path to consent, confidence, and emotional resilience
- Offer caregivers and educators a relational tool to scaffold children's understanding of privacy and rights

More than a tool, PrivyGuard represents a new model for ethical, child-centered AI that grows with children, supports emotional development, and empowers digital agency.

Currently, PrivyGuard is a working prototype built on OpenAI's GPT-4, intended for adult-guided use. It is being incubated in The LOVE Lab: Child Futures Innovation PlaySpace, a global research and design hub committed to building emotionally intelligent, developmentally safe technologies for children.

This white paper outlines the global urgency for accessible, child-centered privacy education; it critiques the developmental mismatch between current laws and children's lived experiences;

and proposes PrivyGuard as a relational, scalable solution. It lays out a forward-looking roadmap, including:

1. Research and funding partnerships for ethical development
2. Co-design workshops with children, families, and experts
3. Technical development of structured, child-safe AI infrastructure
4. Pilot testing in educational, clinical, and home settings

We are seeking collaborators, funders, and institutions who share our vision of a future where digital dignity is not optional—but foundational. Together, we can bring PrivyGuard and a new standard of digital care, consent, and co-regulation into children's lives—shaping not just better tools, but relational systems that honor the future of childhood itself.

With love and deep commitment,

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A working prototype of PrivyGuard™ is available for exploration at
www.childfutures.ca/privyguard,
hosted by The LOVE Lab: Child Futures Innovation PlaySpace.

Let's build the future children deserve—together.

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Introduction: The Crisis in Children's Digital Privacy

We are facing a global crisis in children's digital privacy, marked by a growing divide between the rapid integration of digital technologies into children's everyday lives and our collective capacity to safeguard their rights, well-being, and developmental integrity.

Children today grow up immersed in complex digital ecosystems, from TikTok, YouTube, and Instagram to AI-powered toys, voice assistants, and educational apps. These platforms routinely collect vast amounts of personal data including biometric, behavioral, and locational information and actively shape children's thoughts, emotions, behaviors, and self-perceptions, often without clear explanations or developmentally appropriate consent (Barassi, 2020; Livingstone & Third, 2017).

Children are especially vulnerable to the embedded risks in these systems. Developmentally, they lack the cognitive and emotional maturity needed to navigate or resist:

- Targeted advertising designed to exploit psychological drivers (Nairn & Fine, 2008).
- Manipulative design features, including algorithmic nudging and persuasive technologies that bypass reflection (Burr, Taddeo, & Floridi, 2020).
- Mental health harms, such as screen addiction, algorithm-driven validation, and social comparison linked to increased depressive symptoms (Twenge et al., 2017).

High-profile cases, such as TikTok's $92 million U.S. privacy settlement for unlawfully collecting data from minors, highlight systemic failures within current industry standards and regulatory frameworks (Federal Trade Commission, 2024).

A deeper misconception underlies these risks: informed consent is more than mere disclosure, it demands comprehension, reflection, and authentic choice (Etchells, et al., 2011). Children, especially in early to middle childhood, have not yet developed the critical thinking, foresight, or emotional regulation required to meaningfully assess privacy risks or evaluate long-term consequences (Livingston & Third, 2017). Asking children to consent to dense, opaque terms of service is not only unrealistic, it fundamentally undermines the very concept of consent. Thus, consent becomes performative rather than protective.

For consent to be genuinely meaningful, children must be actively supported through:

- Developmentally appropriate explanations.
- Relational scaffolding that fosters emotional safety and reflection.
- Opportunities to practice decision-making, building curiosity, confidence, and digital discernment.

These are not just educational goals, they are relational conditions that make true consent possible.

This requires moving beyond regulatory checklists to developmental frameworks grounded in how children actually grow, learn, and relate.

This understanding is embodied in **The 3 C's of Meaningful Consent™** (Martyn, in development-c)—a developmental framework at the heart of PrivyGuard's design:

Consent = Comprehension + Conversation + Choice ™

Rather than reducing consent to a legal checkbox, this model reframes it as a relational journey. Children need time, emotional safety, and shared reflection to truly understand what they're agreeing to and to feel empowered to say yes, no, or ask for more information.

When digital systems ignore these relational and developmental needs, they fail not only children but the very foundation of ethical design.

This is not only a child rights issue—it reveals a systemic flaw in how digital platforms are conceptualized, built, and regulated.

This white paper introduces a suite of original, proprietary frameworks developed by Dr. Nikki Martyn and The LOVE Lab: Child Futures Innovation PlaySpace. These include The Neurorelational Love Model, L.O.V.E.ai™, The Love Loop, The 3 C's of Meaningful Consent, 5 Pillars of Ethical Child-Centered AI and related concepts. These frameworks are shared for academic, research, and educational use with proper attribution. All rights are reserved. Commercial use or adaptation without permission is not permitted.

A Fragmented Legal Landscape: Where Current Frameworks Fall Short

Despite increasing awareness, most legal frameworks remain fragmented, inconsistently enforced, and misaligned with children's real-world experiences. They often focus narrowly on data collection, without addressing the emotional, relational, and cognitive dimensions of digital life.

In 2021, the Global Privacy Assembly adopted a resolution urging governments and regulators to embed children's rights into digital policy and practice, calling for privacy-by-design, age-appropriate frameworks, and meaningful child in shaping the technologies that affect them (Global Privacy Assembly, 2021).

United States – Children's Online Privacy Protection Act (COPPA)

Enacted in 1998, COPPA (Federal Trade Commission, 2023) requires parental consent for data collection from children under 13 but has significant limitations:

- It only applies to services explicitly targeted at children, allowing general-audience platforms to evade accountability unless they have "actual knowledge" of a child user's age.
- It emphasizes parental consent without addressing children's developmental needs for comprehension, shifting responsibility onto caregivers.

- It lacks effective enforcement mechanisms, resulting in minimal consequences despite widespread violations.

European Union – General Data Protection Regulation for Kids (GDPR-K)

GDPR-K (Article 8) (European Parliament & Council, 2016; European Data Protection Board, 2024) mandates parental consent for data processing involving users under 16 (or lower, depending on national implementation). Although progressive, it:

- Does not establish unified standards for communicating data practices to children.
- Lacks enforceable requirements for age-appropriate or relationally safe design.

Canada – Privacy Act, PIPEDA, and the Proposed Artificial Intelligence and Data Act (AIDA)

Canada's federal privacy framework comprises two main pillars: the Privacy Act (Government of Canada, 1985), which regulates public-sector data use, and PIPEDA (Personal Information Protection and Electronic Documents Act) (Government of Canada, 2000), which governs the private sector. While both affirm individual privacy rights, they lack provisions tailored to children's developmental needs or the unique ethical risks they face in digital spaces.

The proposed Artificial Intelligence and Data Act (AIDA) (Government of Canada, 2023), intended to regulate high-impact AI systems, also fails to adequately address the unique risks children face in AI-mediated environments:

- Children are not explicitly recognized as a vulnerable or distinct group, despite their unique developmental and ethical needs.
- There are no mandates for age-appropriate, relationally safe AI design, nor requirements to integrate child development expertise in governance.
- Transparency and accountability mechanisms remain vague, especially regarding how AI systems interact with or influence minors

In response to these concerns, The Office of the Privacy Commissioner of Canada (OPC) has repeatedly emphasized the importance of designing privacy policies that children can understand and trust. In its 2017 Global Privacy Enforcement Network (GPEN) Sweep, the OPC identified widespread shortcomings in how privacy policies were communicated across digital platforms used by K–12 students. It recommended a layered approach: offering short, accessible summaries linked to detailed explanations, to support both child and caregiver comprehension.

The OPC also reaffirmed that under PIPEDA, consent must be meaningful, requiring an individual to understand the nature, purpose, and consequences of data collection. This standard is developmentally unattainable for many children unless tools are specifically designed to scaffold their understanding.

These legislative and design gaps disproportionately affect marginalized, low-income, and racialized communities, who often have less access to digital literacy resources and fewer

avenues for advocacy (Gilliard, 2019). Without robust, developmentally aligned safeguards, these communities are more vulnerable to exploitation, deepening existing inequities in digital access and protection.

Meanwhile, emerging technologies such as facial recognition, voice profiling, and emotion AI are embedding surveillance into children's daily environments, including schools and educational platforms. These technologies compromise children's autonomy, hinder critical thinking, and challenge their rights to privacy, participation, and dignity (Lupton & Williamson, 2017; Piaget, 1954; Turkle, 2011; UNICEF, 2021).

This context reinforces the urgent need for ethical frameworks like PrivyGuard that are developmentally grounded, relationally attuned, and built with children's rights at the center.

AI, Prediction, and the Developing Brain

From the perspective of predictive processing, the developing brain is constantly generating and refining internal models of the world based on sensory input and social experience (Clark, 2013; Friston & Frith, 2015). In childhood, these predictive models are especially plastic, shaped by consistent interactions that teach the brain what to expect about trust, agency, and safety (Gopnik, Meltzoff, & Kuhl, 1999; Shore, 2001).

AI interactions are not neutral. They become part of a child's predictive environment (Liu & Zawieska, 2020). If an AI system repeatedly offers opaque, dismissive, or manipulative responses, children may begin to expect confusion or invalidation from digital systems. Over time, this can erode trust and reinforce passivity (Livingstone & Third, 2017; Floridi et al., 2018; Fonagy, et al., 2015).

Conversely, AI designed with emotional attunement and developmental sensitivity can teach children to expect clarity, respect, and agency. These systems can become predictive partners reinforcing internal models in which children's voices matter and digital spaces support meaningful consent and understanding (Gopnik, 2020; UNICEF, 2021; Clark, 2015).

This insight underscores a critical ethical imperative: AI systems must not only meet regulatory requirements they must support the healthy formation of children's expectations about relationship, autonomy, and digital citizenship.

AI is central to these tensions. It can amplify risks through predictive profiling, surveillance, and opaque decision-making, disproportionately affecting vulnerable populations (Eubanks, 2018; Noble, 2018). Yet when designed ethically and developmentally, AI holds immense promise. It can help children understand digital privacy, navigate online choices, foster identity formation, and co-regulate emotional experiences.

The EEPO Human–Technology Interaction Framework (Martyn, et al., 2023) exemplifies this shift. EEPO reimagines AI as a relational partner, not a transactional tool. It outlines four roles—Emissary, Educator, Playmate, and Oracle—each guiding AI to support curiosity, exploration,

and relational safety. This framework helps developers and educators design emotionally intelligent systems attuned to children's cognitive and emotional needs.

Addressing these challenges requires practical innovations that bridge the gap between legal frameworks and children's lived digital realities. PrivyGuard answers this call. As an AI-powered privacy mentor, PrivyGuard translates complex terms of service into clear, developmentally appropriate language, provides a Kid-Friendly Privacy Rating, and scaffolds emotional understanding of digital risks. It is not merely a compliance tool, it is a relational companion.

Rooted in neuroscience, attachment theory, and the Neurorelational Love Framework, PrivyGuard supports children's agency, trust, and consent literacy in digital spaces. It bridges rigid policy with the relational truth of childhood: safety is not just a right it is a felt experience.

These systemic gaps in child digital protection call for new governance models that integrate the science of child developmental, emotionally attuned AI design, and proactive education into every layer of digital infrastructure. PrivyGuard operates within this emergent paradigm, aligning law, learning, and lived experience.

This white paper outlines the urgency of coordinated, cross-sector action to protect and empower children in digital spaces. It is a call to educators, technologists, caregivers, funders, and policymakers to reimagine digital childhood—not simply as a site of risk, but as a relational ecosystem. When privacy is built on emotional safety and informed consent, we cultivate a future where children don't just survive online—they thrive, with clarity, confidence, and voice.

The Vision Behind PrivyGuard

PrivyGuard was born from the heart of the Neurorelational Love Model—an original framework developed by Dr. Nikki Martyn, grounded in trust, vulnerability, empowerment, and belonging. Designed to foster emotional safety and growth through authentic relationships, the model is currently being advanced through research and application at The LOVE Lab: Child Futures Innovation PlaySpace. These core values shape how humans grow, heal, and form identity. As technology becomes increasingly enmeshed in children's lives, it is essential that we intentionally embed these same relational principles into the digital environments they navigate.

Too often, traditional privacy tools emphasize restriction, compliance, and rigid language, which can inadvertently foster confusion or anxiety (Livingstone & Third, 2017; Barassi, 2020; Information Commissioner's Office, 2020; UNICEF, 2021). PrivyGuard was created to offer something radically different: a relational, emotionally intelligent AI companion. It serves as a guide that speaks with children rather than at them, mirroring the developmental scaffolding a trusted adult might provide.

PrivyGuard is grounded in the values of:

- **Trust** – Supporting safe exploration through honest, attuned responses.
- **Empowerment** – Encouraging children to ask questions and make informed choices.
- **Digital Literacy** – Making complex systems understandable, relatable, and relevant.
- **Emotional Safety** – Using language and tone designed to foster co-regulation, not fear.

For example, when a child asks about an app's location permissions, PrivyGuard carefully listens to emotional and developmental cues, responding in ways that reassure, educate, and guide the child through thoughtful decision-making. Through interactive dialogue, Privy Guard helps build awareness around digital footprints, app permissions, and terms of service, empowering children to ask questions and make informed choices before clicking "I agree".

Ultimately, the vision behind Privy Guard is not only to protect children, but to equip them with the language, knowledge, and confidence to navigate their digital world with curiosity, courage, and care.

L.O.V.E.ai: Relational Design for Digital Childhood

PrivyGuard is powered by the L.O.V.E.ai™ model—a relational AI design framework created specifically to guide ethical and emotionally attuned digital interactions (Martyn, in development-b).

L.O.V.E.ai defines the four relational pillars essential for emotionally intelligent technology:

- **L – Listen with Attunement** – The AI listens not only for keywords but also for emotional cues, questions, and developmental contexts.
- **O – Offer Emotional Safety** – Responses are crafted to regulate anxiety, build trust, and mirror the calm, respectful presence of a caring adult.
- **V – Validate Curiosity and Choice**: Children are supported in their curiosity with affirming, developmentally appropriate responses that guide understanding without shame or control.
- **E – Empower Understanding and Consent** – Instead of simply "explaining," the AI scaffolds agency—inviting reflection, inquiry, and confident decision-making.

PrivyGuard embodies this layered, child-friendly design approach. It translates opaque privacy policies into clear, accessible summaries and links them to deeper explanations, supporting meaningful, developmentally aligned consent, in line with guidance from the Canadian Office of Privacy Commission.

The Love Loop: Micro-Moments of Digital Healing

PrivyGuard's design is deeply informed by the Love Loop™—a relational model of healing and growth rooted in the Neurorelational Love Model (Martyn, in development-a).T

he Love Loop follows five dynamic elements:

Trust → Vulnerability → Risk → Validation → Deeper Trust -- → Authenticity ™

Each child-AI interaction is intentionally designed to move through this loop:

- **Trust** is established through attunement and emotional safety.
- **Vulnerability** is invited through open-ended questions and gentle curiosity.
- **Risk** is supported as children explore ideas or express uncertainty.
- **Validation** is offered for thoughts, emotions, and boundaries.
- **Deeper Trust** emerges, enabling the cycle to continue
- **Authenticity** is the outcome where children feel empowered to make informed, values-aligned choices.

These micro-moments of relational rhythm form the foundation for healing in digital spaces. Rather than reinforcing compliance or control, PrivyGuard teaches children that even digital

systems can offer emotional safety, meaningful consent, and personal agency. This scaffolds not only privacy literacy, but also identity formation, self-trust, and relational confidence.

Through this model, PrivyGuard becomes more than a privacy mentor—it functions as a genuinely attuned digital companion.

Play as a Pathway to Relational Trust

Play is not a distraction; it is the primary occupation and developmental language of childhood (Parham Trigg & Fazio, 2007). It is through play that children learn boundaries, test relationships, explore new roles, and negotiate consent (Winnicott, 1971; Landreth, 2012; Gõncū & Gaskins; Gray, 2013).

Play is inherently vulnerable. It invites risk, requires safety, and depends on mutual respect (Martyn, 2020) the very same conditions needed for authentic digital consent (Livingstone & Third, 2017; UNICEF, 2021). PrivyGuard integrates this wisdom by designing interactions that feel exploratory, joyful, and emotionally safe.

Just as a trusted adult joins a child's game with curiosity and attunement, PrivyGuard meets children where they are, engaging them through imagination, emotion, and wonder. By embedding play into its relational scaffolding, PrivyGuard nurtures not only understanding, but the experience of digital agency.

Through play, children don't just learn about privacy—they experience what it feels like to be respected.

A Vision for Digital Childhood

Through interactive dialogue, PrivyGuard helps children and families:

- Understand their digital footprints and app permissions.
- Decode the meanings and potential risks embedded in terms of service.
- Practice reflective thinking before granting data access.
- Develop critical questioning skills about technology.

More than protection alone, PrivyGuard nurtures what developmental psychologists call "epistemic trust"—the foundational ability to evaluate information and decide whom and what to trust (Fonagy et al., 2017). This capacity is particularly crucial in digital contexts, where misinformation, manipulation, and opaque data practices can easily overwhelm or mislead children. Cultivating epistemic trust empowers children with the confidence and discernment essential for navigating their digital lives safely.

Ultimately, the vision of PrivyGuard is not just to protect children but to equip them with the language, knowledge, and confidence to navigate their digital world with curiosity, courage and care. It is an invitation to reimagine AI not as a tool of compliance, but as a companion for

growth, technology that evolves with children, honoring their inner world every step of the way.

Scalable, Embedded Applications

PrivyGuard is being developed not only as a tool, but as a scalable infrastructure layer for ethical digital childhood. Designed with integration in mind, its future form could be embedded via API or SDK into a wide range of children's digital products—from learning apps and games to voice assistants and smart toys—offering real-time, developmentally safe privacy mentoring at the point of interaction.

The Kid-Friendly Privacy Rating system could evolve into a recognized certification layer for caregivers, schools, and developers, building transparency, accountability, and developmental alignment across digital ecosystems.

These future-facing applications underscore PrivyGuard's potential to move beyond standalone use and become a trusted relational layer for consent, safety, and child empowerment across platforms.

How PrivyGuard Works

PrivyGuard, in its current prototype form, leverages OpenAI's GPT-4 to create engaging, interactive, and educational dialogues that enhance children's understanding of digital privacy. Designed explicitly for use with adult guidance — since GPT-4 is not yet independently safe for unsupervised child interactions — PrivyGuard addresses a critical gap in the digital landscape: translating complex terms of service and privacy policies into language children can easily understand and trust.

At the heart of PrivyGuard is its unique Privacy Safety Rating System, a simple, color-coded, and developmentally attuned model that clearly communicates:

- Child-friendly explanations about the types of data an app collects.
- Clarifications regarding the purpose and potential risks of that data (e.g advertising, location tracking, or third-party sharing).
- Practical guidance on permissions (like microphone or camera access) that warrant extra care.
- Accessible explanations of digital concepts (like the purpose of cookies).

This system does more than inform, it also invites reflection and curiosity. By encouraging children to pause, ask questions, and understand what data is collected and why, PrivyGuard cultivates foundational skills of informed decision-making. These are the building blocks of true consent—not compliance, but an empowered ability to weigh risks, ask questions and make values-aligned decisions.

The Privacy Safety Rating System thus serves as a gentle, critical-thinking scaffold, empowering children to look beyond the "I agree" button and actively reflect on their choices.

Relational Design: Bringing the L.O.V.E.ai Pillars to Life

What distinguishes PrivyGuard is not just what it teaches, but how it teaches. Drawing on the relational foundations of the L.O.V.E.ai model (introduced earlier), PrivyGuard mirrors emotionally intelligent caregiving, guiding each interaction with attunement, warmth, and developmental integrity.

Every exchange is designed to be emotionally safe and developmentally responsive, fostering a felt sense of safety and agency. Rather than delivering information in a top-down manner, PrivyGuard meets children where they are, supporting emotional regulation, trust-building, and choice.

Through this relational approach, children begin to develop essential capacities such as perspective-taking, risk awareness, and self-trust, not through correction or control, but by feeling safe enough to explore, reflect, and think for themselves.

These relational processes intentionally cultivate the foundations of informed consent: critical thinking, consequence prediction, and emotional regulation. These skills are not assumed, they are scaffolded through consistent, emotionally attuned interaction.

To keep privacy education both effective and enjoyable, PrivyGuard integrates developmentally aligned, playful features:

- Privacy "Would You Rather" games that spark scenario-based decision-making about digital safety
- Privacy-themed jokes and riddles that build emotional engagement and help children retain key concepts
- Custom storytelling prompts tailored to a child's interests, weaving privacy lessons into playful, relatable narratives

These interactive features strengthen not only digital literacy but also language development, emotional connection, and critical thinking—transforming privacy education into a meaningful, joyful experience rooted in relational trust.

Playful Design is Serious Developmental Work

In PrivyGuard, play is a relational teaching strategy grounded in the science of child development. Whether through Privacy "Would You Rather" games, riddles, or storytelling prompts, each feature is intentionally designed to:

- Normalize reflection and dialogue
- Help children feel safe enough to ask questions
- Build emotional memory around complex topics like data sharing and permissions

These playful interactions mirror how children naturally make sense of the world through curiosity, humor, and trust. By embedding play into its relational scaffolding, PrivyGuard transforms privacy education into an experience of co-regulated discovery, the very conditions that nurture resilience, agency, and authentic consent.

Turning Clicks into Conversations

PrivyGuard's conversational Q&A tool supports intergenerational learning, helping families navigate digital life together. It enables families to:

- Evaluate and discuss app ratings and permissions collaboratively
- Translate dense legal terms of service into values-based conversations
- Reflect on emotional safety, consent, and boundaries in digital spaces
- Navigate nuanced scenarios like online friend requests or location-sharing dilemmas

These shared conversations foster co-regulation, emotional intelligence, and digital discernment laying the foundation for lifelong trust and safety online (Livingstone & Blum-Ross, 2020).

Ultimately, PrivyGuard transforms digital privacy education from an abstract, often intimidating task into a relational, emotionally safe, and empowering experience.

Its holistic design integrates:

- Advanced AI-driven language modeling
- Developmental science grounded in the Neurorelational Love Model (Martyn, in development-a)
- Relational ethics guided by the L.O.V.E.ai framework (Martyn, in development-b)
- Playful, engaging features aligned with children's developmental stages

PrivyGuard is designed not just to protect children, but to nurture them, to raise a generation of emotionally resilient, privacy-literate, and critically aware digital citizens. Children who feel confident navigating technology and empowered to ask questions, set boundaries, and advocate for themselves.

By combining ethical AI, child development, and relational design, PrivyGuard reimagines digital consent as a shared journey of reflection, growth, and care.

Ethical Design Considerations

PrivyGuard's current prototype uses OpenAI's GPT-4 to explore educational interactions, but it is critical to recognize that general-purpose AI systems like ChatGPT are not designed for direct use by children. Without intentional adaptation, these models pose significant ethical, emotional, and developmental risks.

A primary concern is data privacy. Children may unintentionally disclose personal or sensitive information during AI interactions. Without strong safeguards, this data could be processed, stored, or misused, violating critical child privacy protections under laws like COPPA, GDPR-K, and PIPEDA. As the Data Protection Commission (2020) emphasized, children's data processing must prioritize their rights, developmental needs, and lived experiences, not just regulatory compliance.

Equally concerning are risks around content accuracy and emotional safety. General-purpose AI models can generate inappropriate, biased, or incorrect information, what are often referred to as "AI hallucinations." For children, whose cognitive and emotional regulation is still developing, such misinformation can cause confusion, anxiety, or harm. False confidence in AI responses—particularly around topics like identity, relationships, or safety can deeply undermine trust and development.

In their current form, large language models lack essential features for safe child use:

- Verified age gating
- Developmentally structured and emotionally attuned responses
- Clear relational boundaries and repair mechanisms
- Moderation aligned with children's emotional capacities

Without these, interactions may compromise emotional safety and erode the trust essential for learning and self-expression.

The LOVE Lab's 5 Pillars of Ethical Child-Centered AI™

To address these challenges, The LOVE Lab: Child Futures Innovation PlaySpace has developed a unique ethical framework to guide the development of AI for children:

The LOVE Lab's 5 Pillars of Ethical Child-Centered AI™

1. **Zero Data Collection**: To ensure absolute privacy and protect against data exploitation. (Barassi, 2020; Livingstone &Third, 2017)
2. **Transparent and Auditable Response Systems**: To reduce misinformation, ensure accountability, and build trust. (Floridi et al., 2018; Burr, Taddeo & Floridi, 2021)
3. **Co-Design with Children, Families, and Developmental Experts**: To align AI design with real-world needs and lived experience. (Lundy, 2007; UNICEF, 2021; Participatory Design in HCI)
4. **Developmental Alignment and Relational Accessibility**: To ensure responses are emotionally attuned, cognitively appropriate, and grounded in children's developmental and relational needs. (Shonkoff & Phillips, 2000; Piaget, 1954; Vygotsky, 1978)
5. **Emotionally Attuned Interaction Grounded in the Neurorelational Love Model ™**: To support co-regulation, trust-building, and relational safety (Bowlby, 1969; Schore, 2001; Martyn, in development-a).

This framework is not just about making AI safe, it's about making it relationally ethical, developmentally responsive, and emotionally protective. When AI supports children as whole people—not data points—it becomes a tool of transformation, not just automation.

Ethical design should meet children where they are—not just restrict where they go

Relational Boundaries and Developmental Transparency

While PrivyGuard is designed to engage children through emotionally attuned, developmentally appropriate interactions, it is ethically essential to maintain clear boundaries between human relationships and AI tools. Children are particularly vulnerable to anthropomorphizing technology—interpreting warmth or empathy cues as signs of human-like sentience or trustworthiness. Without explicit framing, this can lead to overreliance, misplaced trust, or confusion between relational tools and genuine human connection.

To address this, PrivyGuard will include clear language, visual signals, and consistent reminders that it is a digital assistant, not a friend, caregiver, or authority figure. Each interaction will be framed as an educational scaffold, not a substitute for real human relationships.

This approach protects the integrity of children's developing social and emotional skills while still offering the guided, attuned support necessary to foster digital confidence and agency.

The Future: From Prototype to Public Good

PrivyGuard is currently in a promising prototype phase, demonstrating the transformative potential of AI to reshape how children understand and navigate digital privacy. To fulfill its promise as a safe, accessible, and developmentally aligned public resource, the next phase of development must prioritize rigorous ethical design, inclusive co-creation, and evidence-based implementation.

The vision is clear: to evolve PrivyGuard from an innovative prototype into a fully child-safe, emotionally intelligent privacy mentor, a trusted digital companion that children can relate to like a caring adult, yet scalable to meet the complex demands of our digital world.

Strategic Pathway Forward

Our multi-phase strategy is designed to ensure that future iterations of PrivyGuard uphold the highest standards of child protection, ethical AI, and the science of child development. Each phase builds on relational design principles and is grounded in care, co-creation, and accountability.

To scale PrivyGuard responsibly and with integrity, our next steps center on four core strategies:

1. **Research & Funding Mobilization**

   We are actively seeking partnerships with:

   - **Public and private funders** committed to digital safety, technology equity, and/ or child rights.
   - **Academic institutions** engaged in research on child–computer interaction, AI ethics, and/ or developmental neuroscience.
   - **Philanthropic organizations** focused on youth empowerment, mental health, and/ or responsible innovation.

   Funding will support not only technical development but also rigorous empirical validation of the L.O.V.E.ai model (Martyn, in development-b) and the Neurorelational Love Framework (Martyn, in development-a) in digital contexts.

2. **Inclusive Co-Design Workshops**

   We will facilitate participatory workshops that bring together:

   - Children and youth from diverse lived experiences
   - Parents and caregivers
   - Educators and digital literacy experts
   - Child advocates and privacy professionals

   These workshops will explore real-world scenarios around digital consent, trust, and reflection—ensuring PrivyGuard's voice, tone, interface, and features resonate with

children's developmental, emotional, and cultural realities. Children's voices will be central to every design decision.

3. **Technical Development of Child-Safe AI Infrastructure**

Building on co-design insights, we will develop a dedicated child-centered AI infrastructure with:

- Structured response protocols that reduce misinformation and support emotional regulation
- Robust data privacy protections grounded in minimization and security
- Relational interaction patterns based on the L.O.V.E.ai model (Martyn, in development-b), emphasizing attunement, safety, and agency
- Embedded co-regulation mechanisms informed by affective scaffolding models from developmental psychology (Kopp, 1982; Vygotsky, 1978; Fonagy & Allison, 2014).

PrivyGuard's AI will move beyond GPT toward a custom-designed engine optimized for cognitive and emotional safety. Interactive features will promote informed consent through simplified explanations, reflective prompts, and "pause-and-consider" moments that guide children toward thoughtful decision-making.

4. **Pilot Testing in Families, Classrooms, and Clinics**

Before broad implementation, PrivyGuard will undergo rigorous pilot testing with:

- **Children and youth** from diverse cultural, developmental, and socioeconomic backgrounds
- **Educators** across early childhood, primary, and digital literacy contexts
- **Mental health professionals and child development specialists** working in both clinical and community settings

These pilots will generate qualitative and quantitative insights on usability, engagement, trust-building, and learning outcomes. The findings will guide iterative refinements to ensure that PrivyGuard is developmentally attuned, emotionally resonant, and equitable across identities and contexts.

Establishing a New Public Standard

PrivyGuard aims to become a trusted, accessible privacy mentor, an essential part of how children experience and understand digital life.

More than a protective tool, PrivyGuard aspires to set a new public standard in digital privacy education, one that is deeply grounded in:

- Emotional safety
- The science of child development
- Relational trust
- Empowerment of children as confident digital citizens

This initiative moves beyond harm reduction. It is about cultivating digital dignity and emotional agency from the very beginning, designing systems that honor children's voices, rights, and capacities.

PrivyGuard's vision is aligned with global momentum, including the 2021 Global Privacy Assembly Resolution, which calls for children's rights, transparency, and developmental alignment to be foundational principles of ethical digital governance (Global Privacy Assembly, 2021).

PrivyGuard is redefining what protection means in the age of AI—moving from control to care, and from compliance to connection.

Call to Action: Join Us in Protecting Children's Digital Lives

Creating a digital world where children are safe, empowered, and informed requires more than innovation, it demands collective responsibility, strategic collaboration, and a shared commitment to ethical, love-informed technology.

In today's digital landscape, children routinely click "agree" without meaningful comprehension. To protect them, we must move beyond surface-level privacy measures and toward cultivating consent literacy—a foundation built on emotional regulation, critical thinking, and relational trust.

PrivyGuard supports this essential learning journey through developmentally attuned, emotionally intelligent interaction.

The 3 C's of Meaningful Consent ™

Consent = Comprehension + Conversation + Choice ™

This deceptively simple equation reframes consent as a developmental journey, not a legal checkbox. Embedded within PrivyGuard's design, it ensures that:

- **Comprehension** – is supported through child-friendly language, visuals, and metaphors.
- **Conversation** – creates space for reflection, co-regulation, and emotional safety.
- **Choice** – honors children's agency, boundaries, and their right to say "no" with confidence (Martyn, in development-c).

This model is central to our mission: consent that is felt, understood, and freely given. It's not just a process—it's a relational skill, nurtured over time when supported by love-informed tools like PrivyGuard.

PrivyGuard is a critical first step—but only the beginning.

The 3 C's framework already informs every interaction within PrivyGuard. But to realize this vision at scale, we need co-design partners, policy allies, and bold funders who believe in a future where children are not only protected but respected, empowered, and heard.

The LOVE Lab: Child Futures Innovation PlaySpace

This initiative is part of The LOVE Lab: Child Futures Innovation PlaySpace—a global relational systems innovation hub dedicated to reimagining digital childhood through ethical, emotionally intelligent, and developmentally grounded design.

But the Lab is more than an incubator for tools.

It is a relational systems change accelerator, rooted in love-informed science and designed to transform how children are seen, heard, and supported across digital, educational, and policy systems.

Founded on the belief that children deserve systems—not just apps or policies—that honor their rights, voices, and relational needs, the Lab brings together researchers, designers, educators, caregivers, and children themselves to co-create solutions that protect and empower.

From AI design to policy strategy, the Lab exists to make love-informed, child-centered innovation real—at scale.

PrivyGuard GPT is just one of the first prototypes emerging from this ecosystem.

Other initiatives include:

- **L.O.V.E.ai™** – A relational AI design framework that listens with attunement, regulates with safety, and empowers children's agency (Martyn, in development-b).
- **EEPO Framework ™** – A developmental model for ethical child–technology interaction, structured around four relational roles: Emissary, Educator, Playmate, and Oracle (Martyn, et al., 2024).
- **ARCS (Achieving the Rights of the Child Systemwide)** – A global policy framework, developed through the WED Movement and the Government of Abu Dhabi, to embed children's rights across institutional, legal, and digital systems.
- **ChildArt.ca** – An early Lab prototype that used art-based storytelling to amplify adolescent voices and support mental health during the pandemic (Martyn, 2022)
- **Child Voice GPT ™** – A digital tool designed to help adults listen more deeply to children's non-verbal voices through art and play (Martyn, in development-d).

These innovations are not standalone. They work together as a relational infrastructure—laying the foundation for ethical digital life built on trust, care, and developmental insight.

Together, they signal a powerful shift:

From siloed tools to systemic transformation grounded in child rights, love, and the science of child developmental.

Engage with Us

We are actively seeking partners who share our commitment to reimagining digital childhood through ethical, emotionally intelligent innovation:

- **Funders and philanthropies** invested in transformative, scalable solutions for children's digital rights, privacy, and well-being.
- **Governments and policymakers** committed to child-focused, forward-thinking legislation and education strategies.
- **Privacy researchers, AI ethicists, and technologists** dedicated to building transparent, accountable, and developmentally aligned systems.
- **Educators, schools, and edtech leaders** working to embed relational, ethical digital literacy into learning environments.

How You Can Get Involved

- **Collaborate** – Partner with the LOVE Lab: Child Futures Innovation PlaySpace to co-create research, tools, and systems that honor children's voices, rights, and relational needs.
- **Invest** – Help us scale PrivyGuard and related innovations. The LOVE Lab: Child Futures Innovation PlaySpace is a registered Canadian charity (Charity No. [insert number]), enabling eligible donors to receive charitable tax receipts.
- **Pilot** – Bring PrivyGuard into your school, clinic, or family organization to support real-world testing and co-refinement across diverse communities.
- **Share & Advocate** – Amplify our vision. Connect us with aligned partners, share our work in your networks, and advocate for ethical, child-centered digital governance.

Together, we can create more than safer technology—we can build a digital world where children are truly seen, heard, and protected through intentional, relational design.

Let's build the future they deserve.

Partner with The LOVE Lab

The LOVE Lab is ready to grow—and we're seeking bold, aligned partners to help us build the future of ethical, emotionally intelligent innovation for children.

We welcome opportunities to:

- **Fund or Sponsor:** Support the expansion of our prototypes, pilot testing, and research programs. Your investment helps us bring ethical, child-centered technologies to life and influence global policy and design standards.
- **Engage in Consulting & Collaboration:** Partner with us to apply our frameworks including the Neurorelational Love Model™ (Martyn, in development-a), L.O.V.E.ai™ (Martyn, in development-b), and the EEPO Framework (Martyn, et. Al. 2024) across your products, platforms, schools, or institutions. We offer bespoke consulting, design strategy, and developmental insight.
- **Host a Co-Design Lab or Workshop**: Invite The LOVE Lab to lead custom innovation labs in your community, school, or organization. Together, we can explore real-world solutions rooted in relational trust, the science of child development, and children's voices.
- **Commission Applied Research or Policy Innovation**: Our team is available to conduct applied research, develop child-centered policy briefs, or create white papers aligned with your organizational goals and values.

Let's Build the Future of Childhood—Together

To inquire about partnerships, funding opportunities, or consulting engagements, contact:

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Try the live prototype: PrivyGuard GPT

Conclusion: Reclaiming Childhood in the Digital Age

We are standing at a crossroads between technological innovation and human responsibility. As the digital world becomes more immersive, intelligent, and persuasive, so too must our efforts to protect what is most sacred—childhood itself.

Children are not simply users of technology. They are dreamers, learners, question-askers, and meaning-makers. They experience the world through relationship, story, and play. And yet, the digital systems that surround them often speak a different language, one of speed, extraction, and manipulation.

Within this tension lies both our challenge and our opportunity.

Reclaiming childhood in the digital age means more than shielding children from harm. It means building systems worthy of their trust. It means designing technologies that meet children not as data points, but as whole human beings, curious, sensitive, and growing. It means reimagining consent not as a checkbox, but as a relational journey rooted in trust, reflection, and shared meaning. And it means ensuring that emotional safety and relational care are not luxuries, but design imperatives.

PrivyGuard is not just a technical solution. It is an invitation to remember what matters most: the inner world of the child, the integrity of choice, the quiet courage of asking, “Why does this app need to know where I am?”

We can no longer afford to treat digital privacy as an adult domain. It is time to bring children into the conversation with language they understand, and tools they can trust.

Because if we want a future where children thrive—not just survive—we must build a digital world where their dignity is not compromised, their curiosity is not commodified, and their voices are not lost in the noise of algorithms.

This is our call.

Let us rise to it with wisdom, with love, and with the unshakable belief that childhood is worth protecting, and that technology, when guided by empathy and ethics, can help us do just that.

This is the work of our time. And we are ready.

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Thank you for your interest!

This white paper is part of a broader movement to protect childhood in the digital age.
At The LOVE Lab, we believe technology can be a tool for healing, trust, and transformation when guided by love, ethics, and the science of child development.

We invite you to join us in building a digital world where every child feels seen, heard, safe, and supported; LOVED

Let's create the future they deserve—together. 🧡

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