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Trust-Affording Action: Citizens' Everyday Relations With Algorithmized Public Services

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Abstract

Finland is considered a society of high trust. Finnish citizens' trust in public administration and institutions is clearly above the OECD average, and there is broad consensus on the virtues of maintaining high societal trust. As high-trust public institutions are now turning to new efficiency-promising AI technologies, it is important to ask: "How are these [technologies] then capable of upholding that trust?" This question is a direct quote from our fieldwork following Finnish citizens' everyday trust-building with new AI-infused services. Based on a trust-focused reading of our qualitative data, we propose an approach to trust that affords greater empirical nuance than alternative conceptions, which we see as limited for following the evolving dynamics of citizens' trust in new technologies. The approach we are developing situates trust within a processual conception of action and highlights the need to also grasp the "quieter"—embodied, habitualized, and intuitive—forms of trust as part of its living dynamic. We then apply this approach to examine the adoption of the Finnish Covid-19 tracing application and citizens' perceptions of algorithmically infused services provided by Finland's social insurance institution. We highlight creative tactics that citizens use to establish trust: the agent heuristic, the case heuristic, the social heuristic, and the interaction heuristic. Our research contributes to a nuanced understanding of trust and its situated dynamics from the citizen perspective, a focus we consider crucial at a time of unprecedented excitement around the transformation of high-trust institutions through algorithmic technologies.

Keywords

artificial intelligence; citizens; public services; trust; trust in AI; trust in technology

1. Introduction

In March 2024, Finland's newly inaugurated president, Alexander Stubb, took to X to celebrate another year of Finland topping *the World Happiness Report* (Stubb, 2024; see also Helliwell et al., 2024):

> Finland has been ranked the Happiest Country in the World, now for seven years in a row. Many reasons for it, here are my three: 1. Nature. 2. Trust. 3. Education. There are naturally many other reasons for collective happiness. What would be your top three?

Finland's top ranking was followed by the other Nordic countries—Denmark, Iceland, and Sweden, in that order—with Norway placing seventh. By highlighting trust as a key ingredient in the Nordic mix of happiness, President Stubb echoed a long-standing discourse linking trust not only to happiness but also to broader social goods such as cohesion, stability, and institutional legitimacy. Finnish citizens' trust in public institutions is well above the OECD average (OECD, 2021, 2024), and there is broad consensus on the "importance of maintaining the Finnish trust capital as a core value of the Finnish administrative culture and a cornerstone of institutional legitimacy" (OECD, 2021, p. 11). According to the OECD country report *Drivers of Trust in Public Institutions in Finland*, "The government of Finland sees trust as a fundamental and guiding value that underpins the functioning of the public administration and the development of people-oriented public services" (OECD, 2021, p. 16).

The development of such people-oriented public services has recently enacted a new imaginary of AI-assisted services tailored to individual citizens' needs (Räisänen, 2024), coupled with technology-solutionist promises of state efficiency. The current Finnish government identifies AI as a key element of its data economy strategy and promises to "enable the use of artificial intelligence to automate decisions made by public authorities" (Government of Finland, 2023, p. 125) as part of its larger efforts to support the "full use of the opportunities provided by digitalisation and artificial intelligence" (p. 6). With high-trust Nordic institutions now turning to new efficiency-promising but unstable algorithmic technologies (Kaun, 2021, p. 2047) like generative AI, it is important to ask: "How are these [technologies] then capable of upholding that trust?" This question is a direct quote from our fieldwork following Finnish citizens' everyday sensemaking and trust-building with the new AI-infused services that have entered their lives in recent years.

Our study focuses on the everyday dynamics of trust-building and breakdown in citizens' encounters with AI-infused public services. We ask the following research questions:

> RQ1: How does trust in algorithmic technologies emerge in everyday encounters with these technologies?
>
> RQ2: How is trust questioned and constructed in the process?

Drawing from four rounds of qualitative data collection, we develop an empirically grounded framework of trust-affording action. We see trust as a nuanced navigational device in everyday settings, shaped by the constant flux of new (AI) technologies that bring both promise and excitement but also lead to frequent experiences of uncertainty. Our qualitative reading of this uncertainty is corroborated by a 2023 survey conducted by Finland's Digital and Population Data Services Agency (DVV), which found that "only 15% of

Finns trust AI services" (DVV, 2023; the figure rose to 19% in the 2024 survey; see also Gerlich, 2024; Rousku, 2024, pp. 59–62). This kind of low trust is precisely the problem that the EU's AI Act seeks to address. According to Laux (2024), "its overarching aim…[is] to create European Union ('EU') citizens' trust in AI" (p. 1), which serves "a strategic purpose: [to] induce people to place trust in AI so that they will use it more and, hence, unlock the technology's economic and social potential" (Laux et al., 2023, p. 3).

We begin by looking at research on trust in social and technology studies and propose an alternative conceptual approach that is directly motivated by our qualitative engagements with citizens, which force us to look beyond dichotomies such as cognitive versus emotive concepts of trust. Our data unveils trust not only in its cognitive and active form—reflective and deliberative, commonly seen as "rational"—that is customary especially in computer science and ICT approaches but also in its intuitive, implicit, and latent forms, which are sometimes proposed in social scientific approaches countering the assumption of rational choice theory, something we call quiet trust. We approach trust as affecting the flow, direction, and continuation of action processes and place its elusive varieties into a unified processual frame that enables us to incorporate both active and quiet, or cognitive and intuitive, trust into one action-based framework. We then apply this approach to unpack specific cases of trust formation in citizen encounters with new algorithmic technologies. Finally, we circle back to the question of trust as fundamental to the social sustainability of welfare states and highlight its brittle nature at a time of overwhelming societal excitement around AI technologies. Our study contributes to the multidisciplinary research on citizens' trust in AI by highlighting the living dynamic and variety of trust. We propose a synthetic interpretation that integrates different modes of trust into a unified framework of processual action, showing how citizens' trust shifts between quiet and active forms as they move through a dynamic of established and exploratory phases within human-machine interactions.

2. Trust in Technology and AI

Approaching our empirical observations of people's relationships with AI technologies, we reviewed existing research and approaches to trust in both technological and social studies and found much of it difficult to work with. Indeed, our participants' relationship with new technologies called for a far more nuanced, formative, and fluid approach to trust than the dichotomous, mechanistic models found in much of the literature. Our search for more congruent approaches turned the research process into an open, critical conversation between available conceptualizations and our empirical reflections, and ultimately into an attempt to formulate a more generous approach to trust—one that allows for greater variety in how trust is lived and enacted as part of people's everyday experience and conduct. In our search, we draw on multidisciplinary studies of trust. First, we conduct an overview of empirical studies mainly in information systems, human–computer interaction, and software engineering to explore how trust in technology and AI is studied in ICT research. Much of this research borrows approaches from the more firmly established behavioral and social scientific studies on trust, to which we then turn in our search for alternative conceptions from the sociology and anthropology of trust.

2.1. Antecedents of Trust

Researchers have theorized trust in technology (Gille et al., 2020) and the formation of trust (Gillath et al., 2021; Jacovi et al., 2021), along with searching for ways to analyze trust specifically in human–AI

interactions (Ferrario et al., 2020). Some researchers have suggested that trust in AI should be considered separately from trust in more traditional technologies due to fundamental differences in these technologies (Bedué & Fritzsche, 2022). A literature review on the antecedents of trust in AI identified five trust challenges "unique to or exacerbated by AI": transparency and explainability, accuracy and reliability, automation, anthropomorphism, and mass data extraction (Lockey et al., 2021, pp. 5463–5467). Much of the technical research on trust also focuses on factors predicting trust. According to Li and Hahn (2022), research has explored the effects of human characteristics (e.g., age, gender, region, and socioeconomic factors), technological features (performance, transparency, reliability, etc.), and interactional aspects (building process, calibration, interaction quality, etc.; see also Bao et al., 2021; Kaplan et al., 2021). Other studies (e.g., Ferrario et al., 2020) categorize trust-affecting factors into specific characteristics at the human (e.g., personality), environmental (e.g., culture and structural assurances such as contracts), and technological levels (performance, process, and purpose; Siau, 2018). Trust in AI is often studied in relation to a specific use case such as chatbots in customer service (Zierau et al., 2020), AI in financial risk management (Fritz-Morgenthal et al., 2022), and AI in healthcare (Gille et al., 2020). Importantly, contextual factors affecting trust include which person or organization is deploying the technology and for what purpose. Citizen perspectives on AI have been found to be affected by the context and application of the technology (Crockett et al., 2022; Habib et al., 2020). In the context of AI in healthcare, Baldauf et al. (2020) found perceptions of AI trustworthiness to be significantly affected by institutional factors such as the associated healthcare institution or medical certification. The trust-affecting sociocultural context is also related to national institutions and differences in their cultural position (Chen et al., 2021; Julsrud & Krogstad, 2020; B. Zhang & Dafoe, 2020). An earlier study found that citizens' perceptions of shared values with people who are affiliated with an institution's services are instrumental (Warkentin et al., 2012). The relatively recent European AI Act regulation is intended to foster trustworthy AI, and a literature review of the critiques and challenges of the regulation paints a picture where citizens' trust in AI is actually trust that organizations and institutions using AI are trustworthy (Vainionpää et al., 2023). Robinson (2020) has examined how Nordic nations have positioned themselves in national policy strategies on AI and how they emphasize democracy, ethics, privacy, and autonomy to support trust in AI.

It should be noted that the institutional underpinnings of trust more generally have long been recognized in sociology. In the sociology of organizations, Zucker (1986) distinguishes between three modes of trust production: In addition to process-based trust built on past or expected exchange, Zucker focuses on characteristic-based trust, which is tied to the individuals involved, and institutional-based trust, which is connected to societal structures, institutions, and their intermediary extensions such as certification and regulation. More recently, Callon (2021) highlighted similar process-based, personal, and institutional mechanisms of trust in the context of markets: "Trust can come from repeated interactions the agents want to prolong"; it can be "guaranteed by belonging to a group whose members are known [to] each other, are interdependent, and share the same norms"; and it can be "encouraged by the existence of devices and ad hoc procedures (for example, warranties, labels, or an innovation such as blockchain, which logs transactions)" (p. 251). Studying people's perceptions of data-driven systems in the context of public service media, Steedman et al. (2020, pp. 823–824) find similar institutional underpinnings of trust when citizens consider trustworthiness in terms of the institutional and organizational sources of these data-driven services.

Technical researchers have often approached trust as a problem to solve and aligned with interests to support trust in and acceptance of AI. Trust in AI is viewed as a hurdle to successfully integrating AI into society (Li &

Hahn, 2022), and there is extensive research on trust requirements in AI adoption and how to promote trust in AI (Bangui & Buhnova, 2024; Bedué & Fritzsche, 2022; Ezer et al., 2019; Hasija & Esper, 2022; Knowles & Richards, 2021; Naiseh et al., 2021; Okamura & Yamada, 2020; Rebensky et al., 2021; Weitz et al., 2019; Zierau et al., 2020). Researchers have provided design principles for interaction design (Naiseh et al., 2021; Zierau et al., 2020) and on crafting design dimensions for the evaluation of explainable AI approaches (Sperrle et al., 2020). Transparency in and about AI decision making can affect how the public views its trustworthiness; according to these studies, decision makers should provide reasons for the goals and priorities chosen for AI, make them available to the public, and be clear about who is accountable for a decision and how to intervene (e.g., de Fine Licht & de Fine Licht, 2020). Additionally, certification, self-imposed standards, and guidelines are often highlighted as ways to increase trust in AI (Baldauf et al., 2020; Bedué & Fritzsche, 2022). In sum, this research on trust in AI paints a mechanistic and instrumentalized picture of trust as a function of specific features that can be increased or decreased. This literature can help define specific elements of people's trust constructs—to which we turn later in our empirical findings—but it is not especially useful for approaching the everyday phenomenological underpinnings of lived trust as something enacted and experienced in interactions with AI technologies. In addition, in its unreflexive approach, this research does not reveal a great deal about what trust is in the first place: how we should critically understand it, how it is constituted, how it is lived, and how we should look for and approach it.

2.2. Conceptions of Trust

The Oxford English Dictionary defines trust as a "firm belief in the reliability, truth, or ability of someone or something; confidence or faith in a person or thing, or in an attribute of a person or thing" (Trust, n.d.). This general description does not take any position on the constitution of this firm belief, but much of the literature on trust in the social sciences defines it as a cognitive construct (Cook & Santana, 2020, p. 191). To us, these definitions do not seem far removed in their activist and utilitarian orientation from how, for example, transactional interests and calculative evaluations typically appear in rational choice theory and in neoclassical economists' *Homo economicus* models of agency (Urbina & Ruiz-Villaverde, 2019). For example, Hardin (2002, pp. 3–7) describes trust as "encapsulated interests," as articulated by Cook and Santana (2020, p. 191): "A *trusts* B with respect to x when A believes that her interests are included in B's utility function, so that B values what A desires *because* B wants to maintain good relations with A." However, as Ramírez-i-Ollé (2019), drawing on Misztal (1996; see also Zucker, 1986, pp. 6–7), highlights, conceptualizations of trust vary greatly between traditions in social theory and at least three different approaches to trust can be distinguished: trust as a predisposition enabling a "collaborative order" between calculative individuals; trust as normatively based, enabling a "cohesive order" among functional systems in society; and trust as an implicit background assumption enabling a "stable order" achieved in and for interaction (Ramírez-i-Ollé, 2019, p. 2). It is broadly within these two latter traditions that we find more nuanced approaches to trust, as in Luhmann's (1988) elaborations on the relations of familiarity, confidence, and trust (see also Seligman, 2021), according to which "a rational explanation of other people's interests can hardly serve as an adequate substitute for trust" (Gambetta, 1988, p. xii), and especially in the practice-oriented approaches of the interactionists. This line of thought on trust draws on the symbolic interactionism of Erving Goffman and the ethnomethodology of Harold Garfinkel, rendering it better suited for following trust on the ground, in its lived natural variety as part of interactions within sociotechnical ecologies. The interactionist approach shares roots with our approach, introduced below, in which we draw inspiration from the early 20th-century American pragmatists.

Another highly valuable critique of rationalistic models of trust—one that arguably comes close to the interactionist approach—is provided in the (design) anthropology of Sarah Pink (2021, 2022a, 2022b; Pink et al., 2018; Quilty & Pink, 2024). In Pink's (2021, p. 193) work, trust is approached as a nonrepresentational, affective, sensory, and anticipatory phenomenon built on the ground, in and for everyday action, contributing to our sense of "what might be going to happen next." Pink proposes that "trust, like hope, can be thought of as a *feeling*, or category of feeling, which describes anticipatory sensations," and that "trust is experienced when things 'feel right'" (2021, pp. 194, 196). By contrast, "trust has been commonly conceptualized in organization studies, and in technology design disciplines such as human-computer-interaction research, as a rational, transactional, and interactional relationship between two entities" (Pink, 2021, p. 194). This narrow relational approach has also been challenged in the context of data-driven systems by Steedman et al. (2020), who highlight the "complex ecologies of trust" and the need for a way of "conceptualising trust in data-driven systems that accounts for complexity" (p. 828), because simplistic patterns and the human-technology interaction of trust-building and trust-breaking are difficult to find when approached qualitatively.

At the same time, as Pink willingly admits, "trust is notoriously difficult to define, and whenever it is defined, a competing definition is not far away" (2022a, p. 29). We agree and propose a step away from competing definitions. As important as we find Pink's suggestion that "to trust involves 'a sensory experience of feeling or disposition towards something' rather than an explicit cognitive decision made in relation to a specific technology" (2022b, p. 47)—and share her insistence on sensory experiences and dispositions—we propose looking at things slightly differently: through a framework that moves away from the rather-than and toward a pluralistic, synthetic approach combining various aspects and constituents of trust under a single pragmatic framework that highlights the processual nature of trust-affording action. This shift has another advantage over the aforementioned approaches in diversifying our conceptual vocabulary of trust; because these approaches each highlight a specific character of trust, sometimes as a corrective to earlier models, they do not show how these different elements—cognitive, affective, sensory, or otherwise—might be connected and related. In this regard, and based on our empirical findings, we propose an extension of these approaches as well. We now elaborate on our approach and its foundations in pragmatist action theory.

2.3. Trust-Affording Action: A Processual Interpretation of Trust and Its Varieties

We approach trust-affording action in the context of emerging algorithmic technologies in two ways: By examining trust as it emerges from everyday actions with these technologies, and by analyzing specific technologically entangled everyday actions as they emerge from trust. In short, we study action as affording trust, and trust as affording action. This is our action-based proposal for a synthetic approach that integrates the cognitive, affective, and habitual components of trust within a unified framework of processual action. We deliberately connect to Gibson's (1979) work by using the concept of affordances to highlight the functions of trust for action, treating trust as a form of action possibility. For Gibson (1979, p. 127), famously, "the affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill." Later research has reworked the concept to include mental affordances (McClelland, 2020), under which aspects like trust could be placed—though we do not confine trust merely to the "mental," but also acknowledge its embeddedness in the behavioral dispositions of the body.

Trust as an affordance for action becomes more active and deliberate during moments of uncertainty. In Callon's (2021) formulation, "the importance of trust lies in the fact that it enables actors to make decisions in a complex and uncertain universe" and thus continue to act:

> It is not only a mental and affective disposition that influences behavior. It is also a form of knowledge and a way of grasping reality. In the face of unknown risks, the rational behavior might be to abstain from acting. If, however, I trust an agent or an institution offering to collaborate or transmit information, then I can decide to commit to a course of action that I might otherwise have hesitated to undertake. (p. 252)

This grounding of trust in conditions of uncertainty is also highlighted by Steedman et al. (2020, p. 817): "It has been argued that trust is crucial for dealing with uncertain, uncontrollable or risky situations," a "description that could be applied to the data practices (that is, organisations collecting, analysing and sharing data and the outcomes of these processes) that characterise contemporary digital life." This certainly applies to the fundamentally uncertain AI practices entrenched by the current sweeping enthusiasm to apply generative AI in services across society.

Dealing with uncertainty in action was a key concern for the early 20th-century American pragmatist philosophers William James, Charles S. Peirce, John Dewey, and George Herbert Mead. Peirce's (1877) canonical *The Fixation of Belief* introduced the doubt–belief model of inquiry, highlighting the dynamic of belief formation to replace the discomfort of doubt as generating action. For the classical pragmatists, uncertainty was the condition of living processes in general, and the "quest for certainty" (Dewey, 1929) was what motivated action, especially creative action. Certainty, or belief, in its pragmatist conception, is a habit, and according to Peirce, "the world is characterized by 'the tendency of all things to take habits'" (as cited in Kohn, 2013, p. 59). In what follows, we propose that this is how we should approach trust: as certainty aspiring to take the form of habit. Dewey (1920, 1929), for his part, insisted that philosophy and social thought desperately needed a re-grounding in concrete and practical processes of life from which, and for which, all kinds of complex and abstract human phenomena (like reflective and deliberative thought) functionally emerge (Dewey, 1922). Grounding thought in action situates abstract ideas like generalized ends and values—and similarly, we suggest, trust—as dispositional "instrumentalities in judgment of particular cases as the latter arise; they are, in effect, tools that direct and facilitate examination of things in the concrete while they are also developed and tested by the results of their application in these cases" (Dewey, 1939, p. 44).

This general pragmatist approach to action and thought was later reintroduced in the context of social theory by Hans Joas (1996) in his foundational book *The Creativity of Action*, which focuses on uncertain processes of action where crises provoked by changes in the environment spark situated creative action to establish new habits better suited to the ever-evolving social and material conditions of action (see also Joas & Kilpinen, 2006, p. 326; Kilpinen, 2000, pp. 24, 37–39, 58–60). This kind of creativity is not free-floating but always situated and closely tied to concrete processes of action. More recently, in the context of technology studies, similar approaches with explicit reference to classical pragmatism can be found in Steven Jackson's (2014) influential work on "broken world thinking," which asserts that "breakdown, dissolution, and change, rather than innovation, development, or design as conventionally practiced and thought about are the key themes and problems facing new media and technology scholarship today" (p. 222) and that with the ever-present possibility for breakdown "comes a second and more hopeful approach":

> [N]amely, a deep wonder and appreciation for the ongoing activities by which stability (such as it is) is maintained, the subtle acts of repair by which rich and robust lives are sustained against the weight of centrifugal odds, and how sociotechnical forms and infrastructures, large and small, get not only broken but *restored*. (p. 222)

Similarly, Ananny (2022, 2024), with reference to Dewey, has proposed studying the social entanglement of technologies through errors and uncertainties, focusing on algorithmic mistakes as avenues for unveiling and deliberating on public problems related to the entry of technologies into social spheres.

This approach of emanating inquiry from the dynamics of action provides a fruitful lens through which to view trust. Below, we approach the fractures and uncertainties of the social life of technologies through citizens' perspectives on, and practices of, making sense of and coming to terms with various kinds of AI technologies entering their everyday lives. With this action-based framing, trust can be seen in its "normal" state as quietly (but very actively) embedded and embodied in the agent's generative habits of action. By connecting trust with habit, we join a long history of sociological and economic theorizing utilizing the idea of socially embedded dispositional regularities (Camic, 1986; Gronow, 2008; Hodgson, 2004), made perhaps most famous by Pierre Bourdieu's theory of the *habitus*. For Bourdieu (2005), habitus is "a system of dispositions, that is, of permanent manners of being, seeing, acting, and thinking, or a system of long-lasting (rather than permanent) schemes or schemata or structures of perception, conception, and action" (p. 43):

> [S]ystems of durable, transposable dispositions, structured structures predisposed to function as structuring structures, that is, as principles which generate and organize practices and representations that can be objectively adapted to their outcomes without presupposing a conscious aiming at ends or an express mastery of the operations necessary in order to attain them. (Bourdieu, 1990, p. 53)

We see trust as settling into these kinds of systems of organized dispositional practices that do not require conscious reflection or articulation. Trust remains in this dispositional, quiet form embedded in practice unless errors or uncertainties of action call for reflection on it. Reflexive, critical, and creative capacities for deliberating on trust and trustworthiness are activated not by chance but by specific troubling and uncertain moments in action, when things go wrong or that possibility is recognized by the agent, when action and trust as its disposition runs into a crisis, or when something new (e.g., a new algorithmic technology or its application) emerges in people's lives that needs to be made sense of because there is no guidance from our previous habits and the dispositional trust they embed. It is in these moments that habit and its encapsulated trust can be reflexively recognized, inspected, possibly questioned, and sometimes altered. Once made sense of, creatively reworked, and established, trust once again settles back into its quiet, dispositional state. It is important to note that this kind of habitual trust is not blind faith but is always open to reflexive interrogation and creative change under uncertainty; habits are reflexive and living entities (Kilpinen, 2009). While avoiding rigid dichotomies, another point to highlight is that reflexive and deliberative trust-building necessarily relies on habitual modes of inference or heuristics of deliberation—something the ecological psychologist Gigerenzer (2008, p. 22) aptly calls "rationality for mortals," defined as "a strategy, conscious or unconscious, that searches for minimal information and consists of building blocks that exploit evolved capacities and environmental structures"—as will become clear when we turn below to specific tactics our interview participants use in their reflexive trust-building.

3. Empirical Approach: Data and Methods

Our empirical analysis is based on a trust-focused reading of qualitative data collected between 2020 and 2023, consisting primarily of participant diaries, semi-structured interviews, and three rounds of follow-up interviews. All interviews were conducted remotely using video conferencing software. In August 2020, the first author oversaw the recruitment of ten Finnish citizens to follow their perceptions of and practices with the Finnish Covid-19 contact tracing application, Koronavilkku. We commissioned a data collection agency to handle participant recruitment using a screening tool designed to ensure diversity in age (21–66), gender, geography (urban and rural), education, occupation, and household structure. We also recruited participants to reflect differences in attitudes toward digital technologies, perceived technical skills, and views on health and Covid-19. Participants first kept a pre-interview diary capturing daily observations, impressions, and reactions related to the new app. This was followed by a one-on-one interview (60–90 minutes) in which they reviewed diary entries and discussed their sensemaking of the new algorithmic technology entering their lives. These materials were supplemented by media coverage during Koronavilkku's launch, particularly around trust-building and public justifications by authorities and experts. After six months, in spring 2021, the same participants completed a second diary and interview round, now addressing broader encounters with AI-infused services. These two rounds and the initial thematic analysis were led by the first author with two other researchers (not listed as co-authors; see Acknowledgments Section). In the final two rounds, held a year apart, most participants continued, and five new ones were added based on case-relevant profiles. In spring 2022, the interviews focused on a customer-facing, AI-based banking service seen by participants as straddling public and private sectors due to its regulatory context. This round included eight returning participants and five new ones recruited with the help of a Finnish bank, which provided contacts from its customer base using our screener (excluding health attitudes). The final round (spring 2023) centered on a fictional AI use case in the provision of social assistance by Kela, Finland's Social Insurance Institution, and involved five returning participants with prior experience using Kela's services. By this point, data saturation was becoming obvious: participants' trust-related framings, practices, and heuristics were recurring across cases to such an extent that we decided to discontinue further interviews. The final two rounds and their thematic analysis were conducted by the two authors with the help of a research assistant who transcribed the interviews and assisted in early analysis. All participants gave informed consent, following the ethical guidelines of participating organizations and the research project.

Thematic analysis across rounds was guided by two RQs:

> RQ1: How does trust in algorithmic technologies emerge in citizens' everyday encounters with these technologies?
>
> RQ2: How is trust questioned and constructed in the process?

Each round of analysis was conducted immediately after data collection and later revisited by the first author, then developed jointly with the second author in 2023–2024. Our analysis began with identifying patterns in participants' trust-evaluating accounts and gradually organizing them into heuristics through which trust was actively constructed. We then developed a thematic distinction between different modes of trust to better capture its more latent forms that emerged across our data. Finally, we analyzed these modes in relation to existing conceptualizations of trust in the literature, situating them within a synthetic framework that allowed

for their integration under a unified conception of trust-affording action. The final round of analysis was a theory-informed thematic analysis, drawing on the conceptual framework presented above in Section 2.3, which was itself motivated by and developed in response to the limitations we encountered when applying existing trust concepts to our data.

4. Empirical Findings: Trust in Action

We present our findings by connecting the empirical variety of trust in citizens' action processes with algorithmic technologies. We begin by discussing the challenges our participants face in reflecting on their relationships with, and trust in, algorithmically infused tools and public services that are embedded in their everyday lives. Trust, once established, often seemed to escape the discursive. We then examine instances of reflective trust and heuristic tactics of trust-building in moments of uncertainty.

4.1. Ambiguity of Trust

Experiences and manifestations of trust were often difficult to situate, verbalize, or reflect upon, even as a sense of trust appeared to guide participants' choices and actions—quietly operating as habitual dispositions that afforded certain paths and disrupted others. More generally, we repeatedly found our participants struggling to reflect on and verbalize the role of AI and related risks in their everyday lives, especially during the early interview rounds conducted between autumn 2020 and spring 2022 (before the release of ChatGPT in November 2022). It seemed easier for participants to avoid these questions by steering the discussion toward high-level reflections on, e.g., the importance of technological innovation for a thriving Finnish economy, or more generally, on "efficiency and removing the risk of human errors." Closer to mundane, everyday encounters with AI technologies, participants often expressed technological goodwill, highlighting personal curiosity about new AI tools, being "very positive about technology," and willing "to learn new things" (as exemplified here by a financial administration professional in her late forties). Most participants initially found it difficult to spontaneously give examples of AI in their everyday lives; the technology seemed to be experienced as everywhere and nowhere at once, diffused in digital environments and difficult to detect. Upon prompting, AI was often described as highly advanced software, automation, algorithms, and robots. As concrete examples of AI applications, participants frequently mentioned social media platforms and their algorithms, Google search, chatbots, mobile applications, and smart devices such as smart TVs.

Our questions regarding trust in AI were often initially met with varying degrees of confusion. While understood as legitimate within the interview context, participants often found it difficult to reflect on mundane practices involving technologies that were inconspicuously scattered throughout their material environments. Participants grappled with expressing, or even forming, opinions about their trust or distrust in AI, as illustrated by a retired teacher in her late sixties, who explained her hesitation:

> You don't notice it in your everyday….When things go well, you don't need to think about these things….Pretty much every process is digitalized; it is very mundane. Information technology is assisting in everyday life, and when it is well built, you don't even notice it.

Here, engineered interactional fluency, combined with the habitual and dispositional nature of trust, made it difficult to reflect or verbalize. A theology student in his mid-twenties, by contrast, explained that certain institutions in society are so fundamentally based on trust that even their algorithmically mediated services are, by association, granted that same trust—unless something triggers concern and disrupts this quiet confidence (cf. Luhmann, 1988). An electrician, in his early forties, noted the seeming inconsistency with which people extend this inherent trust across different algorithmic services and devices: "With my workmate, we were discussing how some people worry about being surveilled by this [Finnish Covid-19 contact tracing application], but these same people have a smartphone in their pocket."

However, in this context, the Covid-19 contact tracing application was something entirely new—introduced abruptly and with global alarm—and as such, it called for critical reflection and sense-making. In contrast, people's relationships with their smartphones had formed over years and decades of gradually intensifying data extraction and carefully engineered behavioral monitoring (Zuboff, 2019). One participant, reflecting on her own confidence in AI technologies, concluded: "Unless one feels unsafe, there is no reason to worry," evoking Pink's (2021, pp. 194–196) view of trust as anticipatory sensation—or, perhaps more relevantly here, as the absence of anticipatory unease.

Participants also recalled moments of unease or friction in which their quiet confidence fractured and the question of trust surfaced. These moments of uncertainty were often tied to suspicions about the data practices behind AI-infused tools and services, echoing findings by Steedman et al. (2020, p. 825), whose participants "felt insecure, but the precise nature of their insecurities was hard to express" (see also Pink et al., 2018). Sometimes, these fractures prompted deeper reflection, as in the case of a 33-year-old single mother whose child played the augmented reality game Pokémon Go. A sudden change in the app's behavior led to her critical questioning:

> It [suddenly] was focusing many times. Like when you open the camera and it looks like what you would see through the camera…and then it appears as if the Pokémon would be there, and when you take the picture, it looks like the Pokémon is in your home, for example. So, several times, especially on [the child's] phone, like, what it did was that it focused more on the environment than on the Pokémon….Well, I had the feeling of…like what the fuck is this now! Wasn't this [game] the thing that I thought it was….Yeah, and then when I don't even know where the pictures are going, what are they going to take? Do they go to Niantic [the company] and what are they…like…taking? I don't know.
>
> It just seems weird, because yes, the picture…it goes somewhere, when you take it with the game's software…you take it in the game—so does the picture go somewhere? I don't know. So, then [the question] is—what's there in the background, so to speak?

These experiences fractured her prior dispositions and directly impacted how the now low-trust software was used. She described adopting countermeasures to resist data surveillance:

> Then I just said that I'll have it [under observation] in the future, and if you have some kind of tasks that you have to do [in the game], then you just put it against a white wall, or you let me do it.

Participants' critical reflections on trustworthiness were also provoked by entirely new algorithmic technologies entering their lives—technologies for which they lacked established understandings and

habitual orientations. One such case was the launch of Koronavilkku, the Covid-19 contact tracing application, introduced at the very start of our data collection in autumn 2020. Others included the widespread emergence of generative AI tools like ChatGPT during 2022 and 2023, leaving some participants wondering whether society was placing too much trust in new, impressive, but still uncertain technologies. These concerns were often triggered by a sense that AI was beginning to encroach upon domains of personal autonomy and agency (Savolainen & Ruckenstein, 2022). As a law student in his early twenties put it: "I want to use it. I don't want it to use me."

4.2. Action Under Uncertainty: Situated Tactics of Trust Building

Next, we examine the reflective and creative tactics our participants used in establishing or withdrawing trust during uncertain phases in human-AI interactions. We present four recurring and intertwined trust heuristics that participants employed in moments when trustworthiness was in question: (a) the agent heuristic, (b) the case heuristic, (c) the social heuristic, and (d) the interaction heuristic. These include foundational heuristics that contribute to the construction of trust by inferring qualities of the technology itself, as well as supporting heuristics that define conditions, parameters, and case-specific standards of trustworthiness within particular contexts. We explore these heuristics in action by analyzing the adoption of the Finnish Covid-19 contact tracing application Koronavilkku, drawing from participant diaries, interviews, and media coverage collected during the application's release and dissemination. The development of the application, published in August 2020, was led by the Finnish Institute for Health and Welfare in collaboration with the Ministry of Social Affairs and Health, and its design and technology development were done in collaboration with private technology consultancies. The case provides a unique lens for examining trust, as Koronavilkku became one of the world's most widely adopted Covid-19 apps relative to population size. We further complement this analysis with later interview data, including citizens' reflections on fictional cases of AI-infused services at Finland's social insurance institution, Kela. The heuristics are not presented as exhaustive or definitive but rather as illustrative examples of the kind of cognitive deliberation and creative trust-building that emerge through action under uncertainty. Figure 1 presents these heuristics as situated within the broader process of trust-affording action.

The agent heuristic (a) was clearly the most prominent. Here, our participants' trust-evaluating focus was not on the algorithmic application itself, but the agent responsible for deploying it. This was trust by association: Institutions' or individuals' perceived trustworthiness was inferred to extend to associated services and their technologies (Cook & Santana, 2020, pp. 197–199; Steedman et al., 2020, pp. 823–824; Zucker, 1986). When the Koronavilkku application was released at the end of August 2020, the Finnish Broadcasting Company (YLE) aired the event, during which leading public authorities from the Finnish Institute for Health and Welfare and the Ministry of Social Affairs and Health took to the stage to introduce the app. This was quickly followed by widespread activity in mainstream and social media, where public authorities and officials were joined by politicians, journalists, technologists, cybersecurity experts, privacy activists, researchers, and lay citizens to encourage the downloading of the application. This diverse constellation of agents—representing a spectrum of institutional roles and interests—collectively vouched for the app's adoption (this broad and diverse public deliberation process is also closely tied to the social heuristic). This discussion was not missed by our research participants, who in interviews referred to testimonials from various agents and highlighted the application's close association with public authorities.

A similar agent heuristic was repeatedly observed during our subsequent interview rounds, for example, when participants deliberated on the trustworthiness of AI used by Kela, the Finnish Social Insurance Institution. When presented with various possible uses of AI in its citizen-facing services, a 34-year-old animal care worker said: "Well, Kela is owned by the government, so maybe if it [AI] is used there, it should be trustworthy in principle." Another participant, a graphic designer in her early forties, said how she "would trust Kela using AI more than, say, a newly established business, like a private company." When we met her a year later, she added:

> I do think that public services like these, and agents like these—their [AI applications] are tested more thoroughly and thought through more thoroughly, like, they must be; they maybe have a different responsibility compared to, say, the world of business.

The electrician in his early forties, who often expressed skepticism about AI and criticized the hype surrounding it, explained: "I trust the state more, in the sense that I believe they are more precise in how they process information, and it's more strictly defined where they are used." Stronger expressions of the agent heuristic were not limited to comparisons between public and private spheres (or to recognition of diverse social roles and identities, as seen in the testimonials above); participants expanded this relational thinking to a broader sociopolitical and geographical scale, associating varying interests and governance orientations with the perceived trustworthiness of AI systems in Europe ("public interest," "regulation"), the United States ("uncontrolled capitalism"), and China ("state surveillance," "control").

The case heuristic (b) and social heuristic (c) were strongly present in participants' deliberations around the launch of Koronavilkku. Here, the focus was on situational factors—such as the acuteness and severity of the pandemic—the pressing need for safety and hope, and framings of the pandemic as a shared social condition. One participant, writing about his elderly parents in his research diary, explained that "they said [Koronavilkku] is a major relief for them," and added that he felt "Koronavilkku, on its part, is about caring" and brings "a special sense of relief" for him. It was a device of hope, "something that unites us all, a safety net of sorts, something with which to work our way through these difficult times." Such hopeful framings were common immediately after the application's release, although disappointment and critical voices began surfacing more prominently over time. These heuristics, operating through the specific case and its social context, illustrate how participants defined conditions and case-specific standards of trustworthiness. They also reflect a kind of normative pressure ("If only everyone would use Koronavilkku, this could have been avoided") that fueled swift adoption rather than critical scrutiny. An important element of the social heuristic was also the broader social deliberation and testimonials among diverse and trusted agents, roles, and social positions (as noted earlier, these heuristics often appeared intertwined), not only through the media but also among neighbors and within close communities. This is exemplified by a law student in his early twenties:

> Outside, talking with my neighbor, while tamping some rugs, we were chatting this and that, then the Coronavirus and Koronavilkku came up, because we both had heard about it in the news….I was a bit skeptical about its functionality, but this discussion [with the neighbor] got me to finally register for the app.

> I was listening to a program on YLE Puhe [national radio]…the experts were talking about the Coronavirus and how we might pull through and how Koronavilkku could help us get over the disease.

Finally, the interaction heuristic (d) refers to a trust-establishing tactic that operates by negation. It is characterized by human-machine interaction without critical awareness, and a lack of trust-reflection by design: Sleek and frictionless usability and smooth functionality of the algorithmic service or device that supports the habitualization of trust. This heuristic was previously illustrated by the retired teacher, who explained: "When things go well, you don't need to think about these things," and "when it is well built, you don't even notice it." In the case of Koronavilkku, participants referred to its smooth usability, the ease of setup, and how this frictionless experience let it "sink" into the background. Others described specific glitches and errors that forced the application back into reflective awareness, sometimes prompting them to reconsider its trustworthiness more broadly.

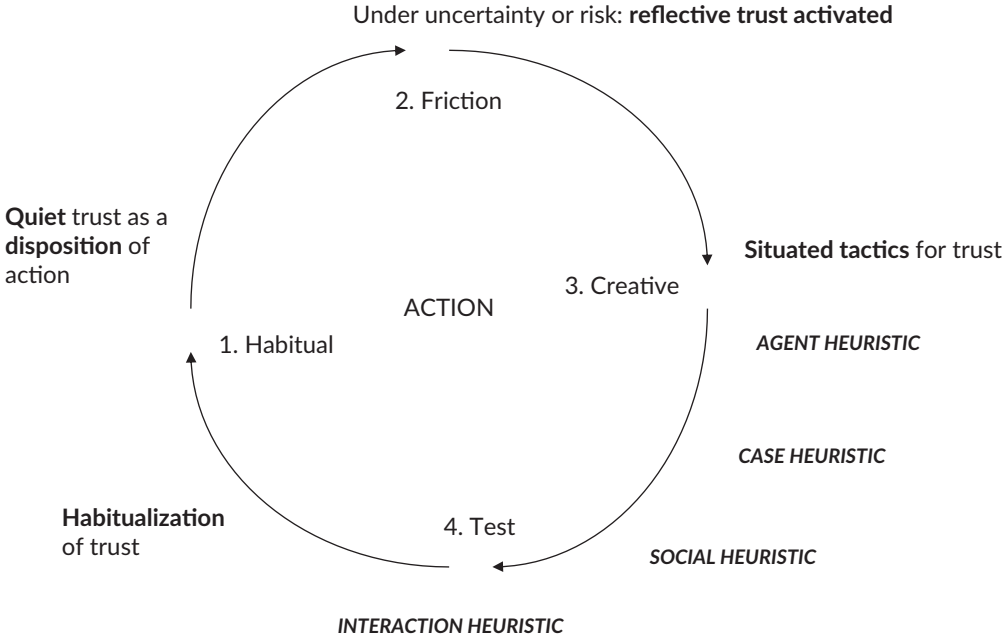

Figure 1. Process view: Dispositional and deliberative trust as phases in action and heuristic tactics of trust formation.

5. Discussion and Conclusion

As high-trust Nordic institutions increasingly embrace intriguing yet uncertain algorithmic technologies, such as generative AI, for more impactful and efficient public services, it is becoming increasingly important to frame questions of sustainable social order as questions of sustainable sociotechnical order, where the scope of trust, as a key mechanism of that order, extends beyond humans to include institutions' material presence through these technologies. Many traditional approaches to trust fail us here, as they approach trust by focusing too narrowly on only some of its aspects, making trust slip out of focus once it exceeds the boundaries of their chosen categories. In computer science and ICT research, trust is often approached in a non-reflexive and uncritical manner by mechanistically measuring and instrumentally tweaking it as a problem to be solved for the purpose of technology acceptance. The various available sociological approaches to trust and its role in social order—such as those based on the concepts of "calculative individuals," "functional systems," or "interaction"—all highlight important aspects of trust, but simultaneously downplay others, leaving the scope of trust-tracing empirical work rather limited. Pink's (e.g., Pink, 2021; Pink et al., 2018) anthropological reconceptualization of trust shows trust as an anticipatory emotion and

points to an action-oriented and dialectical approach. However, to our understanding, it does not extend its dialectics to those between emotive and cognitive trust processes.

The theory of trust-affording action we outlined in this article aims to overcome persistent dichotomies in trust research by showing the connections between cognitive trust-building and the bodily inscription of trust in and for action. We presented a complementary approach to trust that moves from embodied dispositions to cognitive decisions and back, highlighting how trust emerges through situated, everyday encounters with algorithmic technologies. This addresses RQ1 regarding how trust emerges in citizens' everyday encounters with algorithmic technologies. Trust manifests in multiple modes, and these modes are interconnected. Our theory of trust-affording action captures this dynamic variety by placing trust within a pragmatist framework of habit formation and creative adaptation. We understand trust as a constitutive element of both habit-making and habit-breaking: embedded in established patterns of action yet activated and reshaped in moments of disruption or doubt. This processual understanding also enables us to examine how trust is called into question and reconstructed in practice. Methodologically, our approach foregrounds the importance of studying trust as it is enacted in the flow of action—often quietly embedded in routine practices, but sometimes consciously reflected upon.

Our analysis highlighted the habitual underpinnings of trust in both action and reflection, the latter illustrated through four recurring heuristics that participants used to evaluate trustworthiness or that influenced its evaluation: the agent heuristic, the case heuristic, the social heuristic, and the interaction heuristic. This speaks directly to RQ2, concerning how trust is constructed in the process of everyday encounters. Our framework and analysis help illuminate both the emergence of trust in citizens' mundane engagements with algorithmic systems and the moments when trust becomes a site of reflection, judgment, and reconfiguration. Our findings here resonate with prior research that emphasizes the complex social conditions and institutional underpinnings of trust, particularly when citizens evaluate trustworthiness based on institutional and organizational sources (e.g., Steedman et al., 2020; Zucker, 1986). Yet, we emphasize that such active, deliberative, and reflective forms of trust represent only part of the picture. Our analysis underscores that trust is not merely a matter of explicit evaluation but is grounded in embodied, habitual practices that often remain unspoken yet are vital to how citizens navigate algorithmic systems in everyday life.

Building on this analysis, we outline policy considerations for fostering trust in algorithmic public services. Rather than approaching trust instrumentally as something to be engineered for technology acceptance, we argue for the importance of creating conditions under which experienced and enacted trust can take root, or be critically withdrawn. In this sense, designing for trustworthy systems means not engaging in trust engineering, but making space for trust to form, evolve, or dissolve. Among the heuristics we identified, the social heuristic stands out as particularly significant. It underscores the need for infrastructures and practices that support the social deliberation of algorithmic systems—that is, spaces in which trust can be surfaced and reflexively examined from various social positions. The agent heuristic plays a central role in this dynamic. Trust is often inferred from the perceived trustworthiness of institutions, groups, and individuals. Enabling opportunities for diverse agents to engage in public reflection on new technologies and their application—across roles, domains, and experiences—is therefore central. The case heuristic further reminds us of the importance of attending to the very situated and shifting demands of trust, as shaped by the varying contexts in which these technologies are applied. Trust is not simply embedded in technological systems once and for all, but is continually shaped by the social and institutional contexts in which it emerges.

A recent extensive survey on AI adoption in the European public sector highlights that "AI adoption is no longer a promise; it is a reality, in particular in service delivery and internal operations" (Grimmelikhuijsen & Tangi, 2024, p. 26). According to the same report, a majority of public organizations in Europe are either planning one or more AI projects (63.1%) or already have projects fully adopted and in use (51.8%). In Finland, the Social Insurance Institution Kela has set a "future target level of automation" at "70–80 percent" in its strategic vision (Kela, 2024). Yet as AI technologies have repeatedly failed to meet the exaggerated expectations placed on them (Mitchell, 2021), it is worth recalling the OECD's (2021, p. 21) reminder on the nature of trust: "Trust is…a fragile societal asset; while it takes time to establish, it can be lost quickly."

Our research contributes to a more nuanced understanding of trust and its situated dynamics in human-technology interaction, approached from the lived perspective of citizens. We consider this perspective crucial at a time of unprecedented excitement around the transformation of welfare societies through algorithmic technologies and a discourse that operates overwhelmingly in technology-first terms. Despite the growing role of AI in public services, algorithmic governance has not yet sparked widespread public reflection in Finland. The situation is markedly different in some other northern European countries. In the Netherlands, the exposure of biased algorithmic systems—most notably in the welfare fraud detection system SyRI (*Systeem Risico Indicatie*) case (Rachovitsa & Johann, 2022) and the childcare benefits scandal (Peeters & Widlak, 2023)—has turned automated decision-making into a high-stakes political and legal issue, illustrating what Ananny (2022, p. 346) describes as "algorithmic breakdowns as public problems" rather than "idiosyncratic quirk[s] requiring private troubleshooting." Public reckonings are now starting to surface in Sweden and Denmark, where recent investigations by Lighthouse Reports ("Sweden's suspicion machine," 2024) and Amnesty International ("Coded injustice," 2024) have raised concerns about discriminatory AI systems in welfare provision (see also Kaun, 2021). These developments underscore that algorithmic systems do not travel uniformly across social contexts. Their deployment, contestation, and the trust they command are always locally mediated. In our empirical material, the trust heuristics were mobilized in ways that reflect the particularities of the Finnish context and the specific encounters reported by our participants. Further research is needed to examine how trust is managed in other settings, especially where algorithmic systems have already triggered public controversy or resistance.

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Conflict of Interests

Antti Rannisto is a part-time employee at Solita, a technology consultancy that was closely involved in the design and development of the Covid-19 contact tracing application Koronavilkku. Although he was employed by Solita at the time, he had no involvement in the Koronavilkku project and no direct connection

to the development teams. His role at Solita was strictly tied to research activities conducted under the Artificial Intelligence Governance and Auditing (AIGA) project, a multi-year initiative (2020–2022) in which Solita participated as a consortium partner. The project was funded by Business Finland and the participating consortium organisations. His employment at Solita provided access to fieldwork opportunities relevant to the research, which influenced the decision to include this case within the scope of the AIGA project. Fanny Vainionpää declares no conflicts of interest.

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