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Research Article

Do We Trust Artificially Intelligent Assistants at Work? An Experimental Study

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The fourth industrial revolution is bringing artificial intelligence (AI) into various workplaces, and many businesses worldwide are already capitalizing on AI assistants. Trust is essential for the successful integration of AI into organizations. We hypothesized that people have higher trust in human assistants than AI assistants and that people trust AI assistants more if they have more control over their activities. To test our hypotheses, we utilized a survey experiment with 828 participants from Finland. Results showed that participants would rather entrust their schedule to a person than to an AI assistant. Having control increased trust in both human and AI assistants. The results of this study imply that people in Finland still have higher trust in traditional workplaces where people, rather than smart machines, perform assisting work. The findings are of relevance for designing trustworthy AI assistants, and they should be considered when integrating AI technology into organizations.

Keywords: artificial intelligence; assistants; control; survey experiment; trust; work

1. Introduction

Artificial intelligence (AI) is one of the main pillars on which rests the fourth industrial revolution [1]. This cutting-edge technology, capable of learning and processing immense amounts of data, has already entered work environments and begun reshaping them. Many organizations are capitalizing on smart tools such as AI assistants, which due to their potential could become an integral part of future businesses. Research has identified numerous advantages of using AI at work. For instance, it is shown that AI can enhance workers' skills and knowledge and provide higher quality and accuracy of operations [2]. In addition, it can lessen workers' perceived workload and support them in handling tasks more efficiently [3], and it can be used to assist people in performing more sophisticated operations such as strategic decision-making [4].

The processes that drive AI in decision-making are however not fully understood and are therefore difficult to predict [5]. Operating in an unpredictable way can be one of the factors that can violate human trust in technology [6]. Research has shown that people mostly fear losing jobs to AI and losing control over it, and many are skeptical towards the idea of AI being capable of ethical reasoning [7]. In addition, the public is concerned about possible privacy violations, harmful content that AI may produce, and cyberattacks [8]. As a societal development, automated decision-making by AI has found to evoke concerns of risks and mixed reactions on its usefulness and fairness, but in specific decisions, AI was often evaluated as good as or even better than human experts [9]. As the use of AI assistants at work grows, so does the need to deepen our understanding on trust in this technology.

Trust is a basic principle necessary for the successful functioning of society [10], and trust in coworkers has been found to be linked to better outcomes in organizations [11]. In other words, trust can considerably affect interactions within organizations [12], and it is often emphasized as one of the key factors for successful integration of AI into them [5, 6, 13]. The initial adoption of technology and its successful use has been found to depend on trust [14]. In the absence of trust, some people might feel reluctant to

use smart technologies, but it is also possible that they would go to other extremes, such as technology overuse or abuse [15]. Research aimed at investigating technology adoption and acceptance has been relying on theoretical models such as technology acceptance model (TAM) [16], unified theory of acceptance and use of technology (UTAUT) [17], or technology–organization–environment framework (TOE) [18], but neither of these theories places trust at the core of their focus. Having an AI as a coworker might become inevitable in the future, but it is still unknown how people feel when they need to rely on it and how much they trust it. Another important aspect to consider in this context is the level of human control over AI and how it affects our trust in them. Although some definitions of trust (e.g., Mayer, Davis, and Schoorman [19]) imply that it is a concept mutually exclusive from control, others argue that in some cases, control can increase trust [20]. Nevertheless, not enough attention has been given to investigating the link between human control over AI and trust towards AI.

We drew upon the current theoretical and empirical literature on trust formation in the case of AI technologies [5, 14, 21–25]. With the aim to address the gaps in the field, we posed the following research questions: (a) Do people trust AI assistants more than they do human assistants? (b) Does control given to AI assistants affect the trust in them? Our study utilized an online survey experiment as a research method, and it was conducted with participants from Finland. In the experiment, the participants were introduced to a hypothetical scenario in which their work schedule was entrusted to a human assistant, an independently working AI assistant, or a human-verified AI assistant. With a human-verified AI assistant, we refer to having a human involved in the decision-making process related to the operations of AI. The study contributes to the current state of knowledge by providing more information on trust in AI assistants, and the results can be used to improve trust in AI in the workplace context.

2. Theoretical Background and Hypothesis Development

2.1. Conceptualization of Trust. Trust is widely agreed to have a major role in the society [10], interpersonal relationships [26], and relationships within organizations [19]. Increased interactions between humans and machines have led to additional dimensions of trust that have prompted ample studies of the phenomenon. Research has focused on analyzing predictors of trust [5, 22–24, 27], trust building [14], trust-repairing mechanisms [21], algorithm aversion [28], and the link between personality traits and trust in smart technology [25, 29]. In addition, there is current interest in understanding the societal challenges that have emerged with the increased use of smart machines [30]. However, when analyzing human trust in AI, one should consider that AI differs from other technologies by its nondeterministic behavior and its ability to react to its surroundings in unpredictable ways [5].

Trust can be defined as one's readiness to take the risk of believing that another party will fulfill the expectation of performing a specific task that the trustor finds valuable, without having to check and control the actions of that party [19]. Although the authors talk about organizational trust, this definition is also applicable to human–AI interactions. Although this definition sees trust as an intention, Lee and See [31] saw it as "the attitude that an agent will help achieve an individual's goals in a situation characterized by uncertainty and vulnerability" (p. 51). There is also an argument that because machines have no free will, the relationship people have with them cannot be described as trust, but as the confidence that machines will do what we expect from them [12]. Research has implied that trust in AI depends on people's abilities and characteristics, the performance and attributes of AI, and the setting in which the interaction occurs [24]. Literature suggests that interactions with AI cause affective and cognitive changes such as alliterations in attitudes, and this further influences our behaviors such the intention to adopt or reject this technology [32].

2.2. Trust in AI Assistants. Early literature on trust in traditional organizations suggested that trust is directly associated with higher performance quality and better collaboration [33]. Evidence also shows that people who trust their colleagues and superiors are more inclined to work in a team [34]. One study from Poland identified a positive correlation between employees' trust in AI utilized in the workplace and their trust in coworkers, supervisors, and the company [6]. Trust is both important when working with human and nonhuman colleagues [21], yet the ways trust mechanisms operate might differ. For instance, because we tend to think that machines function flawlessly [35], our initial trust in an unfamiliar machine might be higher than our initial trust in an unfamiliar person, but when mistakes occur, trust in machines declines faster [36]. This is aligned with the results of one experiment in which the participants opted to trust the forecasts made by people more, despite AI being far more precise in the forecasting tasks, because they witnessed it making mistakes [37]. One study observed that people with lower trust in AI assistants were more reluctant to use it, and they perceived it as more uncanny and less human-like [38].

Research has confirmed that when choosing whom to trust, in many cases, people still rather opt for people over smart machines (e.g., Esmaeilzadeh, Mirzaei, and Dharanikota [39]; Groom and Nass [40]; Höddinghaus, Sondern, and Hertel [41]; Promberger and Baron [42]; and Zhang, Pentina, and Fan [43]). Lacroux and Martin-Lacroux [44] found that when it comes to resume screening tasks, recruiters trust human recommendations more than AI's recommendations. Similarly, participants expressed higher trust in humans' rather than AI's recommendations in three experimental studies, each with a different task: (1) estimating individual's creditworthiness, (2) determining the proportion of possibly malignant tissue in X-ray specimens, and (3) estimating potential reactive particles of a mineral in a simulated chemical plant [45]. Zhang, Pentina, and Fan [43] investigated human–AI interactions in the context of financial services and discovered that people trust human experts more than robo-advisors. However, there is also

research where preference for human over AI was not found [46, 47]. Some empirical evidence has shown that between independently working AI and the human-verified AI, trust in the latter is higher [39, 48].

In the context of human resource management, the use of humans over AI decision-makers was found to be linked with more favorable perceptions of treatment [49]. It has been identified that people are more likely to trust AI that is team-oriented and that exhibits some form of anthropomorphism [24]. For example, in an experiment where people participated in a general knowledge quiz, they were more prone to take advice from an AI assistant with a human voice than from an AI assistant that communicated with them in writing [50]. Groom and Nass [40] argued that people are reluctant to trust and hence accept robots as coworkers because they lack human-like features such as a sense of self. Another reason people might feel reluctant about delegating decisions to algorithms is because nonhuman agents cannot take responsibility for possible negative consequences [51]. Although lack of transparency is frequently listed as the reason people find AI difficult to trust [5], empirical evidence shows that in some decision-making scenarios, AI's transparency can directly [52] or indirectly [53] decrease trust. The results of one study even showed that participants viewed leadership decisions made by an AI as more transparent than those made by humans [41].

Trust can also be measured in situations when humans and AI are assigned the same task. For example, Dietvorst, Simmons, and Massey [37] found that if people see both AI and a person making the same mistake, they will lose trust in AI quicker than they would in the person, which leads to trusting a forecast made by a person more, even if the AI is significantly better in making forecasts. Maier, Menold, and McComb [54] identified that when people and AI have capabilities of a similar level and they perform the same task, people will decide whether to trust their or the AI's decisions based on the difference in performance. A review of empirical literature suggested that trust can depend on human-based factors such as one's personality, national culture, gender, and age [36]. Similarly, a survey of participants in 14 countries showed that trust in AI making business decisions can also depend on the seniority level of managers, where the top managers had notably higher levels of trust than their lower ranked counterparts had [55].

2.3. AI and Control. As previously discussed, one view of trust is that when one trusts a party, the party does not have to be controlled [19]. This definition implies that if we need to control one's actions, then it means we do not trust them. However, Castelfranchi and Falcone [20] theorized that having control can increase trust in situations when the trustor can intervene in the trustee's activities because by doing this, the trustor is able to prevent possible errors, damage, or violations. In general, not many studies focus on analyzing how control is linked to trust in AI. Modlinski [56] discovered that people are more willing to give control to an AI office assistant when they hold positive attitudes, have higher trust, perceive it as useful, and find it easy to use. The same study identified that people are more willing to relinquish control when an AI assistant both appears and behaves like a human [56]. Kreps et al. [57] analyzed how people perceive interaction with five different modalities of AI: cars, armed drones, surgery, social media content moderation, and police surveillance. They discovered that the inclination to use a specific AI modality rises in a shared control setup where humans can intervene or engage with the machine, as opposed to scenarios of either complete AI autonomy or full human control [57]. Control can also be a mediator between trust and one's willingness to adopt technology. For instance, one study shows that greater autonomy in AI weakens the positive correlation between trust in a company and the adoption of AI services from that company [58].

Many studies focus on investigating interactions with autonomous vehicles while looking at, for instance, locus of control (LOC; [59]), control preference [60], or giving up control [61]. Although autonomous vehicles are just one of the modalities AI can take, these studies can provide an insight into how people feel about relinquishing control. For instance, although the study of Molnar et al. [60] did not find a link between preference for control and trust in automated vehicles, Zoellick et al. [62] found that control was a factor that positively affected trust. A survey conducted in Germany by Hegner, Beldad, and Brunswick [61] showed that trust and control directly affect one's willingness to accept autonomous vehicles. In their follow-up experiments with forecasting, Dietvorst, Simmons, and Massey [63] discovered that people liked having some level of control over AI's activities and that having this control led to feeling better about the process and being more willing to rely on AI's forecasts. Abbass [64] proposed that one's level of control over a machine's actions should be decided based on the type of task because human intervention in some cases is undesirable because it can lead to fatal errors, whereas in other cases, it can be pivotal. According to Steffel, Williams, and Perrmann-Graham [51], people want to avoid responsibility for poor outcomes, which is why they prefer entrusting decisions to parties that can be held accountable. However, accountability is not applicable to nonhuman agents. Thus, it is also possible that the reluctance to give more control to a smart machine is due to the fear that the machine's actions would lead to a bad outcome and that the person who delegated the task would have to take responsibility for it.

2.4. The Present Study. AI technology can offer ample benefits to companies (e.g., Brachten et al. [3], Leyer and Schneider [4], and Wilkens [2]), and it is developing at a fast pace. Hence, it is highly likely that AI assistants will soon become commonplace. We conducted this study to analyze trust towards AI assistants and its association with control in the context of Finnish workplaces. This study relies on theoretical and empirical work on trust in smart technologies [5, 14, 21–25], which suggests that trust depends on various factors and that trust mechanisms are dynamic and highly complex. Without proper trust, there is a risk that people would not be willing to use technology at all, use it excessively, or use it for malicious purposes [15], which might become problematic when having to rely on an AI assistant

at work. In addition, we were interested in investigating how giving up more control to an AI assistant affects trust. So far, the research that addresses the link between control levels and trust has mostly focused on analyzing it in the context of automation and autonomous vehicles (e.g., Choi and Ji [59]; Hegner, Beldad, and Brunswick [61]; and Zoellick et al. [62]). Drawing on the available literature, we developed two hypotheses, which we preregistered at Open Science Framework (10.17605/OSF.IO/RBAFU).

Hypothesis 1. *Participants have higher trust in independently working human assistants than independently working AI assistants.*

Hypothesis 2. *People trust AI assistants more if they have control over their activities.*

3. Method

3.1. Participants. This scenario-based survey experiment was conducted as part of the second wave of the AI in society longitudinal survey that was conducted in the *Urban Utopias and Dystopias: Artificial Intelligence in Art and Society* research project (PI, Atte Oksanen). The data were collected in May and June 2022 through the Norstat online platform. Our respondents represent a demographically balanced adult Finnish population, aged 19–82 ($M = 51.30$, SD = 16.66). In total, there were 828 participants in the second timepoint, of which 49.64% ($n = 411$) were female and 50.36% male ($n = 417$). The response rate was 67.55% of those who answered the first survey. The median response time for the whole survey was 17.1 min (17 min, 6 s).

The participation in this research was voluntary, and the respondents were informed of their right to withdraw from participation during the data collection phase. The survey was conducted in Finnish, and the participants did not receive any direct financial compensation, but they received points from Norstat. The study was approved by the Ethics Committee of the Tampere Region (decision 29/2021).

3.2. Procedure. To investigate the participants' trust in AI assistants, we conducted an online survey experiment. Before the experiment, participants were asked about sociodemographic background information, and after the experiment, the questions related more to their personal attributes and well-being. Participants were introduced to the scenario-based experiment that manipulated the type of assistant (Phase I) and control over assistant's actions (Phase II). Both phases measured the trust in assistants (see the Appendices).

In Phase I, participants were randomized into three groups based on the assistance type: group A worked with an AI assistant, group B worked with an AI assistant with human verification, and group C worked with a human assistant. Participants were then presented with the following hypothetical scenario: "Imagine that you are assigned to work on a new project. The project is demanding, and it includes multiple tasks. Therefore, your busy schedule needs to be managed properly." After this, trust in the assistant was measured.

Table 1: Research design overview.

Group	Assistance type	Level of control
A1	AI assistant	No
A2	AI assistant	Yes
B1	AI assistant with human verification	No
B2	AI assistant with human verification	Yes
C1	Human assistant	No
C2	Human assistant	Yes

In Phase 2, participants were further randomized into two groups based on the level of control: group 1 had no control over modifying the assistants' actions, whereas group 2 had control over modifying the assistants' actions. Then, they were presented with the following scenario: "Imagine that it has been a month since you started working with your previous assistant and the assistant has managed your schedule successfully. The employer is now delegating more tasks to your assistant. The tasks include scheduling your meetings and sending email invitations to relevant parties." After this, trust in the assistant was measured. The two scenarios provided the following six group combinations (Table 1).

3.3. Measures

3.3.1. Outcome Measure. To measure the respondents' trust in the assistants, we utilized the adjusted 12-item scale proposed by Gulati, Sousa, and Lamas [65]. The same scale was used after both scenarios, but the order of the items in the scale was changed. The scale is available in the Appendices. The respondents answered their agreement with 12 statements on a scale from 1 (*disagree completely*) to 7 (*agree completely*). We created sum variables with values ranging from 12 to 84 (see Table 2). The measure had an excellent internal consistency based on omega reliability coefficients for both parts of the experiment ($\omega = 0.94 - 0.96$).

3.3.2. Main Independent Variables. The main independent variables were the categorical experimental group variables for both parts of the experiment. For the first part of the experiment, we used an experimental group variable with three categories (AI, both, and human). Because the second part of the experiment randomly divided the participants into two additional groups (no control or control), six conditions resulted altogether. For the second part of the experiment, we used an experimental group variable with six categories (AI × no control, both × no control, human × no control, AI × control, both × control, and human × control) for the descriptive statistics. For the main analyses, we used both the second experimental group variable with two categories (no control and control) and the original experimental group variable (AI, both, and human).

3.3.3. Covariates. For analysis of covariance (ANCOVA), we used covariates of internal LOC ($\alpha = 0.57$), openness

Table 2: Descriptive statistics of study variables ($N = 828$).

Measure	*n*	*M*	SD	Range	*n* of items	ω/α
Trust in assistant at Time 1	828	51.53	13.53	12–84	12	0.94
AI (main stimulus)	299	49.49	12.30	12–84	12	
Both (control)	259	48.47	13.78	12–84	12	
Human (control)	270	56.72	13.15	12–84	12	
Trust in assistant at Time 2	828	51.88	14.63	12–84	12	0.96
AI × no control	153	47.73	14.10	12–84	12	
Both × no control	123	47.69	14.98	12–84	12	
Human × no control	131	54.12	14.72	12–84	12	
AI × control	146	51.96	12.58	12–84	12	
Both × control	136	49.16	14.27	12–84	12	
Human × control	139	60.63	13.08	12–84	12	
Internal locus of control	828	8.87	2.38	2–14	2	0.57
Openness personality trait	828	14.06	3.75	3–21	3	0.75
Subjective well-being	828	5.04	1.08	1–7	1	
Age	828	51.30	16.66	19–82	1	
Gender	828					
Female	411 (49.64%)					
Male	417 (50.36%)					
A degree in technology	828					
Yes	162 (19.57%)					
No	666 (80.43%)					
Prior experience interacting with robots	828					
Yes	327 (39.49%)					
No	365 (44.08%)					
I do not know	136 (16.43%)					

Note: Condition "both" refers to the AI assistant condition with human verification.

personality trait ($\omega = 0.75$), and subjective well-being. Internal LOC was measured with two internal LOC items adapted from Craig, Franklin, and Andrews [66] and the openness personality trait with a three-item Big Five personality measure for openness [67], and subjective well-being was measured with a single-item measure on happiness that has been widely validated and used in studies conducted in psychology, sociology, and economics over the years [68–71]. All items were measured with answer options ranging from 1 to 7. We created sum variables for internal LOC and openness personality trait, with values ranging from 2 to 14 for internal LOC and 3 to 21 for openness.

3.3.4. Background Variables. For randomization checks, we used background variables age, gender, educational background in technology, and prior interactional experiences with robots. Based on Bartlett's test for equal variances and one-way analysis of variance (ANOVA) in the case of age and Pearson's χ^2 tests in the cases of other background variables, there were no statistically significant differences between the experimental groups of both parts of the experiment. Hence, the randomization was assessed as successful, and the background variables were not controlled as covariates in the following analyses.

3.4. Statistical Analyses. We report descriptive statistics of our main variables, error bar figures with 95% confidence intervals (CIs), and ANOVA and ANCOVA models as our main results. For two-way ANOVA and ANCOVA analyses, we report the df, MS, F, p, and partial η_p^2. For internal consistency of measures, we report ω coefficients for more than two items and α for a two-item measure.

4. Results

Based on the descriptive results, the respondents' trust in the assistant was highest in the control condition referring to the human assistant ($M = 56.72$, SD = 13.15). Trust in the AI assistant and AI verified by human was lower ($M = 49.49$, SD = 12.30; $M = 48.47$, SD = 13.78, respectively). This is illustrated in Figure 1 (see also Table 3). In the second part of the experiment, people reported higher trust in assistants when they were given control over modifying the assistants' actions ($M = 53.92$, SD = 14.14) compared to no control ($M = 49.78$, SD = 14.84). The descriptive results of participants' trust for the second part of the experiment by each experimental group are shown in Figure 2.

Based on two-way ANOVA (see Table 4), statistically significant differences occurred between the experimental

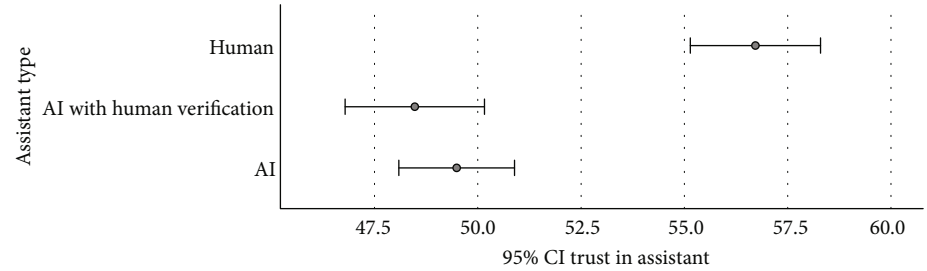

Figure 1: Multiple comparison of trust in an assistant by the experimental group ($N = 828$): Part 1.

Table 3: One-way analysis of variance for the trust in an assistant experiment: Part 1 ($N = 828$).

	Sum of squares	df	MS	F	p
Between groups	10,932.40	2	5466.20	32.08	< 0.001
Within groups	140,555.90	825	170.37		
Total	151,488.30	827	183.18		

conditions of the assistant type ($F(2, 822) = 32.07$, $p < 0.001$) and the level of control ($F(1, 822) = 17.55$, $p < 0.001$), but their interaction was not significant. A Tukey post hoc test revealed that the mean value of trust was again higher in independently working human assistants than it was in independently working AI assistants ($p < 0.001$, 95% CI [4.78, 10.28]) or AI assistants verified by humans ($p < 0.001$, 95% CI [6.10, 11.80]). This reproduced the result from Part 1 confirming Hypothesis 1. However, there was no statistically significant difference between the conditions of independently working AI assistants and AI assistants verified by humans ($p = 0.455$, 95% CI [−4.20, 1.36]). Adding the covariates of internal LOC, openness personality trait, and subjective well-being in the two-way ANCOVA models verified the main results.

ANCOVA analyses were also conducted for both parts of the experiment to see the degree to which the covariates of internal LOC, openness personality trait, and subjective well-being were associated with trust in the assistant based on the assistant type. In Parts 1 and 2 of the experiment, high internal LOC was found to be connected to trust in AI assistants ($F(1, 295) = 5.34$, $p = 0.022$, $\eta_p^2 = 0.02$; $F(1, 294) = 8.22$, $p = 0.004$, $\eta_p^2 = 0.03$) and human assistants ($F(1, 266) = 9.85$, $p = 0.002$, $\eta_p^2 = 0.04$; $F(1, 265) = 10.01$, $p = 0.002$, $\eta_p^2 = 0.04$), but not human-verified AI assistants ($F(1, 255) = 2.95$, $p = 0.087$, $\eta_p^2 = 0.01$; $F(1, 254) = 3.41$, $p = 0.066$, $\eta_p^2 = 0.01$). Higher scores in personality trait openness were connected to higher trust in the AI assistant condition ($F(1, 295) = 7.37$, $p = 0.007$, $\eta_p^2 = 0.02$) of the first part of the experiment, but this connection was not found for other conditions or in the second part of the experiment. A connection between high subjective well-being and trust was found in the ANCOVA model for the second part of the experiment ($F(1, 821) = 7.71$, $p = 0.006$, $\eta_p^2 = 0.01$), but this connection did not remain significant for any specific experimental group and was not found in the first part of the experiment.

5. Discussion

We investigated trust in AI assistants when managing people's work schedules, using a scenario-based survey experiment method with a sample of Finnish respondents. Our study acts as a response to the most recent technological advancements that concern AI and as a response to the call for empirical studies that aim to investigate the factors upon which trust in AI depends (e.g., Glikson and Woolley [5], Kaplan et al. [24], and Rheu et al. [14]). The results imply that independently working human assistants were trusted more than independently working AI assistants were, which confirmed Hypothesis 1. In other words, the participants expressed higher trust in human assistants handling their work schedules. Our results are in line with research such as Dietvorst, Simmons, and Massey et al. [37]; Esmaeilzadeh, Mirzaei, and Dharanikota [39]; Höddinghaus, Sondern, and Hertel [41]; Lacroux and Martin-Lacroux [44]; Promberger and Baron [42]; and Rieger, Roesler, and Manzey [45]. All these studies imply that there are still many occasions where people would rather entrust tasks to humans than AI. Our findings oppose Fahnenstich, Rieger, and Roesler [46] and Jain, Garg, and Khera [47] who did not identify higher trust for humans over AI. In the experiment done by Fahnenstich, Rieger, and Roesler [46], participants had a task to rate the percentage of an area covered by bacteria in an image of either a plant (low risk) or a human patient (high risk). The authors posit that the specific experimental design could account for these results, as it permitted the participants' expressions of trust attitude to potentially align with their interpretation of trust behavior [46]. We did not identify a significant difference between the trust levels towards independently working AI assistants and AI assistants with human verification. This finding opposes the findings of Aoki [48] and Esmaeilzadeh, Mirzaei, and Dharanikota [39], but the data on this phenomenon are still insufficient and require further analysis.

Losing control has been discussed as one of the major risks that AI poses [7]. In this study, we looked at the role that control plays in human–AI interactions in the workplace while inspecting the ways it interacts with trust. We hypothesized that the participants would express higher levels of trust towards AI assistants because they would be

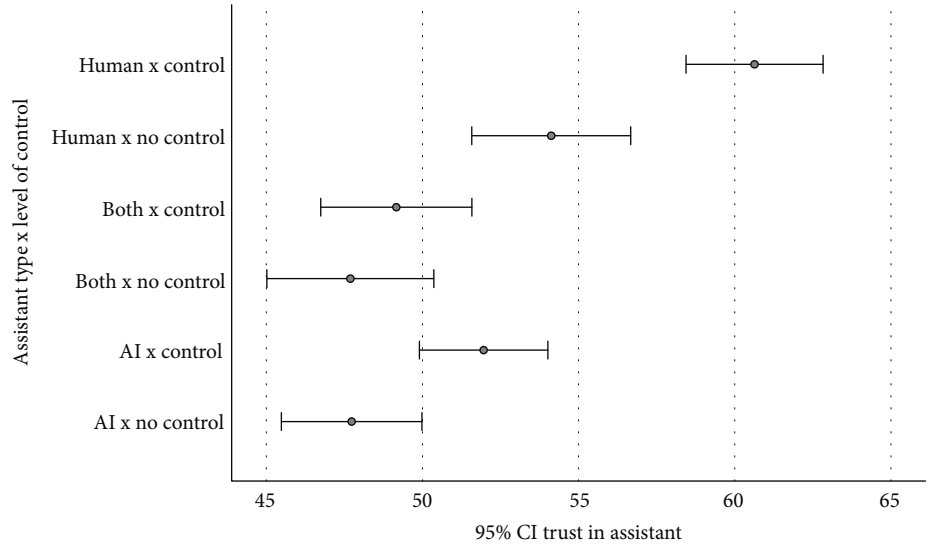

Figure 2: Multiple comparison of trust in an assistant by the experimental group conditions ($N = 828$): Part 2.

Table 4: Two-way ANOVA of trust in an assistant by the assistant type and the level of control ($N = 828$): Part 2.

Group	df	MS	F	p	η_p^2
Assistant type (AI, both, or human)	2	6235.63	32.07	< 0.001	0.072
Level of control (no, yes)	1	3411.02	17.55	< 0.001	0.021
Assistant type X level of control	2	419.85	2.16	0.116	0.005
Residual	822	194.41			
Total	827	213.92			

able to intervene with their actions and, hence, prevent possible mistakes [20]. The results revealed that control is indeed significant for trust, but even in this scenario, the levels of trust were higher when the tasks were managed by people than in the other two options. As previously outlined, research on this topic is scarce and the findings are inconsistent. For instance, our study opposes Kreps et al. [57], who observed higher preference for the setup where control is shared between a human and an AI, rather than the setups where either party has full control. These variations in results may stem from the fact that these two studies analyzed different AI modalities and different application contexts. Our results are in accordance with Zoellick et al. [62] and Dietvorst, Simmons, and Massey [63], but not with Molnar et al. [60] who did not find the link between control and trust. Furthermore, there is some agreement that having control affects people's willingness to interact with smart machines [61] and to rely on the solutions they propose [63]. To that end, this study contributes to the literature by providing an insight into the way people perceive control when they need to rely on AI at work.

As described by Steffel, Williams, and Perrmann-Graham [51], because nonhuman agents cannot be held responsible for possible errors, people are less inclined to entrust them with certain tasks. Similarly, Esmaeilzadeh, Mirzaei, and Dharanikota [39] explained that the reason patients with acute conditions were concerned with the diagnosis proposed by AI and verified by a human doctor was that in this case, it would not be clear who would take responsibility for errors. These could be taken as possible explanations for why the participants in this study felt reluctant to entrust their work schedule and other related tasks to AI assistants as well as AI assistants whose work was verified by a person. Jain, Garg, and Khera [47] argue that distrust in AI might revolve less around a direct human versus AI comparison and more around the delineation of tasks within human–AI collaboration. More specifically, higher distrust is associated with scenarios in which humans receive inputs from their AI teammate [47]. This can be one of the reasons why in our study schedule-related inputs from human assistants gained more trust than inputs from their AI counterparts. In addition, literature identifies task-related antecedents of trust as significant [24]. The tasks proposed in our hypothetical scenarios are not considered typical tasks that AI would perform in the workplace. Therefore, it is possible that the type of task in our experiment affected the trust levels. Nevertheless, empirical research suggests that when a task includes subjectivity or moral considerations, people are less willing to trust AI, and conversely, objectivity and task complexity lead to increased willingness to rely on AI [28]. This somewhat opposes our findings as managing people's work schedules can be seen as a task that does not require neither subjectivity nor moral considerations.

Some of the additional analyses led to relevant outcomes, such as that higher internal LOC was linked to trust in human assistants and AI assistants, but not to trust in AI assistants with human verification. A study that investigated how LOC affects one's trust in mobile AI robots in a disaster response scenario found that people with higher internal LOC trusted the robot less in the setup where a human operator was in charge, while no link between internal LOC and trust was identified in the shared control setup [72]. Another study investigated trust in the context of playing a card game and found that people with higher internal LOC had more trust in their own decisions and had less trust in recommendations received from both human and AI agents [73]. It is possible that an individual with higher internal LOC in our experiment is more prone to trust AI and human assistants because in case of a mistake, it is easier to revisit and address potential issues than in the scenarios proposed in the abovementioned studies. The relationship between LOC and trust in AI remains unclear because the data obtained so far are insufficient. According to Sharan and Romano [73], LOC is a stronger predictor of trust than the Big Five Inventory traits is. In our experiment, the openness personality trait was found to be associated with higher trust in AI, but only in the first condition. When it comes to personality traits, research has indicated that trust is positively linked to being innovative and negatively linked to loneliness, whereas extraversion showed inconsistent results [24]. Furthermore, literature implies that the influence of consciousness on trust is inconsistent, while trust is positively linked to agreeableness and openness but negatively correlated with neuroticism [29].

Investigating trust in AI in different contexts is important as it is identified that trust leads to cognitive, affective, and behavioral changes among AI users [32]. A positive link between trust and intention to use and accept AI is found in many studies (e.g., Choung, David, and Ross [74] and Xiong et al. [75]), but there is also some evidence that higher trust in AI does not always lead to a higher intention to use it [76]. One study observed that users with higher trust in AI banking assistants exhibited a greater inclination to use the tool, perceived the assistant as more competent, and held positive views about the developer's intentions, while users with lower trust had contrasting opinions [38]. There is also some evidence that LOC affects our willingness to use technology, but the findings are inconsistent (e.g., Mays et al. [77] and Taffesse and Tadesse [78]). A study done by Cheng, Lin, and Kong [79] discovered that employees with internal LOC see adoption of AI in the workplace as an opportunity to learn something new, while people with dominant external LOC see it as an obstacle to possible achievements. Considering the results of the abovementioned studies, it would be interesting to further investigate people's willingness to adopt AI assistants in the workplace context.

5.1. Theoretical and Practical Implications. Our study confirms that trust in AI assistants depends on the level of control people have over AI's activities and that people hesitate to entrust tasks to AI if humans are available. The findings are in line with other studies and contribute to the current research literature on trust in AI technologies [5, 14, 21–25, 29, 32, 37, 39, 41, 42]. This study validates the importance of the trust factor in influencing one's behavior when interacting with an AI assistant at work. Consequently, it suggests a need for greater inclusion of trust in theoretical models addressing the adoption of AI technology. Research has recognized task type as a relevant factor that influences trust in AI [24]. However, according to a systematic review of literature [28], not enough attention has been given to studying task-related factors. We address this gap by specifically focusing on tasks such as work scheduling and sending email invitations on one's behalf. As previously discussed, most of the studies investigate the link between control and trust in the context of autonomous vehicles. Our study investigates this relationship in the context of collaborating with AI assistants at work. Although the primary focus of our study is not on LOC, our research enriches the existing literature by providing new insights into how LOC influences trust in AI.

The pace at which smart technologies are developing and the fact that they are becoming capable of handling tasks that are more complex lead to the conclusion that it is just a matter of time before having an AI assistant at work will become commonplace. As formerly emphasized, when used properly, AI can be of tremendous value for organizations. However, this is only true in the presence of trust. Therefore, the findings of this study should be considered when designing AI tools aimed at supporting people at work. To build human-centered and trustworthy AI assistants, one should understand human needs and attitudes.

AI assistants can be utilized across different industries and work settings, and they can take various modalities such as chatbots or robots. Nevertheless, our study implies that having control over the assistant increases trust. Therefore, when designing AI assistants, it should be considered that employees want to maintain a sense of control. This could be achieved by providing employees with a possibility to intervene or override AI's decisions depending on the task or work setting. For example, employees should have more control when the task includes sensitive data such as legal, medical, or financial, or when managing critical projects. AI designers should aim at developing user-friendly AI tools that are easy to operate and control. AI designers should take into consideration the way workers communicate with their AI assistants. The communication method and style must be acceptable for humans and must provide them with a sense of control. Organizations that are integrating AI should come up with strategies that clarify procedures in case of possible issues such who takes responsibility if AI makes a mistake. Organizations should also clearly communicate who has control over information shared with an AI assistant.

Experts responsible for designing AI tools should consider the types of tasks people find acceptable to entrust to AI assistants. According to Jain, Garg, and Khera [47], people are willing to cooperate with AI when the task division is done properly. Our study shows that people are not comfortable with AI assistants managing their work schedule, not even when another human is in the loop. However, trust

increases when people have more control. To that end, the outcomes of our study could act as an initial exploration into balanced approaches for ceding control to AI assistants without compromising trust. Riedl [29] suggests that the knowledge collected through research should be utilized not only to improve technology design but also to educate and prepare users for efficient collaboration with AI. Our findings could also contribute to this purpose. Ultimately, our findings provide knowledge relevant for establishing a safe work environment where people can efficiently interact with their AI assistants as well as feel reassured that AI will properly handle the tasks that people entrust to them.

5.2. Limitations and Future Work. The results of this study advance the understanding of antecedents of trust in AI from a human perspective in the context of work assistants. However, it is important to point out certain limitations. To begin with, this study is limited to self-reported scales. Multiple studies confirm that culture has a significant effect on the way people perceive AI [28, 29]. Such cultural factors could be, for example, differences between individualistic and collectivistic societies, or the way power is distributed within society [32]. Lei and Rau [80] argue that in societies where power distance is high, people have confidence in society leaders' competence and knowledge to make informed decisions regarding implementation and adoption of smart technologies. Vu and Lim [81] found that socioeconomic factors such as a country's level of development, innovation, and effectiveness of the government impact individuals' perceptions of smart technologies. When interpreting our findings, one should take into consideration that Finland is a developed country where people are more exposed to smart technologies. In addition, Finnish society is more oriented towards individualism, it highly values trust, and there is more equal distribution of power. For these reasons, one should not assume that the results of this study can easily be generalized to other cultural contexts or countries. We recommend that forthcoming studies should rely on samples with greater cultural diversity. We suggest that future research should consider investigating trust in AI assistants and the impact of control in the contexts different from ours. Examples of such contexts might include societies characterized by significant hierarchical disparities, where people are more obedient to authority, a pattern that is also observable in the workplace. It is possible that in such environments, the control factor would have a different effect on trust in AI. For instance, one's willingness to relinquish control to an AI assistant might depend on their hierarchical position. Similarly, because control holds significant influence in specific job positions or within particular sectors, trust in AI assistants should be studied across various roles and industries.

In this study, we utilized an experimental survey where we described hypothetical scenarios to the participants. We suggest that it would be beneficial to repeat the experiment in a setup where people interact with actual AI assistants. Moreover, we did not specify the modality of AI with which the participants were interacting. Kaplan et al. [24] suggested that trust depends on the form that AI takes. Future studies should focus on investigating the ways AI modality would affect trust levels in the workplace context. Lastly, the type of task that AI is expected to perform when assisting a person in the workplace also affects trust levels. The findings from this study could be expanded upon by analyzing whether and the way in which trust levels change when, for instance, the task given to the AI assistant poses more risk. Despite some limitations, our results are based on a large-scale sample and experimental method, and hence, they can provide robust evidence to the growing literature on trust in AI.

5.3. Conclusion. The need to understand the way trust operates in human–AI interactions at work has emerged with the increased utilization of AI in this context. The aim of this paper was to inspect the levels of trust towards AI assistants when they are assigned with specific office tasks such as handling a work schedule. For this purpose, we relied on a scenario-based survey experiment that we conducted with respondents living in Finland. Our results unambiguously indicate that people still have higher trust in traditional ways of working where assistance is provided by people rather than AI. This paper addresses topical issues that concern utilization of AI at work, and it contributes to the literature by offering new insights into the factors that influence people's trust in AI.

Appendices

Appendix A: Trust Measure Adopted From Gulati, Sousa, and Lamas [65]

Please answer the following statements.

∗Items 1–12 in English

Evaluate the following statements.

I believe that using an assistant can have negative consequences.

I feel like I have to be careful when using the assistant.

It is risky to interact with the assistant.

I think the assistant will work for me.

I believe the assistant will do its best to help me if I need help.

I believe the assistant is interested in understanding my needs and preferences.

I believe the assistant is competent and efficient in managing my schedule.

I think the assistant does their job in managing my schedule very well.

I believe the assistant has all the abilities that I would expect from an assistant.

If I were to use an assistant, I think I could completely rely on it.

I can always rely on an assistant to manage my schedule.

I can trust the information presented to me by the assistant.

Note: The original language of the experiment was Finnish. Because the Finnish language is not gendered, there were no pronouns that would imply the assistant's gender. This is

relevant because some participants were exposed to scenarios with human assistants and some with AI assistants.

Data Availability Statement

The anonymized data will be made available in the Finnish Social Science Data Archive after the research project.

Ethics Statement

The Ethics Committee of the Tampere Region in Finland gave approval for the procedures of the study (decision 29/2021).

Conflicts of Interest

The authors declare no conflicts of interest.

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