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ORIGINAL ARTICLE

Teleworking antecedents: an exploration into availability bias as an impediment

Marie-E. Godefroid[2] · **Vincent Borghoff**[1] · **Ralf Plattfaut**[2] · **Björn Niehaves**[3]

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Abstract
Telework technologies have been known since the 1970s, yet their adoption levels remained low until Covid-19-related lockdowns and curfews. The known rational and non-rational technology acceptance theory and biases cannot fully explain this effect. One of the possible answers to fill this gap could be availability bias which has probably also affected the lag in adopting other technologies. To examine this phenomenon, we conducted a qualitative study with 22 interviews with individuals from different organizational backgrounds and telework adoption levels. Following a combination of inductive and deductive coding, we identified three key aspects of availability bias: intention, cognitive visibility, and cognitive transfer. The findings also allowed us to delineate this bias further from other biases, e.g., the status quo bias, and classical technology acceptance models, e.g., UTAUT. Thereby, this study examines a bias so far only very limitedly researched in the information systems and extends technology acceptance and cognitive bias literature. The findings should also enable practitioners to question their way of working and technology use more thoroughly.

Keywords Technology acceptance · Cognitive bias · Availability bias · Telework technology · Covid-19

1 Introduction

The limited acceptance and use of telework before Covid-19-related lockdowns and curfews cannot be fully explained with existing information systems (IS) theories. Telework has been around since the 1970s (Nilles 1975). Covid-19-related lockdowns and curfews increased its acceptance and use significantly (Baert et al. 2020). Many individuals found telework in this context beneficial and are planning to continue using it—even once they are allowed back to the offices (Ozimek

Extended author information available on the last page of the article

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2020). IS researchers have already examined continuous use decisions (e.g., Yuan et al. 2019; Ratten 2016), but our focus here is rather on why individuals chose not to use telework technologies before the pandemic. The observed phenomenon presents a curious case as it appears that this technology with significant advantages was only accepted and used to a very limited extend before the pandemic (Aguilera et al. 2016). Classical IS theories from the technology acceptance literature fail to explain this non-rational behavior because the assessment of telework technologies should not have changed. Models like the Unified Theory of Acceptance and Use (UTAUT) assume that individuals can assess the system they encounter regarding its benefits and drawbacks and form an intention to use or not use the system accordingly (Venkatesh et al. 2003). This theory does not fit with the widespread knowledge of telework, its alleged benefits and its lack of acceptance and use before the pandemic (Aguilera et al. 2016). Parts of this phenomenon can surely be explained by the general conditions in organizations before the pandemic (Berberat et al. 2021) and other effects like herd behavior in IT adoption (Li et al. 2014). But it appears that on the individual level, most employees never considered telework technologies and never actively demanded them before the pandemic, which should not have happened in light of the technology's now proven usefulness. Similar arguments can be made from the perspective of the diffusion of information technology innovation theory (Benbasat 2000). Both perspectives reinforce our argument: The changed user perceptions imply behavioral reasons and not changes in the characteristics of the telework technology "innovation".

On top of this, the most prominent example of non-rational explanation approaches, the status quo bias, can also not fully explain why telework was never even considered. Status quo bias, which has garnered increased attention in IS in recent years (Kim and Kankanhalli 2009; Godefroid et al. 2022), is one of the most prominent non-rational explanation approaches. This phenomenon describes a biased preference for the current way of working. Three effects can bias preference: loss aversion, rational decision-making, and psychological commitment (Samuelson and Zeckhauser 1988; Godefroid et al. 2022). All of these require an alternative IS as a solution to evaluate against the current way of working—but in the case of telework, many individuals never even considered it. For example, suppose individuals are to consider their transition costs for system introduction (rational decision-making). These can only be evaluated in the face of a concrete solution (Kim and Kankanhalli 2009). How would the individual otherwise know how much resources it will cost to transition fully to the new system, e.g., what effort is needed to import existing contacts in a new videoconferencing solution? In the case of telework, many individuals never considered the technology at all—irrespective of a single technology solution and its features.

The (non) use of telework is an example that highlights a pattern of human behavior that warrants closer inspection due to its potential negative effects for both individuals and organizations. Individuals did not use telework even though it could have been beneficial before the pandemic. Telework would have enabled individuals to realize several advantages, e.g., reduced travel times, flexibilization of their working times, and overall increased employee satisfaction (Saragih et al. 2021; Zalat and Bolbol 2022). Hereby we acknowledge that the technologies and

their advantages have surely improved since the 1970s; however, it is unlikely that they improved so drastically between 2018 and 2020 that the improvement alone can explain the change in acceptance (Baert et al. 2020). Potentially, telework is hereby only one of several technologies that are not used despite of considerable advantages. This perspective would be worrisome as it would be unobservable unless an external effect suddenly affected use patterns significantly (like the pandemic did for telework technologies). Leaving this effect unchecked would mean putting the introduction of other beneficial technologies at risk, which could impede technology-driven change in organizations or society at large. This behavior thus warrants attention as it does not follow known rational and non-rational considerations regarding technology acceptance.

The answer could lie in another non-rational explanation approach that has received only limited attention in IS so far—namely, availability bias. The availability bias describes the effect that individuals overestimate how representative examples that come readily to mind are. This effect was first discussed in psychology literature with the example of individuals that overestimated the percentage of one gender in a given list of names if only that gender contained celebrity names, which were better to recall (Tversky and Kahneman 1973). Since then, it has gained attention across disciplines, e.g., in medicine, business, and, recently, IS (e.g., Monteiro et al. 2020; Salman et al. 2021). In our discipline, it has so far appeared in the context of code reviews (Spadini et al. 2020), group decision support systems (Benbasat 2000), and software update acceptance (Hong et al. 2011). But this phenomenon has not yet found its way into concepts and models, which still assume rational behaviour—in stark contrast to the call by Herbert Simon, the father of bounded rationality: "the task is to replace the global rationality of economic man with the kind of rational behavior that is compatible with the access to information and the computational capacities that are actually possessed by […] man" (Simon 1955, p. 99).

Thus, we have to ascertain a research gap regarding potential influences on individual technology perception and adoption, which could explain why the apparently beneficial telework technologies were not adopted before the external shock of the pandemic. To close this research gap, we aim to explore the availability bias as a potential answer guided by the following research questions (RQ):

- RQ1: How did the availability bias affect the acceptance and use of telework?
- RQ2: How can the availability bias be conceptualized for IS?
- RQ3: How can this effect be delineated from known explanation approaches like technology acceptance or status quo models?

We employ a qualitative approach as a means of an inductive exploration of the availability bias through narrative interviews (Myers 1997). 22 interviews allowed an exploration of the availability bias in the context of Covid-19-related lockdowns and curfews, taking telework as an example. The effects of the pandemic offered a unique research context, because a technology that had been around for some time without receiving widespread adoption, suddenly became widely adopted. By taking this perspective we add to the insights around influences on telework adoption and

use and the effects of the availability bias in IS. We are able to derive a set of propositions that explains the (lack of) telework technology acceptance and use.

The remainder of this research is structured as follows: Sect. 2 presents the theoretical background regarding cognitive biases, telework, and technology acceptance models. Section 3 explains the method of data collection and analysis. Section 4 presents the findings, which we discuss in Sect. 5. Section 6 presents the conclusion, including contributions to theory and practice, limitations and future research.

2 Background

2.1 Telework technologies

This research focuses on a set of technologies that enable telework, remote work, or working from home. Following the definition of the European Commission we focus on technologies that support: "Telework [a]s a form of organising and/or performing work […] in the context of an employment contract/relationship, where work, which could also be performed at the employers premises, is carried out away from those premises on a regular basis" (European Commission 2008, p. 34). In this context, telework technologies have two key characteristics: Firstly, these technologies support space asynchronous collaboration, e.g., online meeting platforms like Zoom, and secondly, time asynchronous collaboration, e.g., through messaging services and communication platforms like Teams (Kudyba 2020; Vroman et al. 2020). Thus, these technologies reduce the traditional spatial and temporal restrictions for workspaces. Naturally, the solutions used in that regard have changed over time, but basic functionalities like videoconferencing were already widely available 20 years ago, e.g., Skype was first released in 2003 (Microsoft 2022). Research on telework goes back even further: Already in the 1970s, researchers examined telework to reduce congestion in American cities and saw significant potential benefits (Nilles 1975).

Nonetheless, until the external shock of Covid-19-related lockdowns and curfews, the adoption of telework remained low. Telework technologies became more attractive because they often represented the only way to continue operations (Tokarchuk et al. 2021). Several studies now report on an increasing number of use cases for telework technologies, which has for example been studied in the affordance literature stream (e.g., Hacker et al. 2020; Waizenegger et al. 2020). However, surveys showed that this partially forced use of telework technologies also changed the perception of these technologies more permanently. Baert et al. (2020), for example, report that in a survey of 2673 respondents, 17% agreed, and 35% somewhat agreed with the statement that they now looked more positively at teleworking because of the Covid-19 crisis. Suppose we assume that individuals assessed the potential use of telework technologies completely rational beforehand as technology acceptance literature suggests (Venkatesh 2000; Nosratzadeh and Edrisi 2023). In that case, their perception of the technology should not have changed—even though part of the change might be due to continued use (Ferratt et al. 2018).

Various studies have explored a wide range of factors impeding or enhancing telework, but none of these can explain the change in perception (Laumer and Maier

2021). A common explanation approach is the influence of company factors or facilitating conditions (Nosratzadeh and Edrisi 2023; Nguyen 2021). As firms had to offer licenses and allow their employees to stay at home during the pandemic to continue business, this could explain the increased adoption. The extended use of telework technologies has also opened up new use cases like virtual skill acquisition, virtual recruiting and increased performance due to autonomy and interaction reduction (Kral et al. 2022; Durana et al. 2022; Nemteanu et al. 2021). None of these, however, explain the changed perception of telework technologies and willingness to continue their use after the pandemic (Šmite et al. 2023). Thus, in this research effort we explore an availability bias perspective to close this gap.

2.2 Availability bias

Availability bias describes how an event's (non) availability in an individual's mind influences the perception of their likelihood or frequency. We define availability bias as "the ease of recall (or imagination) of instances of specified event. […] A bias occurs when such availability-based estimates are distorted by the influence on retrieval of such factors as the concreteness, drama, familiarity, recency, relevance, similarity or vividness of instances" (Dube-Rioux and Russo 1988, p. 223). Tversky and Kahneman (1973) discovered this bias in an experiment where they observed that participants evaluated the probability of events based on how easily relevant instances came to mind, i.e., were available. The most salient example of the availability bias is surely the level of flood insurance purchased shortly after a flood when the event is still prominent in the mind of residents and the insufficient coverage a few years later (Gallagher 2014).

However, to date, researchers have not yet conceptualized this bias further, which would be necessary to incorporate it into prevailing theoretical models, which still assume rational behavior. Only very context-specific approaches measuring availability bias as one concept with a set of items derived from the research context are known (e.g., Salman et al. 2021).

Availability bias has so far received limited focus in the IS domain and has not yet been incorporated into the prevailing theoretical models (see Table 1). Examples include debiasing group decisions (Benbasat 2000) and code reviews (Spadini et al. 2020). Another is accepting new changes easier if individuals have positive experiences with past technology changes available (Hong et al. 2011). But researchers have not yet conceptualized availability bias in a way that it could be easily incorporated into the prevailing theoretical models in IS: For telework, this could mean that before the pandemic, instances of telework technology use were not as available to individuals explaining the lack of acceptance (negative effects of availability bias). However, when everyone was using it, instances were highly available, enforcing acceptance and continuous use (positive effects of availability bias). Findings from prior research that it needed the pandemic for employees to realize that they could perform tasks via telework would support this assumption (Abulibdeh 2020).

Hereby availability has an overlap but is clearly distinct from the concept of prior use or learning. A system can also be highly available in an individual's mind due to

prior use or learning, a known concept in IS research. It refers to the effect that previous interactions with IT can influence individual use behavior (Ferratt et al. 2018). Venkatesh et al. (2012) describe prior use as something triggered by 'being in a similar situation'. One can assume that something about the situation is sufficiently familiar and thus available in the individual's memory. Hereby they refer, however, to a similar situation experienced with the same system. Here the phenomenon of the availability bias goes further, as it could also be triggered by experiences with other similar systems or mere knowledge. In the case of telework, availability bias for Zoom could, for example, stem from experiences with other videoconferencing solutions like Skype, WebEx, and Teams, as these are quite similar in their use.

Table 1 Key publications on the availability bias for this research

Source	Key aspects
Tversky and Kahneman (1973)	The initial publication coined the term availability bias and reported on the experiment of two psychologists. They discovered that individuals who were read a list of names comprised of an equal amount of male and female names remembered this, however, later as to be largely male or female. The effect was caused by choosing the names of celebrities only for one gender on the list. The participants later recalled these better because they were more available to them
Benbasat (2000)	The study by Benbasat (2000) aimed to debias group judgments. To this regard, a 2 × 2-factor experiment was conducted: electronic brainstorming was either available or not, and the communication mode was either electronic or verbal. He found both factors significantly reduced the availability bias
Hong et al. (2011)	Users of agile information systems are faced with continuous change. In this context, Hong et al. (2011) found that the availability of past experiences with system updates influences the acceptance of new updates
Spadini et al. (2020)	This research confirmed the validity of the current approach of code reviews to work with bug comments. Increasing the availability of knowledge about certain bugs through comments did not lead to oversight of other bugs that were not mentioned in the comments
Salman et al. (2021)	This paper is exemplary for several studies that have explored stock-market and investor behavior by measuring availability bias as one concept with five items: I prefer to make an investment in local stocks as compared to international stocks When I want to invest in a certain company, then I relay information provided by brokers and friends I prefer to sell stocks when the stock market index decreases I prefer to buy stocks when the stock market index increased I usually make an investment decision in those stocks that have more information available to me" (Salman et al. 2021, p. 256)

2.3 Main drivers of technology acceptance and use

The study of technology acceptance and use by individuals is one of the richest streams of IS research (Sykes et al. 2009). Traditionally, acceptance and use of technologies were explained through rational decision-making models based on the Theory of Reasoned Action (Ajzen and Fishbein 1970). A prominent example of this is UTAUT (Venkatesh et al. 2003). UTAUT builds upon the Technology Acceptance Model (TAM) developed by Davis (1985). UTAUT proposes that acceptance and use of technologies depend upon four main variables:

- Performance expectancy measures how far individuals perceive a system to increase their job performance.
- Effort expectancy measures how easy it is for an individual to use a system.
- Social influence measures the influence of colleagues or superiors on system use.
- Facilitating conditions measures how far the necessary organizational and technical infrastructure exists to use the system.

Since then, these rational decision-making models have been extended by various additional variables such as anxiety (Park et al. 2014), technological readiness (Olschewski et al. 2018), or habit (Maican et al. 2019) – none of these explain the observed phenomenon around the use of telework technologies (see Appendix 1 for an overview). A potential answer lies in cognitive biases, a phenomenon that has been found to influence various IT-related decisions ranging from online reputation mechanisms (You and Sikora 2014) to privacy choices (Shih and Liu 2023).

Since the postulation of bounded rationality led to the discovery of cognitive biases in psychology (Tversky and Kahneman 1974; Simon 1955) and the first studies in IS in that regard (Keil et al. 1994), a large number of cognitive biases have been studied in IS contexts (Godefroid et al. 2021). One bias most prominent in IS research (Lee and Joshi 2017; Godefroid et al. 2021) and relevant in the telework context is status quo bias: Individuals with a biased preference for the current state of affairs are less open to change and might even resist innovations. Samuelson and Zeckhauser (1988) studied this effect in a series of decision experiments and identified three explanation approaches for that phenomenon: Loss aversion, rational decision-making, and psychological commitment. Individuals might reject change because they fear losing current privileges, e.g., organizational status (loss aversion). Or they might not see the benefits, find the transaction costs of changing to the new solution too high or be uncertain that the new solution fulfills their needs (rational decision-making). Finally, they might be biased due to investments in the status quo solution—thus sunk costs—and the social influence of their superiors and colleagues or be unsure how to use or control the new solution (psychological commitment).

Kim and Kankahalli (2009) observed this preference to continue with the current situation and information system use based on an ERP introduction. In that study, they were also able to conceptualize status quo bias further with seven distinct concepts: Loss aversion, three concepts for rational decision-making (uncertainty costs, transfer costs, net benefits), and three concepts for psychological

commitment (sunk costs, social influence, and control). They showed that a deviation from the status quo could result in user resistance. Since then, different aspects of status quo bias have seen widespread use in IS research (Lee and Joshi 2017).

For telework, the status quo bias could have impeded technology acceptance before the pandemic because its introduction would have meant change. A change to telework would have meant the loss of social interactions or increased isolation, which several sources name as one of the key risks of telework—both before and during the pandemic (Ward and Shabha 2001; Lengen et al. 2021). Individuals were also not convinced about telework's benefits and feared it would lead to decreased productivity (Ruppel and Harrington 1995; Kazekami 2020). The hypothesis of an influence of the status quo bias also aligns with prior research that cites traditionalism as one of the factors encouraging 'occupational resistance' to telework (Abulibdeh 2020). However, the effect of status quo bias on telework acceptance and use explains only parts of the observed phenomenon. It would imply that individuals when faced with the option to adopt telework technologies, decided not to before because they were biased towards a status quo. They then overcame the bias when they were forced to adopt it as the only way to continue working during the pandemic. But status quo bias cannot explain why individuals never even considered telework technologies before the pandemic. It appears as if the individuals never arrived at the stage of a conscious decision for or against a specific technology. Thus, there was no decision that could have been affected by status quo bias.

The exact nature of status quo bias is, therefore, relevant in the context of this research effort. The status quo bias is an effect that influences individuals in concrete decision situations with known options to reject change. In addition, a second perspective exists in IS research, which understands status quo bias as a general preference against change—not necessarily related to a specific decision problem: "the uncertainty associated with the changes can lead people to prefer no change and no action" (Hong et al. 2011, p. 241). For this research effort, we follow the narrower definition of status quo bias in line with its initial conceptualization.

3 Methods

To answer our research questions, we rely on rich data from individuals who decided to use telework technologies. To obtain this data, we conducted interviews with appropriately selected individuals in which we collected and analyzed real-life narratives (Myers 1997). This approach allowed us to explore explanation patterns and gain in-depth insights into behavior in real-life contexts (Schwarz et al. 2014; Pentland 1999). Hereby we treated the influence of the availability bias on the individual's decision as a black box (see Fig. 1). Within our analysis, we iterated between the collected data and literature on availability bias, status quo bias, and technology acceptance in general. Thereby we were able to develop a first conceptualization of the availability bias in IS research.

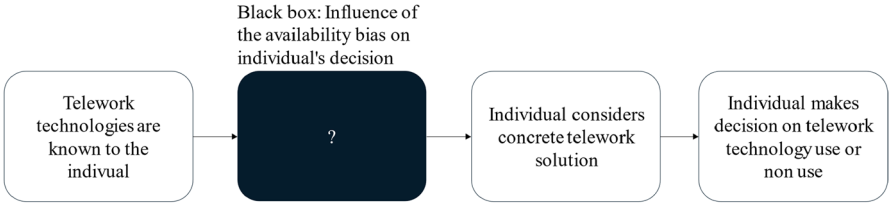

Fig. 1 Illustration of the phenomenon observed in the context of telework

3.1 Data collection

We conducted narrative interviews to understand what influences the decisions between the moment an individual gains knowledge of telework technologies in general and when an individual considers a concrete telework solution (Myers 1997). In IS and other domains, narratives help explain how things evolve and how individual behavior, organizational structures, and routines change (Schwarz et al. 2014; Pentland 1999; Søderberg 2006). The method of narrative investigation is particularly suitable in cases of dramatic changes (Weick 2006), such as the abrupt widespread commitment of many individuals to continue telework use even after the Covid-19 crisis measures end. Instead of asking interviewees about hypothetical events, e.g., if they would use a specific new telework solution, narratives offer accounts grounded in actual events (van der Heijden 2012). Thereby, it constitutes both individual and organizational reality by taking a retrospective perspective (Søderberg 2006). They also allow interviewees to describe their experiences with telework in their own words, leaving room for nuances in nomenclature that established research might not offer (Gruen et al. 2002). Hereby we understand narratives to always represent an ordered sequence of events with a beginning, middle, and end with a focus on something or someone (Pentland 1999). Thus, narratives need to be acquired from interviewees who have directly experienced telework (Pentland 1999; Schwarz et al. 2014). Therefore, we asked interviewees for narratives of their use of telework, including relevant events in chronological order.

In that regard, we collected 22 narratives of individuals from different organizations who had faced the decision to introduce telework or were already working with telework technologies when Covid-19-related lockdowns and curfews took effect. We chose information-rich cases that could represent different variants of telework acceptance and use. We also took care to consciously include interviewees with different individual characteristics (e.g., age, occupation and technological affinity) as well as organizational characteristics (e.g., organization size, experience with telework and organizational form). We thus to employed a purposeful sampling (Patton 2009), and in fact, none of the potential interviewees declined. We prescreened potential subjects we acquired via networks and connections to people who had mentioned peculiarities in their telework technology use. In this selection process, we applied the following inclusion criteria: The interviewee had to (1) be aware of telework technologies, (2) made experiences with them during Covid-19-related lockdowns and curfews, and (3) possess the ability to describe their experiences

in detail. The use of telework technologies and, thus, the occurrence of telework arrangements often related to a professional context. This context is just as often associated with embedding individuals in an organization. Therefore, this organizational context plays a role in the consideration of individual experiences and narratives (Lewis et al. 2003). Hence, we included the individuals' organizational work environment as a further contextual factor for the selection and analysis of our interviewees. Thus, we used the following organizational selection criteria: We aimed at achieving a maximum variation between the organizational contexts by including organizations (1) of different sizes in terms of the number of employees, (2) previous experience with telework, (3) different organizational form in terms of public organizations and private companies, as well as (4) the field of operation of the individual organizations (see Table 2 and Appendix 2). We made selections from the subjects satisfying these criteria based on the intensity of their experiences (Patton 2009). In addition, we collected various experiences to get triangulation of subjects

Table 2 Overview of interviewees (micro < 100 employees, small l < 1000, medium < 5000, large > 5000)

Interview (T)	Organization type	Before Covid19 telework technology was...	No. employees	Sector
I1	IT service provider	...allowed	100	Private
I2	Wildlife activist organization	..allowed	7.000	Social/public
I3	Software producer	...partly considered	40	Private
I4	Manufacturing industry company	...partly considered	240	Private
I5	Public sector agency	...partly considered	2.000	Social/public
I6	Manufacturing industry company	...partly considered	2.500	Private
I7	Public payor	...partly considered	5.000	Social/public
I8	Strategy consulting	...partly considered	21.000	Private
I9	Strategy consulting	...partly considered	28.000	Private
I10	Mobility provider	...partly considered	41.000	Private
I11	Service provider	...partly considered	77.000	Private
I12	Dance organization for young people	...not considered	7	Social/public
I13	Community work organization	...not considered	10	Social/public
I14	Neighborhood center	...not considered	15	Social/public
I15	Regional development agency	...not considered	27	Private
I16	Community work and school organization	...not considered	50	Social/public
I17	Charity association	...not considered	51	Social/public
I18	Regional care and aid organization	...not considered	200	Social/public
I19	Homeless care organization	...not allowed	70	Social public
I20	Peace organization	...not allowed	250	Social/public
I21	Financial service provider	...not allowed	400	Private
I22	Manufacturing industry company	...not allowed	1.500	Private

(Myers and Newman 2007). The age of the interviewees ranged from 25 to 65. Of these, five were female, and 17 were male.

We started interviews by asking about changes in technology use due to Covid-19-related lockdowns and curfews. These narratives revealed that many interviewees had never considered telework technologies before but were planning to continue using them, even if Covid-19-related restrictions were lifted. These initial observations broadened our selection to include cases that had used telework technologies to the same extent before and those that had decided not to.

To avoid framing our interviewees based on an initially conceived hypothesis regarding the reasons for this phenomenon, we developed the interview scheme incrementally as previous interviews provided input for the following ones. This approach of continuous refinement is in line with recommendations from the literature for exploring new areas (Myers and Newman 2007; Berg 2004). We started by exploring the effects of Covid-19-related lockdowns and curfews on telework technology use. As questioning the antecedents of telework technology acceptance and use became a prominent theme, we shifted the focus of our interviews in that regard. Hereby we structured the interviews to guarantee sufficient space for real-life stories to elicit full and consistent accounts of the specific incidents (Butterfield et al. 2005; Gogan et al. 2014). Given our research goal, we asked the interviewees to thoroughly describe how their use of telework technologies originated, how they had changed in the wake of Covid-19, and what they planned to do in the future. Hereby we focused on their actions' motivation and reasoning, working with open why questions. But we also ensured that we got a full account of the narratives by asking various detailed questions about examples, usage patterns, and perceptions.

We followed the main guidelines by Myers and Newman (2007) (see Appendix 3). We continued to include more interviewees' perspectives in our data set until we reached saturation within our analysis. Due to the homogeneity of the data concerning the confrontation with the same phenomenon, saturation was reached after 22 interviews, when only known patterns emerged in the last three interviews (Guest et al. 2006). The interviews were conducted in 2020 and 2021, either in German or English, lasted between 36 and 70 min, and contained altogether over 80,000 words. All interviews were audio-recorded and transcribed verbatim.

3.2 Data analysis

Our unit of analysis was the individual user's decision to use telework technologies, taking into account the aforementioned organizational context. Following Berg's (2004) guidelines for an analytic procedure, we moved between our interview transcripts and the theoretical concepts captured in the different literature streams. Thus, we took a primarily inductive approach but also took advantage of previous insights from the telework, technology acceptance, and cognitive bias literature in IS. Our iterative analysis allowed us to revisit the data once our understanding of the phenomenon had changed. The adherence to methodological guidelines is summarized in Appendix 3, and the data analysis process is depicted in Table 3.

Table 3 Summary of the data analysis process

	1. Distinguish relevant data	2. Focus on central concepts	3. Conceptualizing availability bias
Actions	Reducing data to enable a focus on telework technology-related decisions and organizational context	Using literature-based concepts to make sense of the data	Identifying themes outside of established theories and conceptualizing aspects of the phenomenon
The role of data/literature	Data-driven: We used open coding to identify aspects of the narratives that reflected decisions on telework technologies. The codes allowed us to identify emerging themes	Data and literature: We used technology acceptance and cognitive bias literature to make sense of the data. We constantly compared between literature and the data and analyzed where they converged and where we reached the novel ground	Data and literature: The concepts from the literature allowed us to identify patterns and additional aspects observed in the telework technology context
Outcomes	Overview of the data and coding structure, including emerging themes. By examining these, we identified themes relating to established theories and aspects of the phenomenon that are less covered. We also derived a temporal representation of the organizational context	Text reflecting technology acceptance models (performance expectancy, effort expectancy, social influence, and facilitating conditions), status quo bias (loss aversion, net benefits, transition costs, uncertainty costs, sunk costs, social norms, and control), and availability bias	Conceptualization of availability bias with its three aspects intention, cognitive availability, and cognitive transfer

The first phase of the analysis focused on identifying relevant patterns in the interview data (Berg 2004). Therefore, we structured the collected narrative interview data in terms of time, processed the previous, current and planned use of telework technologies among the individual interviewees, and expanded it to include the organizational context (see Sect. 4.1). Based on this first step, we used open coding in all interview texts that discussed the decision to use (or not to use) telework technologies and the underlying reasons (Berg 2004; Strauss and Corbin 1990). Using MAXQDA, the first author identified all parts of the collected narratives that detailed the individuals' decision to use or not to use telework. The codes were hereby based on the wording of our interviewees (Strauss and Corbin 1990). Constant comparison with literature allowed an iterative revision of these codes. The second author also went through the coding to confirm that nothing essential about the study's focus had been left out. The codes were subsequently discussed with the entire author team. The codes thus developed focused on several general themes: Temporal development in the knowledge and use of telework technologies, rational reasons for non-use, and non-rational behavior patterns. For the latter, we found the active dismissal of a specific telework solution, e.g., due to social influence. Still, we also encountered a general lack of intention even to consider telework technologies, a general lack of awareness or cognitive availability, and a lack of transfer between domains, e.g., private and business. The first theme appears in the technology acceptance literature and has already led to the development of well-established technology acceptance models (Venkatesh et al. 2003; Davis 1985). The second theme has also started to gain more attention in IS, for example, in the context of status quo bias (Kim and Kankanhalli 2009; Godefroid et al. 2022). Finally, the last theme appears yet only in very general terms under the concept of availability bias (Tversky and Kahneman 1973; Hong et al. 2011). As a result, we developed a general view of the data, focusing our attention on the phenomenon of availability bias yet only covered to a limited extent in IS literature (see Appendix 4 and 5 for further details on the codes).

In the second phase, we used the literature on technology acceptance models and status quo bias to make sense of the data. In that regard, we matched our open codes to existing concepts in the literature. For technology acceptance models, we used UTAUT with its direct determinants of performance expectancy, effort expectancy, social influence, and facilitating conditions because it is both well-established in the literature and matched our data well. We used Kim and Kankanhalli's (2009) conceptualization of status quo bias with their seven concepts: loss aversion, net benefits, transition costs, uncertainty costs, sunk costs, social norms, and control. The concepts of social influence and social norms appear to be very similar, i.e., Kim and Kankanhalli (2009) used the questions by Venkatesh et al. (2003) to measure their concept. To avoid duplications, we considered it primarily as part of status quo bias to facilitate our delineation of the observed phenomenon around availability bias from status quo bias.

In the third phase, we further conceptualized the observed phenomenon around availability bias. Based on the data, we identified key overlaps of the identified themes with existing explanation approaches (UTAUT and status quo bias). We then focused on those themes that were not covered and noticed recurring patterns across

interviewees. These were the basis of insights into the proposed conceptualization for the availability bias, which we present in the findings section. For example, most prominently, the majority of interviewees stated that they had never actively considered telework technologies. Despite knowing about them, they had never developed the intention even to consider them. It appears that this was mainly because telework technologies were not available, e.g., they were not prominent in our interviewees' private and business life. This finding does not fit with the aforementioned established theories because both require a specific solution to accept or reject, but our interviewees never came to that consideration phase. However, the described aspect goes further than the influences of available experiences Hong et al. (2011) describe for availability bias. We, therefore, propose to consider (lack of) intention as one of three aspects of the availability bias.

4 Findings

4.1 Changes in the use of telework technologies

In the course of our interviews, we were able to obtain various contextual information about the use of telework technologies in the interviewees' individual organizations. These concern the use of telework technologies before as well as after the onset of the crisis. In addition, we were able to obtain first impressions about the planned further development of the respective use. In the following, we will present the above information to contextualize the findings more profoundly.

4.1.1 Current and past levels of acceptance and use

Our interviews indicate that there appear to be typical acceptance and use paths for telework technologies in the wake of Covid-19-induced lockdowns. We asked our interviewees to explain if they had used telework technologies in the past if they were using them now, and what they plan to do in the future. This analysis led us to identify five paths (see Fig. 2). We found that nearly all private sector organizations had at least adopted telework technologies to a limited extent pre-Covid-19. Thus, telework technologies were available but only used in the minority of organizations. For many individuals, the changed performance expectancy was a relevant factor in the increased acceptance and use of the new telework technologies. With the lockdowns and curfews use cases changed: "Why are Zoom conferences and video conferences attractive now and weren't before? It's just you can simulate this interpersonal a bit. I think phone calls used to be much more transactional than video calls" (I9). However, we also had interviewees who told us that processes were already digital and tools either in use or in the process of being rolled out—the process was then sped up due to the pandemic (I1, I21, I3, I15).

Most organizations introduced Zoom or Microsoft teams; one introduced Rainbow, catering to healthcare's increased privacy needs. Regarding video conferencing software, all but two interviewees had used it in a business context during the

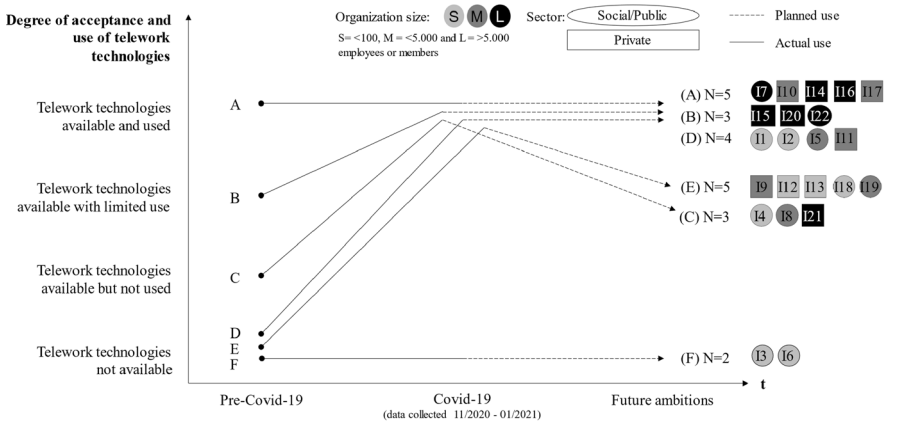

Fig. 2 Telework technologies acceptance and use paths of our interviewees

pandemic, and all but one interviewee reported a high general acceptance of the technology.

4.1.2 Expected long-term changes in the use of telework technologies

Regarding the future, most interviewees expect a lasting change regarding the use of telework technologies, even when the changed use case due to lockdowns and curfews would disappear. This change was especially profound for social or public sector organizations. One, for example, stated, "No, that cannot be turned back" (I20). Another also found the telework situation beneficial and will actively demand this opportunity: "No, I don't think they can roll it back. […] the argument was that you simply couldn't do everything digitally. Now everything has been fully digital for a year. So even if they try to roll it back, overcoming people's resistance will be very difficult" (I5).

Nonetheless, it appears that interviewees are aware of the limitations of telework technologies and, therefore, only expect a limited shift in behavior: When we asked interviewees why they did not introduce technologies beforehand, several interviewees drew us into a discussion on the limits of digitalization instead (I16, I12, I4 I18, I14, I15, I6). Most pointed out activities unsuitable for telework (I16, I12, I19, I2, I20, I1, I21, I3, I15, I9, I17). For example, the CEO of a regional development agency stated that within the domain of marketing and related areas with a high share of relationship-driven interactions, these interactions still very much depend on personal contact and a localized form of meeting each other: "I think it's still, I mean the main concern […] as well you probably saw it in your interviews is that it could never replace the human interaction. We can digitalize as much as possible, but as a human, there's the advantage of physical engagement. It is like that. I believe that's how it is" (I15). In line with this, digital is perceived as a complementary tool, not a substitution (I12, I19, I15). For example, one interviewee clarified that videoconferencing could not substitute for meeting in person, and they will only

use it for a certain percentage of meetings, thus implying a hybrid setting: "And I think Zoom doesn't reflect some of these things. […] Sure, you can talk about the subject level, but sometimes the subject level is not the only important thing. And especially as a social institution, you have to look at it" (I19). Only one interviewee spoke of ideas to switch back to the old normal conditions, partly lowering the rate of employees in the home office and returning them to the office, despite positive feedback from both managers and employees: "We are now in the process of considering a kind of exit strategy. Also attributed to the individual measures we have made" (I22).

4.2 Availability bias

As indicated above, we identified three key aspects of the availability bias: intention, cognitive visibility, and the cognitive transfer. The non-existence of these three aspects (i.e., a lack of intention, lack of cognitive visibility, and a lack of cognitive transfer) led to non-use of telework technologies before the pandemic.

4.2.1 Lack of intention

The most frequent answer as to why individuals did not use telework before the pandemic was that they simply did not consider it. One interviewee, for example, stated that no one would have thought of using videoconferencing tools: "Just the question 'Hey, how are you doing? Tell me about it.' That you can suddenly do that in a video call. That's something that probably nobody would have really thought of a year ago" (I22). Another later framed it as not having perceived a need: 'Hm, there was no need, you could meet in person and if necessary somehow recorded something and then discussed it together" (I2). Such a need, however, seems necessary as proactive experimentation without a concrete problem to solve is rare (I22).

When we asked why the common sentiment was that there was no occasion to consider change: "I think that's the problem, especially in relatively old institutions. Where—not in terms of the team, but simply the [organization] has been here for 70/80 years. And it's hard to get the mentality out of people that we've always done things that way" (I19). Several interviewees described this as some kind of habit (I2), daily routine (I13), or inertia (I9). Another explanation approach was that individuals do not think about potentially better technological solutions because for them: "This stuff has to work; I don't ask how" (I16). Another key argument seems to be that the current solution still works (e.g., I20, I9). In several cases, interviewees reported that digitalizing certain work processes were impossible beforehand (e.g., I19, I20). Therefore, it appeared unthinkable that someone would ask for a change: "I do not believe that ever—I cannot imagine at the moment that someone would have said: 'I would like to take part digitally in the meeting, is that possible?" (I17). Such a lack of interest might also be related to the complexity of the individual's job (I9) and the individual's lack of ICT skills (I17). Another interviewee highlighted that an intention to change requires active consideration "You need an

insane amount of headspace, time, and money to change a process that works, even if it is better afterward, which you don't know" (I20).

But irrespective of their explanation approaches, the commonality remains that none of them had ever developed the intention to change their current way of working or had even thought about possible ways to change it. This finding is interesting as it implies that these individuals never considered the aspects covered in technology acceptance models because they never started a cognitive process akin to technology consideration. Thus, this phenomenon is also different from other effects from the literature, like the status quo bias, because there was never a technical solution under consideration regarding which individuals could develop loss aversion or evaluate their sunk costs.

4.2.2 Lack of cognitive visibility

Another key aspect of the availability bias appears to be a form of cognitive visibility or awareness of a better solution: "Now comes the problem again. It all works well. But I would first have to know that there is something that works better. Or where there is a need" (I22). Because many of our interviewees now use telework technologies, there is a threshold value before the technology is sufficiently cognitively available to overcome a certain resistance even to be considered. In line with the literature, the older generation is often perceived to lack acceptance: "And for the most part, the generation […] where it wasn't part of their earlier life is working here. […] Some of them feel like they can live without it because it's not necessary at all. […] It's relatively difficult to ensure acceptance" (I19).

As we interviewed individuals after the first wave of lockdowns and curfews, we could also capture the effects of prolonged exposure to telework technologies. We found that telework was now a 'cognitively available' solution. One of our interviewees stated this was because "people have now become accustomed to all the online collaboration tools and at least the standard tools, and they are a bit more comfortable with them" (I2). Alternatively, one could assume that "many have now simply also arrived at this technical level" (I10)—a level at which telework technologies appear to be easily available. This effect was supported by on-the-job training using telework technologies (I20). It also befitted "people who are interested in digital solutions and somehow also open to new things, […] for them this was a cool chance to try out new cutting-edge tools" (I2).

The constraints led to experiments and discoveries (e.g., I2, I20, I22). Hereby the visibility of various telework technologies in a network also encourages such experimentation (I2). But our interviewees also told us that on a more general level, the exogenous shock of the pandemic caused their organizations to rethink their way of working (I13, I16, I12, I19, I2, I20, I22, I21, I15). This effect allowed individuals to explore new ways of working: "This means that we had to find other ways of exchanging information. On the one hand, this can be done by telephone, but also by video call. We implemented this because it had not been done in the past. That is the biggest process adjustment we had to make" (I21). This finding is in line with the literature on the influence of the availability of positive experiences with an IS

change acceptance and use (Hong et al. 2011). However, we can add the finding that a lack of cognitive visibility can cause a technology never to be considered.

4.2.3 Lack of cognitive transfer

The effects of the availability bias also included a missing cognitive transfer. Even though telework technology was already known (cognitively available) in other contexts, it was not used (I10, I17). One interviewee who, for example, knew Skype beforehand but never considered using it in a business context gave the following reason: "I knew that from the private context that one skyped sometimes, but in a company or a professional environment, I have never seen someone use Skype" (I9).

However, there were also cases where an experience transfer made telework technology 'cognitively available' pre-Covid. In these cases, the push for innovations came from new people in the organizations or experts (e.g., I13, I16, I2). Thus, the use of a specific technology could be traced back to a new colleague: "Google Slides was partly used in [country organization] but also because of a newly arrived colleague who introduced it there" (I2). Another interviewee argued that this was because: "you can see that with the new colleagues who come into the company that they are basically much more willing to try out new technology" (I9).

Also, in some cases, colleagues had simply encountered the technology elsewhere: "So the suggestion came from someone who already works with video conferencing and who said, okay, this is the new medium, and we should use it. And then we—as you normally meet, we made an appointment for a video conference" (I13). This effect was especially effective during lockdowns and curfews when individuals started to transfer the cognitively available technology from their workplace to private use scenarios (I15). Suddenly the technology was much more cognitively available and subsequently better accepted, and use increased for scenarios where it was not strictly necessary. Nonetheless, across interviewees, it led to the non-use of a known and technically available technology before the pandemic (e.g., I16, I12, I19, I18, I1, I21, I14, I4).

4.3 Status quo bias

To better delineate our observations on the availability bias, we also examined our findings regarding the status quo bias using the seven concepts proposed by Kim and Kankanhalli (2009). However, we found only evidence for loss aversion, net benefits and social norms.

Albeit one might not expect it, some users reacted with loss aversion to the introduction of telework technologies: "We had to switch from this [physical] encounter to a virtual encounter. And for many people, I'm sure, this actually led to painful farewells and moments of sadness" (I20). Some interviewees still exhibited a dislike for telework technology and preferred in-person meetings (ad net benefits): "On the topic of digitalization, web meetings, I say no, I prefer to sit face-to-face, with a cup of coffee in my hand, I prefer to have personal contact" (I22). Or even appear to think "that this is also fundamentally a completely wrong cultural development

of the world. And hope that it will go away again" (I20). However, these accounts of loss aversion or insufficient net benefits, are being postulated now when an actual solution is under consideration or available, which telework wasn't for many individuals before the pandemic.

Another aspect that was quite relevant where social norms, and workplace culture, which appeared to influence the individual's decision on telework adoption (e.g., I3, I15, I9). One interviewee described this as "the corporate climate, so it was always 'all people at the office'. […] To work from somewhere else was an exception. Not many employees did that, but the informal rules were more or less to be in the office on five days a week" (I4). Here a lack of leadership support for telework appears also to have affected acceptance and use: "More and more of the official communication went over it [Slack]. So perhaps that is also something that has now increasingly taken hold, that these tools are not only advertised but also used as official communication channels. This means that a management team now has a Slack channel where it communicates certain things. There are Zoom conferences where all the bosses communicate, and no more meetings. And before that, it was rather that everything was advertised, and you were supposed to use that. But the management itself didn't do that, and that's just changed again now" (I8). We acknowledge that this effect might have further suppressed the intention to change we describe above, but turning to the broader technology acceptance literature social norms explain the full effect on technology acceptance and use (Venkatesh et al. 2003).

4.4 Technology acceptance and use (UTAUT)

To go even further, we also examined our data regarding the direct determinants following the UTAUT model: Performance expectancy, effort expectancy, social influence, and facilitating conditions. Where the status quo bias represents only one influence on the acceptance and use of technology, technology acceptance models, with the prime example of UTAUT, have long been used as a direct predictor of technology acceptance and use—with various additional influences (see theoretical background).

Regarding performance expectancy we found the changed use cases due to curfews and lockdowns (see Sect. 4.1.1), but these cannot explain the continued use intention as restrictions are being lifted. Here we observed that our interviewees rationalized their lack of availability. Instead of focusing on those activities suited for telework now and would have also been suited for telework before the pandemic, they argued why another set of activities was not suitable for telework (see Sect. 4.1.2). In this argumentation, they appeared to be oblivious that before the pandemic, telework technology was known and often even available for those parts of their work that are suitable for telework.

Nearly all interviewees reported a low effort expectancy. Apart from one interviewee (I16) all interviewees perceived the telework technologies as low-effort solutions as they reported no issues installing and using these new solutions. For example, trainings where not necessary: "On the topic of trainings. This is something I honestly never did because when I discovered that we had trainings I had already

figured it out by trial and error" (I9). The low effort expectancy is interesting as it implies that other factors must be the reason for the non-adoption of telework before.

The social influence concept is very similar to the concept of the social norm already discussed concerning the status quo bias above. Kim and Kankanhalli (2009) used the same questions as Venkatesh et al. (2003). Therefore, we refrain from discussing this concept again.

Regarding the facilitating conditions, the most important aspect was the introduction of new telework technologies. In many cases, these were already planned before, but the technology introduction was sped up due to the pandemic (I18, I20, I1, I21, I15, I10, I4). These new technologies could have positively affected both performance and effort expectancy, but basic functionalities were already available before. But here we also found a certain unwillingness to even consider how procedural constraints could be overcome (I18, I21, I15, I17). For example, in the financial service context: "Of course, that's not so easy if they can't be there in person. That's why we had to think about how we could present the whole thing, and there were various hurdles because we can't just send these contracts out like that" (I15).

5 Discussion

Our 22 interviews with individuals from different sectors and organizations of different sizes on the reasons for their (lack of) telework use before Covid-19-related lockdowns and curfews revealed a common effect. Even though telework technologies were widely known and often available in organizations, no one had thought of using them to that extent. Naturally, there were rational reasons like the changed use case under lockdowns and curfews, but this cannot explain the continuous plans to use telework technologies even when restrictions fall. Also, status quo bias might have influenced the lack of acceptance and use. But this would have required active consideration of the full telework scenario, which never happened for many of our interviewees. Thus, our results demonstrate the relevance of availability bias, as neither UTAUT nor the status quo bias can fully explain the observed phenomenon.

5.1 Propositions on the availability bias

This observation has led us to propose that there is indeed a significant biased influence on technology acceptance and use of telework. Therefore, based on the findings presented in the last chapter, we have derived a set of propositions conceptualizing the availability bias with three aspects:

1. The intention to consider a priorly not used (technical) solution influences its availability and can influence an individual's readiness to change. This knowledge does not necessarily refer to the same technology but the general awareness of the solution type. This intention concept differs from the intention to use as defined in the theory of reasoned action and subsequently used in UTAUT (Ajzen and Fishbein 1970; Venkatesh et al. 2003). Instead, it appears to be an aspect of

human action that occurs iteratively throughout the technology decision following the intentionality concept of Bandura as proposed in the psychology literature (Bandura 2001).

2. In terms of how present the technology is in the individual's mind, cognitive visibility influences the individual's entrance into a consideration process. This phenomenon is still present, even if the individual explicitly intends to change. When a technology is not cognitively available, this can cause an individual to fail to evaluate rational aspects of technology acceptance and use. So, technology is never even considered.
3. Despite a technology being cognitively available, the technology might still not be considered for a certain use case because the individual fails to perform the cognitive transfer from one use case that is already known to one that is unknown, e.g., from a private to a business context.

With these propositions, we have derived a first conceptualization of availability bias using the example of telework technology adoption. Naturally, these remain to be verified with a more quantitative approach to test our observed effect further (see Sect. 6.3 on Further Research).

5.2 Discussing our findings and propositions in light of current literature

Our data suggests that the cognitive non-availability of telework technology before the pandemic negatively influenced its acceptance and use and that the prominent availability of telework technology during the pandemic subsequently positively influenced acceptance and use (ad R1). Availability Bias is "the ease of recall (or imagination) of instances of specified event. […] A bias occurs when such availability-based estimates are distorted by the influence on retrieval of such factors as the concreteness, drama, familiarity, recency, relevance, similarity or vividness of instances" (Dube-Rioux and Russo 1988, p. 223). The initial experiment on the availability bias conducted by Kahneman and Tversky (1973) tested for the recall of the most frequent gender in a list of names and found it biased by the increased availability of celebrities. One could make the comparison that some technologies are a bit like human celebrities—well known and therefore available to everyone—while others are not. Thus, we argue that adoption and use of technologies might be subject to such availability bias. We find that if an actor does not have some intention to engage with a specific use case (or solve a specific problem) with a technology, does not have cognitive visibility of the technology, and is not able to cognitively transfer the technology's features to the use case at hand, they are less likely to adopt and use the technology. This bias can go into two directions. On the one hand, if the user lacks intention, the technology is cognitively invisible, and there is no chance for cognitive transfer, the technology will not be adopted and used. On the other hand, if the actor has intention, the technology is highly visible, and cognitive transfer is easy, the technology will be adopted and used although other (less available) technologies might be even better suited.

Based on our data we, thus, propose to conceptualize the availability bias for IS with the three aspects of intention, cognitive visibility, and cognitive transfer (ad R2). The first research studying the effects of availability bias in the IS context by Hong et al. (2011), used the availability bias in the construction of their hypotheses but did not explore or conceptualize availability bias itself in the context of agile software development. Subsequent publications have also not filled this research gap (Godefroid et al. 2021). Such conceptualizations can facilitate the (re-)use of biases in IS research. The conceptualization of the status quo bias, for example, has significantly facilitated subsequent IS research (Kim and Kankanhalli 2009; Godefroid et al. 2022). On a more detailed level, the individual propositions tie into different research streams: The intention to consider a priorly not used (technical) solution complements the existing models of technology acceptance (Venkatesh 2000; Davis 1985) and the diffusion of innovation theory (DOI) (Moore and Benbasat 1996; Rogers 1983). Both focus one a specific technology or information technology innovation, where the intention we discuss here is independent of a specific technology or solution. We found that individuals did not start a consideration process, if they lacked the intention to consider. Therefore, we propose that this intention needs to be in place before the already established concepts—be it the characteristics which make an innovation successful or the direct determinants of the intention to use come into play. Our second proposition on cognitive visibility extends the mere physical visibility concept considered in the diffusion of innovation theory (Moore and Benbasat 1996). In a time of generally "invisible" software products and services we find that we need to extend the concept. Telework technologies became more present and thereby more visible in individuals' lives due to the pandemic, but the technology itself did not change and suddenly became more physically visible, e.g., by having more vibrantly colored interfaces. Our third proposition regarding cognitive transfer between use cases highlights how we need to extend concepts of prior use. Research has long since established that prior use of the same or similar solutions affects user behavior (Ferratt et al. 2018; Taylor and Todd 1995). But in the case of telework technologies our interviewees did not consider their previous experience, because for them it pertained to a different domain. IT appears that it needed the blurring of private and business life during the pandemic to change this (Hacker et al. 2020). Therefore, we propose to extend the current theories with our conceptualization of the availability bias (see also Table 4).

Finally, the delineation from known explanation approaches like technology acceptance or status quo models is necessary to clarify this concept further (ad RQ3). Our analysis using these explanation approaches highlight that neither the status quo bias perspective nor the UTAUT perspective can explain the observed phenomenon. However, status quo bias and the evidence of loss aversion, insufficient net benefits and social norms we identified, requires a specific solution to consider—but telework technologies often never reached that stage, because individuals did not develop the necessary intention to consider a new solution (ad proposition 1). Similarly, the evidence for the UTAUT constructs could not explain the observed phenomenon as individuals should not have changed their assessment of performance and effort expectancy (Venkatesh et al. 2003). We acknowledge that facilitating conditions changed, but that can only explain parts of this phenomenon.

Table 4 Proposed aspects to conceptualize the availability bias

Availability bias aspect	Definition
Intention	Intention describes the desire to actively engage with a specific use case and the desire to support this use case with information and communication technology. If the use case is not seen or the desire to support this use case with technology is not developed, the technology will stay cognitively unavailable
Cognitive visibility	Cognitive visibility describes how present the technology is in the individual's mind. If a technology is not cognitively visible to the user, it will also stay cognitively unavailable
Cognitive transfer	Cognitive transfer describes the cognitive ability to transfer technology from one existing use case to the specific use case at hand. If a user is not able to cognitively transfer the technology to the new use case at hand, the technology will stay cognitively unavailable

6 Conclusion

In our study, we used the example of the increased adoption of telework due to Covid-19-related lockdowns and curfews to examine the phenomenon of availability bias in information systems more closely. Through 22 interviews, we examined this bias more closely and delineated it from status quo bias as a related phenomenon. Finally, to examine our findings further, we also analyzed our data through the more traditional lens of the technology acceptance model UTAUT. This approach allowed us to derive a set of three propositions to conceptualize availability bias.

6.1 Theoretical contribution

We can contribute to several research streams with our findings and theoretical propositions. The main contribution of our work is extending the new phenomenon of availability bias in the context of information systems. Hong et al. (2011) already established that the availability of past experiences with updates influenced the acceptance of new ones. By applying these insights to the telework scenario, we could extend the conceptualization of this effect. Based on our interview data, we identified three key aspects to detail the availability bias further in IS contexts: Intention, cognitive visibility, and cognitive transfer. With these insights, we add to the bigger research stream in IS currently examining the effects of cognitive biases like the status quo bias in IS (Kim and Kankanhalli 2009; Godefroid et al. 2021). Thereby we also contribute to the larger stream of technology-driven change and digitalization, as biases can have a significant effect on the acceptance and use of the technologies which drive these changes. With the increasing societal relevance of technology-driven change, the study of these biases becomes even more crucial—especially as our findings demonstrate that the effects of biases impeding said change might not always be visible.

But our work also offers a new perspective on the telework phenomenon. The availability bias explains important parts of the lack of acceptance and use of

telework before the pandemic. In 2016, Aguilera et al. wrote that telework use would remain at similarly low levels unless an exogenous shock occurred. COVID-19-related lockdowns and curfews provided this exogenous shock, leading to a momentary uptake but also changing the long-term use perspective (Tokarchuk et al. 2021). Especially the long-term change can only be explained if non-rational reasons played a part in acceptance and use before the pandemic. The availability bias could explain this aspect of the telework phenomenon. Further studies will be necessary to determine the dependencies between the aspects of the availability bias and other theories in IS like the DOI concepts. Nevertheless, this extension of our available set of theories to explain innovation adoption is crucial to completing our understanding of the underlying phenomena.

Moreover, our work also offers an extension of technology acceptance literature. As detailed in the theoretical background, many extensions of traditional technology acceptance models like TAM or UTAUT already appear in the literature. We propose to focus on non-rational aspects more systematically, as concepts like social influence already hint at the relevance of these aspects. We do not seek to extend UTAUT; instead, we want to highlight that different explanation approaches must be relied upon to allow a holistic answer. Many of our interviewees never reached the rational consideration stage before the crisis because they never actively considered telework a viable option. Our approach, therefore, allows for a more detailed consideration of the antecedents of technology acceptance considerations. Finally, we also add to the status quo bias concept by delineating it further from other concepts like the availability bias. In line with our focus on our interviewees' non-rational aspects, we can also offer a complementary view to the focus on the rational aspects of status quo bias in IS so far (Lee and Joshi 2017).

6.2 Practical contribution

These contributions also have practical relevance. We are sure that across organizations, the sentiment of 'we just never thought about it' is as frequent as in our interviews. The three aspects of availability bias we identified give practitioners in an organizational context a starting point. They allow a more in-depth consideration of the underlying reasons. By examining the relevance of these aspects in their context, practitioners can design appropriate measures to address these and increase acceptance and use of new technology in their organization. But the example of telework is also very easily transferable to other technologies. It might offer the schema to question the current way of doing things, thus examining past or current technology use. For example, many of our interviewees reported that Covid-19-related lockdowns and curfews led them to rethink their way of working. Knowing the effects of the availability bias, it would be prudent to regularly question the current technology use and create situations that allow for reconsideration. In addition, exploring the different aspects of the availability bias in information systems could also offer practitioners in innovation management and technology providers new ideas on how to increase the adoption of their technology. However, considering our findings, only

optimizing for the known constructs influencing acceptance and use decisions would fall short of the desired goals.

6.3 Limitations, and further research

Even though we took the utmost care to design our research, a few limitations remain: As our approach was explorative, we employed a qualitative method. Therefore, we can only put forth propositions and cannot present the final assessment of the influence a quantitative method would have provided. We believe that the example of telework can easily be generalized to other technologies. But this transferability certainly has limitations, e.g., when organizational contexts make the individual intention irrelevant. Our sample was mostly focused on German organizations, further studies in a more international or national context might yield slightly different results.

But these limitations also offer the potential for further research. We cluster these around three core topics: availability bias, the effects on (different) information systems' acceptance and use, and the individual or organizational contexts. Firstly, our explorative approach enabled us to identify the three key aspects of availability bias in the context of information systems acceptance and use. Here more quantitative means are necessary to test these further and ascertain the exact nature of their influence. The three aspects of availability bias we propose could, for example, be modelled as constructs and tested with a quantitative approach, e.g., a cross-sectional survey or an online experiment. Such an approach would naturally first require the development of corresponding items following, e.g., the guidelines by MacKenzie et al. (2011). Secondly, we chose the phenomenon of telework acceptance and used it as an example to study the availability bias in action. Thus, the generalizability to other information systems or technologies remains to be tested. There still are many more examples in IS research where technologies are known to individuals but not used despite potentially beneficial effects. Thirdly, depending on the individual or organizational context, the availability bias may take a different form or have different effects. In today's setting, where telework solutions are easily and freely available online, the individuals we questioned could easily learn about their existence and collect experiences. More specialized technologies might be less known. Nonetheless, questioning the exact circumstances that spark the intention to change would still be fruitful in fostering innovation. Finally, as mentioned above, cultural aspects might also be considered.

Appendix 1: Literature review

To date, no studies examined cognitive biases in the context of telework technology acceptance. What researchers did examine were drivers of acceptance for telework technology, collaboration, and decision support systems in general (see Table 5 for an overview).

Table 5 Overview of technology acceptance studies on telework

Model	Source	Additional variables
TAM	Malhotra and Galletta (1999), Dasgupta et al. (2002), Pérez Pérez et al. (2004), Abd Ghani and Abdullah (2008), Padilla-Meléndez et al. (2008), Park et al. (2014), Olschewski et al. (2018), Berberat et al. (2021), Lang and Hofer-Fischanger (2022), Straub et al. (1995), Szajna (1996), Yoo (1998), Hu et al. (1999), Lederer et al. (2000), Lou et al. (2000), Wöber and Gretzel (2000), Lee et al. (2003), Bjørn et al. (2003), Bjørn and Scupola (2004), Li et al. (2004), Hong et al. (2006), Sun and Zhang (2006), Ngai et al. (2007), Babar et al. (2007), Jacko (2007), Hasan (2007), Li et al. (2008), Rigopoulos et al. (2008), Suadamara et al. (2010), Turner et al. (2010), Sánchez and Hueros (2010), Tamayo et al. (2010), Olschewski et al. (2013), Kang (1998), Langa and Conradie (2003), Meroño-Cerdán (2016), Tawfiq et al. (2018), Donati et al. (2021), Yousafzai et al. (2007), Abu et al. (2013), Camacho et al. (2020), Namara and Knijnenburg (2021)	Psychological attachment, skilled personnel turnover, salespeople, training, HR flexible practices, variable compensation, activities decentralization, trust and personal flexibility, traffic conditions, awareness and knowledge, information and communication technologies, electronic communication, innovation, knowledge employees, outsourcing, task programming, management by results, institutional resistance, temporary contracts and teamworking, attitude towards using, self-efficacy, familiarity with others, mobility, social presence, media richness, immediacy, concurrency on system use, computer self-efficacy, Anxiety, self-efficacy, institutional support and voluntariness, technological readiness, social influence, Time saving on tasks, experience with telework and compatibility of work with telework, organization size, help and number of children, stress and anxiety, anchoring of health-promoting corporate policy in the company, readiness for telework, attitude toward system use, ease of understanding, ease of finding, information quality, 'critical mass' of users, experience, attitude, task, usage, social awareness, affiliation motivation, confirmation, satisfaction, continued IT usage intention, perceived enjoyment, perceived service availability, perceived monetary value, need for uniqueness, composite reliability, organizational factors, technology factors, individual factors, technical support, attitude, computer self-efficacy, system complexity, attitude, intention, attitude towards using subjective norm, computer anxiety, cultural factors, satisfaction, technology readiness, actual alternative system use, social influence, Task characteristics, environment, user specifics, perception of benefits and barriers of system use, privacy-related trust

Table 5 (continued)

Model	Source	Additional variables
UTAUT	Schacht et al. (2015), Godin et al. (2017), Maican et al. (2019), Razif et al. (2020), Rahmi and Widodo (2021), Chang et al. (2007), Huang et al. (2010), Peñarroja et al. (2019), Aourzag (2021), Cardon et al. (2022), Chorfi et al. (2022)	Technology anxiety, technology self-efficacy, habit, hedonic motivation, and customer value, environmental concern, uncertainty avoidance, power distance, masculinity, individualism, long-term orientation, effectiveness of virtual communities of practice, sense of virtual community, intrinsic motivation, psychological safety, time zone challenges, prior use of slack, gender, personality traits (extroverted, intuitive, thinking, judging), hedonic motivation
NA	Venkatesh and Speier (2000), Vaidya and Seetharaman (2008), Golden (2009), Louw and Mtsweni (2013), Leyton et al. (2015), Eom et al. (2016), Chatterjee et al. (2022), van Slyke et al. (2002)	Intrinsic and extrinsic motivation, information intensity of task, collaborative orientation, technology drive and performance pressures, comfort or fear of new technologies, readiness to engage with them affected acceptance, the fear of social isolation, negative effects for non-teleworking co-workers, managerial challenges, enterprise strategic alignment, adoption strategy, governance, and communication, training and support, estimated utility, system and team self-efficacy and affectivity, cost of commuting, cost of business trips, expected work productivity and efficiency, institutional and technological support, and burden of supporting a family, Job unsuitability, expected isolation and lack of communication, and unfriendly leadership and management, Antecedents (workplace flexibility, work time flexibility, and infrastructure flexibility) and consequences (employee satisfaction and productivity and their influence on organization performance of remote work flexibility, relative advantage, compatibility, perceived innovation characteristic, result demonstrability

Table 5 (continued)

Model	Source	Additional variables
Other models (TTM, FFM, TAM3, TOE*, DOI, TDF, HOT-fit, CFIR—DSS)	Vreede et al. (2012), Silva-C et al. (2019), Ollo-López et al. (2021), Lancelot Miltgen et al. (2013), Camacho et al. (2020)	Certainty, and Perceived net value of transition, FFM personality traits, Subjective norm, perceived compatibility, experience of managers, self-efficacy, intrinsic motivation, anxiety affects, Family responsibilities, living distance to workplace, qualification level, level of empowerment in organization, country characteristics (individualism, power distance, higher femininity, ICT development, national regulation), compatibility, concern for privacy, trust in the technology, innovativeness, agreement with the decision algorithm, attitudes, behavioral regulation, beliefs about capabilities, beliefs about consequences, contingencies; demographic characteristics, effort expectancy, emotions, environmental context and resources, goals, intentions, intervention characteristics, knowledge, memory, attention, and decision processes, patient–health professional relationship, patient's preferences, performance expectancy, role and identity, skills, ability, and competence, social influences, and system quality

Appendix 2: Data sample

See Table 6.

Table 6 Data sample of interviewees selected

Sector	Social/Public								Private							
Size	Micro		Medium		Small		Large		Micro		Medium		Small		Large	
Tele-work	−	+	−	+	−	+	−	+	−	+	−	+	−	+	−	+
#	6	0	0	1	2	0	0	1	1	1	1	1	1	2	0	4

Appendix 3: Adherence to methodological guidelines

See Table 7.

Table 7 Adherence to methodological guidelines following Myers and Newman (2007)

Data collection	
Interviewee selection	We employed purposeful prescreening sampling to obtain an information-rich sample (Patton 2009)
Interview structure	We used telework technology use as our starting point and anchored the subsequent questions and responses in these real-life events. We gave interviewees the space to speak their minds and followed up on interesting topics emerging during the curse of the interviews (Myers and Newman 2007). This approach helped us develop our interview structure incrementally (Myers and Newman 2007; Berg 2004). We relied on a semi-structured interview guide to ensure we covered related general concepts from the literature
Interview procedures	To put our interviewees at ease, we often opened the interviews with a brief, casual conversation on general topics related to Covid-19. We subsequently emphasized that we were interested in their genuine perceptions and had also lagged in our own telework technology use before the pandemic. Three of the authors conducted the interviews using remote conferencing software. Following the narratives of our interviewees closely, we formulated subsequent questions using the mirroring technique including probing questions (Myers and Newman 2007). We instructed the interviewees to think carefully about their experiences and gave them time to do so during the interviews. When interviewees remained on the general level, we requested real-life examples to minimize recall and reinterpretation biases (Folkman and Moskowitz 2004)
Researchers' assumptions and experiences	In the author team, we repeatedly discussed the observed telework phenomenon and our hypotheses, putting our assumptions and experiences with telework technologies into the background (Berg 2004; Myers and Newman 2007). With our interview scheme evolving from the insights and narratives of our interviewees, we consciously refrained from following a specific theory in our structure. However, our knowledge of related research might have influenced our questioning (which we naturally attempted to minimize)
Data analysis	

Table 7 (continued)

Nature of analysis	In our analysis, we first concentrated on the data to reach a data-based picture of the phenomenon and avoid fitting the data to known concepts. Subsequently, we turned to the literature on telework, technology acceptance, and cognitive biases to question our emerging findings and integrate them with existing theories. Finally, we did so in an iterative process as findings from the literature led us to re-examine our data in a new light, and emerging themes from the data led us to consider additional literature (Berg 2004)
Constant comparison	As a sufficiently large author team, we focused on different theoretical perspectives and continuously questioned where our findings supported or challenged previous theories (Berg 2004)
Analytic techniques	We first used open coding to identify relevant themes (Berg 2004). We then used related literature to contextualize our findings in a wider theoretical background and to identify relevant new insights
Triangulation	To ensure reliability, we ensured that at least two interviewees mentioned the main findings to allow for data triangulation (Berg 2004). In that regard, we also purposefully selected interviewees with different patterns of telework acceptance and use to triangulate between subjects (Myers and Newman 2007)
Confidentiality of disclosure	We anonymized our transcripts and the distilled findings in the preparation of this manuscript (Myers and Newman 2007). At the beginning of each interview, we asked for permission to record and assured the interviewee that we would only report on their findings in an anonymized way

Appendix 4: Coding excerpts

See Table 8.

Table 8 Coding excerpts illustrating key concepts

Category	Illustrative quotes
Availability Bias: Intention	"Now the problem appears again, it all works well. But I would first have to know that there is something that works better. Or where there is a need" (I20)
Availability Bias: Cognitive visibility	"I also think that many people have now become accustomed to all the online collaboration tools and at least the standard tools, and they are a bit more comfortable with them" (I2)
Availability Bias: Cognitive transfer	"Yes. So I had never worked in companies before […] where you skyped. So I know it in a private context, of course. There I skyped with I don't know the exchange students or whatever. But in the business context, I have never seen this somewhere in the professional context" (I9)
Status Quo Bias	"Where I then say again and again, here is—what we do now virtually I hate something like that. I prefer to have people in front of me according to great-grandfather custom. I can see your face" (I16)
UTAUT	"Why do I think Zoom conferences and video conferences are attractive now and weren't before? It's just that you can simulate this interpersonal a bit. I think telephone calls are much more transactional than video calls because they don't have a camera, and that's okay for half an hour. Still, you can already tell, because of 2 h on the phone, that you actually get lost somehow because you're not keeping up anymore. With the video phone call comes a bit more emotionality to it through facial expressions, for example, which had been missing relatively strongly at the beginning of the quarantine. I think that's why you're very glad that we have video conferences to exchange" (I9)

Appendix 5: Coding structure

See Table 9.

Table 9 Coding structure presenting 1st, 2nd and 3rd level codes

1st level codes	2nd level	3rd level
Doesn't think about further technological opportunities	Intention	Availability bias
The shyness of technology/ lack of engagement		
No one would have thought of this		
Current solution works		
No trigger for change		
Pro-active experimentation without a problem to solve is rare		
Digitalization was unthinkable		
No occasion to consider a change		
Habitual modus operandi does not trigger change		
Habitual modus operandi does not trigger change		
Prior experiences with IT	Cognitive transfer	
Transfer of remote work experience elsewhere		
No transfer from private to business context		
Push for innovations comes from new people/experts		
Technology was not used even though available		
Network effects increase visibility	Cognitive visibility	
Lack of available role models/examples		
Push to try out cutting-edge tools		
Structures needed that take up innovations		
Training on the job		
Technology was cognitively available at an earlier time but not used		
Individuals now got used to new tools		
1st level	**2nd level**	**3rd level**
Afraid of losing their current way of working	Loss aversion	Status Quo Bias
Preference for the current way of doing things		
Technology is not wanted due to specific fears		
Transaction costs (TC)	TC	
The normal participation process slows down change	Uncertainty costs	
Management doubts productivity		
Unsecure about feasibility ~ Data security concerns		
Dislike for technology use due to unknown potential consequences		
Influence benefits perception to force change	Lack of net benefits	
No perception of need		
Benefits are perceived as insufficient		
Telework led to a loss of speed		
Lack of leadership support	Social norms	
Social influence		
Issues in adapting the way of working to telework	Control	
Available help resources were ignored		
Feeling more comfortable with technology that is known		
Lack of sufficient skills to deal with ICT innovation		
Not sufficiently broad training before	Facilitating conditions	UTAUT
Increased training offers		
Legal/procedural constraints		
Lack of knowledge about implementation procedure		
New technologies were made available/introduction sped up		
Lack of adequate hardware/internet connection		
Lack of leadership training before		
Issues with remote work technologies	Effort expectancy	
Hybrid settings are difficult - favor present participants		
New communication methods necessary for informal exchanges		
Technologies are time intensive / require learning		
Technologies require expert handling		
Technical/Organisational synchronization issues		
Video communication is more exhaustive		
Technology needs to be easy to understand		
Remote work technologies had technical issues in the beginning		
Remote work tech is not fully suitable for the current use case		
Remote work technology was easy to use		
The large variance of solutions is difficult	Performance expectancy	
The actual use scenario changed		
Processes were already digital		
Limited use perception		
Digital as an add-on, not a substitute		
Activity not suited for telework		
Changed working mode, e.g., frequency		
Longterm performance expectancy changed		
Exogenous shock led to the rethinking of performance expectancy		

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Authors and Affiliations

Marie-E. Godefroid[2] · Vincent Borghoff[1] · Ralf Plattfaut[2] · Björn Niehaves[3]

✉ Marie-E. Godefroid
Marie-Elisabeth.Zubler@icb.uni-due.de

Vincent Borghoff
borghoff.vincent@fh-swf.de

Ralf Plattfaut
Ralf.Plattfaut@icb.uni-due.de

Björn Niehaves
niehaves@uni-bremen.de

[1] Process Innovation and Automation Lab, South Westphalia University of Applied Sciences, Soest, Germany

[2] Information Systems and Transformation Management, University of Duisburg-Essen, Essen, Germany

[3] Digital Public, University of Bremen, Bremen, Germany