Do not Disturb! Trust in Decision Support Systems Improves Work Outcomes Under Certain Conditions

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ABSTRACT

Organizations provide their employees with decision support systems (DSS) to facilitate successful decision making. However, the mere provision of a DSS may not be sufficient to facilitate beneficial work outcomes because employees often do not rely on a DSS. Therefore, we examined whether users' trust in a DSS increases positive effects of DSS provision on several core work outcomes (i.e., *performance*, *well-being*, and release of cognitive capacities). Moreover, we examined whether trust effects on these work outcomes depend on specific context conditions (i.e., user *accountability*, *distraction*, and market *dynamics*). We tested our hypotheses in a laboratory experiment with $N = 201$ participants who received assistance by a DSS in a simulated sales planning scenario. In line with our assumptions, trust in the DSS was positively related to users' *performance* and *well-being*. Moreover, the link between trust and *strain* as well as release of cognitive capacities were qualified by *distraction*, so that higher *distraction* diminished these links. No such moderation occurred for user *accountability* and market *dynamics*.

CCS CONCEPTS

• Information systems • Information systems application • Decision support systems

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KEYWORDS

Decision support systems, DSS, Trust in technology, Decision making, Distraction

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1 Introduction

Work and business processes are becoming more and more digitalized, and organizations generate huge amounts of data. This constantly increases the complexity and speed of work processes for employees [1]. Multitasking, time pressure, and the use of multiple electronic devices are just some examples resulting from these changes. Especially decision making requires employees to analyze huge amounts of data [2]. Organizations have to address these challenges in order to maintain high work outcomes (e.g., decision quality and *performance*) as well as employees *well-being* (e.g., strain experience) [3, 4].

One core option for organizations is the implementation of information systems (IS) that support employee decision making by providing automatic analyses and aggregations of huge data sets. However, in addition to suitable architectures and algorithms for such IS, it is also crucial to consider employees' interaction with such technologies to guarantee that an IS is also used in the daily work processes (e.g. [5, 6]). Thus, usability and user experience of DSSs are important issues in addition to the

core functionality of information systems. The current study provides initial insights relevant for the design of DSSs in this respect.

Compound computer-based information systems as combinations of hardware, software, and network services collect, process, organize, store, and disseminate information, and thus support analyzing, controlling, and visualizing data [7]. Indeed, studies have already supported the positive effect of decision support systems (DSS; a specific type of IS) on work outcomes. For instance, Hertel et al. [8] and Meeßen et al. [9] found that the availability of a DSS had positive effects on users' work *performance* and *well-being*, and negative effects on user's *strain experience*. Additionally, the authors reported that the DSS triggered forgetting of obsolete information (i.e., "*directed forgetting*"), and thus led to a release of cognitive capacities that could be used for other tasks.¹

However, even though DSSs provide various benefits, they also come with certain perceived uncertainties and risks for the individual user. For instance, users cannot easily control the functioning of a DSS, or its information used as a basis for decision-making [12]. Such perceived risks might lead to reservations of employees to rely on a DSS [13, 14, 15]. Thus, the mere provision of a DSS might not be sufficient to ensure that a DSS leads to desirable work outcomes.

We expect that users' trust in a DSS helps to overcome experienced uncertainties and thus increases beneficial effects of a DSS on work outcomes [12]. Trust is defined as the "willingness to depend on and be vulnerable to a [DSS] without being able to monitor or control the [DSS's] functioning, that is, under uncertainty and risk" [12, p.7]. Trust relations in general consist of a trusting party (the trustor, in our research the user) and a party to be trusted (the trustee, in our research the DSS). Moreover, trust is highly subjective, affected by individual and situational differences, and is followed by risk-taking behaviors [16]. Evidence shows that trust is positively related to numerous workplace behaviors and experiences, such as performance, commitment, and job satisfaction [17]. Moreover, trust in technology has been shown to be positively associated with behavioral intentions to use the technology [18], user satisfaction [19], and customer acceptance [20]. Finally, initial research has demonstrated that trust in a DSS can increase a DSS's positive effects on *performance*, *well-being*, and release of cognitive capacities [8, 9].

The current study replicates and extends these initial findings [8, 9]. First, we examined the positive association of trust in a DSS with *performance*, *well-being* and release of cognitive capacities. Notably, while trust has been considered as a moderator of DSS effects on organizational outcomes in the past [8, 9], in the current study we focus on the direct relation between trust and organizational outcomes, keeping the availability of a DSS constant. Second, we extend prior research by examining whether the connections between DSS trust and organizational

outcomes are qualified by typical context conditions that exist in business organizations, i.e., users' *accountability*, user *distraction*, and market *dynamics*. Examining these potential moderators not only contributes to the generalizability of trust effects, but also have implications for the design of a DSS if shown to be effective. Therefore, we consider these three context factors as moderators of trust effects on *performance*, *well-being*, and release of cognitive capacities in this study.

1) DSS trust and work outcomes. DSSs can significantly support employees by analyzing and aggregating huge amounts of business data that would exceed human information processing capacities. However, using a DSS is often connected with perceived uncertainties and risks because users have limited insight into the functioning of a DSS. Therefore, we assumed that trust in a DSS helps to manage these uncertainties, and increase workers' reliance on a DSS as well as consecutive *performance*, *well-being*, and release of cognitive capacities (see also [8, 9]). Thus, we expected that:²

H1: Trust in a DSS is positively associated with users' *performance* in the decision task.

Further, we propose that users' trust in a DSS is associated with higher *well-being* because the reliance on a DSS reduces users' workload and cognitive *strain*. On the other hand, users who distrust a DSS should experience higher *strain* and lower *well-being* [7]. Indeed, initial evidence suggests that the availability of a DSS in a decision task increases reported *well-being* and decreases reported *strain* [8, 9]. Thus, we predicted:

H2: Trust in the DSS is positively associated with users' *well-being*.

We further expected that the provision of a DSS can implicitly trigger forgetting of decision-related information because the DSS provides such information. Thus, the provision of a DSS can implicitly suggest that the related information details can be forgotten by the user. As a consequence, users' cognitive capacities should be released [8, 9]. However, this effect should also be increased by users' trust in the DSS. Thus, we predict:

H3: Trust in the DSS is positively associated with cognitive capacities due to *directed forgetting* cued by a DSS.

2) Contextual moderators of the connection between trust in DSS and work outcomes. In addition to examining the direct connection between trust and various work outcomes, we extended prior work by examining moderating effects of three typical business factors as contextual moderators: users' *accountability*, user *distraction*, and market *dynamics*.

Users' accountability is the "perceived expectation that one's decisions or actions will be evaluated by a salient audience and

¹ *Directed forgetting* describes the human ability to forget learned information when being instructed to do so or when receiving an implicit cue to forget [10, 11].

² The study design was approved by the ethics committee of the Department 7 of the University of Münster (ID 2016-04-GH) and pre-registered via AsPredicted.org (see <http://aspredicted.org/blind.php?x=xs8e3q>).

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that rewards or sanctions are believed to be contingent on this expected evaluation” [21, p.134]. If users perceive a higher responsibility for their decisions, trust associations with the different outcomes should be strengthened. Thus, we predicted:

H4: User *accountability* moderates the relation between trust and DSS use, so that higher *accountability* increases the relationship between trust and DSS effects on *performance*, *well-being*, and DSS-cued *directed forgetting*.

Secondly, we predicted that *distractions* during the interaction with a DSS should moderate trust effects. When users are highly distracted, they should be more willing and more forced to trust a DSS because their ability to process task-related data is limited [e.g., 22, 23]. Thus, we predicted:

H5: *Distraction* moderates trust effects on DSS use, so that *distraction* increases the relation between trust and the DSS effects on *performance*, *well-being*, and *directed forgetting*.

Finally, *dynamics* in the context users face during their decisions should also moderate trust effects on the DSS use. Specifically, if markets are unstable and participants face more complex business contexts, they should be more dependent on the DSS [e.g., 24] and thus trust and *directed forgetting* should show a stronger relationship. Thus, we predicted:

H6: Market *dynamics* moderate trust effects on DSS use, so that dynamic market conditions increase the relation between trust and DSS effects on *performance*, *well-being*, and *directed forgetting*.

The hypotheses are illustrated in Figure 1.

Figure 1: Theoretical Model.

2 Method

Sample and Design. Participants of the study were N = 201 students from a German university, most of them studying business economics or law. The study followed a 2x2x2 between-subject design (high vs. low *accountability*, high vs. low *distraction*, high vs. low market *dynamics*). Participants were randomly assigned to one of the eight experimental conditions in

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which they were asked to complete a series of decision tasks with the help of a DSS.

In the *high accountability* condition, participants learned that they were personally responsible for their decisions and would be rewarded accordingly. In contrast, in the *low accountability* condition, participants were told that the final decision was not in their but in another person's responsibility, and that they would be paid regardless of their performance. In the *high distraction* condition, the experimenter entered the room during the decision task twice, a phone was ringing three times, and the participants saw that e-mail messages arrived on their computer. Participants in the *low distraction* condition were not distracted at all during the decision tasks. Finally, participants in the *high market dynamics* condition received written information (articles of different magazines) suggesting that the bicycle market is quite dynamic, while in the *low market dynamics* condition, this information characterized the market as being stable.

Decision Tasks. In the experiment's decision tasks, participants were asked to take the role of an employee of a fictitious sports manufacturing company and to distribute different types of bicycles across various fictitious countries. Specifically, participants were asked to allocate monthly sales of three types of bicycles (roadsters, mountain bikes, and e-bikes) to five countries of. In each decision trial, which represented fictitious months in the simulation, participants had to enter the number of bicycles for each country in a table. The goal of each decision trial was to maximize the company's revenue. To complete the decision tasks, participants received both, detailed background information, such as historical data on sales and profits from previous years, as well as the support of a DSS [25], which provided a recommended distribution for each decision trial based on historical data. The information provided by the DSS appeared as a table on the computer screen next to the table in which participants entered their decisions about the number of bicycles for each country. Figure 2 shows a screenshot of the provided recommended distribution of the DSS.

Informationssystem		
Mountainbike, 2017/09		
Land	Absatzprognose	Deckungsbeitrag
Karidol	19	12.50
Laputa	16	7.90
Nautland	13	15.00
Rugiland	14	21.00
Zamonien	20	4.50
Σ 82		Ø 12.18
Verfügbare Kapazität: 60		

Figure 2: Screenshot of a recommended distribution calculated by the DSS to support participants with the decision tasks in the study.

Procedure and Measures. After arrival in the lab, participants first completed a pre-survey measuring dispositional constructs

as control variables, i.e., disposition to trust technology [26, 27], technology competence [28], Need for Cognition [29, 30], conscientiousness [31], and Need for Control [32]. The following experiment was conducted on a computer in a closed room. Participants were informed that phones should be turned off, that no additional aids were allowed, and that all instructions and information on the experiment would be provided on the screen. Then the experimenter left the room to avoid observer effects.

The procedure of the experiment is depicted as a flowchart in Figure 3. Apart from the experimental manipulations, the procedure was similar to the procedure used by Hertel et al. [8] and Meeßen et al. [9].

Figure 3: Flowchart of the experiment's procedure across the experimental conditions.

After the pre-survey, participants were first asked to rate their current *well-being* [33] (5-point smiley rating scale) and current *strain* [34] (three items on a 7-point Likert scale). They then received general information on the (fictitious) manufacturing company they were “employed” at and on their task, which included the *accountability* manipulation. Afterwards, participants received detailed background information related to the decision tasks including data on sales and profit of three different types of bicycles from the previous year. As this information was instructed to be essential for the upcoming decision trials, participants were asked to memorize data points (i.e. exact sale numbers) and data patterns (i.e. sale numbers following either linearly increasing, linearly decreasing, constant, seasonal summer or seasonal winter patterns) from the background information for ten minutes. Afterwards, they were informed that a DSS would support them with the following decision tasks by providing all decision-relevant information, which was supposed to serve as an implicit cue for forgetting the

just learned information. Another list of detailed background information was provided including data points and data patterns on winter sports equipment sales and profits (i.e. snowboards, ski boots, and alpine skis), which were unrelated to the decision tasks. However, participants once again were instructed to memorize data points and data patterns for ten minutes to measure participants’ ability to recall additional unrelated organizational data.

Participants were then forwarded to four test-trials of the decision task to get acquainted with the procedure. *Well-being* and *strain* were measured again. Then, participants were asked to complete thirty decision tasks, in which both *distraction* and market *dynamics* were manipulated. Participants received feedback after each decision trial (see [8], p. 603 for further detail), which additionally served as manipulation of *accountability*.³ After completing all decision trials, participants were again asked to rate their current *well-being* and *strain*. Then, trust in the DSS was measured using three items rated on a 7-point Likert scale [9] and the *accountability* [35], *distraction* and market *dynamics* manipulations were checked, each again by using a 7-point Likert scale.

Ultimately, participants had to complete recall tasks of both decision-unrelated (winter sports equipment) and decision-related (bicycles) information. Here, they first had to recall data patterns for 15 combinations of product type and country and then data points with the same procedure. The recall tasks served as measures for the *directed forgetting* effect, as per theory participants should remember data points and patterns from the decision-related list (bicycles) significantly worse than those from the decision-unrelated list (winter sports equipment).

Finally, each participant received a debriefing and for fairness reasons the same amount of money as reward (15 Euro). To calculate the *directed forgetting* effect, we used the difference between recall rates of decision-unrelated information (winter sports equipment, dataset 2) and decision-related information (bicycles, dataset 1), the so-called R-F-difference [36], which proved to be a reliable indicator for *directed forgetting* in prior studies [8, 9]. We additionally calculated user’s overall *performance*, again following Hertel et al.’s [8] procedure.

3 Results

Manipulation Checks. In order to test whether participants experienced the manipulations accordingly in the different conditions, t-tests were calculated. Participants in the low *accountability* condition ($M = 3.09$, $SD = 1.41$) did not rate the perceived *accountability* significantly different from participants in the high *accountability* condition ($M = 2.98$, $SD = 1.36$), $t(199) = -.59$, $p = .555$, indicating that the *accountability* manipulation was not effective. For distraction however, a t-test revealed that the manipulation was effective. Participants in the low *distraction* condition ($M = 2.10$, $SD = 1.21$) rated their perceived *distraction*

³ In the *high accountability* condition, participants were reminded that their performance was crucial for their reward, whereas in the *low accountability* condition, performance-based rewards were not mentioned in the feedback

Table 1. Bivariate Correlations Among the Variables, Descriptives, and Scale Reliabilities.

Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 Acc (h=0, l=1)	-																			
2 Dist (h=0, l=1)	.01	-																		
3 Dyn (h=0, l=1)	-.01	-.01	-																	
4 Trust	.02	-.02	-.02	(.91)																
5 Performance	-.02	-.08	.12	.49***	-															
6 R-F-Difference	-.06	.05	-.08	-.06	-.07	-														
Data Patterns																				
7 R-F-Difference	-.06	-.04	-.05	-.05	-.05	-.09	-													
Data Points																				
8 Strain T1	-.10	-.19**	.05	-.06	-.06	-.01	-.01	(.86)												
9 Strain T2	-.14*	-.05	.06	-.04	-.08	.13	.05	.65***	(.89)											
10 Strain T3	-.03	-.15*	-.08	-.15*	-.25***	.11	.07	.49***	.64***	(.90)										
11 Well-being T1	.03	.13	-.09	.06	.02	.05	.01	-.52***	-.31***	-.21**	-									
12 Well-being T2	.06	-.06	-.07	.13	.22**	-.06	-.04	-.30***	-.48***	-.33***	.48***	-								
13 Well-being T3	-.13	-.05	.00	.19**	.30***	-.02	-.08	-.14*	-.13	-.38***	.34***	.43***								
14 Disptrust	-.06	-.13	-.13	.27***	.10	.11	-.09	-.02	.02	.10	.12	.08	.07	(.81)						
15 Technol. Competence	-.12	.01	-.07	.06	.13	.17*	.02	-.14*	-.12	-.07	.17*	.25***	.13	-.03	(.86)					
16 Need Cognition	-.04	-.00	-.12	.04	.11	-.04	-.13	-.15*	-.21**	-.22**	.12*	.23**	.19**	.16*	.30***	(.75)				
17 Conscientiousness	.03	-.12	.03	.11	.10	-.05	-.06	-.11	-.11	.03	.22**	.15*	.16*	.16*	.07	-.27***	(.76)			
18 Need Control	-.03	-.00	-.06	.01	.05	.02	-.05	-.12	-.18**	-.14*	.08	.11	.12	.08	-.14	.32***	.31***	(.63)		
19 Gender (f=0, m=1)	-.06	-.02	.02	.11	.19**	-.10	-.06	-.17*	-.15*	-.23**	.02	.10	.15*	-.11	.31***	.15*	-.25***	-.06	-	
20 Age	.06	.04	-.05	.06	-.02	.06	.07	-.10	-.13	-.04	-.12	-.08	-.09	-.15*	.14	.08	-.13	-.04	.14*	-
21 M	.50	.50	.50	5.45	72.56%	-5.27pp	.70pp	2.99	3.48	3.15	3.71	3.54	3.67	5.31	5.43	5.14	6.07	5.41	.50	23.23
22 SD	.50	.50	.50	1.36	.42	2.66	1.07	1.23	1.18	1.18	.72	.76	.80	.98	1.09	.76	.75	.72	.50	2.71

Notes. N = 201; Cronbach's α is given in parentheses (see diagonal matrix). Cronbach's α is not reported for experimental conditions, test scores or single items. pp=percentage points.

*p<.05

**p<.01

***p<.001

significantly lower than those in the high *distraction* condition ($M = 3.08$, $SD = 1.24$), $t(199) = 5.66$, $p < .001$. Cohen's d , as a measure of mean difference effect sizes which differs between small ($|d| < .50$), medium ($.50 < |d| < .80$) and large ($|d| > .80$) effect sizes, revealed that the difference had a medium effect size of $d = .74$. Finally, the manipulation of *market dynamics* was also effective. Participants rated *dynamics* significantly lower in the low *dynamics* condition ($M = 2.68$, $SD = 1.29$) as compared to the high *dynamics* condition ($M = 4.20$, $SD = 1.31$), $t(199) = 8.29$, $p < .001$. Cohen's d revealed this effect to be large with $d = 1.01$. Taken together, the *distraction* and *market dynamics* manipulations worked well with medium to large effect sizes, while the *accountability* manipulation did not.

Descriptives. Table 1 displays intercorrelations among the study variables and Cronbach's α of the scales, which is an indicator for a scale's reliability. As can be seen, scale reliabilities exceeded the recommended threshold of Cronbach's $\alpha > .70$ [37] except for the scale measuring Need for Control ($\alpha = .63$), which was therefore excluded from further analyses. Disposition to trust was included as control variable in the further analyses in light of

a significant correlation between disposition to trust and trust ratings ($r = .27$, $p < .001$). However, ANOVA's revealed that randomization was largely successful and no further control variables needed to be added to the following analyses.

Hypothesis Testing. Hypothesis 1 proposed that trust in the DSS is positively associated with users' decision quality and *performance*. A regression analysis to analyze the relationship of trust and the control variable with *performance* revealed trust as a significant predictor ($\beta = .50$, $p < .001$, $R^2_{adj} = .23$), thus confirming hypothesis 1.

Hypothesis 2 proposed that trust in the DSS is positively associated with user's *well-being*. We measured *well-being* and *strain* three times in the course of the experiment, and computed one-way repeated ANOVA's to test both, main effects of trust on *well-being* and *strain* as well as moderating effect of trust on the course of *well-being* and *strain*. Results with *well-being* as dependent variable revealed a main effect of trust on *well-being* ($F(1,198) = 4.08$, $p = .045$, $\eta^2 = .02$), indicating that trust in the DSS is positively associated with *well-being* in general, which is in line with H2. However, neither different perceptions of *well-being* at the different time points ($F(2,396) = .25$, $p = .776$, $\eta^2 = .00$), nor a moderating effect of trust on the measurement of time differences ($F(2,392) = 2.03$, $p = .133$, $\eta^2 = .01$) could be observed. The one-way repeated ANOVA with *strain* as dependent variable neither showed trust to be negatively associated with *strain* in general ($F(1,198) = 2.36$, $p = .126$, $\eta^2 = .01$), nor significant differences of the *strain* perception between the three measurement times ($F(1.90,375.22) = .36$, $p = .689$, $\eta^2 = .00$) or a moderating influence of trust on the measurement time differences ($F(1.90,375.22) = 2.74$, $p = .069$, $\eta^2 = .01$). Thus, trust was significantly associated with perceived *well-being* but not with *strain*.

Hypothesis 3 proposed trust in the DSS to be positively associated with *directed forgetting* as an indicator of cognitive

capacity releases. A regression to analyze the association of trust and the disposition to trust with the R-F-differences revealed that trust neither predicted users' recall of data points ($\beta = -.03$, $p = .709$, $R^2_{adj} = -.01$), nor of data patterns ($\beta = -.10$, $p = .169$, $R^2_{adj} = -.01$). However, disposition to trust marginally predicted data patterns recall ($\beta = .14$, $p = .058$, $R^2_{adj} = .01$), which would be in line with the assumption that a more general trusting attitude is positively associated with *directed forgetting* effects. In sum, trust in the DSS is positively associated with both users' *performance* and *well-being*. However, no such relationships could be observed for *strain* or *directed forgetting*.

Hypothesis 4 proposed *accountability* to moderate trust in den DSS's relation with user's *performance*, *well-being* and *directed forgetting*, so that high *accountability* strengthens the relationships between trust and the outcome variables. As the manipulation check suggest that the *accountability* manipulation was not effective, we refrained from further testing our hypothesis in the given data set.

Hypothesis 5 proposed that *distraction* has moderating effects on the relation between trust and *performance*, *well-being*, as well as *directed forgetting*. We computed a regression analysis to examine significant associations of trust, disposition to trust and *distraction* with users' *performance* as well as the moderating effect of *distraction* on the trust effect. *Distraction* did not moderate the effect of trust on *performance* ($\beta = .05$, $p = .561$, $R^2_{adj} = .23$). Another one-way repeated measure ANOVA revealed that *distraction* did also not moderate trust effects on *well-being* ($F(1,196) = .76$, $p = .384$, $\eta^2 = .00$). However, *distraction* did moderate the measurement time effect on *well-being* ($F(1.98,390.81) = 4.08$, $p = .018$, $\eta^2 = .02$), so that highly distracted users showed lower *well-being* at measure 1, but also a lower decrease of *well-being* from measure 1 to measure 2 as compared to participants in the low *distraction* condition. The moderating effect of *distraction* on the course of *well-being* is depicted in Figure 3.

Figure 3. Users' perceived well-being (measured on a 5-point Smiley scale at three time points during the experiment) accentuated for highly vs. lowly distracted users. Error bars represent standard errors.

For participants' *strain* experience, *distraction* revealed both, a main effect ($F(1,197) = 4.54, p = .036, \eta^2 = .02$), indicating that more *distraction* increased *strain*, as well as a moderating effect on the trust-*strain* relation ($F(1,196) = 4.25, p = .040, \eta^2 = .02$), indicating that low *distraction* strengthened the positive association between trust and users' *strain* experience. The main effect of *distraction* as well as the moderating effect of *distraction* on the trust-*strain* relationship are depicted in Figures 4, 5 and 6.

Figure 4. Users' perceived *strain* (measured on a 7-point Likert scale at three time points during the experiment) accentuated for highly vs. lowly distracted users. Error bars represent standard errors.

Figure 5. Users' perceived *strain* (measured on a 7-point Likert scale at three time points during the experiment) accentuated for strongly vs. weakly trusting users (median-split) in the *high distraction* condition. Error bars represent standard errors.

Figure 6. User's perceived *strain* (measured on a 7-point Likert scale at three time points during the experiment) accentuated for strongly vs. weakly trusting users (median-split) in the *low distraction* condition. Error bars represent standard errors.

Finally, we could also find a moderating effect of *distraction* on the trust - *directed forgetting* relation ($\beta = .22, p = .039, R^2_{adj} = .03$), however the significant main effect of trust ($\beta = -.26, p = .015, R^2_{adj} = .03$) reveals that trust was not positively associated with *directed forgetting*, as we proposed, but negatively. Thus, *distraction* moderated trust effects of *directed forgetting* so that *directed forgetting* effects were significantly smaller for high trustors (recall rates of list 2 data patterns compared to recall rates of list 1 data patterns, i.e. R-F differences) when being highly disturbed. This finding does not support Hypothesis 5 because *distraction* moderated trust effects on *strain* and *directed forgetting* in the opposite direction than expected.

Finally, Hypothesis 6 proposed that market *dynamics* moderate trust associations with *performance*, *well-being*, and *directed forgetting*, so that the relationships should be strengthened when users face a highly dynamic market. However, we could not confirm this assumption because market *dynamics* neither moderated trust associations with *performance* ($\beta = -.07, p = .437, R^2_{adj} = .24$), nor *well-being* ($F(1,196) = .93, p = .336, \eta^2 = .01$), *strain* ($F(1,196) = .00, p = .975, \eta^2 = .00$) or *directed forgetting* ($\beta = -.09, p = .331, R^2_{adj} = .01$). Thus, Hypothesis 6 is not confirmed by the data.

Taken together, among the three moderators considered in the present study, only *distraction* revealed to be a significant moderator of trust associations with *strain* and *directed forgetting*. More specifically, we found high *distraction* to weaken trust associations with both, *strain* and *directed forgetting*.

4 Discussion

In the present study, we examined positive associations of trust in a DSS with core work outcomes, i.e., *performance*, *well-being*, *strain*, and release of cognitive capacity. Additionally, we

investigated how these effects are influenced by three context variables, user *accountability*, *distraction*, and market *dynamics*. Similar to prior studies [8, 9], we found that trust in a DSS is positively associated with users' *performance* in decision tasks and their *well-being*. Moreover, extending prior research we found that *distraction* during the decision tasks moderated trust relationships with *strain* and *directed forgetting*, so that trust was less strongly connected with outcome indicators when being highly distracted. No such effects were observed for the other two moderator conditions *accountability* and market *dynamics*.

Practical Implications. Our research provides evidence that trust in a DSS is central to leverage potential DSS benefits for employees facing complex data at the workplace. Thus, organizations and software designers are well advised to increase their efforts developing and implementing software solutions so that they can be trusted by employees. As prior studies showed, the credibility of a system is an important antecedent of trust development [7, 9]. Thus, during adaption and implementation processes of a new system, organizations need to pay attention that information systems provide information users can rely on and perceive as truly credible. Additionally, prior studies found the reliability of a system to be inevitable for trust development [7]. Thus, in addition to providing credible information, a DSS should work without malfunctions and must be dependable [38, 39]. Additionally, organizations should try to include their employees in the implementation process when introducing a DSS [40, 41].

Moreover, our findings reveal that *distraction* not only increases workers' *strain* but also weakens the trust-strain relationship. Thus, when highly distracted, buffer effects of trust in the DSS seem to disappear. These findings indicate that during system implementation and adaptation, organizations should provide their employees sufficient protection and strategies against unplanned interruptions and distractions. Employees thus can develop trust in the system and skills for the usage which could positively affect later times of working with the DSS under high disturbance. For market *dynamics*, on the other hand, our study did not provide evidence for it to effect trust relations with work outcomes. This indicates no need of a particular consideration of the *dynamics* of the market the DSS is implemented in.

Future Research Directions and Limitations. In the context of trust development over time, long-term examinations of the influence of context factors would be interesting for further research. Additionally, our manipulation of *accountability* was not sufficiently strong. Improvement of this manipulation is necessary to enable a systematic examination of the related assumptions.

In the present study, we could not replicate prior findings on positive effects of a DSS on cognitive resources [8, 9]. As we applied a similar paradigm as in prior studies, this finding is somewhat surprising. However, descriptive statistics of the indicators of *directed forgetting* revealed a generally weak recall of data points. Thus, it is possible that participants, regardless of whether they strongly or weakly trusted the DSS, showed no *directed forgetting* effect because the recall task was too difficult. Additionally, different to prior research [8], trust in the DSS was

measured not before participants completed the decision trials but afterwards. Thus, trust ratings in the current study might have been affected by the participants' experience with the DSS, rather than being a predictor of participants' usage behavior. Indeed, disposition to trust—which was measured before the decision task—at least slightly affected *directed forgetting* of data patterns, which is in line with the general assumption that the availability of a trusted DSS can release cognitive capacities in a decision task.

These limitations bear several fruitful directions for future research. First, investigating trust effects on *directed forgetting* with different, simpler recall tasks and with continuous trust indicators would be desirable for future studies. Second, further studies could investigate the moderating effect of *distraction* on the trust-directed forgetting relationship. It would be interesting to see whether *distraction* is still weakening trust effects on *directed forgetting* or if different methods would lead to different findings.

Another avenue for future research would be to examine the design of the user interface. For example, it would be of particular interest to see how important the interface design is for the usage of and trust in DSSs as compared to the functionality of the system. Thereby, recommendations for the design of DSSs could be gained. In this light, conducting user experience studies could also provide insights about certain functions and design aspects of DSSs, that would for instance enhance trust development and intention to use.

Additionally, the investigation of DSS supported decision making in the real-life as compared to the lab would be of major scientific relevance. This would greatly enhance the studies ecological validity. Further, investigating DSS use in real-life settings would pay particular attention to effects of the operational environment and uncontrollable factors, which could reveal further influential factors on trust development or system use. Additionally, in real-life the dependence on the DSS could be associated with higher risks than in the lab, as the DSS would support actual business decisions. As outcomes in actual business settings are more critical for both the decision maker and the company, the role of trust in the system could become even more critical and *directed forgetting* effects could significantly increase.

Finally, even though DSSs can be quite helpful technologies at the workplace, potential downsides of automation are to be considered, such as under- and overreliance on, or misuse and disuse of DSSs [42]. These risks and potential prevention also need to be addressed in future research.

Conclusion. Taken together, this study delivers important insights into how trust in a specific technology can increase organizational and personal outcomes, and how these effects are influenced by context conditions. Organizations might take advantage of our insights by making the development of employees' trust a core goal during the implementation of new information systems.

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