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ORIGINAL EMPIRICAL RESEARCH

Unveiling the recovery time zone of tolerance: when time matters in service recovery

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Abstract This article examines the link between recovery time and customer compensation expectations for service failures that cannot be immediately redressed. First, we show that the relationship between recovery time and compensation expectations is nonlinear. Initially, in a recovery time zone of tolerance, compensation expectations do not increase. Beyond this zone, the relationship follows an inverted U-shape, such that compensation expectations first increase but decrease in the long run. Second, our results show that long recovery times are accompanied by additional negative effects, including lower satisfaction with the recovery and negative word of mouth, so postponing service recovery represents a poor option. Third, relationship strength functions as a moderator. First-time customers expect higher compensation earlier; relational customers display a recovery time zone of tolerance but claim considerably higher compensations afterwards. Fourth, communication initiatives like the separate provision of status updates or an explanation may limit increases in compensation expectations over time. Still, their joint usage creates a "too-much-of-a-good-thing" effect, suggesting that if the usage of communication initiatives is taken too far it may lead to negative outcomes such as increasing compensation expectations.

Keywords Service recovery · Customer relationships · Service failure · Customer betrayal · Customer anger · Explanation · Equity theory · Complaint status updates

> "The faster might seem the better. However, we do not really know what we are doing and just provide any kind of compensation immediately to prevent customers becoming dissatisfied."
> —Jim, franchise owner, global restaurant chain

This opening quote acknowledges an essential but widely neglected topic in the design of service recovery processes: the time a service provider needs to recover its customers. Setting appropriate recovery times is a highly relevant topic, as indicated by survey results that show that 60% of customers identify lost time as the greatest harm they suffer during service recovery. Their resulting dissatisfaction leads to losses of up to $202 billion in revenues, simply because firms have not met customers' recovery expectations (Customer Rage Survey 2015).

Managers recognize the importance of these questions too, yet they lack standards for setting time-oriented goals in their service recovery strategies. For example, we asked 51 customer care managers and service employees from multiple industries (e.g., airlines, parcel services, online retailing, hospitality, financial services) about their recovery time strategies in response to customer complaints. Only 4 employees completely agreed that their company explicitly set standards for this duration (the mean response was 3.96 on a 7-point Likert-scale; 1 = "strongly disagree"). Furthermore, the responses we received exhibited substantial discrepancies in average recovery

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times: anywhere from 6 h to 42 days. Despite the lack of strategic insights into the critical question of adequate recovery times, to the best of our knowledge, no research has analyzed the effect of recovery times on customer service recovery expectations. The current study seeks to address that gap by including time as a strategic choice in service recovery processes that can address customers' needs better, with the potential to establish more stable customer–firm relationships following a service failure (DeWitt and Brady 2003; Palmatier et al. 2006).

In particular, this study shows companies that neglecting the role of recovery time might lead to negative customer responses, including the threat of increasing customers' compensation expectations. For example, 42% of complainants ask for financial redress for their "lost time, inconvenience or injury" (Customer Rage Survey 2015), implying that customers expect a firm to compensate them not just for the losses caused by the service failure but also for the losses that stem from the duration of the recovery process. This interesting aspect has been identified in prior studies (e.g., Grewal et al. 2008) but not tested empirically. For this study, we adopt an equity theory rationale (Adams 1965) to reason that recovery time and compensation are not independent, as usually presented in service recovery literature, but rather are linked directly, such that recovery time influences customers' compensation expectations. That is, extended recovery times increase customer service recovery inputs, in the form of non-monetary costs (e.g., waiting, uncertainty), which results in greater demands for redress. With the perspective that customers' compensation expectations thus represent a new outcome variable for service recovery literature, we address three main research questions:

(1) How does recovery time affect customers' compensation expectations during service recovery?
(2) Which moderators affect the relationship between recovery time and compensation expectations?
(3) What are the underlying processes that explain the effects?

With six experimental studies to address these questions, we contribute to the service literature in four main ways. First, we shed light on the relationship between recovery time and customers' compensation expectations. By explicating their relationship, we extend prior studies that consider recovery time and compensation as distinct service recovery strategies (e.g., Mostafa et al. 2015; Wirtz and Mattila 2004). Instead, we show that customers' compensation expectations are affected by the perceived recovery process. We also analyze what actually determines an adequate remuneration after recovery.

Second, we show that this time–compensation link is not linear. This article offers robust support for the existence of a recovery time zone of tolerance, in which compensation expectations do not rise. Beyond this zone, the relation follows an inverted U-shape, such that compensation expectations first increase but decrease in the long run. In isolation, this nonlinear effect seemingly might suggest that longer waits for recovery do not harm the firm, because compensation expectations eventually decrease. Therefore, we test some additional effects of long recovery times by considering customer satisfaction with service recovery and negative word of mouth (nWOM) as dependent variables. We find that satisfaction with service recovery decreases and nWOM increases over time.

Third, we specify two sets of moderators (relationship- and communication-focused) of the link between recovery time and compensation expectations. From a relationship perspective, we compare first-time and relational customers, to determine if they differ in their responses to the recovery time. The results show that customers expect different amounts of compensation when they are in weaker versus stronger relationships with the firm. From a communication perspective, we investigate two communication initiatives as potential moderators: explanations for the reason for the recovery time and status updates. Explanations for the reason for the recovery time and status updates as two distinctive communication initiatives have been successfully adopted in the consumer waiting literature. Both efforts help limit customers' perceptions of the wait and therefore can mitigate their negative affective responses to different waits (Maister 1985; Taylor 1994). Thus, we explain how the effect of recovery time on compensation expectations varies with the company's communication initiatives.

Fourth, we offer explanations of the changes in compensation expectations by recovery time according to the influence of negative emotions, such as anger, that stem from delayed service recoveries (Bougie et al. 2003; Chebat and Slusarczyk 2005). A customer's anger, resulting from the recovery duration, prompts variations in compensation expectations. Although not demonstrated previously or empirically in a service recovery context, this mediation is necessary to understand what determines effective recovery. The underlying process also becomes more complex for customers in strong relationships, because perceived betrayal enters as a relationship-specific affective response to a firm's poor service recovery (Grégoire and Fisher 2008).

These results confirm that managers must acknowledge the strategic role of recovery time and keep track of the time involved before they complete their service recovery processes. Time has a direct effect on the compensation that customers expect, so firms must adapt their compensation strategies to match the time they actually need to recover. Customers might grant them a grace period for processing the complaint, but afterwards firms must provide significantly higher compensation. Alternatively, managers might seek to extend the recovery time zone of tolerance by applying accurate communication initiatives that limit compensation claims.

However, applying both communication initiatives simultaneously might backfire. In addition, firms are well-advised to set recovery time standards according to their relationship with the customer, to prevent strong negative responses by relational customers and ensure more stable, long-term customer–firm relationships.

The meaning of time for service recovery as a strategy: literature review

Prior literature examining the time in service recovery uses various terms, such as speed of recovery (Wirtz and Mattila 2004), timeliness (Cambra-Fierro et al. 2015), or prompt handling (Liao 2007). These conceptualizations are closely related, even though some researchers define time in service recovery as the time required to respond to a complaint (Boshoff 1997), others regard it as the time needed to complete the complaint handling (Zhou et al. 2014), and still others mix these notions (Mostafa et al. 2015). For this study, we conceive of *recovery time* as the span between the initial customer complaint and the final resolution offered by the firm.

We recognize that prior research does not draw a clear picture of the role of recovery time during recovery processes (Zhou et al. 2014). Table 1 summarizes experimental studies on recovery time as a service recovery strategy and reveals two major streams of research pertaining to how time might influence customers' responses to service recovery. One stream suggests that service providers should act quickly, because a fast recovery ameliorates customers' injustice perceptions, leading to greater satisfaction and repatronage intentions (Larivière and Van den Poel 2005; Liao 2007; Wirtz and Mattila 2004). In contrast, slow recovery processes create dissatisfaction, low justice perceptions, negative emotions, and poor post-recovery intentions (Chebat and Slusarczyk 2005; Smith et al. 1999). A second stream suggests that immediate recovery is not always necessary to achieve desired outcomes like satisfaction with service recovery, repatronage intentions, or lower nWOM (Boshoff 1997; Zhou et al. 2014) because, as Davidow (2003) argues, very fast resolutions might imply that the organization has not devoted sufficient effort to resolving a customer's complaint.

Both perspectives have merits, suggesting that customers' perceptions of adequate service recovery times might vary, depending on the context (Roschk and Gelbrich 2014; Zhou et al. 2014). For example, customers usually demand an immediate solution to reversible failures (e.g., wrong restaurant order), but for separated services (Keh and Pang 2010) when customers are not present during service production (e.g., wrong delivery by an online retailer), they recognize that the solution may take longer. It also seems reasonable that customers' perceptions of adequate recovery times would be flexible and not necessarily "immediate" for irreversible failures like flight delays. In situations in which immediate reperformance is not possible, recovery time thus may constitute a particularly critical element of firms' recovery initiatives that has been underresearched yet is likely to affect customers' compensation expectations—which we define as the monetary amount that a customer perceives as adequate redress for all costs (monetary and nonmonetary) related to the service failure and the service recovery process.

Linking recovery time and compensation expectations: an equity theory perspective

Equity theory suggests that people perceive equity if their own outcome–input ratio in an exchange equals the outcome-to-input ratio of the exchange partner (Adams 1965). These inputs and outcomes can be financial or nonfinancial. In a service process, as a social exchange, a failure usually implies inequity (Maxham 2001), because customers perceive their inputs (e.g., effort, money, time) have not been rewarded by the promised service outcome. Therefore, equity theory frequently provides a perspective for explaining the influence of recovery strategies or failure conditions on post-recovery evaluations (e.g., Grewal et al. 2008). We extend this perspective and use equity theory to predict compensation expectations as a dependent variable. In particular, we link equity theory to Osuna's (1985) psychological costs of waiting, which may stem from longer waits for recovery. Recovery time then becomes a nonfinancial customer input, and equity theory provides a foundation for explaining the relationship between recovery time and customers' compensation expectations, due to the perceived mismatches in outcome–input ratios. Building on the idea of compensating nonmonetary costs with monetary outcomes, we link equity theory to legal literature that examines the monetary value of emotional damages or pain (e.g., Flatscher-Thöni et al. 2013).

Direct effect of recovery time on compensation expectations

Compensation is provided as redress for a flawed service (Gelbrich et al. 2015), so it should "exactly balance the harm done" (Walster et al. 1973, p. 158) and offset the customer's total loss (Grewal et al. 2008). Perceptions of inequity are not immutable after a service failure though; they even can worsen during service recovery, because each component of the service recovery might affect customers' justice evaluations (Liao 2007; Mostafa et al. 2015). We argue that more customer inputs to the service recovery aggravate the perceived mismatch between customers' own outcome–input ratio and that of the provider. Consequently, the same compensation might be appreciated less when the recovery process requires more customer inputs (Tax et al. 1998) and not suffice to restore equity.

Table 1 Experimental research on recovery time as service recovery strategy

Study	Compensation as outcome	Affective process	Moderators		Major findings
			Relationship focused	Communication focused	
Boshoff (1997)	No	No	No	Yes (source of information)	Time has a direct, nonlinear negative effect on customer satisfaction. If the level of atonement is high, time has a less negative effect on satisfaction. The effect of time on customer satisfaction is independent of the organizational level of the person involved.
Cambra-Fierro et al. (2015)	No	No	Yes (relationship strength)	No	Timeliness positively influences customer profitability. This effect is stronger for customers experiencing an economic failure but is independent of the length of the customer–firm relationship.
Chebat and Slusarczyk (2005)	No	Yes (pos./neg. emotions)	No	No	Time does not have a significant positive effect on positive emotions but does have one on negative emotions.
Larivière and Van den Poel (2005)	No	No	No	No	The speed of the company's reply to a complaint positively influences complainants' next-buy decision; an immediate reply has the strongest impact.
Liao (2007)	No	No	No	No	Prompt handling has a positive indirect effect on customer satisfaction.
Mostafa et al. (2015)	No	No	No	No	Speed of response has a positive effect on procedural justice, which has a positive effect on customer satisfaction.
Smith et al. (1999)	No	No	No	No	Speedy recovery has a positive effect on procedural justice, which has a positive effect on customer satisfaction.
Wirtz and Mattila (2004)	No	No	No	No	Speed has a positive effect on customer satisfaction. Offering compensation has no positive effect on customer satisfaction in situations when service recovery is fast but does if service recovery is delayed.
Zhou et al. (2014)	No	Yes (pos./neg. emotions)	No	No	Delaying resolutions produces higher repatronage intentions and less negative word of mouth. This effect is moderated by service separation and mediated by customers' negative emotions.
Our Study	Yes	Yes (anger, perceived betrayal)	Yes (relationship strength)	Yes (explanation for reasons for the recovery time, status updates)	The relation between recovery time and compensation expectations first describes a recovery time zone of tolerance in which compensation expectations do not increase. Beyond this zone, the relation follows an inverted U-shape, such that compensation expectations first increase but decrease in the long run. The relation is mediated by customer anger and perceived betrayal and moderated by relationship strength and communication initiatives.

Acknowledging Osuna's (1985) psychological costs of waiting, we argue that time in recovery constitutes a customer input that worsens inequity perceptions during service recovery. Customers who are ready to receive an outcome (e.g., after filing a complaint) but must wait for the outcome to be delivered (e.g., compensation) might perceive more unfair treatment (Katz et al. 1991; Maister 1985) and increased psychological costs (Osuna 1985). We argue that customers expect more compensation to regain equity if they must wait, because their nonmonetary inputs have increased. The sense that nonmonetary costs can be reflected in higher compensation expectations also is supported by legal literature (e.g., Flatscher-Thöni et al. 2013) that suggests means to calculate an adequate monetary redress to compensate for nonmonetary losses (e.g., emotional harm, pain, suffering).

H1: A customer's compensation expectations increase with recovery time.

Anger as an affective response to recovery time

The change in compensation expectations with longer recovery times might stem from feelings of anger. Anger usually occurs when people judge an event as frustrating or harmful and believe they "have been voluntarily wronged unjustifiably" (Bougie et al. 2003, p. 379). It is common in response to long wait times (Taylor 1994). Customers perceive waiting (i.e., longer recovery times) as a violation of equity, so it leads to negative emotions (DeWitt et al. 2008), including anger. Customers who face longer recovery times reveal more anger as their perceptions of inequity increase further (Homans 1961), and this relationship gains strength with longer recovery times. The resulting anger counts as a form of nonmonetary cost, beyond the losses attributed to the service failure. Customers expect to be compensated for both monetary and nonmonetary costs, to regain equity in the exchange relationship (Walster et al. 1973), so they likely anticipate more compensation for their feelings of anger, which have been caused by the longer recovery times.

H2: By increasing customers' anger, longer recovery times increase customers' compensation expectations (positive mediation).

Moderators of the relationship between recovery time and compensation expectations

Relationship strength Customers differ in their responses to the service recovery, depending on their relationship with the provider (Grégoire and Fisher 2008). To examine the impact of customer relationship strength on the link between recovery time and compensation expectations, we differentiate customer relationships as either first-time or relational. A first-time customer has not developed any relationship with the service organization (Mattila 2001); a relational customer has cultivated a long-term relationship, such that their historical transactions create positive social and emotional bonds (Gwinner et al. 1998).

Customer compensation expectations after longer recovery times might differ depending on whether the customer has developed a relationship with the service organization. In equity theory terms, relational customers have invested more significant inputs to the relationship with the service provider, so they might perceive more inequity following a service failure than would first-time customers. Customers in strong relationships are more likely to take offense at an unfair recovery (Grégoire and Fisher 2008), so we predict that perceptions of inequity are disproportionately intense for relational customers as the recovery time increases, such that they expect the firm to provide more compensation than first-time customers do.

H3: Relationship strength moderates the effect of recovery time on compensation expectations, such that relational customers expect more compensation than first-time customers when recovery time increases.

Furthermore, in a relational context, inequity prompts not only feelings of anger but also a sense of betrayal (Adams and Freedman 1976). Customers feel especially betrayed if the service organization seems to have behaved unfairly, broken its promises, and taken advantage of their relationship (Grégoire and Fisher 2008). Therefore, perceived betrayal may mediate the effect of recovery time on compensation expectations among relational customers. If they must wait for the recovery, they feel betrayed, because their required inputs seem much higher than the level they expected, based on their strong relationship with the provider. Moreover, they judge the provider's inputs as inferior, in that it is not attending fully to their case. Thus, the firm appears to have "intentionally violated what is normative in the context of their relationship" (Grégoire and Fisher 2008, p. 250), which elicits feelings of betrayal. Only relational customers face these nonmonetary costs (Adams and Freedman 1976) and expect the provider to address them with greater financial redress (Walster et al. 1973).

H4: A moderated mediation exists, such that recovery time increases compensation expectations among relational customers, by increasing perceived betrayal.

Regardless of their perceptions of betrayal, first-time and relational customers should not differ in their feelings of anger after a lengthy service recovery. People naturally grow angry

when they receive less than they expect (Adams 1965) or feel unfairly treated, regardless of whether the relationship is weak or strong (Bougie et al. 2003). Accordingly, a customer's anger may be an inevitable result of inequity perceptions, as we predicted in Hypothesis 2.

Communication initiatives: explanation for the reasons for the recovery time and status updates The proactive use of communication initiatives (in our case: explanation for the reason for the recovery time and status updates) might mitigate the increase in compensation expectations, by affecting customers' perceptions of the recovery time in a way that enhances their sense of equity. For this study, an explanation for the reason for the recovery time specifically cites the causes that create longer recovery processes. It differs from explanations of the service failure. Evidence from waiting time literature suggests that explanations grant customers additional information, allowing them to reappraise the situation (Houston et al. 1998). Customers prefer explained over unexplained waits (Maister 1985; Taylor 1994). Thus, unexplained waits appear longer to the customer than explained ones and are more likely to be accompanied by negative customer emotions (Houston et al. 1998; Maister 1985). In terms of equity theory, unexplained recovery times are likely perceived as stronger inputs than explained ones. By providing an explanation, the service provider might soothe customers and mitigate perceptions of recovery time, which ultimately leads to a lower increase in compensation expectations with longer recovery times.

Another option would be to provide updates with information about the current status of the service recovery (i.e., status updates). Status updates should produce a positive shift in equity perceptions, by enhancing customers' perceptions of recovery time. Customers who are waiting often fear that the service provider has forgotten about them (Taylor 1994), such that their "'anxiety' level is much higher while waiting to be served than it is while being served, even though the latter wait may be longer" (Maister 1985, p. 4). By providing status updates, the service provider reassures the customer that his or her complaint is being processed. Keeping customers informed in this way should lead them to develop less negative perceptions of longer recovery times and therefore ascribe less nonmonetary costs to them. That is, we expect customers receiving updates during the process to display a smaller increase in compensation expectations following a longer recovery time.

Both explanations and status updates should decrease inequity, through their impact on the customer's evaluations of nonmonetary costs connected to recovery time. Consequently, we argue that the joint use of both initiatives will lead to the lowest perceptions of inequity and thus to the smallest increase in compensation expectations over time. Formally:

H5: A three-way interaction among recovery time, the provision of explanations for the reason for the recovery time, and status updates during recovery exists, such that the provision of (a) explanations for the reasons for the recovery time or (b) status updates mitigate the impact of recovery time on compensation expectations, and (c) their joint usage results in the lowest increase in compensation expectations over time.

Overview of studies

We address our research questions and test our hypotheses in a series of six experimental studies. By using both consumer panels and student data, we identify and provide robust support for a recovery time zone of tolerance. Specifically, Study 1a demonstrates that though compensation claims for an immediate recovery are inferior to those for a later recovery, the difference only becomes significant if the recovery time exceeds a specific level. Moreover, it reveals that the underlying process for these reactions is anger. In Study 1b, we replicate these findings with a more realistic design, manipulating actual waiting time in a lab, such that the respondents experience the recovery time. With Study 2a, we shed light on the nonlinear effects of recovery time on compensation expectations by manipulating 18 levels of recovery time. Study 2b then builds on these results and seeks to clarify whether diminishing compensation expectations for very long recovery times are accompanied by negative effects on other dependent variables. Finally, with Studies 3 and 4, we identify two sets of moderators (relationship- and communication-focused) that affect customers' compensation expectations. By manipulating relationship strength (Study 3), explanations for the reason for the recovery time, and status updates (Study 4), we demonstrate how they moderate the relation between recovery time and compensation expectations. Figure 1 provides an overview of the studies and effects.

Pretests

To identify adequate recovery time manipulations, we conducted several pretests in various service settings. First, in interviews with 42 graduate students, we described a service failure that led them to complain to the provider. They had to indicate timeframes (number of days or weeks) for handling the issue that they considered appropriate or inappropriate. Four manipulation levels emerged: immediately, two days, one week, and four weeks.

Second, we prepared an experimental pretest, in which respondents considered different recovery time levels across distinct service settings. We thus sought to ensure that the effective manipulation levels applied across various service industries. After reading about the service failure, respondents

were randomly assigned to one of four recovery time conditions (immediate, two days, one week, four weeks) and completed a seven-point Likert-scale item: "I consider the time the firm needed to handle my complaint was appropriate" (1 = "strongly disagree"; 7 = "strongly agree"). With the assistance of a professional panel provider, we collected responses from 102 participants, stratified in age and gender (49% women; 19–66 years old; M = 36.52 years).[1] We combined the two datasets and calculated mean perceptions of time ($M_{Immediate}$ = 6.17; M_{2Days} = 5.92; M_{1Week} = 3.92; M_{4Weeks} = 2.50). A contrast analysis indicated that respondents did not rate an immediate recovery as more appropriate than a two-day response ($F_{1, 98}$ = 0.360; *ns*), whereas significant differences arose when we compared the immediate recovery with recovery after one week ($F_{1, 98}$ = 30.549; $p < 0.01$) or after four weeks ($F_{1, 98}$ = 81.593; $p < 0.01$). We also found significant differences between the one- and four-week conditions ($F_{1, 98}$ = 12.803; $p < 0.01$). We therefore excluded the two-days level from our main experiments, because it was not distinctive. These results mimic prior literature; among the few studies that manipulate recovery time experimentally, several use an immediate response as a baseline (e.g., Smith et al. 1999; Zhou et al. 2014), and Boshoff (1997) used up to one month of recovery time.

Study 1: when and why time matters in service recovery

Study 1a: the impact of recovery time on compensation expectations

Experimental design, sample, and measures Study 1a features an airline scenario, such that a changed seat assignment resulted in a poorer placement (Web Appendix A, Panel A). The participants read that they complained to the airline's service desk and received (depending on their randomly assigned manipulation) financial redress immediately, after one week, or after four weeks. Next, they stated the amount of compensation they expected. Finally, the last screen summarized the recovery time and amount of compensation they received; this amount always equaled their expressed expectation. A market research firm specializing in online panels provided a sample of 240 participants stratified by gender and age. We excluded 11 respondents who failed the quality and attention checks, leading to a final dataset of 229 people (47.6% women; 18–68 years; M = 40.20 years). To measure participants' compensation expectations, we asked about the amount of compensation they would consider appropriate to recover from the service failure in the specific situation, similar to willingness-to-pay studies that use direct measures to capture this value (e.g., Homburg et al. 2005). After customers stated their compensation expectations and learned that they received the indicated amount, we measured their satisfaction with service recovery (Maxham and Netemeyer 2002), such that we could compare respondents' satisfaction levels across the different time conditions and compensation payments. Thus, we can determine whether all experimental cells reach the same levels of customer satisfaction with service recovery. We also measured anger (Gelbrich 2010) as a mediator and included failure magnitude as a control; perceptions of severe failures may increase the time pressures on service recovery and drive customers' recovery expectations (Smith et al. 1999). By measuring satisfaction levels after both the service failure and the service recovery, we ensured that the scenario was perceived as a service recovery (Chan et al. 2010; Maxham 2001). The Cronbach's alphas, composite reliabilities, and average variances extracted indicated the good reliability and convergent validity of the measures (see Web Appendix B); we also confirmed discriminant validity according to Fornell and Larcker's (1981) criterion.

Manipulation checks We asked participants to indicate, with a checkbox, how long it took the airline to complete the service recovery, according to their recall of the recovery time level. The manipulation worked as intended. Participants correctly recalled the recovery time ($\chi^2(4) = 398.078$, $p < 0.01$). Our realism check also indicated that all participants understood the scenario instructions (M = 6.49). We find a significant increase in customers' satisfaction, from after the service failure (M = 2.09) to after recovery (M = 5.10; $t = -31.095$; $p < 0.01$), so respondents effectively understood that the scenario involved a recovery.

Main effect An analysis of covariance (ANCOVA) revealed a positive, direct effect of recovery time on compensation expectations ($F_{2, 225}$ = 26.930; $p < 0.01$), in support of H1. The failure magnitude significantly influenced the dependent variable ($F_{1, 225}$ = 14.322; $p < 0.01$), so we report adjusted means. Figure 2, Panel A, depicts the contrast analysis, which reveals no significant difference in compensation expectations for immediate recovery (M = 38.60) versus recovery after one week (M = 42.72; $F_{1, 225}$ = 0.977; *ns*). But if it takes four weeks to recover, customers expected significantly higher compensation (M_{4Weeks} = 67.11; comparison with immediate, $F_{1, 225}$ = 46.071; $p < 0.01$; comparison with one week, $F_{1, 225}$ = 34.126; $p < 0.01$).[2]

[1] All datasets were collected from a Western European country that is part of the European Union. They are representative of the population of this country.

[2] A replication in an online retailing (n = 117) context offers robust support for the direct effect of recovery time on compensation expectations ($F_{2, 113}$ = 5.594; $p < 0.01$; ANCOVA). Contrast analyses also confirm the pattern of means ($M_{Immediate}$ = 23.50 vs. M_{1Week} = 27.04; $F_{1, 113}$ = 0.850; *ns*; $M_{Immediate}$ = 23.50 vs. M_{4Weeks} = 35.77; $F_{1, 113}$ = 10.632; $p < 0.01$; M_{1Week} = 27.04 vs. M_{4Weeks} = 35.77; $F_{1, 113}$ = 5.092; $p < 0.05$).

We calculated another ANCOVA with satisfaction with service recovery as the dependent variable and failure magnitude as a covariate, to determine if satisfaction can be regained due to the right amount of compensation across all recovery time groups. This ANCOVA reveals that the means did not vary across the different time manipulations ($M_{Immediate}$ = 5.76; M_{1Week} = 5.65; M_{4Weeks} = 5.53; $F_{2, 225}$ = 0.915; *ns*). Therefore, the same level of satisfaction with service recovery resulted when customers received the amount of compensation that they perceived as appropriate, regardless of the recovery time group to which they were assigned.

Mediation analysis We tested the hypothesized mediating effect of anger by applying bootstrapping procedures (Preacher and Hayes 2008). Anger mediated the effect of time on compensation expectations (B = 1.6496, SE = 0.8917; 95% confidence interval [CI] [0.2888; 4.0692]; $p < 0.05$). However, the direct effect of recovery time did not disappear in the presence of the mediator (B = 12.5812, SE = 2.1901; CI [8.2654; 16.8970]; $p < 0.01$). Both results suggest complementary mediation (Zhao et al. 2010). We thus confirm H2.

Study 1b: replicating the results in an actual waiting situation

Experimental design, sample, and measures In this study, we asked 95 business students (56.8% female; 18–33 years, M = 23.33 years) at a university in a major Western European country to participate in a laboratory experiment, in exchange for a bar of chocolate. We used the airline scenario from Study 1a and manipulated three recovery times (immediate, one week, four weeks). However, unlike Study 1a, we required participants to wait if they were assigned to the one- or four-week treatment groups. In accordance with think-aloud and quantitative pretests, we determined that actual waiting times of one and four minutes could manipulate a recovery time of one and four weeks, respectively. After reading the scenario, the students proceeded to a screen that asked them to imagine having to wait for the compensation. They could not click to "continue" until after one or four minutes had passed; after this wait, participants indicated the amount of compensation they expected. The last screen summarized the amount of compensation they received at the specific recovery time, before they answered the other items (Web Appendix B). All constructs achieved convergent and discriminant validity.

Results The manipulation check ($\chi^2(4) = 184.242$, $p < 0.01$) and all comprehension checks worked as intended. Recovery time had a significant positive effect on compensation expectations ($F_{2, 91}$ = 7.846; $p < 0.01$), in support of H1. Failure magnitude significantly influenced the dependent variable ($F_{1, 91}$ = 4.128; $p < 0.05$), so we report adjusted means. Again, the contrast analysis (see Fig. 2, Panel B) identified no significant differences in compensation expectations after an immediate recovery or recovery after one week ($M_{Immediate}$ = 34.36 vs. M_{1Week} = 38.98; $F_{1, 91}$ = 0.758; *ns*). If recovery time increased to four weeks though, customers' compensation expectations rose significantly (M_{4Weeks} = 54.87; comparison with immediate $F_{1, 91}$ = 13.927; $p < 0.01$; comparison with one week $F_{1, 91}$ = 9. 269; $p < 0.01$).

Discussion

Studies 1a and 1b reveal a positive effect of recovery time on compensation expectations: the longer a company takes to recover, the higher customers' compensation expectations. However, expectations do not increase constantly. We find no difference in expectations between an immediate recovery and a recovery one week later, confirming the prediction that customers generally understand the company may need some time to deliver honest solutions and are more interested in an adequate outcome than a fast one (Boshoff 1997; Davidow 2003). This grace period represents a "recovery time zone of tolerance." As long as the different recovery times are compensated for adequately, similar satisfaction levels can result. To gain a deeper understanding of these results and rule out the possibility that the recovery time zone of tolerance simply reflects the chosen manipulation levels, we use additional manipulation levels in Study 2, to specify the nonlinear relationship between recovery time and compensation expectations.

Study 2: understanding the recovery time zone of tolerance

Study 2a: specifying the relationship between recovery time and compensation expectations

Experimental design, sample, and measures We adopted the airline scenario from Study 1 but manipulated 18 recovery times (immediate, one day, two days, three days, four days, five days, six days, one week, eight days, nine days, ten days, two weeks, three weeks, four weeks, five weeks, six weeks, seven weeks, and eight weeks). For the analyses, we recoded the 18 recovery times, such that we had a quasi-metric variable that replaced the treatment groups by the number of days customers waited for compensation (e.g., immediate = 0, three days = 3, eight weeks = 56). With the help of a professional online panel provider, we collected a sample of 724 participants, stratified by age and gender. Quality and attention checks led us to exclude 20 cases from further investigation, so the final sample consists of 704 cases (50.6% women; 18–69 years old; *M* = 45.59 years). The items to measure compensation expectations, failure magnitude, and satisfaction remained the same. All constructs achieved convergent and discriminant validity.

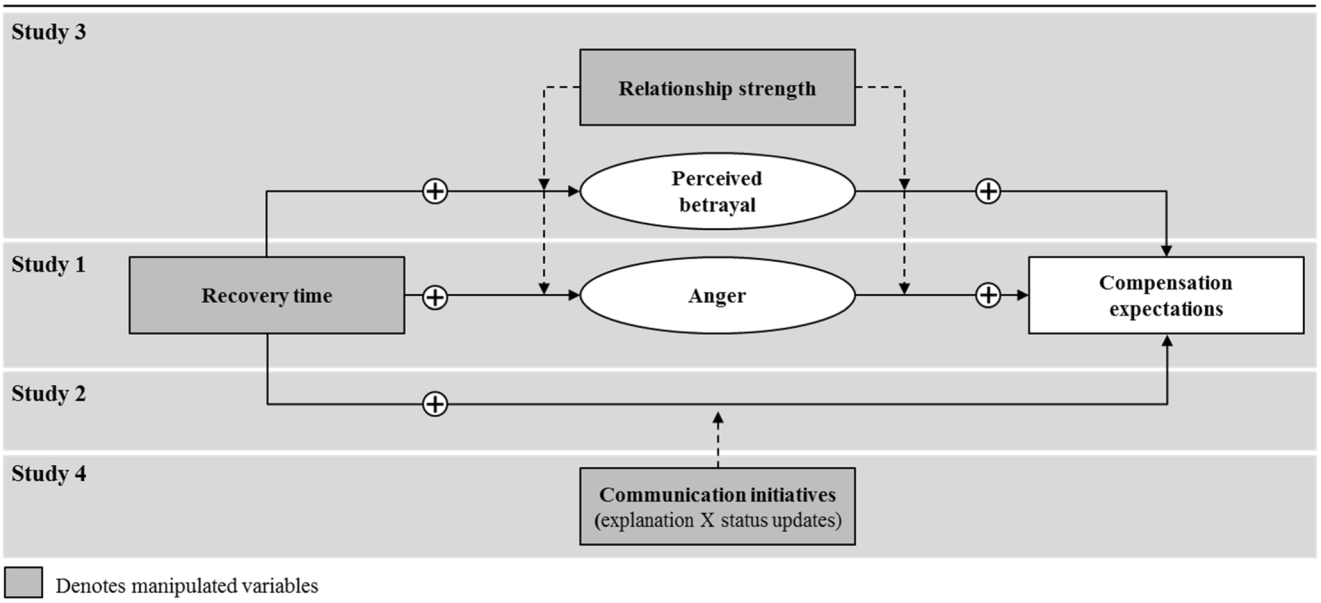


Fig. 1 Theoretical framework

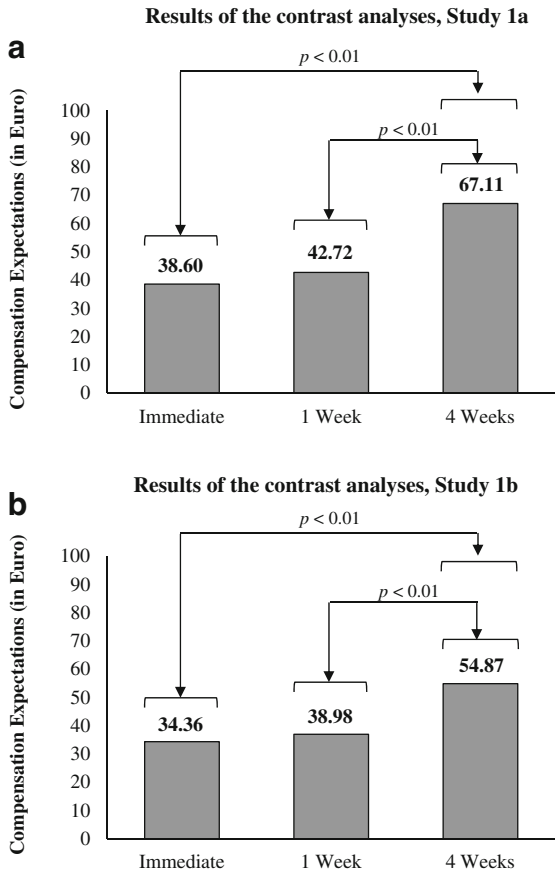
Results The manipulation and comprehension checks worked as intended. We applied a multistep hierarchical regression to scrutinize the relationship between recovery time and compensation expectations, using the recoded quasi-metric variable for recovery time. We started by centering the independent variables. After calculating Model 1, which only included the covariate, we stepwise added the linear, quadratic, and cubic terms of recovery time (see Table 2, Panel A [Models 2–4]). The amount of explained variance did not increase when we added the linear term to model 1 ($\Delta R^2 = 0.000$, F = 0.101, *ns*), but it changed significantly with the inclusion of the quadratic term ($\Delta R^2 = 0.011$, F = 7.803, $p < 0.01$). Including the cubic term did not significantly alter the R-square value, so we stayed with the quadratic model. The negative and significant quadratic term (B (unstandardized) = −0.021, SE = 0.007; $p < 0.01$) suggested that the relation between recovery time and compensation expectations follows an inverted U-shape.

To check for the recovery time zone of tolerance, we calculated two additional multistep hierarchical regressions. In the first, we accounted for the eight manipulations of recovery time, from immediate to one week. Then the second regression contained all the manipulation levels from one week to eight weeks. One week serves as the reference point in both regressions, because both our Study 1 results and the plot of Study 2a for the regression with all recovery times (Fig. 3, Panel A) indicated that customers' compensation expectations change significantly after this point (i.e., recovery time zone of tolerance). The first regression did not reveal any significant changes when we add the linear, quadratic, or cubic terms to Model 1—that is, no significant differences in R-square and no significant regression coefficients. Thus, compensation expectations do not change significantly within this timeframe (Table 2, Panel B).

However, in the second regression with the 11 recovery times from one to eight weeks, we uncovered a significant change in the R-square due to the inclusion of the quadratic term in the model ($\Delta R^2 = 0.017$, F = 7.726, $p < 0.01$). This quadratic term was significant and negative (B = −0.030, SE = 0.011, $p < 0.01$), signifying an inverted U-shape. Including a cubic term did not alter the R-square any further, and the relevant regression coefficient in the cubic model was insignificant. So we retained the quadratic model. The combined results of these additional regressions support the recovery time zone of tolerance.[3]

Finally, to verify our observation that satisfaction with service recovery remains constant for all recovery times if the participants receive compensation that they perceive as appropriate, we calculated another multistep hierarchical regression, with satisfaction with service recovery as the dependent variable and failure magnitude as the covariate. However, contrary to our expectations, the first regression, accounting for all manipulations of recovery time, displayed a negative linear effect (B = −0.011, SE = 0.003, $p < 0.01$; $\Delta R^2 = 0.016$, F = 12.290, $p < 0.01$), suggesting that satisfaction with service recovery declines over time, even with appropriate compensation (see Web Appendix C, Panel A). To follow up on this finding, we calculated two more regressions (see Web Appendix C, Panel B): one that encompasses the immediate to one week manipulations and reveals no significant linear, quadratic, or cubic effect, and a second from one to eight

[3] To check the robustness of the recovery time zone of tolerance, we calculated further multistep hierarchical regressions with different timeframes (i.e., immediate to ten days; immediate to eight days; immediate to five days; eight days to eight weeks). All regressions support the finding that compensation expectations do not increase significantly within the recovery time zone of tolerance but do so after.



Notes: Failure magnitude as a covariate was significant, so we display adjusted means.

Fig. 2 Effect of recovery time on compensation expectations. **a** Results of the contrast analyses, *Study 1a*. **b** Results of the contrast analyses, *Study 1b*

weeks that displays a linear decrease of satisfaction with service recovery (B = −0.009, SE = 0.004, $p < 0.05$; $\Delta R^2 = 0.010$, F = 4.754, $p < 0.05$). Noting the manipulation levels in Study 1, we limited our regression to the 14 manipulation levels between immediate and four weeks, to determine if adequate compensation can restore satisfaction with service recovery within this time frame. We find no significant linear, quadratic, or cubic effect.

Study 2b: in-depth analysis of the effects of long recovery times

Experimental design, sample, and measures This study uses the airline scenario (see Web Appendix A, Panel A). Study 2a provided robust support for a one-week recovery time zone of tolerance; for this analysis, we decided to apply a more parsimonious design and only manipulate every second day within that zone. Thereafter, we manipulated full weeks, resulting in 12 manipulations (i.e., immediate, one day, three days, five days, one week, two weeks, three weeks, four weeks, five weeks, six weeks, seven weeks, and eight weeks). We recoded these 12 recovery times as a quasi-metric variable, using the number of days.

The sample of 484 participants, stratified by age and gender, was collected with the support of a professional online panel provider. After checking for quality and attention, we excluded 29 cases from further consideration, for a final sample of 455 (52.3% women; 18–69 years old; $M = 45.06$ years). We used the same items to measure failure magnitude and satisfaction (see Web Appendix B). Regarding the additional unintended effects of longer recovery times, we also included nWOM, adapted from Jones et al. (2007). All constructs achieved convergent and discriminant validity.

Results The manipulation check and comprehension checks worked as intended. The results of Study 2b deliver further support for the recovery time zone of tolerance: we find no significant linear, quadratic, or cubic effects of recovery time on compensation expectations in the period from immediate to one week, but we observe a significant negative quadratic effect (B = −0.028, SE = 0.014, $p = 0.056$) when we include the quadratic term in the model that considers the recovery times from one to eight weeks (see Table 3).[4]

On first glance, the robust quadratic effect outside the recovery time zone of tolerance could suggest that longer recovery times are a viable option for service providers, but Study 2b also reveals additional, unintended effects. First, replicating the findings of Study 2a, satisfaction with the recovery remained the same within the recovery time zone of tolerance (i.e., no significant linear, quadratic, or cubic effects), then decreased from one week to eight weeks (B = −0.008, SE = 0.005, $p = 0.068$; $\Delta R^2 = 0.009$, F = 3.352, $p = 0.068$, see Web Appendix E). From immediate to four weeks we find no significant decrease in satisfaction with service recovery.

Second, we consider negative behavioral intentions by calculating two multistep hierarchical regressions, in which nWOM functions as the dependent variable. There were no significant linear, quadratic, or cubic effects for recovery times from immediate to one week. However, the linear effect was positive and significant between one and eight weeks (B = 0.011, SE = 0.005, $p < 0.05$, see Web Appendix F). We observed no increase in nWOM between the immediate and four weeks levels; all important regression coefficients remained insignificant.

[4] Slightly different from Study 2a, we find a significant negative cubic effect (B = −0.002, SE = 0.001, $p < 0.05$; see Web Appendix D) of recovery time on compensation expectations when conducting the regression over all 12 recovery times. At first sight, the negative cubic effect might imply a curve that is first U-shaped and then inverted U-shaped. A closer look at Fig. 3, Panel B, instead reveals that the results within the recovery time zone of tolerance (i.e., immediate to one week) do not decline significantly, as supported by the regression analysis for this separate range of recovery time. The main aim of Study 2b was to identify additional negative effects of longer recovery times, so we decided to focus our discussion on the effects within and outside the recovery time zone of tolerance.

Discussion

Replicating the results of Study 1 in an extended experimental setting that includes up to 18 recovery times, we show with Studies 2a and 2b that our observations are not artifacts of the chosen manipulation levels in Study 1. Study 2 thus supports the nonlinearity of the relationship between recovery time and compensation expectations. We also provide robust support for the recovery time zone of tolerance. That is, our results of both Studies 2a and 2b display no significant increase in customer compensation expectations from immediate to one week, whereas these expectations describe an inverted U-shape afterward, implying that compensation expectations decline again in the long run. At first glance, these results seem to suggest that providers can wait to recover their customers until compensation expectations decrease again. The results of Study 2b issue a clear warning against such a strategy though, because nWOM increases over time, so longer recovery times may lead to unwanted effects that harm service providers.

Study 3: relationship strength as a moderator

Experimental design, sample, and measures

Study 3 uses the airline scenario from Study 1a but also features manipulations of the first-time and relational customer conditions (Web Appendix A, Panel B). We retained the three recovery time manipulation levels from the pretest and Study 1, noting that Study 2 offers robust support for the meaning of these recovery times and that no additional unintended effects occur within this timeframe. We gathered a sample of 210 participants, stratified by age and gender, with the help of a professional online panel provider. Except for 12 participants, they all correctly answered the quality and attention checks, resulting in a final sample of 198 respondents (49.0% women; 18–69 years old; M = 43.35 years). The study featured a 2 (relationship strength: first-time vs. relational customer) × 3 (recovery time: immediate, one week, four weeks) between-subjects factorial design. We used the same items and constructs to measure the dependent variable (compensation expectations) and controlled for the covariate of failure magnitude. In addition to these repeated constructs (see Web Appendix B), we included a new measure for perceived betrayal (Grégoire and Fisher 2008) to analyze the proposed moderated mediation process. All constructs achieved convergent and discriminant validity.

Results

The manipulations worked as intended. Participants correctly recalled the time the provider needed to resolve the complaint ($\chi^2(4) = 352.183$, $p < 0.01$) and their relationship condition ($\chi^2(1) = 164.055$, $p < 0.01$). The comprehension checks also were confirmed. We find a significant main effect of recovery time on compensation expectations ($F_{2,\ 191} = 13.753$; $p < 0.01$) in a two-way ANCOVA, but we find no direct effect of relationship strength ($F_{1,\ 191} = 0.106$; *ns*). The interaction of recovery time and relationship strength had a significant effect on compensation expectations ($F_{2,\ 191} = 6.570$; $p < 0.01$). Failure magnitude was significant ($F_{1,\ 191} = 9.063$; $p < 0.01$), so we report adjusted means. To clarify the group differences, we undertook contrast analyses and compared them between relational and first-time customers for each recovery time condition. As Table 4 shows, the compensation expectations of relational customers did not change significantly between the immediate (M = 39.03) and one-week (M = 42.12; $F_{1,\ 191} = 0.259$; *ns*) recovery periods, but they changed significantly between immediate and four weeks ($M_{4Weeks} = 71.44$; $F_{1,\ 191} = 28.668$; $p < 0.01$) as well as between one week and four weeks ($F_{1,\ 191} = 23.490$; $p < 0.01$). In contrast, first-time customers indicated significant differences in the expected amount of compensation between an immediate recovery and recovery after one week ($M_{Immediate} = 43.75$, $M_{1Week} = 56.64$; $F_{1,\ 191} = 4.545$; $p < 0.05$), after which compensation expectations remained fairly constant until after four weeks ($M_{4Weeks} = 55.60$; $F_{1,\ 191} = 0.030$; *ns*). First-time customers demanded significantly higher compensation than relational customers if they received their resolution after one week ($M_{First\text{-}time} = 56.64$, $M_{Relational} = 42.12$; $F_{1,\ 191} = 5.716$; $p < 0.05$), but after four weeks, the pattern changed, and relational customers demanded significantly higher compensation ($M_{First\text{-}time} = 55.60$, $M_{Relational} = 71.44$; $F_{1,\ 191} = 6.844$; $p \leq 0.01$), confirming H3. However, first-time and relational customers expressed similar compensation expectations for an immediate service recovery ($M_{First\text{-}time} = 43.75$; $M_{Relational} = 39.03$; $F_{1,\ 191} = 0.609$; *ns*). Again, satisfaction with service recovery did not vary across the subgroups in a post hoc test.

We compared the indirect effects for each customer group. This comparison is based on an inference about the index of moderated mediation, which tests if an indirect effect is statistically different according to the value of the moderator (Hayes 2015). The index of moderated mediation is significant if the conditional indirect effect between groups differs significantly. We calculated the conditional indirect effects of recovery time on compensation expectations at the different values of the relationship strength moderator. Accordingly, we tested for the moderated mediation of anger on compensation expectations for first-time and relational customers ($B_{First\text{-}time} = 1.0911$, $B_{Relational} = 5.3705$; Index = 4.2794; 95% CI [−0.4479; 9.8252]; *ns*). As expected, the mediation of perceived betrayal was moderated by the strength of the customer–firm relationship ($B_{First\text{-}time} = -0.0488$, $B_{Relational} = 5.6062$; Index = 5.6550; 95% CI [2.2935;

Table 2 Results of the multistep hierarchical regressions (Study 2a)

a. All manipulated recovery times

	Model with all 18 recovery times			
	Model 1	Model 2 *(linear)*	Model 3 *(quadratic)*	Model 4 *(cubic)*
Constant	59.582** *(1.730)*	59.582** *(1.731)*	65.874** *(2.835)*	64.191** *(3.350)*
Failure magnitude	3.753** *(1.144)*	3.764** *(1.145)*	3.805** *(1.140)*	3.716** *(1.144)*
Recovery time (linear)	—	−0.032 *(0.100)*	0.339* *(0.166)*	0.453* *(0.205)*
Recovery time (quadratic)	—	—	−0.021** *(0.007)*	−0.007 *(0.016)*
Recovery time (cubic)	—	—	—	0.000 *(0.000)*
R^2	0.015	0.015	0.026	0.027
ΔR^2	0.015**	0.000	0.011**	0.001

b. Different periods of manipulated recovery times

	Immediate to one week recovery time				One week to eight weeks recovery time			
Model	Model 1	Model 2 *(linear)*	Model 3 *(quadratic)*	Model 4 *(cubic)*	Model 1	Model 2 *(linear)*	Model 3 *(quadratic)*	Model 4 *(cubic)*
Constant	58.725** *(2.481)*	58.725** *(2.482)*	55.136** *(3.790)*	55.187** *(3.788)*	59.890** *(2.243)*	59.890** *(2.244)*	68.464** *(3.804)*	68.034** *(4.373)*
Failure magnitude	2.726 *(1.564)*	2.833 *(1.569)*	2.909 *(1.569)*	2.824 *(1.570)*	3.684* *(1.514)*	3.789* *(1.520)*	3.501* *(1.512)*	3.492* *(1.514)*
Recovery time (linear)	—	0.947 *(1.072)*	0.983 *(1.072)*	4.063 *(2.913)*	—	−0.104 *(0.133)*	0.127 *(0.156)*	0.190 *(0.354)*
Recovery time (quadratic)	—	—	0.666 *(0.532)*	0.641 *(0.532)*	—	—	−0.030** *(0.011)*	−0.027 *(0.018)*
Recovery time (cubic)	—	—	—	−0.327 *(0.288)*	—	—	—	0.000 *(0.001)*
R^2	0.010	0.012	0.017	0.021	0.014	0.015	0.032	0.032
ΔR^2	0.010	0.002	0.005	0.004	0.014*	0.001	0.017**	0.000

Compensation expectations are the dependent variable. Unstandardized regression coefficients are displayed. Standard errors are in brackets

* $p < 0.05$, ** $p < 0.01$

10.1542]; $p < 0.05$). The two groups differed in their perception of betrayal; the indirect effect of perceived betrayal was significant only for relational customers. These results confirm H4.

Discussion

Study 3 extends to our previous studies by identifying relationship strength as a moderator that affects the recovery time zone of tolerance. First-time customers demand significantly higher compensation sooner; relational customers grant the firm a longer grace period. However, if the firm exceeds this grace period, relational customers punish it by claiming considerably more compensation. We explain these expectations with different underlying processes and moderated indirect effects. Specifically, whereas first-time customers expect higher compensation solely due to their perceived anger, relational customers suffer additional feelings of betrayal.

Study 4: Communication initiatives as moderators

Experimental design, sample, and measures

Study 4 uses the same airline scenario to assess how explanations for the reason for the recovery time and status updates during the recovery process can help absorb the increased compensation expectations. Such increases only occur outside the recovery time zone of tolerance, so we focused on one- and four-week recoveries. We manipulated the provision of an explanation for the reason for the recovery time and of status updates (Web Appendix A, Panel C). Thus, the study used a 2 (recovery time: one vs. four weeks) × 2 (explanation for the reason for the recovery time: no explanation vs. explanation) × 2 (status updates: no status emails vs. status emails) between-subjects factorial design. We collected a sample of 321 people, stratified by age and gender, with the help of a professional online panel provider. After

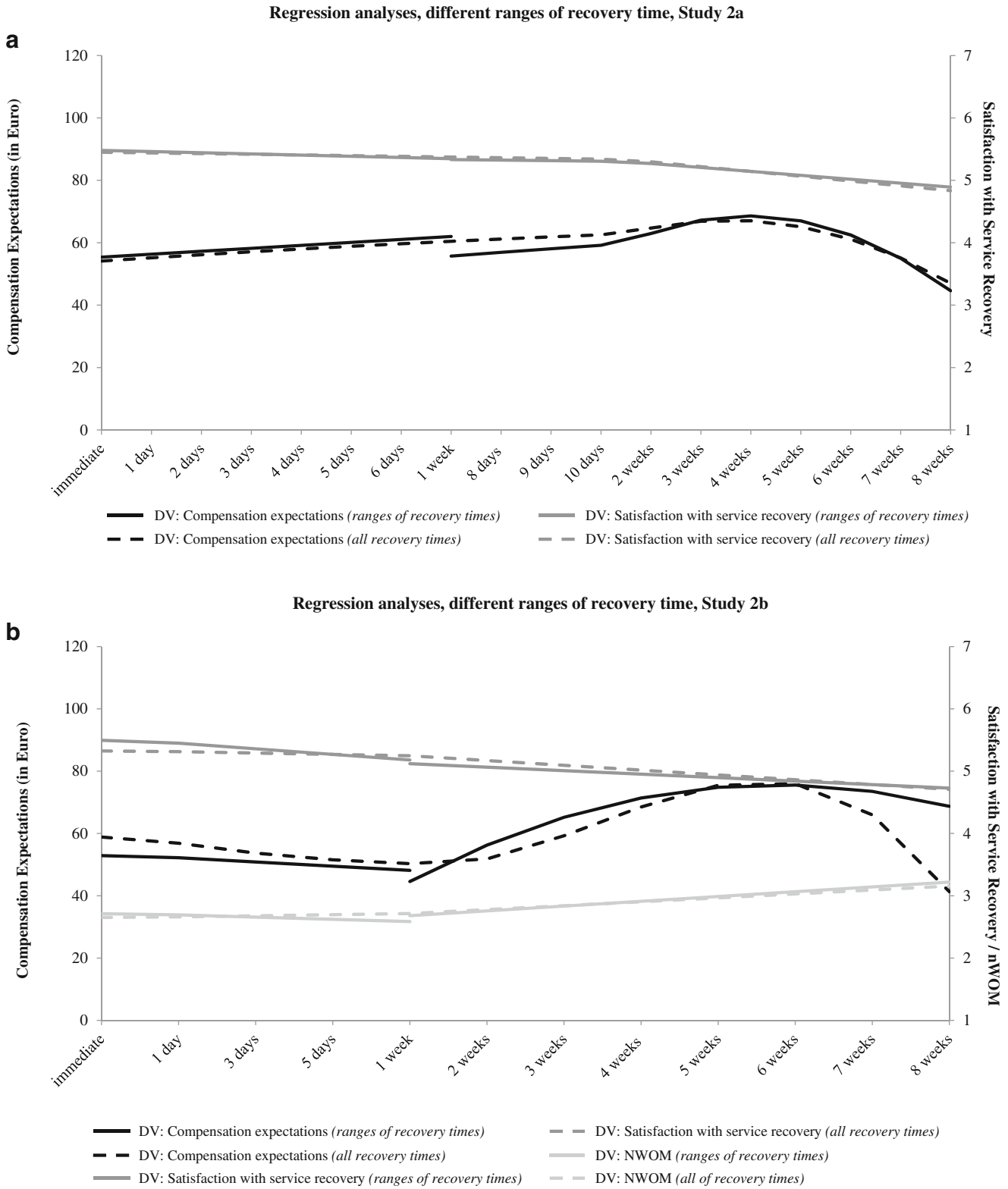


Fig. 3 Result plots. **a** Regression analyses, different ranges of recovery time, *Study 2a*. **b** Regression analyses, different ranges of recovery time, *Study 2b*

excluding 32 participants who did not answer the quality and attention checks correctly, we attained a final sample of 289 respondents (53.3% women; 18–69 years old; M = 43.68 years). The items were repeated from the previous studies; all constructs achieved convergent and discriminant validity.

Results

The manipulations worked as intended, such that participants correctly recalled their recovery time condition ($\chi^2(1) = 208.808$, $p < 0.01$). To check the other two manipulations, we included two new items: "The airline informed me about the current processing status of my complaint by email" and "The airline gave me an explanation for the reason for the recovery time until the reception of the compensation" (1 = "strongly disagree," 7 = "strongly agree"). As expected, participants reported higher means on the respective item if they received a status email ($M_{No\_email} = 2.09$, $M_{Email} = 5.81$; $t = -23.553$; $p < 0.01$) or received an explanation ($M_{No\_exp} = 2.95$, $M_{Exp} = 4.72$; $t = -7.768$; $p < 0.01$). The comprehension checks worked as intended.

In a three-way ANCOVA, we find a significant three-way interaction among the manipulations of recovery time, explanations, and status updates ($F_{1, 280} = 3.937$; $p < 0.05$). The other main effects and two-way interactions were not significant, except for the failure magnitude covariate ($F_{1, 280} = 7.434$; $p < 0.01$). We followed up the three-way interaction with planned contrasts (see Table 5); in line with our previous studies, compensation expectations increased from one week to four weeks if the participants received no explanation or status updates ($M_{1Week} = 55.34$, $M_{4Weeks} = 70.13$; $F_{1, 280} = 3.210$; $p = 0.074$). This increase disappeared though when the firm sent status updates to customers but did not explain the reasons for the recovery time ($M_{1Week} = 61.87$, $M_{4Weeks} = 50.66$; $F_{1, 280} = 1.787$; *ns*) or explained the recovery time but did not keep customers updated about their status ($M_{1Week} = 53.27$, $M_{4Weeks} = 60.33$; $F_{1, 280} = 0.650$; *ns*), in support of H5a and H5b. Using both instruments at once instead may have counterproductive effects: we observed a significant increase in compensation expectations when participants received both an explanation and status updates ($M_{1Week} = 46.62$, $M_{4Weeks} = 60.93$; $F_{1, 280} = 3.091$; $p = 0.080$). Thus, we must reject H5c. Finally, satisfaction levels were equal in all treatment groups when customers received compensation that they identified as adequate (Table 5).

Discussion

Study 4 identifies suitable communication initiatives to prevent an increase in customers' compensation expectations due to a longer time spent in recovery. Both the provision of an explanation for the reason for the recovery time and status updates can result in lower compensation expectations. However, in contrast with our hypothesis, using both communication initiatives in combination does not lead to superior outcomes. The sole provision of an explanation or status updates works to combat an increase in compensation expectations over time. Both of them together may be too much, such that compensation expectations rise significantly when both an explanation and status updates are provided.

General discussion

Across six studies, we investigate the effect of recovery time on compensation expectations, the underlying process, and its moderators. Studies 1a and 1b reveal a positive relationship between recovery time and compensation expectations, which is mediated by a customer's anger. However, we empirically identify a recovery time zone of tolerance, in which compensation expectations do not increase significantly. With Studies 2a and 2b, we gain a better understanding of the nonlinear relation of recovery time and compensation expectations and provide robust evidence of the recovery time zone of tolerance. If recovery takes longer than this grace period, the effect of recovery time on compensation expectations reveals an inverted U-shaped pattern. Compensation expectations might decrease, but long recovery times create lower customer satisfaction with service recovery and nWOM as additional effects. With Studies 3 and 4, we examine relationship- and communication-focused moderators of the effect of recovery time on compensation expectations. Whereas the recovery time zone of tolerance holds for relational customers, first-time customers' compensation expectations increase after very little recovery time. Still, relational customers display very high compensation expectations in the long run. These differences in compensation expectations between first-time and relational customers can be explained by the relationship-specific affective response of perceived betrayal and the non–relationship-specific affective response of anger. For communication initiatives, we find that either an explanation or status updates can mitigate increasing compensation expectations.

Theoretical contributions

Service research frequently seeks to develop frameworks of the effects of recovery time and compensation, as two distinct service recovery strategies, on customer attitudes and behaviors (e.g., Liao 2007; Smith et al. 1999). Yet prior research has not been able to clarify the impact that time has on post-recovery evaluations (Zhou et al. 2014), leading to persistent debates about whether an immediate response (e.g., Smith et al. 1999) or a delayed, adequate problem solution (Davidow 2003) is more effective. By including recovery time as an antecedent of customers' compensation expectations, the current study suggests that firms should generally provide fast resolutions to customer complaints, but customers also understand that a firm might need some time to provide adequate compensation. During this grace period, which we call the recovery time zone of tolerance, customers' compensation expectations do not increase significantly. Our study thus

Table 3 Results of the multistep hierarchical regression for different periods of manipulated recovery times (Study 2b)

	Immediate to one week recovery time				One week to eight weeks recovery time			
	Model 1	Model 2 *(linear)*	Model 3 *(quadratic)*	Model 4 *(cubic)*	Model 1	Model 2 *(linear)*	Model 3 *(quadratic)*	Model 4 *(cubic)*
Constant	50.581** *(2.214)*	50.581** *(2.216)*	50.144** *(3.822)*	50.240** *(3.872)*	65.666** *(3.257)*	65.666** *(3.225)*	72.790** *(4.906)*	72.069** *(4.925)*
Failure magnitude	5.371** *(1.487)*	5.414** *(1.490)*	5.382** *(1.511)*	5.393** *(1.516)*	5.103* *(2.310)*	5.030* *(2.287)*	4.954* *(2.277)*	4.921* *(2.274)*
Recovery time (linear)	—	−0.674 *(0.846)*	−0.694 *(0.860)*	−1.236 *(2.871)*	—	0.537** *(0.200)*	0.563** *(0.200)*	1.251* *(0.532)*
Recovery time (quadratic)	—	—	0.064 *(0.454)*	0.033 *(0.481)*	—	—	−0.028† *(0.014)*	−0.023 *(0.015)*
Recovery time (cubic)	—	—	—	0.052 *(0.265)*	—	—	—	−0.002 *(0.001)*
R^2	0.063	0.066	0.066	0.067	0.016	0.039	0.050	0.056
ΔR^2	0.063**	0.003	0.000	0.000	0.016*	0.023**	0.012†	0.006

Compensation expectations are the dependent variable. Unstandardized regression coefficients are displayed. Standard errors are in brackets

* $p < 0.05$, ** $p < 0.01$, † $p = 0.056$

applies the concept of the service quality zone of tolerance (Zeithaml et al. 1993) to a service recovery domain. We find similar observations in consumer waiting research, which has shown that customers consider some waits acceptable and will wait without becoming dissatisfied or annoyed (e.g., Katz et al. 1991).

This finding of a recovery time zone of tolerance in turn led us to identify the nonlinear effects. In two studies, we find an inverted U-shaped pattern, following the recovery time zone of tolerance, such that compensation expectations do not continuously increase, but they diminish if service recovery takes very long. Decreasing compensation expectations for long recovery times might be explained by equity theory. In our hypotheses, we primarily relied on the notion that longer recovery times would be considered higher inputs and thus prompt expectations of compensation with higher outcomes. But Adams (1965) also argues that people deploy different mechanisms to reduce inequity, such as cognitive distortion that alters the importance and relevance of varied inputs and outputs. In our study context, this reasoning suggests that for very long waits, customers may tend to attribute declining costs to recovery time and lower their compensation expectations. Thus, as time goes by, the service failure situation may become decreasingly prominent in customers' perceptions, such that they think less frequently about the incident or the ongoing recovery process, which lowers their estimation of the costs connected to the recovery time. Another pertinent mechanism might be a change in the object of comparison (Adams 1965). We treated the service provider and its outcome–input ratio as a customer's comparison object, but as time passes, customers may increasingly fear that the service provider has forgotten about their case (Maister 1985; Taylor 1994) or give up hope of finding a resolution (Grégoire et al. 2009). In such situations, the object of comparison might change, such that they no longer compare their outcome–input ratio to the provider's but instead use other customers (even imagined ones) who have received no compensation after a service failure as comparison standards. This line of thought aligns with the basic principle of downward comparison (Wills 1981, p. 245) which states that "persons can increase their subjective well-being through comparison with a less fortunate other." That is, customers may lower their reference points by comparing themselves with others who receive worse outcomes in similar situations (Bonifield and Cole 2008). According to this argument, a change of the object of comparison might explain the effect of decreasing compensation expectations for long recovery times, which then could be grasped as a "something-is-better-than-nothing" effect.

Even though customers' compensation expectations may decrease in the long run, service providers should not misinterpret this finding to imply that longer recovery times are not harmful. Instead, our study suggests a broader view. The

Table 4 Results of contrast analyses: Study 3. Group differences in compensation expectations by recovery time (Study 3)

	Immediate	1 Week	4 Weeks
Compensation expectations of			
First-time customers	43.75^a	56.64^b	55.60^b
Relational customers	39.03^a	42.12^a	71.44^c

Means in the same row with different superscripts are different at a maximum level of $p < 0.05$. We display adjusted means. The covariate was failure magnitude

decrease in compensation expectations after long recovery times is deceptive, because other negative effects arise. Thus, customers may expect less compensation for very long recovery times but they appear to be less satisfied in these situations which in turn seems to intensify their intention to spread nWOM—a link which is well established in prior research (e.g. de Matos and Rossi 2008).

This research also highlights the strength of the customer–firm relationship as a moderator that influences the length of the recovery time zone of tolerance. Customers in weak relationships seem more calculative and instrumentally oriented than relational customers (Grégoire et al. 2009), who want to continue the relationship with the provider rather than just demanding the fulfillment of their recovery expectations (Hess et al. 2003). A first-time customer's recovery time zone of tolerance seems narrower than a relational customer's. Relational customers show more leniency, but this buffering effect also can shift, similar to a "love-becomes-hate" effect (Grégoire and Fisher 2008), if the recovery time exceeds their recovery time zone of tolerance, resulting in significantly higher compensation expectations.

Communication initiatives are also important moderators of the length of the recovery time zone of tolerance. Explanations for the reason for the recovery time and status updates can prevent increased compensation expectations, but the simultaneous use of both initiatives is not effective. These findings could reflect a "too-much-of-a-good-thing" effect, as recently discussed in marketing (Hogreve et al. 2017), in that the "escalation of an initially positive action or organizational intervention may actually lead to negative results" (Pierce and Aguinis 2013, p. 331). Customers who value an initial explanation might not want to be reminded repeatedly that the process is still taking time; customers who have not received such an explanation instead may be more interested in updates that assure them the process is ongoing.

Finally, beyond examining the moderators of the relationship between recovery time and compensation expectations, we provide insights into the underlying process and emphasize the importance of affective mediators in recovery contexts. In this sense, we support the findings from research into waiting times (Taylor 1994) by revealing that anger is an important mediator that can explain customers' shifting compensation expectations. Feelings of anger are likely to arise for all customers; we show that the process becomes more complex for customers in strong relationships. Perceived betrayal as a relationship-specific feeling induced by a long recovery time and relational customers' anger both help explicate why relational customers exhibit higher compensation expectations than customers in weak relationships. On the one hand, this result highlights anger and perceived betrayal as affective responses to service recovery, whereas perceived betrayal is conditional on the strength of the customer–firm relationship (Grégoire and Fisher 2008). On the other hand, we emphasize the importance of breaking down and examining single affective responses to service recovery, rather than aggregating them into collective measures such as "negative emotions" (Chebat and Slusarczyk 2005).

Managerial implications

In pre-study interviews with actual service managers (as described in the opening of this text) we revealed that they lack understanding of the strategic role of recovery time for service recovery success. Only 4 respondents out of 51completely agreed that their company explicitly set standards for the duration of complaint resolutions. Our findings should motivate firms to rethink their existing internal regulations or else deploy standards for recovery times, which directly influence customers' expectations of compensation. Firms would be well advised to provide compensation that is accordant with the time they need to complete the service recovery process. Seeking to provide fast resolutions can produce benefits for service firms, such as preventing higher compensation expectations or lower customer satisfaction with service recovery, as well as alleviating customer anger and betrayal. However, customers also grant firms a recovery time zone of tolerance, during which they can restore customer satisfaction without providing higher compensation. If the recovery time lies outside the recovery time zone of tolerance, firms need to compensate the customer more, but by doing so, they might still restore satisfaction. Managers thus should check their service recovery processing time, to determine if it lies within their customers' recovery time zone of tolerance and enables them to benefit from lower expected compensation. To identify a firm's recovery time zone of tolerance, managers might survey customers to learn their compensation expectations for different recovery times.

This study recommends using communication initiatives to lengthen the recovery time zone of tolerance. Keeping

Table 5 Results of contrast analyses: Study 4. Sending status emails without explaining recovery time and explaining recovery time without sending status emails deflects an increase in compensation expectations from 1 to 4 weeks

	No explanation condition			
	No email		Email	
	1 week	4 weeks	1 week	4 weeks
Compensation expectations	55.34[a]	70.13[b]	61.87	50.66
	Explanation Condition			
	No Email		Email	
	1 week	4 weeks	1 week	4 weeks
Compensation expectations	53.27	60.33	46.62[c]	60.93[d]

a differs significantly from *b* at $p = 0.074$. *c* differs significantly from *d* at $p = 0.080$

customers updated fills up customers' recovery time, transfers some control over the process to customers, makes the process more transparent, and mitigates perceived uncertainty about the outcome (Taylor 1994). We recommend status updates that convey a sense of caring by the firm, such that customers sense their complaint is being acknowledged (Davidow 2003). Similar to shipment tracking systems, firms might coordinate their internal ticket systems and tracking numbers for service recovery, so that they can send status updates to the customer every time the processing status of a complaint changes. However, providing both an explanation and status updates might not help mitigate compensation expectations. Firms should allow for flexibility in the choice of how, when, and how much information to provide about an ongoing recovery process. Customers should have an easy way to unsubscribe or alter the number and type of notifications they receive from the company. If firms adopt permission-based marketing activities and recovery strategies (Kumar et al. 2016), such that they give customers the choice to receive status updates with opt-in and opt-out procedures, they might prevent the negative, "too-much-of-a-good-thing" effect.

Finally, we recommend designing service recovery processes according to the strength of the customer–firm relationship. Specifically, firms should speed up first-time customers' service recoveries, because their compensation expectations increase significantly if the service recovery is not immediate. But even if managers might be tempted to handle first-time customers' complaints immediately, it likely would be a mistake to delay recovery for relational customers too long; their compensation expectations rise by about 70% if they are not recovered within their recovery time zone of tolerance (M_{1Week} = 42.12; M_{4Weeks} = 71.44), whereas first-time customers increase their expectations by only about 29% ($M_{Immediate}$ = 43.75; M_{1Week} = 56.64). The compensation expectations of one delayed relational customer thus are equivalent to more than two delayed first-time customers. Firms might prioritize first-time customers' complaints, but they also must ensure that service recovery for relational customers is completed within their recovery time zone of tolerance.

Limitations and further research

Some limitations of this research provide direction for further research. First, all our studies refer to the airline industry context, so some caution is required before generalizing our findings and conclusions to other sectors. Our pretests and replication study in an online retailing context offer some initial confirmation that our findings—and especially the recovery time zone of tolerance—likely hold in different service industries too. However, the length of the grace period may be specific to each industry, service quality, or associated prices. One week was a robust length in our studies, but different timeframes may arise in other settings. We thus recommend investigations in other industries.

Second, research should devote additional attention to the nonlinearity of the recovery time–compensation–expectation link. A better understanding of the reasons for decreasing compensation expectations following a very long recovery time is key. In our discussion, we propose that cognitive distortion and a revision to the comparison object might offer reasonable explanations (Adams 1965). Research might seek empirical support for these or other arguments.

Third, in all our studies, customers received the amount of compensation they expected. Further research might address how differences between expected recovery performance (e.g., compensation, recovery time) and actual recovery performance influence customers' satisfaction with the service recovery and potentially lead to other negative intentions or behaviors.

Fourth, we did not include the costs of recovery or the costs of the resources that would be needed to speed up internal processes and ensure a quick resolution. Some evidence indicates that fast processes and adequate compensation payments contribute to efficient service recovery (Wirtz and Mattila 2004), but with this study, we cannot confirm this statement empirically.

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