

# FRONTLINE EMPLOYEE WORK ENGAGEMENT AND CUSTOMER SERVICE EVALUATIONS: A CONCEPTUAL REPLICATION

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**Acknowledgements:** The authors thank the telecom operator for the opportunity to collect data among their frontline employees. The first author acknowledges financial support from the Research Foundation Flanders (FWO, grant n° G0B2621N). The funding source was not involved in the study design, in the collection, analysis and interpretation of data, in the writing of the report, and in the decision to submit the article for publication. During the preparation of this work the authors used ChatGPT 3.5 for language editing purposes, using “Please copyedit the following paragraph:” as a prompt. We did not use ChatGPT or any other large language model for other purposes. After using ChatGPT, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication. Finally, we thank the editor and the two anonymous reviewers for their support, excellent comments, and suggestions.

**This paper is an author post-print version of a paper forthcoming in the  
*Journal of Service Management***

DOI: 10.1108/JOSM-07-2024-0304

(accepted for publication on September 11, 2024)

# Frontline Employee Work Engagement and Customer Service Evaluations: A Conceptual Replication

## Structured abstract

**Purpose:** The relationship between frontline employee work engagement and customer service evaluations is a major theme in service research. Recent studies have called for further exploration and validation of this relationship. This paper conceptually replicates the work engagement-customer service evaluations link within the context of technology-mediated voice-to-voice encounters. Moreover, we extend prior work by examining how work engagement influences customer service evaluations depending on the outcome of the service encounter (positive or negative).

**Design/methodology/approach:** The authors conducted a multilevel, multi-source study involving data from 4,198 customer interactions and 346 employees at a major European telecom operator. The data were analyzed using a linear mixed-effects model.

**Findings:** The study could not replicate the relationship between work engagement and customer service evaluations in technology-mediated voice-to-voice encounters. The findings reveal that customers who interacted with a highly engaged employee but received a negative service outcome evaluated the interaction more negatively than those who interacted with a less engaged employee. Conversely, when the service outcome was positive, work engagement was not significantly related to customer service evaluations.

**Originality/value:** In voice-to-voice encounters, employee engagement appears to have little impact on customer service evaluations and can even be detrimental when the service outcome is negative. This study is among the first to empirically demonstrate a negative effect of work engagement on customer service evaluations. Future replication studies are needed to validate these findings.

**Keywords:** Employee Engagement; Work Engagement; Frontline employee; Customer Service; Service Encounter; Service Failure; Service Outcome

**Paper type:** Research paper

## 1. Introduction

The suggestion that engaged employees “can create satisfied and even delighted customers” (Barnes *et al.*, 2014, p. 380) has made understanding the relationship between employee engagement and customer service evaluations a major topic in service research. A substantial number of studies have demonstrated a positive effect of employee engagement on customer service evaluations across various settings (e.g., Menguc *et al.*, 2013; Salanova *et al.*, 2005; Shaheen *et al.*, 2018; Qi *et al.*, 2023). The spillover from employee engagement to customer service evaluations, also known as 'linkage research' (Bowen, 2024), plays a significant role in foundational frameworks such as the service profit chain (Heskett *et al.*, 1994) and the service climate framework (Bowen and Schneider, 2014). Meta-analyses have validated the employee engagement–customer service evaluations linkage for both frameworks (Hogreve *et al.*, 2017; Hong *et al.*, 2013; Michel *et al.*, 2023). These studies collectively recommend that managers prioritize improving and leveraging employee engagement strategically (Solnet and Golubovskaya, 2023). Given these benefits, academic and practitioner interest in employee engagement continues to grow (Bowen, 2024; Schneider and Meyer, 2021).

Despite the strong and positive support for the work engagement–customer service evaluation linkage, this paper aims to conceptually replicate this relationship. A conceptual replication tests a hypothesis using different methods and conditions than those in the original studies (Schmidt, 2009). Rather than merely supporting or refuting the original studies, it seeks to assess the generalizability of the theoretical predictions. Conceptual replications are valuable when they introduce new elements to the original studies (e.g., meaningful moderators; Hüffmeier *et al.*, 2016) and employ stronger designs (Köhler and Cortina, 2021), making them ideal for testing and advancing theory. From a practical perspective, conceptual replications are also crucial. The widespread promotion of the employee engagement–customer service

evaluation linkage can significantly influence managerial practices. However, if the supporting evidence is flawed due to methodological issues or lacks generalizability across populations and business contexts, its integration into managerial practices may be problematic (Klonek *et al.*, 2023).

Several limitations in current research highlight the need for a conceptual replication of the work engagement–customer service evaluations relationship. First, previous studies have predominantly tested this relationship in settings with high levels of direct face-to-face interactions, such as retail (e.g., Menguc *et al.*, 2013), hospitality (e.g., Salanova *et al.*, 2005), and healthcare (e.g., Shaheen *et al.*, 2018). There is a lack of research on whether this relationship holds in settings without direct face-to-face interactions, such as technology-mediated voice-to-voice encounters. This is surprising given that such contexts differ in dimensions like anonymity, physicality, and semiotic modality, which likely affect cognition, affect, and behavior (Johns, 2006, 2017). Second, prior research often examines the work engagement–customer service evaluations relationship in general terms, without considering whether the customer experienced a positive or negative outcome. However, not all service encounters result in successful outcomes. Third, much research focuses on linking business unit- or firm-level employee engagement to business unit- or firm-level customer service evaluations (e.g., Harter *et al.*, 2002; Kumar and Pansari, 2016), despite both constructs being individual-level. Finally, studies examining this relationship at the individual level often use dyadic data, where one employee is linked to one customer (e.g., Qi *et al.*, 2023). Theoretically, this relationship should unfold across multiple encounters, where one employee interacts with multiple customers sequentially.

This constructive replication study presents the results of a large-scale, multilevel, multisource investigation designed to address these concerns. We examine the relationship

between frontline employee work engagement and customer service evaluations using data from 4,198 customer interactions handled by 346 employees at a major European telecom operator's contact center, considering both positive and negative service outcomes. This study aims to test the generalizability of the work engagement–customer service evaluations relationship and aligns with calls in the service management literature for more complex and diverse data sources in frontline employee research (Subramony *et al.*, 2023). This paper also explores how employees' job attitudes impact customer outcomes in technology-supported service encounters (Chase and Apte, 2007) and examines boundary conditions of the employee engagement–customer service evaluations linkage (Subramony *et al.*, 2021).

The rest of the paper is organized as follows: We begin with a review of the literature and discussion of relevant concepts. We then address the need for a conceptual replication of the employee engagement–customer service evaluations relationship. Next, we describe our data and analytical model. Following this, we present the main results and conclude by summarizing the study's theoretical contributions and discussing managerial implications.

## **2. Conceptual background**

### *2.1. Frontline employee work engagement*

Employee engagement has received significant attention from both academics and practitioners due to its critical role in organizational success. This interest arises from the need for employees who are psychologically invested in their work, fully committed to their roles, and proactive in maintaining high performance standards (Bakker *et al.*, 2011). Kahn (1990) was the first to conceptualize engagement at work, defining it as the “harnessing of organization members’ selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances” (p. 694). Highly engaged employees are

so absorbed in their work that they forget everything else (cognitive), are enthusiastic about their tasks (emotional), and invest significant energy into their job (physical).

In the years following Kahn's initial work, research on employee engagement has expanded significantly. However, a major challenge is the ambiguous use of the term "employee engagement" (Macey and Schneider, 2008). Researchers have proposed various definitions, often with subtle differences, and have used terms such as organizational engagement, job engagement, and work engagement to describe it (see Shuck *et al.*, 2017, for an overview). This ambiguity highlights the need for a clear conceptualization of employee engagement. In this paper, we adopt the conceptualization of work engagement as employee engagement, as it is the least prone to conceptual ambiguity and utilizes a widely accepted measurement scale (Shuck *et al.*, 2017). Therefore, for the remainder of this paper, we use "employee engagement" and "work engagement" interchangeably.

Work engagement is defined as “a positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption” (Schaufeli *et al.*, 2002, p. 74). Vigor involves high levels of energy and mental resilience while working. Dedication is marked by strong involvement in one’s work, along with a sense of significance, enthusiasm, and challenge. Absorption refers to being fully concentrated and happily engrossed in work, with time seeming to pass quickly and difficulty detaching from work (Schaufeli *et al.*, 2002). Essentially, work engagement reflects how employees perceive their work: as invigorating and energizing, motivating them to invest time and effort (vigor); as a meaningful and significant endeavor (dedication); and as absorbing, where they are fully immersed and focused (absorption; Bakker *et al.*, 2011).

A common criticism of employee engagement is that it represents “old wine in new bottles,” merely repackaging constructs such as job satisfaction, organizational commitment, or job

involvement (Macey and Schneider, 2008). This criticism is reinforced by the tendency of practitioners to use “employee engagement” interchangeably with terms like organizational commitment or job satisfaction (Bakker *et al.*, 2011; Macey and Schneider, 2008). While these constructs are related, they are not identical. The distinctions between work engagement and these other constructs are best understood through its fundamental dimensions: energy and identification (Bakker *et al.*, 2011). Engagement is an active state, with "active" reflecting the forward-moving energy of engagement rather than passivity or static involvement (Shuck *et al.*, 2017). Additionally, engaged employees strongly identify with their work (though not necessarily with the organization) and even invest their sense of self in their roles (Uy *et al.*, 2017).

Job satisfaction refers to a pleasurable or positive emotional state resulting from the appraisal of one’s job (Locke, 1976). It typically connotes contentment and calmness, whereas employee engagement implies activation, such as enthusiasm and excitement. While job satisfaction is related to engagement, it does not capture the energy or strong identification with work (Schaufeli and Bakker, 2010). Organizational commitment is defined as “the relative strength of an individual’s identification with and involvement in a particular organization” (Mowday *et al.*, 1979, p. 226). Organizational commitment overlaps with the identification aspect of employee engagement but does not necessarily reflect the same level of energy. Additionally, organizational commitment focuses on the organization itself, whereas work engagement pertains to involvement in the work role or the work itself (Schaufeli and Bakker, 2010). Job involvement refers to “the degree to which a person is psychologically identified with his work, or the importance of work in his total self-image” (p. 24), capturing the identification aspect of employee engagement but lacking in energy (Schaufeli and Bakker, 2010).

Macey and Schneider (2008) propose that employee engagement should be viewed as a multidimensional construct encompassing a range of related but distinct aspects of how

individuals connect with their work goals. This perspective is supported by studies examining the construct and discriminant validity of work engagement compared to other related constructs. For instance, Hallberg and Schaufeli (2006) found that work engagement, organizational commitment, and job involvement are distinct, though weakly to moderately related. Similarly, Byrne *et al.* (2016) demonstrated that work engagement is separate from commitment across five different samples. The correlations between these constructs generally fall below .50, reinforcing the idea that while they are related, they remain distinct (Macey and Schneider, 2008; Schaufeli and Bakker, 2010).

## 2.2. *Employee engagement and customer service evaluations*

Employee engagement is linked to various employee-related outcomes, including perceived health, well-being, and turnover intentions (Bakker *et al.*, 2004; Cole *et al.*, 2012). Research also indicates that employee engagement impacts customer outcomes (Subramony *et al.*, 2021). Most studies find a significant relationship between employee engagement and customer service evaluations. For instance, Harter *et al.*'s (2002) meta-analysis identifies a significant relationship between employee engagement and customer service evaluations, while Kumar and Pansari (2016) report an effect of employee engagement on customer engagement.

Employee engagement affects customer service evaluations through two main mechanisms: a performance mechanism and an affective mechanism. The *performance mechanism* is conceptually rooted in the service-profit chain, which proposes that employee engagement enhances customer service evaluations due to higher levels of service performance. Several studies support this view, showing that engaged employees deliver better service, which positively impacts customer evaluations (e.g., Hogueve *et al.*, 2017; Michel *et al.*, 2023). For example, Lambert *et al.* (2021) found that engaged employees in a quick-service restaurant work

faster, improving customer service evaluations. Additionally, Qi *et al.* (2023) demonstrate that employee engagement boosts customer service evaluations by increasing perceived value.

The *affective mechanism* suggests that employee engagement influences customer service evaluations through emotional contagion (Pugh, 2001). Emotional contagion refers to the automatic mimicry and synchronization of expressions, vocalizations, and movements between individuals, leading to shared emotional states (Hatfield *et al.*, 1994). Engagement is thought to be contagious, spreading from employees to coworkers, family members, and customers (Bakker *et al.*, 2011). Engaged employees, who exhibit high energy and enthusiasm, can transfer these positive emotions to customers during interactions. Close psychological and physical interactions between frontline employees and customers can lead to a convergence of their attitudes and emotions (Schneider *et al.*, 1980). For instance, Qi *et al.* (2023) found that customers interacting with highly engaged employees experience higher levels of rapport, positively affecting their service evaluations. This affective pathway is empirically supported, as shown in a meta-analysis on the service-profit chain, which highlights its significance beyond the traditional performance mechanism (Hogreve *et al.*, 2017).

### 2.3. *The need for a conceptual replication*

While the employee engagement–customer service evaluations relationship is well-established, a conceptual replication study is necessary for four reasons: Research needs to (1) focus on technology-mediated service encounters as a research context in addition to face-to-face encounters, (2) account for the service outcome (positive or negative), (3) shift from macro-level to micro-level analysis to better understand individual interactions, and (4) adopt stronger research designs to validate and extend existing findings. Next, we delve into these four reasons in more detail.

***Context matters: From face-to-face to technology-mediated service encounters.*** Previous research did not pay sufficient attention to the context in which customer-employee interactions occur. Context significantly influences organizational behavior (Johns, 2006; 2017), potentially including employee engagement and its outcomes. Johns (2006) defines context as "situational opportunities and constraints that affect the occurrence and meaning of organizational behavior as well as functional relationships between variables" (p. 386). In service research, context is increasingly recognized as an essential factor. For instance, Barrett *et al.* (2024) suggest that customer engagement can vary considerably between utilitarian and hedonic contexts. In this paper, we examine how the nature of the service encounter, specifically comparing face-to-face with voice-to-voice interactions, may impact the relationship between employee engagement and customer service evaluations.

Prior research mainly explored the relationship between employee engagement and customer service evaluations in face-to-face encounters (e.g., Menguc *et al.*, 2013, Shaheen *et al.*, 2018, Qi *et al.*, 2023). However, face-to-face interactions between customers and service providers are declining (Hackett, 2024). Today, customers engage with organizations through various technology-mediated channels, with phone interactions remaining a primary customer-facing channel in many industries. The phone-based, voice-to-voice encounter is a typical example of a technology-mediated service encounter (Feinberg *et al.*, 2002). A key feature of contact center work is that employee-customer interactions are "mediated by telephones and computers" (Batt, 1999; p. 540).

A voice-to-voice encounter offers a unique context to test the robustness of the employee engagement–customer service evaluation relationship, as it differs significantly from traditional face-to-face encounters. Drawing from existing taxonomies of contextual variables in organizational behavior research (e.g., Johns, 2006, 2018; McFarland and Ployhart, 2015), we

identify four key contextual variables that distinguish voice-to-voice from face-to-face service encounters and that may influence the employee engagement–customer service evaluation link. Table 1 summarizes these discrete contextual variables. While our study focuses on the broader, *omnibus* context of voice-to-voice encounters, it is important to recognize that discrete contexts can be nested within this broader context (Johns, 2006). Although these contextual variables are interconnected and may interact, we discuss each one separately to emphasize their individual significance. We rely on existing literature to propose theoretical arguments and predictions for *what the context does* (Johns, 2006), that is how these contextual factors might shape the impact of employee engagement on customer service evaluations in voice-to-voice encounters.

--- *Insert Table 1 about here* ---

***Accounting for the outcome of service encounters.*** The relationship between employee engagement and customer service evaluations has been primarily studied in ‘regular’ service encounters, often overlooking the impact of service outcomes—whether customers achieve their desired result. A service outcome is defined as “what the customer receives during the exchange” (Mohr and Bitner, 1995, p. 239) and can be either positive or negative. For instance, if a customer with an Internet issue reaches out to a contact center, a positive outcome occurs if the connection is restored after the call, whereas a negative outcome occurs if the problem persists. Unfortunately, employees may not always be able to resolve customer issues (Van Vaerenbergh and Orsingher, 2016), resulting in negative outcomes. These negative outcomes are common. For example, the 2020 National Customer Rage Study found that two-thirds of American households had problems with products or services in the 12 months preceding the survey (Customer Care Measurement and Consulting, 2020).

Research has yet to explicitly test whether the service outcome influences the strength of the relationship between employee engagement and customer service evaluations. This aspect is

theoretically important. Employee engagement is connected to customer service evaluations through both affective and performance mechanisms (Hogreve *et al.*, 2017; Michel *et al.*, 2023). The service outcome is directly tied to the performance mechanism, which is likely activated when the outcome is positive but inhibited when the outcome is negative. Therefore, examining the moderating effect of the service outcome can provide insights into the theoretical foundations of the employee engagement–customer service evaluations linkage.

In cases where the service outcome is positive, we expect that employee engagement will impact customer service evaluations as prior research suggests (e.g., Harter *et al.*, 2002; Hogreve *et al.*, 2017; Michel *et al.*, 2023). When a frontline employee successfully resolves a customer's problem, this supports the performance mechanism driving the employee engagement–customer service evaluations relationship. Additionally, following emotional contagion principles (Hatfield *et al.*, 1994), the engaged employee's enthusiasm and energy are likely to spill over to the customer, further enhancing customer service evaluations.

The relationship between employee engagement and customer service evaluations in the context of negative service outcomes is less straightforward. On one hand, a negative outcome disrupts the performance mechanism, as the customer does not achieve the desired result, potentially leading to negative emotional reactions (Valentini *et al.*, 2020). On the other hand, the affective mechanism, driven by employee engagement (vigor, dedication, and absorption), should still be active, since engagement tends to remain relatively stable over time (Mauno *et al.*, 2007). Consequently, customers might perceive deficiencies in performance due to the negative outcome while still experiencing the employee's enthusiasm and energy. The impact of employee engagement on customer service evaluations in such contexts remains unclear and requires further investigation.

***From macro-level to micro-level of analysis.*** As Michel *et al.* (2023) note, most research on the relationship between employee engagement and customer service evaluations is conducted at the macro level, focusing on firm or unit-level data. Researchers often collect data from employees and customers, aggregate it to a firm or unit level, and then test hypotheses based on these aggregated data (e.g., Harter *et al.*, 2002; Kumar and Pansari, 2016; Salanova *et al.*, 2005). However, employee-customer interactions occur between individuals, not units. Aggregating micro-level data to a macro level can inflate effect sizes and increase the risk of ecological fallacy (Ostroff, 1993). These observations question whether the employee engagement–customer satisfaction relationship holds at the micro level of analysis. Studies focusing on the individual, micro-level of analysis remain relatively rare (e.g., Qi *et al.*, 2023). Although challenging, designs that combine data from individual employees and customers offer the most rigorous test of relationships at this level. As Subramony *et al.* (2023) emphasize, aligning the level of analysis with the theoretical framework is crucial. In line with this, our conceptual replication study will utilize data collected at the individual level of analysis.

***Use of stronger research designs.*** Finally, research on employee engagement often relies on cross-sectional datasets and relatively simple designs (Michel *et al.*, 2023). Calls have been made for more complex, stronger research designs. Cole *et al.* (2012) suggest incorporating diverse data sources and introducing time lags between predictor and criterion variables. Subramony *et al.* (2023) echo this, advocating for well-designed studies using multiple data sources, longitudinal designs, and relevant mediators and moderators. Michel *et al.* (2023) found that studies using same-source data tend to show larger effect sizes compared to those with different rating sources, highlighting the risk of common method bias. Qi *et al.* (2023) also note the limitations of cross-sectional paired data and suggest that “cross-sectional paired data, longitudinal or lag data may provide more insights and enhance research validity” (p. 8).

Criticism of current research designs includes their reliance on cross-sectional, paired data without accounting for time lags between employee and customer data collection. To address these limitations, we will design a large-scale multilevel study. Like Giardini and Frese (2008), this study will use two levels of analysis: the individual employee level (Level 2) and the service encounter level, representing individual customers served by a particular employee (Level 1). This multilevel design is suitable because (i) a service employee typically interacts with multiple customers, and (ii) employee engagement generally remains stable over short periods (Mauno *et al.*, 2007). Regarding the latter, Macey and Schneider (2008) suggest that engagement is a relatively enduring state that explains both the persistence and direction of job and organizationally focused behavior. Sonnentag (2003) demonstrated that work engagement fluctuates to some extent, yet always around an average or "trait" level. Hence, work engagement should be considered as a state with longer-term boundaries. Consequently, individual measures of engagement should remain relatively stable. By examining the employee engagement–customer service evaluations relationship across multiple service encounters, we can better assess its generalizability and robustness.

Data will be collected from employees, their customers, and company records. To ensure a time lag, we will first gather data from frontline employees and then collect data from customers who interacted with these employees. This data will be matched with company records to create control variables. Using multiple data sources mitigates concerns about common method bias (Podsakoff *et al.*, 2003) and spurious relationships from response styles (Van Vaerenbergh and Thomas, 2013). This approach also addresses issues with outcomes being assessed using the same method and rater at a single point in time (Cole *et al.*, 2012, p. 1574) and provides a rigorous examination of the relationship between employee engagement and customer service evaluations.

To summarize, this study conceptually replicates the relationship between employee engagement and customer service evaluations at the individual level. This study considers (a) the multilevel nature of service encounters, where one employee serves multiple customers over time, and (b) the need to examine this relationship across both positive and negative service outcomes. Figure 1 outlines our research design.

--- *Insert Figure 1 about here* ---

### **3. Method**

#### *3.1. Context, sample, data collection, and measures*

Data were collected from eleven contact centers (seven in-house and four outsourced) of a European telecom operator. Moreover, the contact center uses various channels to interact with customers, including phone, email, and chat. This study focuses specifically on employees who serve customers via phone. Important to note is that phone interactions with customers are not fully standardized: while the operator uses service scripting, employees have some empowerment autonomy (see Table 1) and can deviate from the script to improve outcomes. Performance monitoring includes call reviews and weekly feedback sessions discussing good and bad practices. We also considered time pressure when designing our study (see Table 1). The study was conducted during a relatively calm period for the contact center. Contact center services experience some seasonality, with varying demand levels at different times of the year. In collaboration with the contact center managers, we scheduled the survey during a period of lower activity. This approach aimed to minimize, although not eliminate, the effects of time pressure on employee responses.

Employee data were matched with customer data and company records using employee IDs as unique identifiers. We first requested the frontline employees' consent for survey participation and data matching. Following this, they were asked to provide their employee ID at the beginning

of the survey, rather than having it automatically linked to the survey. The identifier was anonymized after the data were matched. The following sections detail the data collection procedures.

***Employee-level data.*** The contact center employees were allotted time to complete an online survey during one of their weekly briefings. A week prior to the survey, a research assistant attended the employees' meetings to explain the survey procedure. Participants were informed that the research was part of an academic study, and that participation was voluntary. They were also notified about the need to provide their login code at the beginning of the survey. To ensure anonymity and protect employees from retribution or other job-related concerns, the researcher assured participants that the data would be collected, processed, and analyzed by a university researcher. The survey was distributed using the university's survey software (and with logos from the university) to emphasize the independent nature of the research. Additionally, employees were informed that the contact center managers would only receive aggregate insights and would not be able to access individual responses. The dataset was not shared with the telecom operator.

At the time of data collection, the telecom operator employed 911 employees, of whom 647 participated in the survey. Out of these, 346 employees could be linked to customer data. Employee data were excluded from the final analysis primarily due to the absence of customer service evaluation data for the observation period (e.g., no customer responses or the employee was not 'active' during the observation period). Additionally, about 10% of the respondents were excluded because they provided no or invalid login codes. In the final sample, 54% of participants were female, with an average tenure of 18 months. Of the participants, 26% worked in in-house contact centers, while the remaining 74% worked in outsourced contact centers.

These descriptive statistics are representative of the population of contact center employees working for the telecom operator.

Employee engagement, encompassing vigor, dedication, and absorption ( $\alpha = 0.84$ ), was measured using the validated short version of the Utrecht Work Engagement Scale (UWES-9) by Schaufeli *et al.* (2006), on a 7-point Likert scale. The scale included anchors “Strongly disagree,” “Do not agree,” “Somewhat disagree,” “Neither disagree nor agree,” “Somewhat agree,” “Agree,” and “Strongly agree,” which possess equal-interval properties (Casper *et al.*, 2020). Scores were averaged to create employee engagement metrics. The average level of employee engagement was 4.8 (SD = 1.2). A post-hoc analysis indicated no significant difference in engagement levels ( $t(643) = 1.917, p = .056$ ) between employees linked to customer data (M = 4.81, SD = 1.17) and those not linked (M = 4.98, SD = 1.16). We also measured job satisfaction in the survey, which will be used in robustness tests. Enthusiasm and energy are commonly used in scales to measure employee engagement (such as the UWES-9 used in our study), while job satisfaction scales typically do not include these indicators (Macey and Schneider, 2008, Schaufeli and Bakker, 2010). Job satisfaction was assessed using a three-item, seven-point Likert scale with the following items: “My job content is in line with my expectations,” “Overall, I am very satisfied with my job,” and “I feel I am doing useful work” ( $\alpha = .84$ ).

The survey also included questions on various job demands and resources, assessed *after* the engagement and job satisfaction ratings. While these variables were not included in this paper, they were used to provide the telecom operator with insights into job demands and resources experienced by their frontline employees. Minor differences in job demands and resources were observed between employees linked to customer data and those who were not, but no consistent pattern emerged (see Web Appendix A).

***Service encounter-level data.*** Service encounter level data were provided by an external market research agency. After their interaction with the service employee, customers received an invitation to complete a brief online customer service evaluation survey. The survey was sent to customers shortly after their contact with the service employee. In line with Andaleeb and Conway (2006), customer service evaluations ( $\alpha = 0.86$ ) were measured using a two-item, five-point Likert scale, consisting of items on customer satisfaction and word-of-mouth intentions [1]. These metrics are commonly used to evaluate service encounters. Customers rated their satisfaction with the service encounter using the question, “How satisfied were you with your recent encounter with [name of the telecom operator]?” with response options ranging from “completely dissatisfied” to “completely satisfied.” They also rated their word-of-mouth intentions with the question, “How likely is it that you would recommend [name of the telecom operator] to others?” using response options from “not at all likely” to “extremely likely.”

Customers were asked whether the employee was able to help them resolve their problem (“Was the employee able to resolve the issue for which you contacted us?” Yes/No). This variable served as an indicator of the service outcome (positive or negative). We chose to ask customers about the service outcome rather than employees because prior research shows that their perceptions of problem resolution can differ. A problem might be resolved from an employee's perspective but remain unresolved from a customer's perspective (Customer Care Measurement and Consulting, 2020). In the study, customers experienced a positive service outcome in 71.6% of service encounters and a negative service outcome in 28.4% of encounters. Responses from customers who completed the survey more than 10 days after their contact with the employee were excluded. In total, 4,198 customer surveys were successfully matched with the employee data.

***Objective data from company records.*** Several covariates were included in the analysis.

First, not all customers contact the service provider with the same type of problem. Employees resolved administrative issues (38.2% of service encounters), technical issues (52.8%), or other reasons (9.0%). Two dummy variables representing these types of service encounters were included in the analysis. Second, Pizzi *et al.* (2015) indicate that satisfaction scores vary based on when a customer evaluates a service encounter. To account for this, we included the time elapsed since the encounter, measured as the number of days between the customer's contact with the frontline employee and their survey response ( $M = 2.9$  days,  $SD = 2.3$  days) as a covariate. This data was drawn from the telecom operator's records: the type of problem was logged by the employee, and the timing of the customer's evaluation was recorded automatically. Finally, the telecom operator's contact center managers suggested that in-house contact centers might yield slightly higher customer service evaluations compared to outsourced contact centers. Therefore, we included a dummy variable indicating whether the frontline employee worked in an in-house (22.2% of service encounters) or outsourced contact center (77.8%).

## **4. Analysis and results**

### *4.1. Analytical approach*

This study uses a multilevel dataset, incorporating data from two levels: employee level and service encounter level. It combines information from three different sources—employees, customers, and the company's database—collected at distinct times (with employee data gathered before customer data). The model to be estimated is as follows:

*Customer service evaluations<sub>ij</sub>*

$$\begin{aligned}
 &= \beta_0 + \beta_1 \text{Service outcome}_{ij} + \beta_2 \text{Employee engagement}_j \\
 &+ \beta_3 \text{Service outcome}_{ij} \times \text{Employee engagement}_j \\
 &+ \beta_4 \text{Type of contact center}_j + \beta_5 \text{Type of problem: Administrative}_{ij} \\
 &+ \beta_6 \text{Type of problem: Other}_{ij} + \beta_7 \text{Time elapsed since encounter}_{ij} \\
 &+ \mu_{0j} + \varepsilon_{ij}
 \end{aligned}$$

in which subscript  $ij$  refers to a variable measured at the service encounter level (i.e., level 1), subscript  $j$  refers to variable measured at the employee level (i.e., level 2),  $\mu_{0j}$  refers to the error term at level 2, and  $\varepsilon_{ij}$  to the error term at level 1.

Data were analyzed using a linear mixed-effects model with a random intercept. This approach assumes that each employee has a unique intercept, capturing unobserved heterogeneity among frontline employees. The analysis was conducted in R (version 4.1.2). Web appendix B gives an overview of the various packages that were used. The dataset and codes are available on a dedicated OSF page: <https://osf.io/ga4x7/>. The data for this study are collected specifically for this paper and are not part of any other paper or research project. The study design and analyses were not preregistered.

#### 4.2. Findings

Table 2 presents descriptive statistics and correlations. Before interpreting the parameter estimates, we examined the ICC(1) and ICC(2) scores. The ICC(1) score indicates the proportion of variance in customer service evaluations attributable to being served by different employees. The ICC(2) score reflects how reliably the average customer service evaluation per employee represents a customer service evaluation by an individual customer served by that employee (Bliese, 2000). Both scores are relatively low, with ICC(1) at 0.02 (below 0.05) and ICC(2) at

0.20 (below 0.50; Koo and Li, 2016). These results suggest that only a small portion of the variance in customer service evaluations is due to the employees, and reveal an inconsistent pattern in the customer service evaluation scores per employee. At first glance, frontline employees' impact on customer service evaluations seems to be limited.

--- *Insert Table 2 about here* ---

The model accounts for 41.1% of the variance in customer service evaluations (40.9% without covariates). Table 3 shows the parameter estimates, and Figure 2 illustrates the interaction effect. The main effect of employee engagement on customer service evaluations is not significant ( $\beta = 0.00$ ,  $p = 0.395$ ), contradicting previous research that highlights a significant link between employee engagement and customer service evaluations. The effect of service outcome aligns with prior findings: Customer service evaluations are significantly lower for negative service outcomes compared to positive ones ( $\beta = -1.16$ ,  $p < .001$ ).

The results also show that the relationship between employee engagement and customer service evaluations becomes significantly more negative in the context of negative service outcomes ( $\beta = -0.06$ ,  $p = .006$ ). To further explore this interaction, we estimated the simple slopes. When the service outcome is positive, employee engagement is not significantly related to customer service evaluations ( $\beta = 0.00$ ,  $p = .790$ ). When the service outcome is negative, employee engagement is negatively related to customer service evaluations ( $\beta = -0.05$ ,  $p = .005$ ).

--- *Insert Table 3 and Figure 2 about here* ---

The analysis of covariates further reveals that customer service evaluations are slightly lower in outsourced contact centers than in in-house contact centers ( $\beta = -0.07$ ,  $p = .011$ ). Evaluations are also lower for administrative problems ( $\beta = -0.14$ ,  $p < .001$ ) and issues for which employees cannot provide support ( $\beta = -0.15$ ,  $p < .001$ ) compared to technical problems. The time elapsed between the service encounter and the customer survey response has a minor effect on

evaluations ( $\beta = -0.01$ ,  $p = .010$ ). These findings remain consistent regardless of the inclusion or exclusion of covariates (see Table 3).

We also assessed whether our findings would hold when using customer satisfaction and word-of-mouth intentions as dependent variables instead of our combined “customer service evaluations” measure. The analyses confirmed a negative interaction effect between employee engagement and service outcome for both variables separately (see Web Appendix C).

#### *4.3. Robustness test 1: Employee engagement versus job satisfaction*

We re-estimated our model using job satisfaction as the independent variable instead of employee engagement. If the interaction term becomes non-significant with job satisfaction, this would suggest that the level of energy and enthusiasm, rather than general job satisfaction, drives the cross-level interaction effect. The results from this model (see Web Appendix D) reveal a non-significant cross-level interaction effect between job satisfaction and service outcome ( $\beta = -0.03$ ,  $p = .111$ ), indicating that energy and enthusiasm may be key drivers in the relationship between employee engagement and customer service evaluations, particularly in negative service outcomes. Additionally, we estimated a model where employee engagement was the independent variable, but job satisfaction was included as a covariate. This approach isolates the effects of employee engagement and its interaction with service outcome from the effects explained by job satisfaction. The results, detailed in Web Appendix E, confirm that the interaction effect between employee engagement and service outcome remains significant. The effects observed in this study seem specific to employee engagement rather than general job satisfaction.

#### *4.4. Robustness test 2: Independence of employee engagement and service outcome*

An alternative explanation for our findings could be that highly engaged employees are more likely to deliver a positive outcome to customers, which would mean employee engagement and service outcome are not independent. To test this, we ran a Binomial Generalized Linear Mixed

Model with a random intercept. The results of this model, with employee engagement as the independent variable and service outcome as the dependent variable (see Web Appendix F), reveal a non-significant relationship between employee engagement and service outcome ( $\beta = -0.00, p = .452$ ). This result indicates that employee engagement and service outcome are independent, ruling out the alternative explanation that engaged employees are more likely to deliver positive service outcomes.

## 5. Discussion

### 5.1. Theoretical implications

Despite the extensive research on the relationship between employee engagement and customer service evaluations, there remains a call for further investigation into how generating employee engagement can effectively improve customer service evaluations, as many aspects of this relationship are still not well-understood (Subramony *et al.*, 2021, 2023; Solnet and Golubovskaya, 2023). Recognizing the crucial role of context in shaping organizational behavior (Johns, 2006), this paper conceptually replicates the employee engagement–customer service evaluations relationship specifically within the context of technology-mediated voice-to-voice interactions. By accounting for the outcome of the service encounter (whether positive or negative) and employing a multilevel, multisource research design, our study makes several significant contributions to service research.

First, we found no significant relationship between employee engagement and customer service evaluations in the context of positive service outcomes, nor did we identify a significant main effect. This result contrasts with prior research that reports a significant relationship between employee engagement and customer service evaluations (Harter *et al.*, 2002; Menguc *et al.*, 2013; Shaheen *et al.*, 2018). In line with the goal of conceptual replication to extend rather than invalidate existing literature and test the generalizability of established relationships

(Schmidt, 2009), our study differs significantly from previous research in its context. Specifically, our research is set within a contact center involving technology-mediated voice-to-voice encounters, whereas prior studies predominantly focused on face-to-face service interactions. These contexts differ on several key dimensions (see Table 1), suggesting that the performance and affective mechanisms underlying the employee engagement–customer service evaluation relationship that are effective in face-to-face interactions might not operate similarly in voice-to-voice settings.

Given prior research’s strong evidence supporting the performance mechanism in contact center environments (e.g., Bakker *et al.*, 2004), it is plausible that the affective mechanism, particularly through emotional contagion, is weaker in voice-to-voice encounters. Emotional contagion often involves vocalizations as well as facial expressions and movements of the frontline employee (Hatfield *et al.*, 1994). Smiling, for example, is commonly considered an antecedent of emotional contagion (Hennig-Thurau *et al.*, 2006; Pugh, 2001). However, these visual cues are absent in voice-to-voice encounters, which may account for the non-significant findings in our study. Additionally, as indicated in Table 1, other mechanisms might be activated in the context of voice-to-voice encounters, even though our research setting makes these aspects (lack of empowerment autonomy and high time pressure) less prominent. Further research is needed to explore the specific processes through which the affective mechanism, or other mechanisms, influences the employee engagement–customer service evaluation relationship in technology-mediated settings.

Second, our study advances the understanding of the employee engagement–customer service evaluations relationship by examining this link across different service outcomes, a perspective not previously empirically tested. This research contributes significantly to theory by being among the first to demonstrate that employee engagement can have a *negative* effect on

customer service evaluations under certain conditions. Specifically, we found that in voice-to-voice encounters, customers responded more negatively to a highly engaged frontline employee who delivered a negative service outcome compared to a disengaged employee. This suggests that, in some cases, being *too engaged* might be detrimental. These findings challenge prior research, which generally depicts employee engagement in a positive light, associating it with improved health, well-being, reduced turnover intention, and enhanced job/service performance (Bakker *et al.*, 2004; Cole *et al.*, 2012; Michel *et al.*, 2023). While there is limited research on the boundary conditions and potential negative consequences of employee engagement (Bakker, 2009), our study addresses this gap.

However, we caution against generalizing this negative relationship between employee engagement and customer service evaluations following a negative service outcome without further replication. Future research is necessary to confirm this effect. Nonetheless, our findings offer a valuable starting point for future theorizing on the employee engagement–customer service evaluations relationship, particularly in different contexts and service outcomes.

Third, our replication study advances the field of service research by addressing a notable gap: the scarcity of replication studies in business and management research (Blöck *et al.*, 2023). Replication studies are often undervalued in the literature (Koole and Lakens, 2012), but our study underscores their significance. By re-evaluating a well-established relationship—namely, between employee engagement and customer service evaluations—within a different context (Klonek *et al.*, 2023) and incorporating the moderating role of service outcome (Hüffmeier *et al.*, 2016) with a stronger research design (Köhler and Cortina, 2021), our study reveals the value of constructive conceptual replication. It provides insights into the generalizability and underlying assumptions of this relationship. Echoing Johns' (2006) call for greater contextual understanding, our conceptual replication highlights the need to reassess foundational frameworks such as the

service-profit chain or service climate framework (Heskett *et al.*, 1994; Bowen and Schneider, 2014) within specific contexts. Despite their established credibility, these frameworks require more replication studies to challenge their assumptions and test their contextual boundaries.

## 5.2. *Implications for practice*

The findings of this research offer important implications for managers. Our study indicates that the link between employee engagement and customer service evaluations may be absent in cases of positive service outcomes and even negative in cases of negative service outcomes. Consequently, managers should exercise caution when interpreting business press claims that engaged employees invariably lead to satisfied customers, also in contact center settings (Morgan, 2015). Investing in employee engagement programs with the goal of enhancing customer service evaluations may not always yield the anticipated results.

The findings of this study hold particular significance for call center services. Often, these interactions represent the first—and sometimes the only—point of contact with a customer. The global market for call center services, spanning industries like hospitality, healthcare, and finance, is projected to expand from \$340 billion in 2020 to \$496 billion by 2027 (Statista, 2022a), driven by evolving business needs intensified by the Covid-19 pandemic. In 2021, approximately 2.8 million people were employed in contact centers in the U.S. alone (Statista, 2022b). This study's insights are crucial for managing the vast number of contact center employees involved in voice-to-voice service encounters worldwide.

We can derive several specific recommendations for managers from these findings. First, our results indicate that employee engagement may negatively impact customer service evaluations if the organization fails to deliver positive service outcomes. Therefore, organizations should implement systems and provide training and access to information that empower employees to resolve customer issues effectively (Van Vaerenbergh and Orsingher, 2016). In our

sample, just over 70% of problems were resolved during customer interactions. While this recommendation may seem standard, this figure highlights that achieving completely failure-free service delivery remains a challenge in everyday practice.

Our findings also suggest that highly engaged frontline employees might trigger negative effects due to their high levels of energy and enthusiasm. Although preliminary, these results indicate that such employees may need to moderate their enthusiasm during customer interactions. Supervisors should consider discussing these findings with highly engaged employees to raise awareness. Additionally, training programs could be developed to help these employees manage their energy levels effectively, aiming to mitigate any potential negative consequences of their high engagement.

A third recommendation arises from the observation that frontline employees appear to have limited impact on customer service evaluations. In many organizations, particularly in contact centers, customer service evaluations are often a key component of employee performance assessments. Given the minimal impact employees have on these evaluations, relying solely on such metrics for performance appraisals could lead to perceptions of unfairness. We recommend that organizations implement multi-faceted performance evaluations rather than relying predominantly on customer service evaluations. Additionally, the analysis of covariates shows that customer evaluations of service encounters tend to become more negative over time. Therefore, firms should adjust these satisfaction measures to account for this potential bias when evaluating employee performance. By doing so, organizations can achieve a more accurate understanding of the relationship between customer and employee metrics (Yohn, 2023).

Overall, our findings present a double-edged sword for organizations. On one hand, managers might interpret these results as a reason not to invest heavily in employee engagement programs, given the limited impact on customer service evaluations. However, employee

engagement is linked to many other valuable intrapersonal outcomes, such as improved employee retention and organizational citizenship behavior, which contribute positively to the organization. For instance, high employee turnover—a common issue in contact centers—represents a significant cost to the organization. Therefore, managers must balance their investments in employee engagement to enhance internal employee outcomes while also considering the potential benefits for external customer outcomes.

### 5.3. *Limitations and future research*

Possible limitations of this study should be considered. First, despite introducing a time lag between data collection from frontline employees and customers, our study remains correlational. Future research is needed to establish causality in the observed effects. Second, we did not measure any process variables. To better understand the employee engagement–customer service evaluations relationship, especially in negative service outcomes, future research should investigate the process mechanisms. For example, future research might explore the employee engagement-customer service evaluations relationship in video calls, to assess the extent to which the lack of cues like facial expressions and movement play a role in this relationship. Third, while employee engagement is generally stable over short periods, there may be small day-to-day fluctuations. Future studies could replicate these findings using a diary method to capture these variations. Fourth, this study analyzed the employee engagement-customer service evaluations relationship after a single service encounter. Since customer issues are not always resolved in one interaction, future longitudinal studies could examine how this relationship develops over multiple interactions, including both successful and unsuccessful encounters.

Fifth, the ICC(1) and ICC(2) scores indicated that only a small portion of the variance in customer service evaluations can be attributed to employees, and suggested that the different customer service evaluations per employee cannot be substituted for each other. The latter is also

an indicator of (un)reliability in multilevel models, and might truncate the correlation between the independent and the dependent variables. Sixth, we did not account for the length of the interaction in our model. Intuitively, longer interactions might provide more opportunities for employee engagement to influence customer service evaluations. Unfortunately, we lost access to the data related to interaction length after a reviewer raised this issue, due to a change in our contact person. Seventh, the average tenure of employees in our sample was 18 months. Future research could investigate how tenure impacts the relationship between employee engagement and customer service evaluations. On the one hand, employees with a longer tenure might possess more organization-specific skills and knowledge, potentially improving service performance (i.e., the performance mechanism). Conversely, employees with a longer tenure might experience more boredom and decreased motivation, which could reduce employees' energy and enthusiasm in customer interactions (i.e., the affective mechanism; see Ng and Feldman, 2013). Future studies should explore these aspects in more detail.

Finally, and perhaps most importantly, this study provides initial evidence of a negative relationship between employee engagement and customer service evaluations in the contexts of voice-to-voice encounters and negative service outcomes. We urge other researchers to replicate these findings to further validate this relationship and deepen our understanding, preferably pre-registering their study. Our analyses indicate that the negative effect is specific to employee engagement and not to job satisfaction as an independent variable, suggesting that the level of energy in highly engaged employees might contribute to these effects. However, this observation remains preliminary. Future research should investigate the specific behaviors exhibited by highly engaged employees compared to their less engaged counterparts and identify which of these behaviors may contribute to the observed negative effects.

**Conflict of interest**

The authors declare that they have no conflict of interest.

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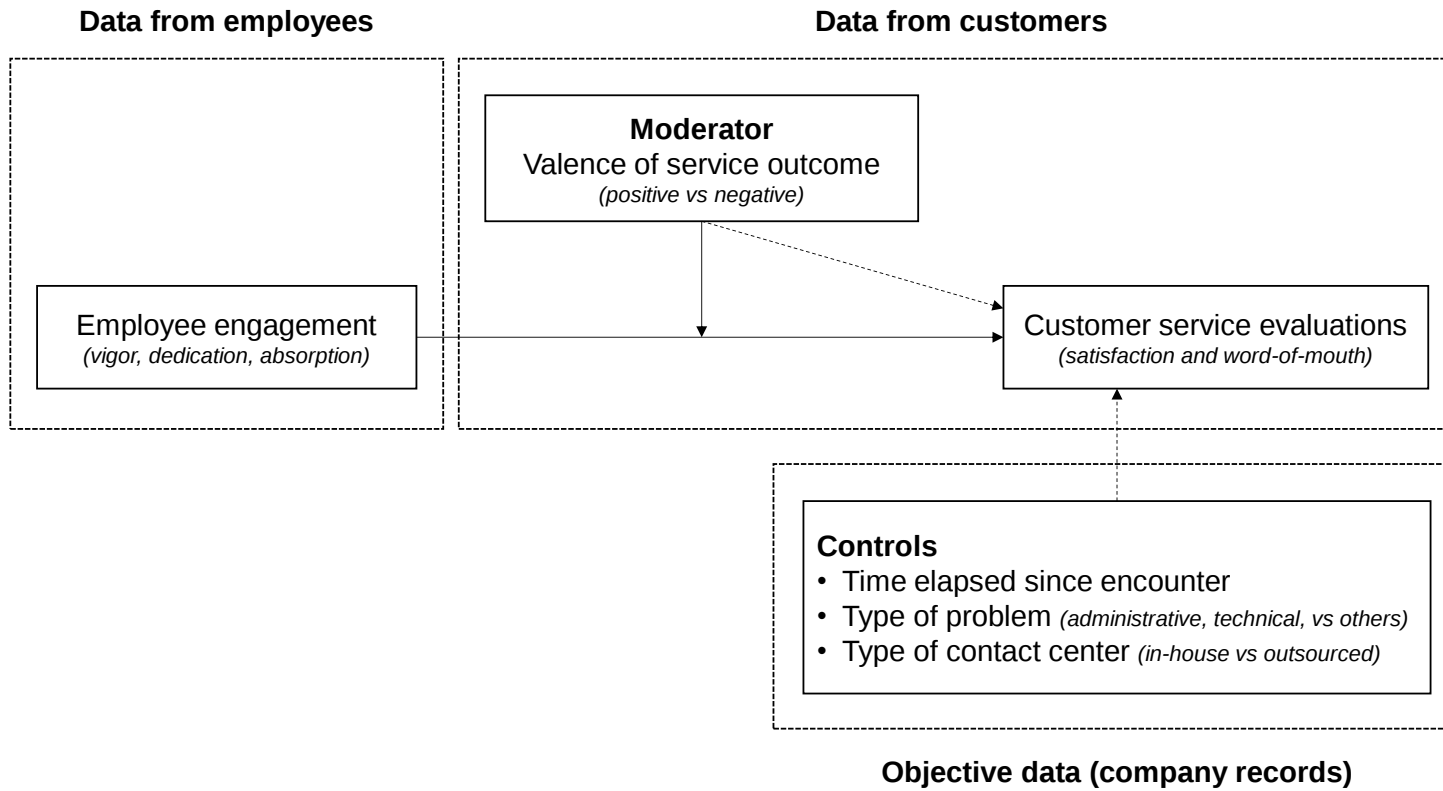
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**Footnote**

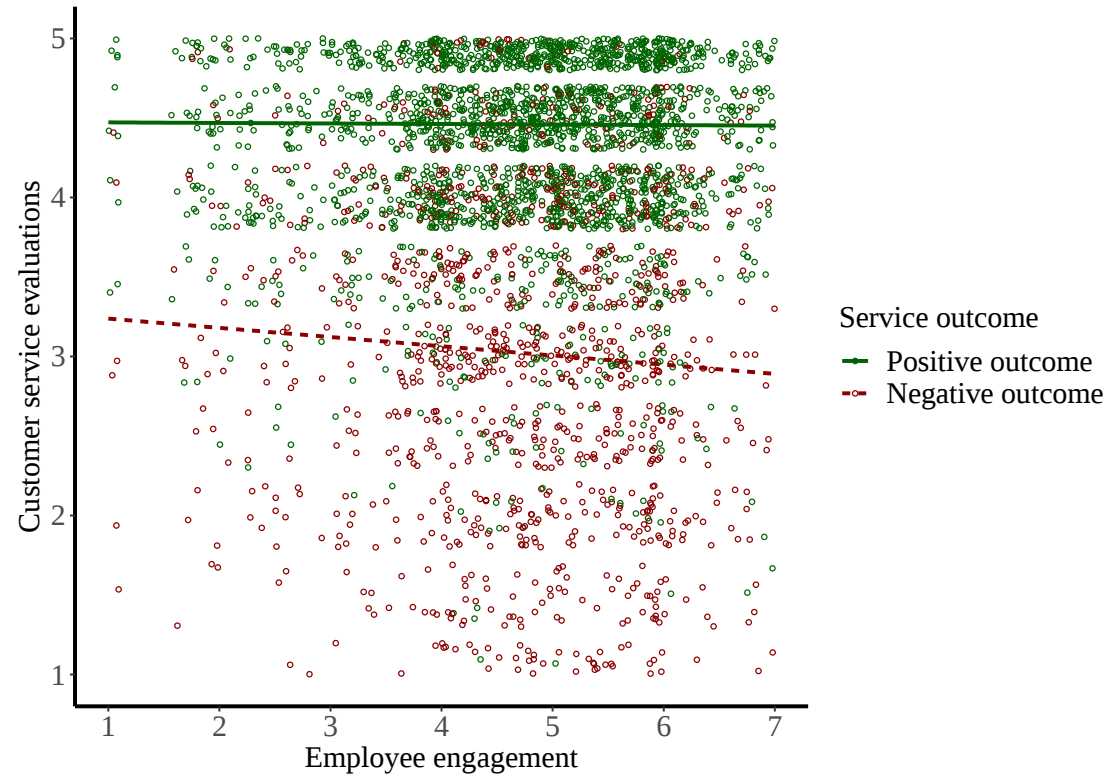
- [1] The original customer service evaluations scale also includes a repurchase intentions item. Given that the telecom operator mainly offers subscription-based contracts, this item was less relevant for respondents to answer.

**Figure 1: Conceptual framework**



*Note:* The above figure was created by the authors.

**Figure 2: Cross-level interaction between employee engagement and service outcome**



*Notes:* The above figure was created by the authors. The small dots in the graph represent individual observations. We used the *jitter* function in *ggplot2* to spread the dots more evenly throughout the graph. Analysis of simple slopes reveals a nonsignificant relationship between employee engagement and customer service evaluations for positive service outcomes ( $\beta = 0.00$ ,  $p = .790$ ), and a negative relationship for negative service outcomes ( $\beta = -0.05$ ,  $p = .005$ ).

**Table 1: Contextual differences between voice-to-voice and face-to-face service encounters**

| <b>This contextual feature</b>      | <b>... makes voice-to-voice (V2V), technology-mediated encounters distinct from face-to-face (F2F) contexts because...</b>                                                                                                                                                                                                                               | <b>... and accordingly, might influence the employee engagement–customer evaluation linkage as follows...</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Physicality and semiotic modality   | In voice-to-voice (V2V) contexts, physical co-presence is not required, allowing customers to stay in their homes or workplaces without being physically present in the service environment (Withing and Donthu, 2006). Consequently, V2V encounters depend exclusively on verbal and paraverbal communication modalities (de Ruyter and Wetzels, 2000). | In V2V encounters, customers receive limited information about the service employee, focusing primarily on language and vocal expressions (Burgers <i>et al.</i> , 2000). While Rueff-Lopes <i>et al.</i> (2015) suggest that emotional contagion can occur in these interactions, this has not been extensively tested. Consequently, the affective mechanism linking employee engagement to customer service evaluations may be less activated, as the technology eliminates key nonverbal cues like facial expressions and movement that are crucial for emotional contagion (Hennig-Thurau <i>et al.</i> , 2006).                                                                                                                                      |
| Anonymity                           | In technology-mediated contexts such as voice-to-voice (V2V) encounters, participants may feel more anonymous and, as a result, think and behave differently (McFarland and Ployhart, 2015).                                                                                                                                                             | Anonymity influences how individuals relate to and behave toward other individuals and objects (Esmark Jones <i>et al.</i> , 2018). Consistent with research indicating that infrequent, anonymous encounters create what Simmel (1950) describes as a ‘society of strangers,’ customers may assume that employees in anonymous V2V encounters feel less accountable towards unfamiliar customers and are driven more by utilitarian motivations than prosocial ones. Consequently, in such settings, high employee engagement could significantly impact customer evaluations. An engaged employee might exceed expectations and potentially generate delight (Barnes <i>et al.</i> , 2014), aligning with expectation-confirmation theory (Oliver 1977). |
| Employee’s autonomy and empowerment | In V2V contexts, employee communication tends to be more standardized, planned, and scripted, which reduces employees’ autonomy and empowerment (Bélanger and Edwards, 2013; de Ruyter <i>et al.</i> , 2001).                                                                                                                                            | In contexts with restricted employee autonomy due to standardized procedures, customers might perceive interactions as robotic and impersonal, raising concerns about a lack of attention to their unique characteristics and circumstances (i.e., uniqueness neglect; Longoni <i>et al.</i> , 2019), especially with less engaged employees. This shift from personal to impersonal interactions can make employee engagement seem inauthentic, potentially nullifying the emotional contagion mechanism and negatively impacting customer outcomes (Delpechitre and Beeler, 2018; Hennig-Thurau <i>et al.</i> , 2006).                                                                                                                                   |
| Time pressure                       | Tasks in V2V encounters are often performed under significant time pressure (Wegge <i>et al.</i> , 2006).                                                                                                                                                                                                                                                | Highly engaged employees often work more efficiently and manage time pressure better (Lambert <i>et al.</i> , 2021), leading customers to perceive these employees as less rushed, which can enhance customer service evaluations (Michel <i>et al.</i> , 2023).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

*Note:* The above table was created by the authors.

**Table 2: Descriptive statistics and correlations**

| Variable                                                 | M    | SD   | Correlations |       |       |       |       |       |       |    |
|----------------------------------------------------------|------|------|--------------|-------|-------|-------|-------|-------|-------|----|
|                                                          |      |      | 1.           | 2.    | 3.    | 4.    | 5.    | 6.    | 7.    | 8. |
| <i>Employee level</i>                                    |      |      |              |       |       |       |       |       |       |    |
| 1. Work engagement                                       | 4.75 | 1.21 | 1            |       |       |       |       |       |       |    |
| 2. Job satisfaction                                      | 5.31 | 1.15 | 0.80         | 1     |       |       |       |       |       |    |
| <i>Service encounter level</i>                           |      |      |              |       |       |       |       |       |       |    |
| 3. Customer service evaluation                           | 4.05 | 1.02 | -0.01        | -0.01 | 1     |       |       |       |       |    |
| 4. Service outcome                                       | 0.28 | 0.45 | -0.02        | -0.03 | -0.63 | 1     |       |       |       |    |
| <i>Covariates</i>                                        |      |      |              |       |       |       |       |       |       |    |
| 5. Type of contact center (0 = In-house, 1 = Outsourced) | 0.78 | 0.42 | -0.13        | -0.10 | -0.04 | 0.05  | 1     |       |       |    |
| 6. Type of problem (0 = Technical, 1 = Administrative)   | 0.38 | 0.49 | 0.17         | 0.18  | 0.00  | -0.08 | -0.31 | 1     |       |    |
| 7. Type of problem (0 = Technical, 1 = Other)            | 0.09 | 0.29 | -0.03        | -0.06 | -0.09 | 0.11  | 0.00  | -0.25 | 1     |    |
| 8. Time elapsed since encounter                          | 2.94 | 2.30 | 0.00         | 0.00  | -0.04 | 0.02  | -0.02 | 0.05  | -0.01 | 1  |

Notes: The above table was created by the authors.  $n_{\text{employee level}} = 346$ ,  $n_{\text{service encounter level}} = 4,198$ , M = mean, SD = Standard deviation.

**Table 3: Two-level linear mixed-effects model results**

| <b>Independent variables</b>                                       | <i>Model without covariates</i>    |                       |                             | <i>Model with covariates</i>       |                       |                             |
|--------------------------------------------------------------------|------------------------------------|-----------------------|-----------------------------|------------------------------------|-----------------------|-----------------------------|
|                                                                    | <b>Parameter estimate</b>          | <b>Standard error</b> | <b>p-value (One-tailed)</b> | <b>Parameter estimate</b>          | <b>Standard error</b> | <b>p-value (One-tailed)</b> |
| Constant                                                           | 4.47                               | .06                   | < .001                      | 4.61                               | .07                   | < .001                      |
| <i>Employee level</i>                                              |                                    |                       |                             |                                    |                       |                             |
| Employee engagement <sub>j</sub>                                   | -.00                               | .01                   | .427                        | .00                                | .01                   | .395                        |
| <i>Service encounter level</i>                                     |                                    |                       |                             |                                    |                       |                             |
| Service outcome <sub>ij</sub> (0 = Positive, 1 = Negative)         | -1.78                              | .11                   | < .001                      | -1.16                              | .11                   | < .001                      |
| <i>Cross-level interaction</i>                                     |                                    |                       |                             |                                    |                       |                             |
| Employee engagement <sub>j</sub> *Service outcome <sub>ij</sub>    | -.05                               | .02                   | .008                        | -.06                               | .02                   | .006                        |
| <i>Covariates</i>                                                  |                                    |                       |                             |                                    |                       |                             |
| Type of contact center <sub>j</sub> (0 = In-house, 1 = Outsourced) | -                                  | -                     | -                           | -.07                               | .03                   | .011                        |
| Type of problem <sub>ij</sub> (0 = Technical, 1 = Administrative)  | -                                  | -                     | -                           | -.14                               | .03                   | < .001                      |
| Type of problem <sub>ij</sub> (0 = Technical, 1 = Other)           | -                                  | -                     | -                           | -.15                               | .04                   | < .001                      |
| Time elapsed since encounter <sub>ij</sub>                         | -                                  | -                     | -                           | -.01                               | .01                   | .010                        |
| Explained variance                                                 | Marginal R <sup>2</sup> = 40.2%    |                       |                             | Marginal R <sup>2</sup> = 40.8%    |                       |                             |
|                                                                    | Conditional R <sup>2</sup> = 40.9% |                       |                             | Conditional R <sup>2</sup> = 41.1% |                       |                             |

*Note:* The above table was created by the authors. Variables with subscript <sub>j</sub> are measured at the employee level (n = 346), variables with subscript <sub>ij</sub> are measured at the service encounter level (n = 4,198).