Mitigating the Negative Effects of Service Failure through Customer Identification

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Abstract

This research investigated the effect of numerical customer identification (i.e., assigning numbers to identify customers) in the service context on the numbered customers' reaction to service failures. We manipulated numerical identification in different ways (room number, customer number, table number, and order number) and measured customers' tolerance of services across various settings (in a restaurant, a spa, and a café) in four studies. The results demonstrated that after being identified by a number, customers tend to exhibit a higher tolerance of service failures (Studies 1 and 2), and this effect is mediated by a sense of self-dehumanization among the numerically identified customers (Study 3). Moreover, the investigated effect diminished when customers had heightened individuation (e.g., by disclosing personal information) to buffer against dehumanization (Study 4). Our findings contribute to the underexplored research area on customer identification, broaden the numerical research and dehumanization literature in marketing, and bring practical implications for firms to mitigate the negative effects of service failures and decrease customer dissatisfaction.

KEYWORDS

numerical identification, customer identification, dehumanization, service failures, dissatisfaction, individuation

1 INTRODUCTION

Customer service is becoming of greater importance for consumers, with 54% of consumers having higher expectations of customer services in 2017 than they did in 2016 and 96% of them regarding customer service as a primary factor in predicting their brand loyalty (Microsoft Corporation, 2017). However, even for the best firms delivering a superior customer experience, service failures are often inevitable. Ranging from trivial ones, like a delivery takeaway being 5 minutes late, to serious ones, such as making a mistake when filling prescription medication, service failures can be detrimental to a firm. For instance, 66% of switching decisions can be directly attributed to service failures, and 13% of customers spread negative word of mouth to at least 15 other individuals when encountering a dissatisfying experience (Kolsky, 2015).

In this research, we investigate an unstudied novel way that service firms may use to mitigate the negative effects of service failures, that is, through the numerical identification of customers. We propose that the numerical identification of customers can enhance customers' tolerance of service failures. Numerical identification, where the service providers assign numbers to their customers and identify them by their numbers, is a prevalent practice in the service context. For instance, the take-a-number system is widely used in the queue management of restaurants, banks, pharmacies, and post offices, where customers are assigned ticket numbers and wait for their turn. Taking McDonald's mobile ordering system as an example, after placing an order through the McDonald's app, customers will be assigned an order number (McDonald's, 2021). Customers who choose a counter collection receive a number that is called by the service provider or displayed on the screen when their food is ready, and customers who opt for table service are identified by their table number when the service providers serve the food to them (McDonald's, 2021). Apart from ticket,

order, and table numbers, room and seat numbers can also be used to identify customers during the waiting and service process.

Additionally, companies frequently assign numbers to better track the behavioral pattern of their customers. For instance, banks and utility companies (e.g., electricity, water, and internet providers) assign customers account numbers, service providers (e.g., Airbnb, Uber, and Google Account) verify customers' identity by their mobile phone numbers, and loyalty programs (e.g., AAdvantage program, Tesco Clubcard program, and Sephora's Beauty Insider reward program) identify customers by their member card numbers.

Despite the prevalence of numerical identification of customers by service companies in daily practice, marketing research on how customers respond to numerical identification is lacking. We intend to address this research gap. In four studies, we show that customers have a higher tolerance of service failures when they are identified by numbers than when not numerically identified. This is because numerical identification implies treating customers in a standardized and mechanical way with a lack of humanistic solicitude, which can elicit the feeling of self-dehumanization among the numbered customers. In response, the dehumanized customers tend to become emotionally numb and more tolerant when encountering a service failure. This effect of numerical identification on customers' tolerance of a service failure will diminish when the humanness of customers is buffered by boosted individuation before being numerically identified.

We believe that the findings of this research will provide essential insights into several streams of research. It broadens the numerical research in marketing. Different from previous research in which numbers were applied to product-related information (e.g., Wadhwa & Zhang, 2015; Yan, 2016) or marketing communication (e.g., Das et al., 2021; Jerez-Fernandez et al., 2014), we intend to identify how numbers can be associated with consumers themselves and influence their reactions to service failures. This work also

provides insight into an unconventional way (i.e., the numerical identification of customers) to mitigate the negative effect of service failures and extends the existing literature on dehumanization and service marketing (e.g., Das et al., 2020; Henkel et al., 2018; Kwon & Yi, 2019; Yim et al., 2012).

2 THEORETICAL BACKGROUND

2.1 Numerical Identification and Self-Dehumanization

In the current research, numerical identification refers to service providers assigning numbers to their customers and identifying them by such numbers. Service providers frequently utilize numerical identification to pursue efficiency and convenience; however, to our knowledge, numerical identification is rarely studied in the marketing context. Therefore, this research intends to void this gap by exploring the effect of numerical identification on customers' tolerance of service failures.

Despite the lack of research specifically on numerical identification, there is a wide research on numbers in the marketing context. Numbers applied to pricing (e.g., Kaltcheva et al., 2013; Viglia et al., 2019), brand name (e.g., Gunasti & Ross, 2010; Pavia & Costa, 1993), product variety (e.g., Haynes, 2009; Reutskaja & Hogarth, 2009), and marketing communication (e.g., Coulter & Suri, 2020; Das et al., 2021) were found to have a crucial influence on customers' judgments and decision-making (Adaval, 2013). Nevertheless, past literature tended to focus on associating numbers with products or the sales team from the company's perspective. Research on what will happen when consumers themselves are associated with numbers is still in its infancy. We attempt to enrich this understudied area of

research by exploring the effect of identifying customers by numbers on their reactions toward service failures.

The direct impact of numerical identification is its benefits to firms, which contributes to the prevalent use of the number system in marketing. Numbers have quantifying and sequencing functions (Corbett, 2004) so that a number system can instrumentally enhance the efficiency of customer management and bring convenience to customers. For instance, a take-a-number system allows customers to gauge the expected time they need to wait and become more comfortable and distracted when waiting (Davis & Heineke, 1994). Particularly in our research, we believe that numerical identification may have another noteworthy effect on customers, that is, it can induce the feeling of self-dehumanization among the numbered customers.

Self-dehumanization denotes a process through which individuals attribute less humanness to themselves (Gray et al., 2007; Haslam et al., 2005). According to Haslam (2006), humanness includes two dimensions: (1) human nature, which refers to traits that are seen as fundamental to our humanity and distinguish us from machines (e.g., the capacity to experience emotions), and (2) human uniqueness, which relates to traits that distinguish us from animals (e.g., more complex cognition). Correspondingly, self-dehumanization can be classified into (1) mechanistic dehumanization that denies one's human nature and (2) animalistic dehumanization that threatens one's human uniqueness (Haslam, 2006).

Prior literature has identified some possible triggers of self-dehumanization. For instance, self-dehumanization can be induced by immorality, either maltreatment by others (e.g., when being socially excluded; Bastian & Haslam, 2010) or maltreatment of others (e.g., being dishonest and lying to others; Kouchaki et al., 2018). Nevertheless, a sense of dehumanization is also frequently activated in the daily experience without actual maltreatment, which is referred to as "everyday dehumanization" (Haslam, 2015; Henkel et

al., 2018). In this research, we intend to investigate situations in which everyday dehumanization happens. We posit that customers who are identified by a number tend to experience a sense of mechanistic dehumanization. This supposition can be derived from different streams of research.

In the research on technology, Montague and Matson (1983) discussed the technological dehumanization phenomenon, which explains that firms give high priority to the pursuit of automation-like efficiency, standardization, and conformity. As a result, the humanity of individuals is denied through mechanistic dehumanization (Haslam, 2006; Montague & Matson, 1983). We believe that numerical identification, which also heightens automation-like efficiency and standardization, may also lead to a mechanistic denial of human nature because of the mental association of numbers with machines. This mental association is established and strengthened because mathematics is a fundamental tool that provides a set of rules to develop high-technological machines, such as aircraft, automobiles, and robotic machines (Glimm, 1991), and mechanical products are prevalently referred to by numbers (e.g., BMW X6, Boeing 777, and iPhone 12; Gunasti & Ross, 2010; Pavia & Costa, 1993). Based on the number–machine mental association, we predict that when customers are identified by numbers, they may feel that they are being treated in a standardized way like machines, rather than being respected for their humanistic solicitude. Thereby, the numbered customers are likely to undergo a mechanistic dehumanization process.

Furthermore, according to the mind perception theory, individuals sometimes fail to attribute minds to others and dehumanize them as indistinguishable and fungible instruments (Epley et al., 2013; Gruenfeld et al., 2008). When using numerical identification, service providers also sequence and manage customers as mindless objects without personal identifiers (e.g., names and self-views; Chen & Gao, 2021; Gao et al., 2009). In other words, the numerically identified customers are treated as instruments without an independent mind,

and this can lead to dehumanization. To represent this, it is common to assign numbers to prisoners to replace their real names when identifying them, as part of the restriction that can lead to dehumanization (Haque & Waytz, 2012; Hill et al., 2016). In a milder case, students taking final exams feel dehumanized by being reduced to the number of their grades (Adam, 2014). Therefore, as Kelman (1976) stated, denying a person's identity as an individual distinguishable and independent from others, like numerical identification in our research, can lead to their dehumanization.

In this way, numerically identified customers will feel being dehumanized, and this feeling can activate their sense of self-dehumanization. According to past research, individuals tend to view themselves through the lens of others, such as females tend to objectify themselves when others objectify them (e.g., Calogero et al., 2011; Wang et al., 2021), and employees may dehumanize themselves when being treated as an instrument by the company (e.g., Baldissarri et al., 2019). Similarly, Bastian and colleagues (2014) found that victims of dehumanizing maltreatment, such as domestic violence or parental abuse, are inclined to dehumanize themselves. Following this research stream, we predict that numerical identification can initiate a sense of self-dehumanization among customers.

2.2 Self-Dehumanization and Tolerance of Service Failure

Service failure is defined as a situation in which the service performance falls below customers' expectations or their "zone of tolerance" (Holloway & Beatty, 2003; Zeithaml et al., 1993). As service failures are among the major factors causing customer dissatisfaction, and even a single severe service failure can impede customers' repatronage intentions and cause their brand switching (Hui et al., 2004; Keaveney, 1995), it is of great importance for service companies to mitigate the negative effect of service failures.

Plenty of research has shed light on the countermeasures adopted to deal with service failures (e.g., Chang, 2006; Das et al., 2020; You et al., 2020). Most directly, objectively enhancing service quality can inhibit the frequency and severity of service failures (Booms & Bitner, 1982; Brady & Cronin, 2001; Gale, 1994). Meanwhile, following a service failure, apologizing, compensating, and correcting may alleviate consumers' anger and dissatisfaction (Baliga et al., 2021; Cummings & Yule, 2020; McCollough et al., 2000). Customers' tolerance of service failures also depends on their relationship with the service providers (e.g., Berry, 1995; Jones et al., 2000), customers' attribution of the responsibility (e.g., Tsiros et al., 2004; Wan & Wyer, 2019), and cultural factors (e.g., Chan et al., 2009; Wan, 2011). As an extension of this stream of work, this paper explores another way to increase customers' tolerance of service failures by activating their sense of self-dehumanization after being numerically identified by service providers. We propose that when numerically identified customers experience a sense of self-dehumanization, they are likely to be more tolerant of and less dissatisfied with the service failures they encounter.

As noted in the previous section, self-dehumanization denies one's human nature, and emotions and affective traits are the essence of human nature (Haslam, 2006; Turkle, 1984). Therefore, when experiencing a sense of self-dehumanization, customers tend to regard themselves as machines or objects that lack basic emotionality and become cold, robotic, indifferent, and emotionally inert (Haslam, 2006; Mithen, 1996). In this way, emotional numbness, that is, the lack of emotions and feelings (Baumeister et al., 2009), becomes a typical manifestation during the process of self-dehumanization. Additionally, individuals who are dehumanized through maltreatment by others commonly use emotional numbness as a coping strategy because feeling less emotionally responsive, more superficial, and colder allows them to bear these maltreatments better (Bastian et al., 2014). In sum, numerically identified customers are likely to display emotional numbness as a part of the self-

dehumanizing process and as a coping strategy when experiencing a sense of self-dehumanization. Consequently, compared to customers who are not identified by number, numerically identified customers are likely to be more unemotional, insensitive, and tolerant of the service failures they encounter.

3. THE CURRENT RESEARCH

Based on the reasonings above, we predict that customers who are numerically identified by service providers are likely to dehumanize themselves for two reasons. (1) Numbers can induce mechanical, standardized, and robotic feelings, heightening the mechanistic dehumanization of human nature among the numbered customers. (2) Numerical identification assists the instrumental management of customers by regarding them as unindividuated and mindless objects. Furthermore, customers tend to see themselves through the lens of others and experience a sense of self-dehumanization. We posit that customers experiencing a sense of self-dehumanization are likely to have higher tolerance of service failures. This is because self-dehumanized individuals tend to display emotional numbness and conformity during their self-dehumanization process and try to use emotional numbness as a coping strategy to the sense of self-dehumanization. As a result, they will become emotionally numb and more tolerant of service failures. Stating these formally, we propose that:

H1: Compared to customers who are not numerically identified, numerically identified customers will become more tolerant of service failures.

H2: This effect is driven by a sense of self-dehumanization experienced by the numerically identified customers.

Further, since the effect of numerical identification on customers' tolerance of service failures is driven by a sense of self-dehumanization, boosting customers' humanness before being numerically identified would likely serve as a buffer against activating a self-dehumanization process. In this way, numerical identification would not influence their tolerance of service failures. We reasoned in the previous section that the self-dehumanization process activated by numerical identification is likely to include a deindividuation process as a way of dehumanizing human nature (Haslam, 2006; Kelman, 1976; Zimbardo, 1969). We, therefore, conclude that individuation, as the opposite of deindividuation (Alicke et al., 1995), can moderate the effect of numerical identification on the tolerance of service failures.

Individuation denotes the recognition of the distinctive identity of an individual (Alicke et al., 1995). For instance, disclosing personal information is a common way to individuate humans because it enhances their identifiability and individuality (Ambady et al., 2004; Maslach et al., 1985). Given that individuation is a key part of human nature, heightened individuation not only makes one feel distinguishable from others but also empowers one's humanity (Haslam, 2006). Consequently, numerical identification is less likely to threaten the humanness of customers who have heightened individuation. This proposition is also evinced in medical research, which suggests that doctors can use person-centric information to recover their patients' humanness when patients feel dehumanized by the treatment process (Haque & Waytz, 2012). Therefore, if customers' individuation is heightened, they could still retain an adequate level of humanness after being numerically identified, thereby not becoming more tolerant of service failures. Stating this formally, we propose that:

H3: The effect of numerical identification on customers' tolerance of service failures will diminish when the boosted individuation serves as a buffer against their dehumanization.

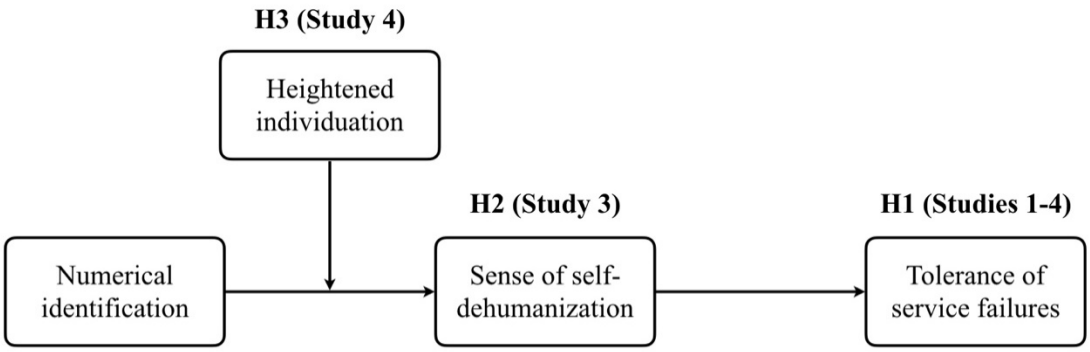

FIGURE 1 Conceptual framework

As depicted in Figure 1, four studies tested our conceptual framework. Studies 1 and 2 supported the main effect proposing that numerically identified customers will become more tolerant of service failures compared to customers who are not being numerically identified (H1). Study 3 explored the sense of self-dehumanization as the underlying mechanism of this effect (H2). Study 4 showed that the effect of numerical identification on customers' reaction toward service failures would diminish if customers had a chance to heighten their individuation (H3). Detailed descriptions of the scenarios used in the four studies are presented in Appendix A. Taken together, studies in the current research provide a comprehensive understanding of the relationships among numerical identification, self-dehumanization, and customers' reaction toward service failures.

4 STUDY 1

The objective of Study 1 was to show initial evidence for the positive effect of numerical identification on customers' tolerance of service failures (H1). To verify that the effect was driven specifically by numerical identification, we included a third condition for comparison in which the customers were identified but not by numbers. In this way, the numerically identified condition could be compared to both the no identification condition and the non-numerical identification condition to test whether the higher tolerance of service failures is truly caused by numerical identification rather than any forms of customer identification.

4.1 Method

Two hundred and seventy-nine adults (M_{age} = 35.52, 49.1% female) participated in this study via Amazon's Mechanical Turk (MTurk) for a nominal payment. Participants were randomly assigned to one of the 3 (numerical identification vs. non-numerical identification vs. control) between-subjects conditions.

Participants were instructed to imagine themselves entering a new Japanese restaurant and the waiter leading them into a private tatami room for dinner. In the numerical identification condition, participants were told that they were led to and stayed in room "212", while in the non-numerical identification condition, the room was called "Kitamoto" (name of a city in Japan). In the control condition, no room number or name was mentioned to the participants. Separate tests validated the manipulations in this and all later studies (see Appendix B for details). Next, to vividly imagine the scenario, participants completed the same filler task by choosing one of the three buffet options. After making their choice, they were given a description of the service failures they encountered, including slow service, unresponsive waitress, and low-quality food with limited choice, which are common

restaurant complaints found in the comments on customer review websites, such as TripAdvisor. After imagining this scenario, participants were asked to rate their overall dissatisfaction with this restaurant experience on a 201-point scale (-100 = very dissatisfied, 0 = neutral, and 100 = very satisfied; adapted from Sengupta et al., 2015). Finally, the participants completed standard demographic questions, including their gender and age, and these questions were also included at the end of all later studies in this research.

4.2 Results

Consistent with our expectation, an ANOVA revealed a significant main effect of numerical identification on customers' attitude toward service failures *(*$F(2, 276) = 3.40$, $p = .035$; $\eta_p^2 = .024$). Specifically, *t*-test comparisons showed that participants in the numerical identification (room number) condition were less dissatisfied with the service failures ($M = -41.61$, $SD = 53.07$) compared to those in the non-numerical identification (city room name) condition ($M = -58.03$, $SD = 39.13$; $t(276) = 2.47$, $p = .014$; $d = .35$), and those in the control (no room number or name) condition ($M = -55.08$, $SD = 45.28$; $t(276) = 1.96$, $p = .051$; $d = .27$). Meanwhile, the difference between the non-numerical identification condition and the control condition in the effect of identification on customers' tolerance of service failures was non-significant ($t(276) = .44$, $p = .663$).

4.3 Discussion

Results of Study 1 supported Hypothesis 1 that, after being identified by a number, customers will become more tolerant to service failures. Notably, the statistically insignificant difference between the non-numerical identification and control conditions in

tolerating service failures confirmed that the observed effect was driven specifically by numerical identification rather than any forms of identification.

In the non-numerical identification condition in this study, participants were identified by the room name of a city in Japan, rather than their own names. We believe that this facilitated a clearer comparison between the two identification conditions, as customers themselves were not identified directly in both conditions. However, we conjecture that the proposed effect will still hold when the service providers directly identify customers by numbers, so we tested this in Study 2.

5 STUDY 2

Study 2 intended to directly measure the tolerance of service failures in a different setting in which the customers themselves were identified by numbers or their names. This study also tested the role of a confounding factor, that is, the familiarity of the service based on their prior experience, in the effect of identification on tolerance of service failures. Meanwhile, numerical identification represents a standardized way to identify customers, whereas name identification is more personalized. One may thereby argue that for customized services, when customers prefer personalization rather than standardization, the effect may not exist. To test this, we used a customized massage service scenario in this study.

5.1 Method

Two hundred adults participated in this study via Prolific for a nominal payment. Eight participants who failed the manipulation check were excluded, leaving a final sample

of 192 (M_{age} = 27.49, 49.5% female). They were randomly assigned to either the numerical identification or the name identification condition.

Participants were asked to imagine that they went for a massage to relieve their stresses and shoulder pain. In the numerical identification condition (name identification condition), the receptionist assigned them a random number "4597" (asked the name they wanted to be identified by) and referred them to a waiting area. Later, a massage therapist called their number (name), led them to a treatment room, asked questions about their pain and stress, and introduced a customized treatment based on their situation. The participants were then given information about service failures, including the therapist's impatient and impolite tone and ineffective pain relief (adapted from Wang, 2011).

After imagining this scenario, participants evaluated the service based on the degree to which they agreed with the four statements: I am dissatisfied with the service; I am unhappy with the service; this service is intolerable to me; this service is not acceptable to me (1 = Strongly disagree; 9 = Strongly agree; α = .87; adapted from Chan et al., 2009). They also completed a control question measuring how familiar they were with massage (1 = Not familiar at all; 9 = Extremely familiar) and a manipulation check question testing their recall of how they were identified in the scenario (by a number, by their name, or not specifically identified).

5.2 Results

Consistent with our expectation, the results showed that participants in the numerical identification condition were marginally more tolerant of the service failure (M = 7.25, SD = 1.90) compared to those in the name identification condition (M = 7.69, SD = 1.15; $t(190)$ = -1.95, p = .053; d = .28). The effect of familiarity on participants' tolerance of service failures

was non-significant (β = -.002, t = -.03, p = .975), and the effect of identification on tolerance of service failures remained (F(1, 189) = 3.82, p = .052) when controlling for familiarity.

5.3 Discussion

Using different manipulations, scenarios, and measurements, Studies 1 and 2 provide converging evidence for our crucial proposition that customers will exhibit more tolerance of service failures after being identified by a number (H1), even when the service is customized. We next explored the underlying mechanism of the observed effect.

6 STUDY 3

Study 3 examined the proposed mediational role of a sense of self-dehumanization in the positive effect of numerical identification on customers' tolerance of service failures. We expected that compared to customers who are not numerically identified, numerically identified customers would experience a sense of self-dehumanization, leading to their higher tolerance of service failures (H2).

6.1 Method

One hundred and sixty-eight Hong Kong undergraduates (M_{age} = 20.82, 71.4% female) participated in this study for a nominal payment. They were randomly assigned to either the numerical identification condition or the control condition.

Participants were instructed to imagine that they had reserved a table for dinner. When they arrived at the restaurant, in the numerical identification condition (control

condition), they were guided to sit at table 218 (a table) and ordered a medium steak. Participants were then given a service failure scenario, wherein the steak served to their table was overcooked and almost inedible (adapted from Hess et al., 2003). After imagining this scenario, participants were asked to evaluate the service based on the same questions we used in Study 2 (α = .94). Next, their sense of self-dehumanization was measured by indicating the extent to which they agreed with the five statements: I have complex feelings; I can experience pain; I am capable of emotion; I feel angry; and I feel contempt, on 9-point scales (1 = Strongly disagree; 9 = Strongly agree; α = .85; adapted from the emotion factor in Kozak et al., 2006).

6.2 Results

Consistent with the results of Studies 1 and 2, numerically identified participants were more tolerant and less dissatisfied (M = 6.49, SD = 1.56) compared to those in the control condition when encountering a service failure (M = 7.03, SD = 1.25; t(166) = -2.46, p = .015, d = .38). In addition, numerically identified participants also experienced a sense of self-dehumanization by exhibiting lower perceived humanness (M = 4.06, SD = 1.69) compared to those who were not numerically identified in the control condition (M = 5.72, SD = 1.14; t(166) = -7.49, p < .001, d = 1.15). Bootstrapping methods (PROCESS Model 4, with 5,000 resamples; Hayes, 2013) verified that a sense of self-dehumanization mediated the effect of numerical identification on tolerance of service failures *(*b = .31, SE = .14; 95% CI: .041 to .583).

6.3 Discussion

Study 3 supported our proposed mechanism by showing that a sense of self-dehumanization drives the positive effect of numerical identification on customers' tolerance of service failures (H2).

7 STUDY 4

Study 4 intended to test the moderating effect proposed in Hypothesis 3, which states that numerical identification will not influence customers' tolerance of service failures when customers are provided with a chance to boost their individuation. Besides, this study also aimed to rule out the alternative explanation that when customers were identified by names, they may develop higher expectations of service quality and experience greater expectancy disconfirmation when encountering a service failure.

7.1 Method

One hundred and eighty-one adults participated in this study via MTurk for a nominal payment. Six participants who failed the individuation manipulation task (e.g., by answering "nothing" or "good" to all the trait questions) were excluded from later analyses, leaving a final sample of 175 (M_{age} = 38.68, 55.4% female). They were randomly assigned to conditions of a 2 (numerical identification vs. name identification) × 2 (individuation vs. no individuation) between-subjects design.

To manipulate individuation, participants completed a writing task. In the individuation condition, the participants were asked to answer an anonymous questionnaire to gather more information about themselves, including questions about their favorite food, favorite movie, favorite book, special interest or hobby, as well as three positive and three

negative personality traits about themselves (Ambady et al., 2004; Maslach, 1974). In the non-individuation condition, the participants completed questions unrelated to themselves, including what lions eat, what a group of lions is called, where lions can be found, what kind of animal a lion is, and what three positive and three negative traits describe lions (Ambady et al., 2004; Maslach, 1974).

Participants were then asked to visualize that they were taking a coffee break in a café. In the numerical identification condition, they were asked to imagine that after placing an order, they were given an order number "349" and were told to collect their drink at the counter when their number was called, whereas in the name identification condition, participants' name was recorded, and they were told to collect their drink at the counter when their name was called. A pretest with a separate group of respondents ruled out the alternative explanation of expectancy disconfirmation by showing that the difference in expectation between the numerical identification and the name identification conditions was non-significant ($t(98) = -1.17$, $p = .243$; see Appendix C for details). Next, participants were given the service failure scenario in which the waiter did not smile and gave them the wrong drink, and asked to rate their dissatisfaction with the café by indicating their agreement with four statements: I am dissatisfied with the restaurant; I am unhappy with the restaurant; I am not pleased with what the restaurant has done; and I condemn the restaurant, on a 9-point scale (1 = strongly disagree; 9 = strongly agree; $\alpha = .83$; adapted from Chan et al., 2009).

7.2 Results

A 2 × 2 ANOVA revealed a significant numerical identification × individuation interaction effect on customers' tolerance of service failures ($F(1, 171) = 4.53$, $p = .035$, $\eta_p^2 = .03$; see Figure 2). In the non-individuation conditions, the results replicated the previous

findings, that is, participants in the numerical identification condition were marginally more tolerant of the service failures by indicating lower dissatisfaction with the café (M = 6.53, SD = 1.73) compared to those in the name identification condition (M = 7.12, SD = 1.44; F(1, 171) = 3.49, p = .063). Importantly, in the individuation conditions, the difference between the numerical identification condition (M = 7.19, SD = 1.40) and the name identification condition (M = 6.76, SD = 1.62) in tolerance of service failures was non-significant (F(1, 171) = 1.43, p = .233).

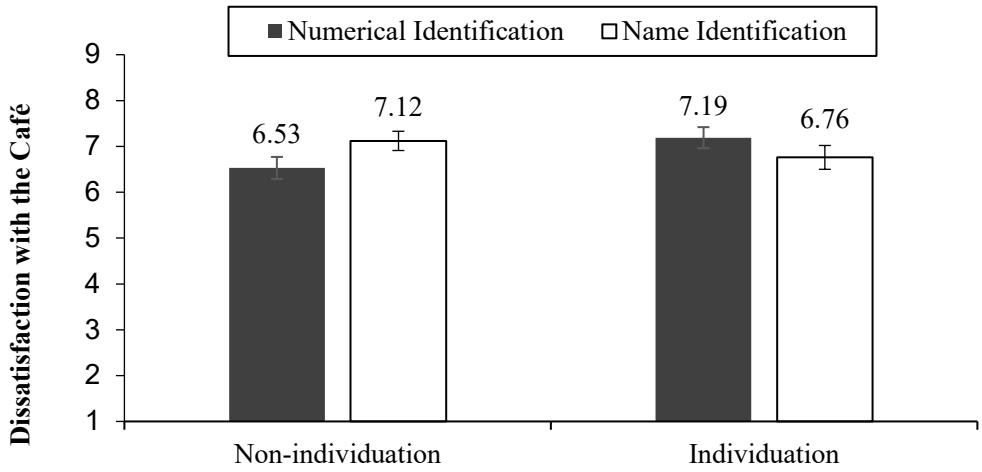

FIGURE 2 Study 4: Dissatisfaction with the café

7.3 Discussion

Study 4 ruled out the alternative explanation of expectancy disconfirmation and supported the notion that individuation can act as a buffer for humanness and moderate the effect of identification on customers' tolerance of service failures.

8 GENERAL DISCUSSION

Along with the development of modern technology and the pervasive goal of enhancing convenience and efficiency in business operations, service companies have widely used numerical identification. Through four studies with different manipulations, scenario settings, the severity of service failures, and measurements, the current research serves to deepen the understanding of numerical identification and suggest a novel way for marketers to alleviate the negative consequences of service failures. As disclosed in our research, customers experience a sense of self-dehumanization when numerically identified, and thereby become emotionally numb and more tolerant of service failures. Nevertheless, if customers have a chance to boost their individuation before being numerically identified, they will be buffered against dehumanization and not exhibit higher tolerance of service failures.

8.1 Theoretical Contributions

We believe that the current research makes important contributions to different research areas. It enriches the literature on numerical information by showing how numbers can be directly associated with customers and influence their tolerance of service failures. Different from previous numerical research (e.g., Das et al., 2021; Scheibehenne et al., 2010), to our knowledge, this research is the first to demonstrate the relationship between numerical identification and customers' reaction to service failures. By systemically investigating the mechanism underlying this effect, our research unveils how and why a subtle cue like numerical identification can influence customers' tolerance of service failures.

Furthermore, the findings of this research further extend our understanding of service failures from a customer psychology perspective. Given the importance of customer service and the prevalence of service failure, a large body of existing research has probed the

preventions (e.g., Hauser & Clausing, 1988; Wan et al., 2011) or remedies (e.g., Mattila, 2001; Wei et al., 2020) for service failures. Distinct from both prevention and remedies, the current research explores a novel avenue (i.e., numerical identification) for mitigating service failure through enhancing customers' tolerance.

The present research also adds to the existing literature on self-dehumanization and emotions. In contrast to the productive marketing research on anthropomorphism (e.g., Aggarwal & McGill, 2007; Chen et al., 2017), dehumanization, standing on the other side of the story, is largely overlooked. This research sheds light on how a sense of self-dehumanization caused by numerical identification can benefit service companies. Additionally, our findings contribute to the understanding of emotional intensity in marketing (e.g., Puntoni et al., 2009; Rocklage et al., 2021). Following the call for research on how emotional intensity affects customers' responses to a negative service experience (Su et al., 2018), our research not only explores the consequences but also identifies an antecedent of emotional numbness (general low emotional intensity) in marketing. Specifically, we found that numerical identification can lead to emotion numbness among customers, which will mitigate the negative effects of service failures on customer satisfaction. Together, these findings provide new insights into our understanding of numerical information, self-dehumanization, emotions, and service failures.

8.2 Limitations and Future Research

As the underlying mechanism in this research is a sense of self-dehumanization, which represents a negative psychological state, whether using numerical identification in marketing is ethical becomes questionable. Based on our findings, this sense of self-dehumanization is likely to be mild and temporary, corresponding to the prevalent "everyday

dehumanization" that consumers frequently experience in marketplace interactions (Haslam, 2015; Henkel et al., 2018). As shown in Studies 3 and 4, consumers tend to display less anger and contempt, that is, to accept rather than fighting back this dehumanization, and completing a simple task of individuation can buffer its effects. As this degree of sense of self-dehumanization is common in daily social interactions, numerical identification may not violate the ethical principles of business. However, if a service provider intentionally and repeatedly calls customers by their numbers during a service consumption, customers may feel offensive, unrespectful, angry, and contempt.

In our Studies 2 and 4, we compared the numerical identification to the name identification condition and showed that the effect of numerical identification on customers' tolerance of service failures remains even when the service is customized (in Study 2). This raises speculation that the customized service in Study 2 may boost customers' individuation. We surmise that individuation can buffer against dehumanization only when it is enhanced before numerical identification and is unrelated to the negative service experience. Future research may test this postulation. Meanwhile, other effects driven by personal (vs. non-personal) identification are worthy of investigation. In an additional study (see Appendix D for details), we found that when the service experience was positive without a service failure, customers in the personal and numerical identification conditions did not differ in their acceptance of the service. Past research has reported mixed findings on the effect of personal identification on customers' attitudes. Personalization in general contributes to higher perceived service quality, customer satisfaction and repatronage intention (Mittal & Lassar, 1996). Besides, the identifiable victim effect revealed that personal identification of the victims' details can stimulate empathy and encourage helping behavior (Jenni & Loewenstein, 1997). However, consumers may resist personal identification due to the increasing privacy concerns in modern society (Awad & Krishnan, 2006; Wattal et al., 2012).

Further, personal identification is less systematic to manage and not suggestive of the sequence or waiting time (Corbett, 2004; Davis & Heineke, 1994). Future research may systematically test the strengths and weaknesses of personal (vs. non-personal) identifications.

Apart from the prerequisite of a service failure, another possible boundary condition of the positive effect of numerical identification on service failures is the endurance of the effect. Comparatively speaking, the tolerance and service evaluation we tested in this research represent customers' immediate reactions to the service failures, rather than their long-term attitudes toward the firms. In other words, the results of our scenario-based experiments cannot predict customer loyalty and brand preference in the future. Therefore, researchers may use longitudinal studies to investigate the consequences of numerical identification over time in real-world settings. Take repatronage intention as an example. Numerically identified customers (vs. customers not numerically identified) tend to have fewer negative feelings towards and lower dissatisfaction with the service experience and thereby become more likely to repatronage in the future. Nevertheless, it is also possible that unemotional and insensitive customers may care less about the experience and never come back to the service company. We leave this as an avenue for future research.

Future work could also further explore the effects of numerical identification in the online customer service chat context. Live chats for customer support have become more popular especially due to the COVID-19 pandemic (Hussain, 2021). Our research studied the effect of numerical identification of customers on the identified customers. Future research may explore the influence of the numerical identification of service providers on customers. For example, service providers online are sometimes anonymous and represented by their working IDs when communicating with customers. Whether this can lead customers to

dehumanize the service providers and influence their satisfaction when facing online service failures remain unknown.

We believe that the effect of numerical identification is likely to be stronger when the numbers pertain to customers themselves, that is, when the customers are assigned numbers directly (Study 2) compared to when they are assigned to a numbered table (Study 3) or a numbered room (Study 1). Nevertheless, customers identified by a numbered object, such as a table or a room, may feel an even stronger sense of dehumanization. Further research may explore the difference between direct numerical identification and indirect numerical identification through a medium.

8.3 Managerial Implications

The findings of our research have rich managerial implications for marketers. Companies strive to achieve higher service quality, and even for firms that sell products, before-purchase and after-sales services have become more vital nowadays (Gebauer 2008). We suggest a new and easy way (i.e. through numerical identification) for companies to alleviate customer dissatisfaction when service failures occur. At first glance, numerical identification seems to be a shortcut for attenuating the negative effect of service failures, as no objective service quality is enhanced in the process. However, it is still of great importance in practice, as service failures are nearly inevitable no matter how much effort has been put into enhancing service quality.

In real business, we witness an increasing number of firms, such as Starbucks, Joe & the Juice, Citibank, and Singapore Airlines, identifying their customers by names to show respect and caring. However, according to the findings of our studies, exactly the lack of respect and caring associated with numerical identification enables it to alleviate customer

dissatisfaction effectively when service failures occur. Therefore, especially for startup firms that lack experience or shops located in busy areas, numerical identification may seem to be a wiser, although perhaps less considerate, choice for limiting the ramification of service failures. This research also offers flexibility to marketers by providing different ways to practice numerical identification. Apart from take-a-number systems, table and room numbers can also be considered. In addition to the food and beverage industry, companies providing more customized services (e.g., spas in Study 2) may also adopt numerical identification in their daily operations. Regardless, firms need to be cautious when applying numerical identification by first considering the frequency and severity of service failures in their daily operation. We prefer to be conservative in predicting the overall long-term positive effect of numerical identification on customer satisfaction, especially for established firms with infrequent service failures.

In this day and age, we are identified by different numbers, such as identity card number, date of birth, age, salary, mobile phone number, and examination scores. Still, in marketing research, numerical identification is a relatively new and intriguing topic. This research opens an avenue that encourages future studies to explore numerical identification and derives practical implications for service companies in enhancing customer satisfaction after service failures occur.

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