

# Research on the Impact of Intelligent Customer Service on Trust Restoration in Service Recovery—Based on the Perspective of Customer Social Mindfulness Perception

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**How to cite this paper:** Meng, H., Xiao, Q., Dong, X. Q., & Lei, X. H. (2024). Research on the Impact of Intelligent Customer Service on Trust Restoration in Service Recovery—Based on the Perspective of Customer Social Mindfulness Perception. *Journal of Service Science and Management*, 17, 137-167.

<https://doi.org/10.4236/jssm.2024.172007>

**Received:** March 23, 2024

**Accepted:** April 26, 2024

**Published:** April 29, 2024

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## Abstract

With the rapid development of artificial intelligence, intelligent customer service systems based on natural language interaction have become a key factor in improving service quality in many service industries. However, the phenomenon of “high ability and low enthusiasm” in service recovery has become one of the major challenges in the development, design and application deployment of intelligent customer service. From the perspective of customer perception, this study explores the impact of customers’ perception of social mindfulness on the trust restoration mechanism of intelligent customer service in a human-machine co-creation environment based on the control theory and expands the domain of AI service in the time and use phases. In addition, this study explores how changes in customers’ perceptions of social mindfulness of intelligent customer service affect the trust repair process under different levels of time urgency. In the current stage of AI development and application, the findings of this study provide important strategic references for service organizations in constructing design frameworks and formulating recovery strategies for intelligent customer service.

## Keywords

Intelligent Customer Service, Service Recovery, Social Mindfulness, Trust Repair, Human Machine Co-Creation

## 1. Introduction

Artificial Intelligence (AI) is becoming increasingly integral in assisting custom-

ers in managing products and delivering services as the Experience Economy shifts to the Emotion Economy. Session agents and intelligent self-service technologies (hereinafter collectively referred to as AI customer service), with AI chatbots as the primary vehicle, are widely used in the consumer space. Data suggests that text-based chatbots running on instant messaging service platforms can reach more than 2.5 billion people (Sheehan et al., 2020). The direct reason for the large-scale investment in AI customer service is the advanced information processing capability and the advantage of human cost. In China's large-scale e-commerce event "Double 11", Taobao AI customer service can solve 95% of the business problems (Edgeson, 2020).

In the face of unavoidable service failures, a swift recovery service can restore customer word-of-mouth and restore repurchase intentions to 84%, making the negative impact of failures minimal (Harrison-Walker, 2019), although customers prefer human involvement in remedial measures to effectively address the limitations of AI customer service. Especially with the current widespread adoption of technology services, less than one in five customers are willing to encounter AI customer service for services such as sales as well as dispute resolution (Treasure Data, 2019). The reason for this is, on the one hand, the mass media's portrayal of AI as "ice-cold, iron lumps" and the past experience of using AI in the past are two factors that form the perception of the mind (Deng et al., 2022), which makes the customer form a stereotypical impression of AI customer service as "high ability and low enthusiasm" in the emotional-social scenario. The stereotype of "high ability and low enthusiasm" is formed by customers in the emotional-social scenarios. Although customers sometimes believe that the AI customer service is capable of completing the remedy, it is difficult to feel the warmth, respect and helpfulness of the service organization during the service provided by the AI (Fiske et al., 2002; Cuddy et al., 2011). Therefore, when placed in such an impression of "high ability and low enthusiasm", customers will begin to form a heuristic attitude towards AI customer service that undermines their trust by "acting in the interest of the service organization, covering up for the service organization, and being unsympathetic" (Banks, 2020). Secondly, most service organizations in the past limited the recovery implementation centre to the service organization or the customer alone, assuming that the customer is a passive recipient or a complete implementer, ignoring their role as a co-creator of value, which can easily lead to the loss of control and participation, or the abandonment of the use of AI technology due to a low risk-benefit ratio (Guo et al., 2015; Scherer et al., 2015). As shown in **Figure B1 and Figure B2 of Appendix B**, when customers use online after-sales service, one is a collaborative AI customer service based on strong information generation capability that considers everything and thinks about what you want, and always asks you about your needs first and then provides multiple solutions in the service; the other is a Q&A customer service based on a strong information search that provides a non-selective and "official" answer, which one do customers trust more? Which one do customers trust more? Combined with the li-

mitations of AI's relatively independent existence in the service process highlighted in the above question, and considering that "harmonious" human-machine collaboration is said to be the dawn of the fifth industrial revolution as well as a core change (Noble et al., 2022), there is still room for research on the significance of the intrinsic emotional manifestation of AI services in converting customer attitudes (trust).

For this reason, scholars have explored more deeply consumer behavioural issues affecting trust building and trust repair in human-robot interaction based on the perceived usefulness and ease of use of the technology. Choi's study found that anthropomorphic robots (vs. non-anthropomorphic robots) have a significant impact on consumer trust in service recovery through sincere apologies (Choi et al., 2020). Hu Qian explored the repair of trust in service recovery by multiple service feedback language styles, demonstrating the importance of warmth and competence language cues in anthropomorphic design (Hu, 2022). Song's study found that the robot's level of intelligence plays an important moderating role in consumers' cognitive and emotional perceptions (Song et al., 2022). Although most of the above studies have focused on physical anthropomorphism such as appearance, movement, communication style, etc., we have also found valuable information that the establishment and strengthening of consumer trust is ostensibly a result of these physical external features, but in essence, it is the mechanism of influence generated by internal perceptions of emotion such as respect, empathy, and so on, conveyed by the physical features of the AI. As a result, how to make customers feel the warmth and enthusiasm conveyed in their interactions with AI customer service in service recovery is the key to attenuating heuristic attitudes and transforming trusting attitudes.

Reversal of attitudes in real life often occurs when cue information expressed by one another causes a perceptual change in the psyche of the other party. For example, cognitive or affective cues such as concern for each other's self-esteem (Guo et al., 2015), sense of interpersonal control (Liu & Kai, 2015), sharing of resources (Li, 2007), and pursuit of co-operation (Liu & Hao, 2011) demonstrated in interactions shift customers' trusting attitudes. These positive cues that promote attitudinal or behavioural change have some commonalities, one of which is that these cues are expressed in a way that does not only consider the implementation of decisions on one's side, but also gives enough initiative, self-esteem concern and even puts oneself in the other party's shoes with regard to the relevant factors at the other party's level. When these attention cues and position protection cues are expressed by AI, customers in service recovery may inspire attenuation of attitudes leading to positive emotions and eventually rebuilding trust (Bickmore & Schulman, 2007). AI customer service is constantly developing towards socialisation and anthropomorphism, continuously optimising the service process through intelligent features such as functional adaptivity and natural language interaction, enabling customers to gain more initiative and discourse, and enhancing their quasi-social perception of AI customer service.

In this paper, we introduce “social mindfulness” to summarise the cues of “high enthusiasm” that intelligent customer service exhibits in addition to “high competence”, as a strategic form of interpersonal communication. As a strategic form of interpersonal communication, it is the behaviour of an individual who pays attention to, respects, and protects the needs and rights of others to make choices in interpersonal interactions, which helps to satisfy the other person’s need for autonomy in the interaction process (Dou et al., 2018). Take a simple example, there are two apples and a banana on the table, A and B queue up to get them, if A takes the apple then there is still a choice between the banana and the apple for B. If A takes the banana there is only one choice left for B. Compared to the latter, the former shows more positive cues during the interaction and is more likely to establish a trust relationship with it. Meanwhile, scholars are also successively proved that the expression and perception of social mindfulness cues can effectively enhance the formation of trust and cooperation in interpersonal interactions (Dou et al., 2018; Wang et al., 2023; Dou, 2016). In this study, we apply social mindfulness to the service remediation expression of intelligent customer service to explore how to strengthen or re-establish customer’s trust repair through social mindfulness in human-machine co-creation service recovery from the perspective of customer’s emotion, so as to improve the effect of service remediation. To promote the better development of AI customer service towards integrated socialisation and anthropomorphism, to provide references for AI customer service in emotional and behavioural anthropomorphism as well as for scholars and service organizations, therefore, the questions we aim to investigate are as follows:

- 1) How effective is human-computer co-creation service recovery in repairing customer trust?
- 2) What is the interaction between the social mindfulness perceived by customers and their psychological factors in co-creation recovery, as explored from the customers’ perspective?
- 3) What are the moderating effects on the path of customers’ perceived social mindfulness on trust repair under varying degrees of time urgency?

In order to answer the above questions, this paper develops a research model based on control theory and interdependence theory to illustrate the relationship between perceived social mindfulness, time urgency, and trust repair. To test the hypotheses, subjects’ trust levels and perceptions before and after the experiment were measured through two scenario-based experimental methods. Our study contributes to the service restoration literature by the following three contributions. Firstly, it re-emphasizes the important role of social mindfulness on trust repair demonstrated by AI customer service, represented by the service provider, in the process of service recovery, and expands the application scenarios of social mindfulness. By conceptualising and placing it in offline hotel and online shopping contexts, it explores the impact of different degrees of social mindfulness exhibited by AI customer service during human-computer co-creation of resto-

ration with customers on trust repair with customers, expanding the domain of AI service in both the time and use phases. Second, in addition to confirming the main effect produced by perceived social mindfulness, this study also found a mediating effect on trust restoration through two psychological pathways, perceived risk and relationship-based self-esteem. Providing a new explanation for how firms' co-creation recovery strategies can repair customers' trust, in co-creation service recovery, customers may not only care only about financial gains and losses, but also value their relationship status as conveyed by firms' service recovery. Finally, bridging the gap in previous research on the relationship between social mindfulness and time pressure, we reveal the "heuristic" changes in customers' perceptions of social mindfulness for trust restoration under time-pressured restoration conditions, and point out the ups and downs of the psychological paths of social mindfulness in time-pressured environments.

## 2. Theoretical Background

### 2.1. Man-Machine Co-Creation for Service Recovery

Service recovery usually occurs after service failure, and expectancy confirmation theory suggests that service failure and negative uncertainty occur when customers find that the actual performance of the service does not match their expectations (Balaji et al., 2017). This is where the service provider and the AI customer service on behalf of the service organization are required to provide the customer with the appropriate remedies to recover. Co-creation of service recovery rooted in service-driven (S-D) logic is essentially the customer combining his or her knowledge and ideas to complete the integration with the resources (tools, information, knowledge, etc.) provided by the organization in order to create and maximise value (Bolton, 2004). The field on co-creation service recovery has been established and a number of scholars and practitioners have explored various aspects of co-creation recovery. Tran has demonstrated in his research the moderating role of relationship marketing orientation in the relationship between customer value co-creation behaviours and firm capabilities (Tran & Vu, 2021). Chen and Pan compared the effectiveness of provider-alone recovery, client recovery, and co-creation recovery in the context of healthcare service recovery and found that co-creation recovery was significantly better than the other two (Chen et al., 2022). Relevant studies have proved the important role of co-creative recovery, but the current research is basically in the context of human-human service, which is insufficient to explain how co-creative recovery plays a role in trust repair when the scene is switched from human-human interaction to human-machine interaction. Of course, some scholars have also explored the mechanism of psychological distance, emotion, and empathy in AI restoration of trust (Bickmore & Schulman, 2007; Piçarra & Giger, 2018), focusing more on the explanation of the role of emotional path. This direction still needs further extended research.

Human-computer co-creation is the co-operation between humans and ma-

chines (including AI) to create content and share creative tasks. At first, AI appeared as an “outsider” and could not participate in co-creation, but with the upgrading of algorithms and the learning of massive data, it has completed the transformation from “outsider” to “collaborator”, creating conditions for the emergence of human-machine co-creation (Zhan & Guo, 2023). In the whole service recovery process, AI customer service plays the advantage of content generation speed and efficiency, while the customer masters the direction and formation process of the content, and through sharing information and optimizing the content the two jointly promote service recovery and ultimately achieve the matching of customer preferences. In this paper, human-computer co-creation of service recovery is defined as a recovery measure to solve the service problem by matching information, resources, and preferences that are jointly carried out by the synergy of the customer and the AI representing the service organization after the service failure, and to achieve the conversion of negative uncertainty as well as the repair of trust through the customer’s perceived capabilities and perceived emotions.

## **2.2. Social Mindfulness and Perceived Social Mindfulness**

In interacting with each other, whether at the national or individual level, the challenge of balancing different interests is often encountered. Such situations are often viewed as social dilemmas, such as the classic example of the Prisoner’s Dilemma, a strategy game, or the public goods problem in economics. All of these situations involve making difficult decisions in the context of complex choices. Initially, dilemmas were approached as scenarios in which the interests of individuals conflicted with the interests of others, and only the sacrifice of one party’s interests could lead to co-operation and a way out of the dilemma (Van Lange et al., 2013). Later, co-operation was recognised by scholars as an effective way of resolving social dilemmas (Declerck et al., 2013), and in our daily lives it is not common to be faced with a situation where we need to resolve a conflict at the expense of others, but rather a situation where we need to decide how to choose and what decisions to make. Ellen Langer (Langer, 2014) believes that mindfulness is the key to choice, and defines mindfulness as “a general style or mode of functioning through which the individual actively participates in reconstructing the environment so as to direct attention to new contextual cues that may be consciously controlled or manipulated”. That is to say that in the state of positive thinking the individual is more inclined to focus on engaging, controlling, creating, changing the environment around them, the development of things, etc. Compared to the abstract awareness and state of positive thinking, social positive thinking is a newly proposed research field based on positive thinking, which focuses more on behaviours related to cognitive information processing (Bahl et al., 2016; Sauer et al., 2012). Before introducing the relevant theories we have to sculpt them appropriately. Social positivity was proposed by Van Doesum on the basis of Western experimental psychology, who argued that

social positivity is a positive interpersonal interaction in which people's choices and actions collectively determine the range of possible outcomes for others. The same interpretation of positive thinking is found in Eastern Buddhist culture, which, in addition to its focus on enhancing unbiased consciousness through meditation, also focuses on altruistic qualities such as kindness and benevolence that are cultivated in practice and ignored in Western thought (Black, 2011). At the same time, China has been a collectivist country since ancient times, emphasising consideration of the choices and feelings of others, from chauvinism and being kind to others, to the modern socialist core values of harmony and friendliness (Li et al., 2014). In view of all of the above, we believe that we should apply the term social mindfulness in this paper to interpret the work that follows. Based on the theory of interdependence and combined with previous research, we give the definition of social mindfulness in this paper: social mindfulness is the pro-social behaviour of engaging in conscious, well-intentioned interactions with each other to consciously take into account the other person's sense of control over one's own choices, preferences, and outcomes.

Driven by the concept that “customer engagement is the key to business success”, companies have been trying new initiatives to form participatory co-operation by catering to customers' preferences or preferences as much as possible. Meanwhile, social mindfulness, which consists of cognitive viewpoint selection and emotional empathy, coincides with the above concept, and scholars have conducted a lot of research on it, and the results are consistent with those of van Lange and van Doesum *et al.*—social mindfulness is a facilitator of cooperation (Williams, 2012; Damen et al., 2020; Bagdasarov et al., 2019). At present, most of the research and application of social mindfulness is in the field of interpersonal behavioural psychology, if we force AI customer service to express social mindfulness as a unique human “feeling” quality will trigger the Valley of Terror effect, resulting in counterproductive effects? We argue that social mindfulness, as mentioned above, is more focused on competence and cognition, and is a behaviour during human-computer interaction, and that Waytz and Norton's (Waytz & Norton, 2014) work on perceptual theories of mind has found that people are more naturally receptive to AIs engaging in tasks that require “competence”, so the expression of social mindfulness still makes the unique “feeling” of humanity belong to humans—the perception of social mindfulness.

### 2.3. Perceived Social Mindfulness and Control Theory

Choice is the exercise of control, recognising control means recognising that there are choices (Rodin, 1986), and in conjunction with the theory of control, the transition to a sense of control occurs when there is a conscious focus on the options available to the other person in the choice situation at hand and a willingness to make decisions that do not limit the choices of the other person (Dou, 2016), as demonstrated and recognised by the other person during the in-

teraction, allowing the receiver to perceive more control over the outcome. Perceived control, also known as a sense of control, refers to people's perceived ability to manipulate their surroundings and has been widely used to explain consumer behaviour since Averill's mention in the field of psychology. In the context of service recovery, perceived control refers to a customer's sense of control over internal and external factors such as information, decision-making, and resources throughout the process, as well as the ability to anticipate the outcome of recovery. A certain degree of increase in perceived control has a positive effect on customers' positive uncertainty (Anne Lee et al., 2007) and positively affects consumer psychology or emotions (e.g., satisfaction) (Wang & Wang, 2007). Therefore, we argue that perceived control conveyed in customers by pro-social behaviours such as social mindfulness is an important safeguard for information and resource matching in the co-creation recovery process.

### 3. Theoretical Model and Hypotheses

#### 3.1. The Dual Psychological Path of Social Mindfulness

The transmission of social mindfulness is a dual-processing process that involves both cognition and emotion (Van Lange & Van Doesum, 2015). Each other will think differently to understand others' thoughts, wishes, views, etc. from their perspectives, i.e., cognitively more able to choose a point of view; at the same time, each other will put themselves in the shoes of others to experience their inner emotions, i.e. (Chen, 2019), emotionally more able to empathise with their concerns. In the previous section, we mentioned that social mindfulness can also be understood as a kind of consciousness, a state of affairs, so how does social mindfulness promote the confirmation of behaviour from perception to reality? Snyder and Swann (Snyder & Swann Jr., 1978) gave the theoretical basis that the interaction between the perceiver and the target individual will lead the target individual to act in a way that is consistent with the perceiver's initial beliefs. In the context of this paper, the interaction between the customer and the AI prior to the start of service recovery allows the customer to express initial views and opinions about service recovery. This "preconception" will guide the AI customer service to act in accordance with the customer's initial beliefs in subsequent interactions. Therefore, in the process of service recovery, the customer's perceived social mindfulness is consistent with his/her initial beliefs, which promotes consistency from cognition to behaviour. At the same time, based on interdependence theory, social mindfulness seeks to maximise the control of others over one's outcomes, and the transition to a sense of control is achieved during the interaction. Perceived risk is powerful in explaining consumer behaviour as it is commonly perceived that customers prefer to avoid errors rather than maximise utility during the service process. Bauer defines perceived risk as the dual structure of uncertainty and adverse consequences perceived by customers during the service process. Where uncertainty refers to an individual's probabilistic assessment of the outcome during the service process (Bauer,



1960), and adverse consequences are usually expressed in terms of the number and importance of losses (Peter & Tarpey Sr, 1975), the sense of control conveyed by perceived social mindfulness allows customers to be less likely to be uncertain and less likely to lose. We argue that since the service provider's socially good behaviour matches customer preferences and opinions, and things are going as they are expected to go, the customer's perception of risk must fall.

Social identity theory indicates that people pay attention to cues that convey information about their status in an interaction and construct their social identity and sense of self-worth from these social cues (Abrams & Hogg, 2006). This may remind us of concepts and theories related to self-esteem in organizational behaviour, but his self-esteem is based on employees' self-perceived value of their relationship with the organization in the context of employee-leader exchange. This self-esteem is based on the consumer-service provider exchange in which customers form a self-evaluation of their relationship with the service provider. For customers, relationship-based self-esteem is important, meaningful, and valuable in service relationships (Guo et al., 2015). The cues conveyed by the organization's self-esteem for the customer during the recovery process constitute the customer's self-worth and status of identity; inclusion stems from a sense of belonging, which involves a feeling of being accepted and valued by others (Hirsch & Clark, 2018). Therefore, relationship-based self-esteem is a way for AI customer service to show respect to customers to satisfy their need for social status and belonging. Deci and Ryan (Van Lange et al., 2011) suggest that social mindfulness is a way of focusing on the needs and interests of others in a way that respects the idea that the majority of people prefer to choose for themselves, while the sense of control given by social mindfulness helps to inform the customer about the recovery process. The customer's sense of self-worth and sense of value to the service provider The client's sense of self-worth and value to the service provider (relationship-based self-esteem) increases (Guo et al., 2015), as does their sense of belonging to the group (Declerck et al., 2013). In addition, based on cognitive consistency theory, when people feel respected in an interaction, they tend to respond to their acquired status by following the rules and cooperating, which creates a virtuous circle that leads to cooperation. Based on the above theories and analyses, we make the following hypotheses:

**H1a:** There is a negative relationship between customers' perceived social mindfulness and perceived risk during co-creation recovery with AI customer service

**H1b:** Customer's perceived social mindfulness is positively related to relationship-based self-esteem during co-creation recovery with AI customer service

### 3.2. The Mediating Role of Perceived Risk, Relationship-Based Self-Esteem

Trust is a fundamental element of social interaction and is essential for building customer relationships and increasing their repeat purchasing behaviour. The inevitability of service failure and the fragility of trust may lead to the erosion of

the pre-existing trust relationship between the customer and the service provider, with obvious implications for both parties. In order to repair this broken relationship, rebuilding trust becomes a necessary step. Apology and compensation strategies are the main trust repair that have been explored and tested to be effective (Božič et al., 2020; Lewicki & Brinsfield, 2017). However, these measures are only one-way outputs from the service provider, and passive acceptance reduces the customer's sense of control, resulting in a reduced sense of experience in recovery and a poor repair effect. Trust is viewed as a psychological state of risk-taking based on positive perceptions of others' behaviour or intentions (Zhang et al., 2011). Customer adoption is determined primarily by the relationship between their perception of risk and their level of trust. Customers are more likely to show trust if their level of trust is higher than their perception of risk. Therefore, trust is closely related to the level of perceived risk, and a low perception of risk is more conducive to the formation of trust. Mayer et al. (Mayer et al., 1995) argue that the establishment of trust consists of perceived trustworthiness as a determinant and trusting behaviours as an outcome, whereas trustworthiness consists of competence, honesty, and benevolence. Compassion is considered to be the core factor of trust, which refers to the willingness of the service provider to serve the customer to the best of his/her ability, putting aside his/her own needs and motives, and acting in the interest of the customer. Relationship-based self-esteem resulting from thinking differently and valuing the customer is an integral part of trust repair. Therefore, we make the following assumptions:

**H2:** Perceived risk mediates between perceived social mindfulness and trust repair.

**H3:** Relationship-based self-esteem mediates the relationship between perceived social mindfulness and trust repair.

### 3.3. The Moderating Effect of Time Constraints

Time urgency, also known as time scarcity and time pressure, is considered by Svenson and Edland (Svenson & Edland, 2008) to be a psychological state or emotional experience of an individual under time constraints, a stressful response of the individual to the constraints. Therefore, we refer to time urgency as a broad concept, which involves not only objective time constraints, but also the effects perceived by an individual after experiencing a sequence of mental activities. For example, the perceived opportunity cost and risk cost of the recovery process can cause customers to perceive time pressure (Zhao et al., 2015). Time constraints create a situational definition of resource scarcity for customers, and their increased arousal levels and psychological stress can significantly affect an individual's cognitive processing. According to the Resource Risk Interaction Theory, when customers are in a resource-limited situation, they are more inclined to adopt strategies that allow them to focus their resources more efficiently, thus increasing the attractiveness of the co-creation recovery process. In

addition, our model is put into the cognitive information processing framework, and Payne et al. (Payne et al., 1996) argues that under time constraints customers will selectively and purposely filter or omit part of the information, reducing the amount of cognitive resources consumed, and thus reducing the cognitive load. In the study of consumer behaviour, scholars call such behaviour “heuristic” information processing, which is a way for customers to reduce the systematic information processing process under pressure and simplify their consumption behaviour. The two-way transmission of information and mutual perception is the main support for the perception of social mindfulness of the dual psychological path, in view of the above, then in the impact of time constraints and how their psychological path will change. So we make the following assumptions:

**H4a:** Time urgency moderates the relationship between social mindfulness and perceived risk.

**H4b:** Time urgency moderates the relationship between social mindfulness and relationship-based self-esteem. The specific model of the entire article is shown in **Figure 1**.

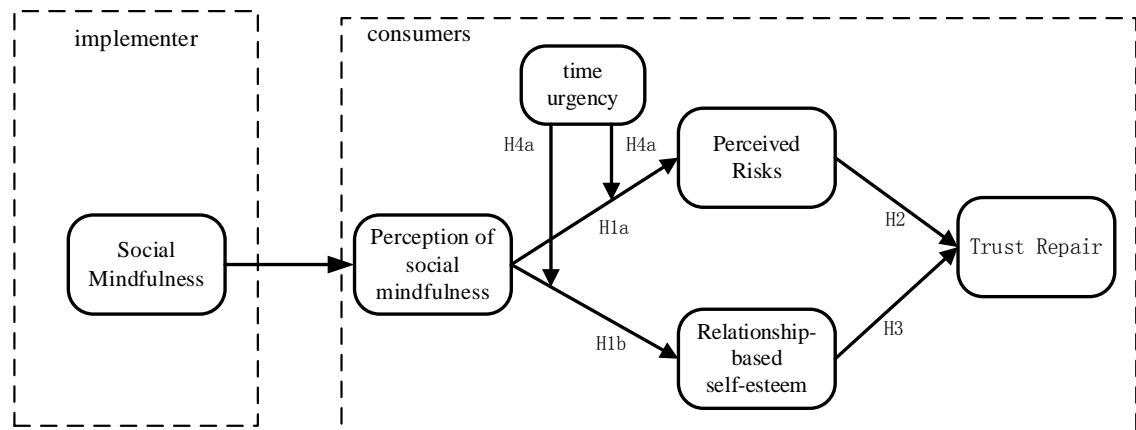
## 4. Methods

### 4.1. Study 1

#### 4.1.1. Participants and Procedure

Gpower 3.1.9.7 was used to calculate the sample size, with a significance level of  $\alpha = 0.05$ , a validity of 0.5, and a statistical power of  $1 - \beta = 0.8$ , requiring a sample size of 128. 181 subjects were recruited to participate in this one-way bi-level inter-subjects experiment in the campus classroom, and the questionnaires that took too short a time to fill in were excluded through the screening process (less than one minute). The selected subjects are all MBA students with over three years of work experience. A total of 165 participants, with an effective return rate of 91%. All subjects had witnessed or experienced service failure in the past three months, and were given classroom credit and a chance to receive a RMB 3 - 5 cash bonus after the offline experiment. Sample details can be found in **Table 1**.

Subjects were randomly placed into high and low social mindfulness groups and were informed that the purpose of this experiment was to conduct perceived social mindfulness and trust measures, after which subjects were presented with materials for controlling social mindfulness and co-creation of service recovery in the context of a malfunctioning AI service robot in a hotel, and subjects completed the scenarios and experimental interactions with Player A in the lab via E-prime 2.0 (Player A was controlled by the programme). The social mindfulness paradigm developed by Van Lange et al. (Van Lange et al., 2013). (“SoMi paradigm”) was used for the assessment and manipulation of social mindfulness. After reading the material, subjects scored each item on a 7-point semantic differential scale. The detailed information of the experimental materials can be found in **Figure C1** and **Figure C2** in **Appendix C**.



**Figure 1.** Theoretical model of customers' perceived social mindfulness towards smart customer service in co-creation service recovery.

**Table 1.** Demographic profile of customers.

Demographic Variables	Percentage
<b>Gender</b>	
Male	40.8
Female	59.2
<b>Age group</b>	
18 - 24 years	42.6
24 - 30 years	28.8
30 - 36 years	28.6
<b>Spending power (RMB)</b>	
1000 - 1500	22.4
1500 - 2000	37.1
2000 - 2500	28
Over 2500	12.5

#### 4.1.2. Manipulation of Social Mindfulness

Participants simulated service scenarios by playing an item choice game with Player A in a computer programme that served as a perceived social mindfulness stimulus for participants. Each choice in each choice game in both scenarios (high perceived social mindfulness, low perceived social mindfulness) had only one of the four items that had the same size, shape, and other characteristics in addition to being inconsistent in colour. In the High Perceived Social Mindfulness group, Player A chose 20% of unique items and 80% of non-unique items; in the Low Perceived Social Mindfulness group, Player A chose 80% of unique items and 20% of non-unique items. There were 24 rounds of the game, 6 of which were control conditions to ensure operational adequacy, in which there were no unique choices for the items that appeared in the 6 rounds, and 2 items of each colour appeared in each of the 24 rounds of the choice game. Each item was presented randomly, and the position of the item in each round was also

randomised.

#### 4.1.3. Manipulation Test

Compared to the low social mindfulness group, subjects in the high social mindfulness group perceived A to have a lower level of self-interest ( $t = -27.31$ ,  $p < 0.001$ ,  $d = -2.67$ ), liked Player A more ( $t = 22.417$ ,  $p < 0.001$ ,  $d = 2.69$ ), expected to meet him/her in real life ( $t = 14.389$ ,  $p < 0.001$ ,  $d = 2.643$ ), and were more willing to work with Player A ( $t = 16.209$ ,  $p < 0.001$ ,  $d = 2.643$ ). ( $t = 14.389$ ,  $p < 0.001$ ,  $d = 2.643$ ), and more willing to work with Player A ( $t = 16.209$ ,  $p < 0.001$ ,  $d = 2.08$ ). This shows that subjects perceived Character A to be friendlier in the high social mindfulness group, suggesting that the manipulation of social mindfulness levels in this experiment was reliable.

#### 4.1.4. Survey Design

The measurement items of the variables were mainly selected from well-established domestic and international scales. In order to ensure that the subjects fully understood the content of the survey, the concepts of perceived social mindfulness, perceived risk, relationship-based self-esteem, and urgency of recovery were explained to the subjects, and they were asked to judge whether or not they were affected by these factors when recovering from co-creation services. The content of the questionnaire measurement items and their sources are shown in the table below, and all variables were scored on a 7-point Likert scale, with some items requiring reverse processing. (For details, see **Appendix A**)

**Perceived Social Mindfulness** The measure of perceived social mindfulness consisted of four secondary variables: Willingness to cooperate, Desire to meet, Degree of liking, and Level of perceived self-interest, with a total of 12 items measuring customers' perceptions of social mindfulness of intelligent customer service (e.g., "Would you like to have dinner with Player A"; "How much do you like Player A? degree"). These items were taken from Dou et al. (Dou et al., 2018) and adapted to fit the service setting, each secondary variable was averaged through three question items, and perceived social mindfulness was averaged through four secondary variables.

**Other adapted scales.** To measure perceived risk, we adapted 4 items of an established scale from Walker et al. (Walker et al., 2002), A suitability index was created by averaging the four question items. To measure relationship-based self-esteem, we adapted 3 items of an established scale from Guo et al. (Guo et al., 2015). To measure trust repair, we adapted 6 items of an established scale from Jarvenpaa et al. (Jarvenpaa et al., 2000) and Pavlou (Pavlou, 2003) and adapted to fit the service setting, An index of Trust repair was created by averaging the items, with higher scores indicating greater trust repair.

#### 4.1.5. Analysis and Results

Firstly, SPSS26.0 was used to conduct second-order CFA and reliability analysis on the second-order dependent variable perceived social mindfulness, while CFA was conducted on the first-order variables, the Cronbach's  $\alpha$  coefficients of

all the second-order variables are above 0.70, which indicates that the measurement scales have good reliability. The factor loadings of each item corresponding to each latent variable of the second-order variables of Willingness to cooperate, Desire to meet, Liking, and Perceived self-interest level are all greater than 0.5, indicating that the items corresponding to each latent variable are highly representative. (For details, see **Appendix A**)

All variables showed significant correlations with each other ( $p < 0.01$ ). At the same time, these correlations were all less than the square root of the corresponding average extracted variance (AVE), which indicates that despite the correlations between the latent variables, they are still significantly differentiated. Therefore, the discriminant validity of the scale is ideal and the results of the test of discriminant validity are displayed in **Table 2**. In addition, by conducting CFA on the valid data of the questionnaire using AMOS 22.0 software, each of the mindfulness-of-fit indicators met the basic requirements, thus comprehensively indicating that the overall model fit was good. The test indicators for model fit are detailed in **Table 3**.

**Common methodology bias.** Since the data for all variables in this study were derived from questionnaires, there is a possibility of common methodological bias. In order to minimise the impact of this bias, the study was first implemented using procedural control methods. Before distributing the questionnaires, it was made clear to participants that the questionnaires were anonymous, that there were no right or wrong answers, and that the answers would be used only for academic research and would be kept confidential. In addition, participants filled in the questionnaires at different times, either in the morning or in the afternoon or evening. Nonetheless, procedural controls did not completely eliminate common method bias. Therefore, we also used Harman's one-way test to detect common method bias and conducted an unrotated principal component analysis on the entries of all variables. The results of the analysis showed that there were five factors with eigenvalues greater than one. The first factor explained 18.195% of the total variance, which is well below the critical value of 40%, indicating that the data in this study do not suffer from serious common method bias.

**Table 2.** Overall model discriminant validity.

Variant	Perceived Social Mindfulness	Relationship-based Self-esteem	Perceived Risk	Trust Repair
Perceived Social Mindfulness	0.436			
Relationship-based Self-esteem	0.618***	0.658		
Perceived Risk	-0.443***	-0.583***	0.657	
Trust Repair	0.443***	0.502***	-0.637***	0.387
Square root of AVE value	0.661	0.811	0.811	0.622

Note: \* represents  $p < 0.05$ , \*\* represents  $p < 0.01$ , \*\*\* represents  $p < 0.001$ , two-tailed, same below.

**Table 3.** Key metrics for model fit testing.

<b>Fitness (of device)</b>	$\chi^2/df$	GFI	RMSEA	CFI	IFI	TLI	NFI
Reference point	1 < NC < 3	>0.8	<0.08	$\geq 0.90$	$\geq 0.90$	$\geq 0.90$	$\geq 0.80$
Actual value	1.438	0.845	0.076	0.936	0.939	0.918	0.823

**Main effects.** Through regression analysis, gender, age, and monthly living expenses were used as control variables. Perceived social mindfulness on trust restoration ( $\beta = 0.566$ ,  $t = 4.055$ ,  $p < 0.001$ ), the direct effect of independent variables with dependent variable was established. Customer perceived social mindfulness on perceived risk in co-creation restoration ( $\beta = -0.404$ ,  $t = -3.579$ ,  $p = 0.001 < 0.01$ ), which indicates that customer perceived social mindfulness for co-creation restoration produces a significant negative effect relationship on perceived risk, Hypothesis H1a is established; similarly customer perceived social mindfulness is considered as an independent variable, the presence of self-esteem based on the relationship is considered as a dependent variable and gender, age, and monthly cost of living as control variables for regression analysis. The value of regression coefficient of the independent variable is ( $\beta = 0.561$ ,  $t = 5.853$ ,  $p = 0.000 < 0.01$ ), so customers' perceived social mindfulness will have a significant positive influence on relationship-based self-esteem existence, and hypothesis H1b is valid.

**Intermediation effects analysis.** In this study, demographic variables such as gender, age, and monthly living expenses were used as control variables for independent samples t-test and ANOVA analysis of variance, and it was found that the sample gender did not have significant differences among the variables, while monthly living expenses and age had significant differences among all the variables, so in this paper, the regression analyses were carried out with the mediator model using the average monthly income and age as control variables. The hypotheses H1a, H1b were verified based on the relationship self-esteem ( $\beta = 0.253$ ,  $t = 2.005$ ,  $p < 0.001$ ), perceived risk ( $\beta = -0.527$ ,  $t = -5.529$ ,  $p < 0.001$ ). The regression analysis results of the mediation model are shown in Table 4.

To test whether relationship-based self-esteem and/or perceived risk mediated the association between perceived social mindfulness and trust repair, we used the PROCESS extension to SPSS. Bootstrap method was applied to the factors for 5000 iterations and finally, the 95% confidence interval levels of the variables were extracted. To further enhance the test of mediating effects, the process plug-in in SPSS26 was used and the results of the test are shown in Table 5. The indirect effect of relationship-based self-esteem between perceived social mindfulness and trust repair was significant; perceived risk also had a significant mediating effect between perceived social mindfulness and trust repair, and hypotheses H2 and H3 were tested. Differences in the mediating effects of relationship-based self-esteem and perceived risk were not significant and had equal explanatory validity.

**Table 4.** Regression analyses of the intermediary model.

Variant	Trust Repair			Relationship-based Self-esteem	Perceived Risk
	Model 1	Model 2	Model 3		
Age	0.061	0.098	0.076	-0.046	0.07
Monthly living expenses	0.008	0.025	0.052	-0.136	0.033
Perceived Social Mindfulness	0.435 <sup>***</sup>	0.222 <sup>**</sup>	0.253 <sup>**</sup>	0.561 <sup>***</sup>	-0.404 <sup>***</sup>
Perceived Risk	-	-0.527 <sup>***</sup>	-	-	-
Relationship-based Self-esteem	-	-	0.324 <sup>***</sup>	-	-
R <sup>2</sup>	0.291	0.508	0.35	0.432	0.508
Adjusted R <sup>2</sup>	0.24	0.466	0.294	0.392	0.466
F Value	5.737 <sup>***</sup>	11.896 <sup>***</sup>	6.198 <sup>***</sup>	10.652 <sup>***</sup>	11.896 <sup>***</sup>

**Table 5.** Mediation effect detection for Bootstrap analysis.

Effect type	$\beta$	Boot SE	Bootstrap 95% CI		Percentage of relative mediation effects (%)
			Boot LLCI	Boot ULCI	
Total Effect	0.435	0.107	0.225	0.645	-
Perceived Social Mindfulness → Trust Repair	0.222	0.098	0.03	0.414	
Perceived Social Mindfulness → Relationship-based Self-esteem → Trust Repair	0.182	0.127	0.004	0.479	41.839
Perceived Social Mindfulness → Trust Repair	0.253	0.126	0.016	0.5	
Perceived Social Mindfulness → Perceived Risk → Trust Repair	0.213	0.09	0.06	0.414	48.966

## 4.2. Study 2

### 4.2.1. Study Design and Data Collection

Experiment 2 used a 2 (perceived social mindfulness: high/low) × 2 (time urgency: high/low) between-groups experimental design, with a sample size calculated using Gpower 3. 1.9, with a significance level of  $\alpha = 0.05$ , a validity of 0.25, and a statistical efficacy of  $1 - \beta = 0.95$ , requiring a sample size of 210. 256 subjects were recruited to participate in this experiment, and 254 were screened out of the questionnaire. Also through the campus classroom, 256 subjects were recruited to participate in the experiment, and the questionnaires with too short a response time (less than 1 minute) were screened out, and a total of 244 valid questionnaires were returned, with an effective recovery rate of 95.31%. The selected subjects are all MBA students with over three years of work experience. All subjects had no history of mental illness and had witnessed and experienced a service failure in the last three months, and were given classroom credit and a chance to receive a 3 - 5 RMB cash envelope at the end of the experiment. Sample details can be found in **Table 6**.



**Table 6.** Demographic profile of customers.

Demographic Variables	Percentage
<b>Gender</b>	
Male	43.44
Female	56.56
<b>Age group</b>	
18 - 24 years	39.8
24 - 30 years	24.6
30 - 36 years	35.6
<b>Spending power (RMB)</b>	
1000 - 1500	13.9
1500 - 2000	28.4
2000 - 2500	30.2
Over 2500	27.5

Subjects were randomly assigned to four experimental groups and were told that the purpose of the experiment was to conduct measures of perceived social mindfulness and trust. The steps of Experiment 1 were repeated for the perceived social mindfulness measure. Afterwards subjects are shown the materials for co-creation of recovery between AI customer service and customers after a service failure occurs in the context of online shopping, and control over time urgency is achieved by adding recovery time limits and resource limits in the experiments and materials, such as conducting the lab to add a new countdown timer function, “when it is used the day after tomorrow at the graduation party”, “when used at the graduation ceremony one month later”, etc. After reading the material, the subjects scored each item on a 7-point semantic differential scale.

#### 4.2.2. Measures and Manipulation Test

**Time urgency.** A total of six question items were used to measure customers’ perceived relationship-based self-esteem (e.g., “I feel an urgency to get it done as soon as possible”) during the co-creation recovery process with intelligent customer service. These question items were taken from Collier and Barnes (Collier & Barnes, 2015) and adapted to fit the service setting. A suitability index ( $\alpha = 0.927$ ) was created by averaging the four question items.

#### 4.2.3. Manipulation Test

1) Time urgency manipulation: the results showed that there was a significant difference between high time urgency and low time urgency [ $M_{\text{high}} = 5.44$ ,  $M_{\text{low}} = 3.21$ ;  $t(244) = 23.514$ ,  $p < 0.01$ ], and the time urgency variable was successfully manipulated.

2) Manipulation of perceived social mindfulness: the results showed that there was a significant difference in willingness to work together (WC) [ $M_{\text{high}} = 5.13$ ,  $M_{\text{low}} = 3.24$ ;  $t(244) = 20.67$ ,  $p < 0.01$ ], significant difference in looking forward

to the encounter (DM) [ $M_{\text{high}} = 5.31$ ,  $M_{\text{low}} = 3.21$ ;  $t(244) = 21.55$ ,  $p < 0.01$ ], and liking level (L) significant difference [ $M_{\text{high}} = 5.12$ ,  $M_{\text{low}} = 2.95$ ;  $t(244) = 22.96$ ,  $p < 0.01$ ], and level of perceived self-interest (PSI) [ $M_{\text{high}} = 2.93$ ,  $M_{\text{low}} = 5.06$ ;  $t(244) = -23.03$ ,  $p < 0.01$ ], and the variable of perceived social mindfulness was successfully manipulated in this experiment

#### 4.2.4. Analysis and Results

**Correlation analysis.** Pearson's correlation analysis was first performed on the variables. Sense of time urgency and perceived social mindfulness ( $r = 0.629$ ,  $p < 0.05$ ) and relationship-based self-esteem ( $r = 0.666$ ,  $p < 0.05$ ) have a positive correlation. Time urgency and perceived risk had a negative correlation ( $r = -0.237$ ,  $p < 0.05$ ). The results of the correlation analyses between the variables set the stage for the hypothesis testing below.

**Detection of the moderating effect of time urgency.** In the analysis of the moderating effect of time urgency in perceived social mindfulness on perceived risk, gender, age, and monthly cost of living were used as control variables and found to be insignificant in the moderated model analysis. The model was tested by using perceived risk, and relationship-based self-esteem as mediator variables, time urgency as the moderator variable and trust repair as the dependent variable. The validation of this moderating effect was tested using Model 7 in PROCESS, and after 5000 iterations of the factors by Bootstrap method, the interaction and direct effects between the variables were finally extracted for analysis. The results are shown in **Table 7**.

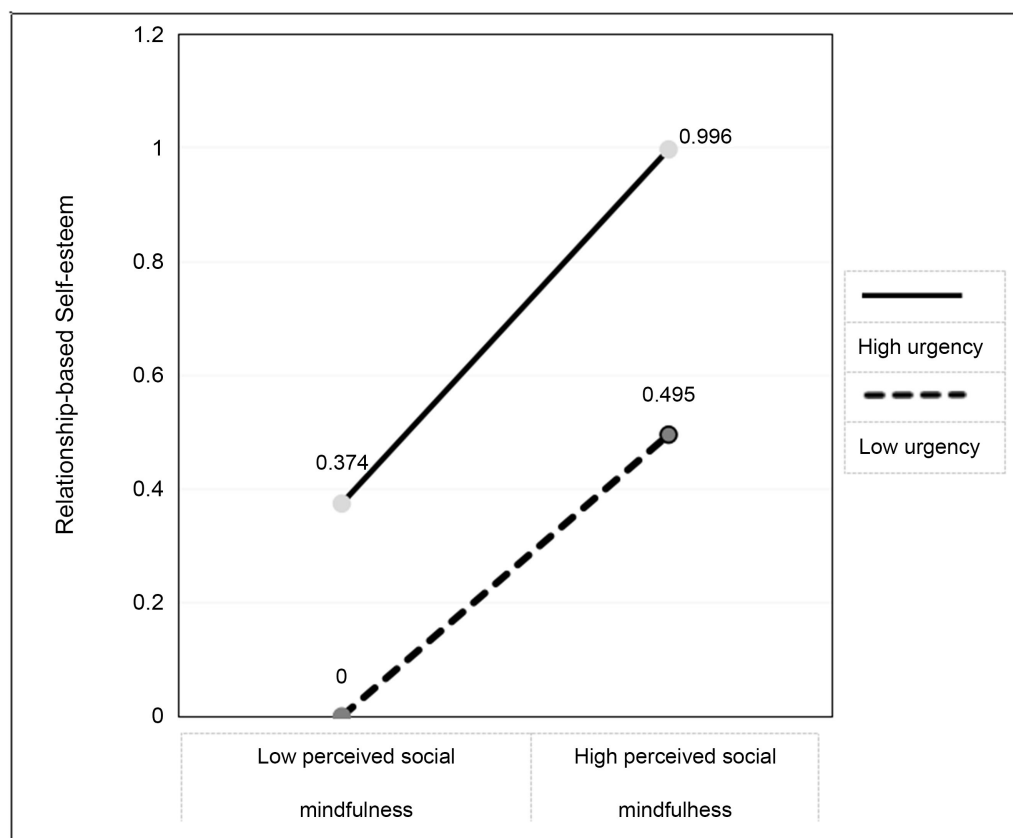
**Table 7.** Regression analysis of moderating effects.

Variant	Trust Repair Model 1				Relationship-based Self-esteem Model 2				Perceived Risk Model 3			
	$\beta$	SE	t	p	$\beta$	SE	t	p	$\beta$	SE	t	p
	0.305	0.589	0.519	0.605	-0.588	0.438	-1.344	0.181	-0.715	0.579	-1.234	0.219
Perceived Social Mindfulness	0.273	0.101	2.691	0.018**	0.495	0.069	7.164	0.000**	-0.542	0.091	-5.924	0.000**
Time Urgency					0.374	0.072	5.191	0.000**	0.055	0.096	0.571	0.569
Perceived Social Mindfulness * Time Urgency					0.127	0.058	2.208	0.029*	-0.264	0.076	-3.467	0.013**
Relationship-based Self-esteem	-0.075	0.112	-0.672	0.503								
Perceived Risk	-0.39	0.088	-4.408	0.000**								
R <sup>2</sup>		0.283				0.606				0.31		
Adjusted R <sup>2</sup>		0.243				0.585				0.272		
F □		8.274, $p = 0.000$				32.359, $p = 0.000$				9.447, $p = 0.000$		

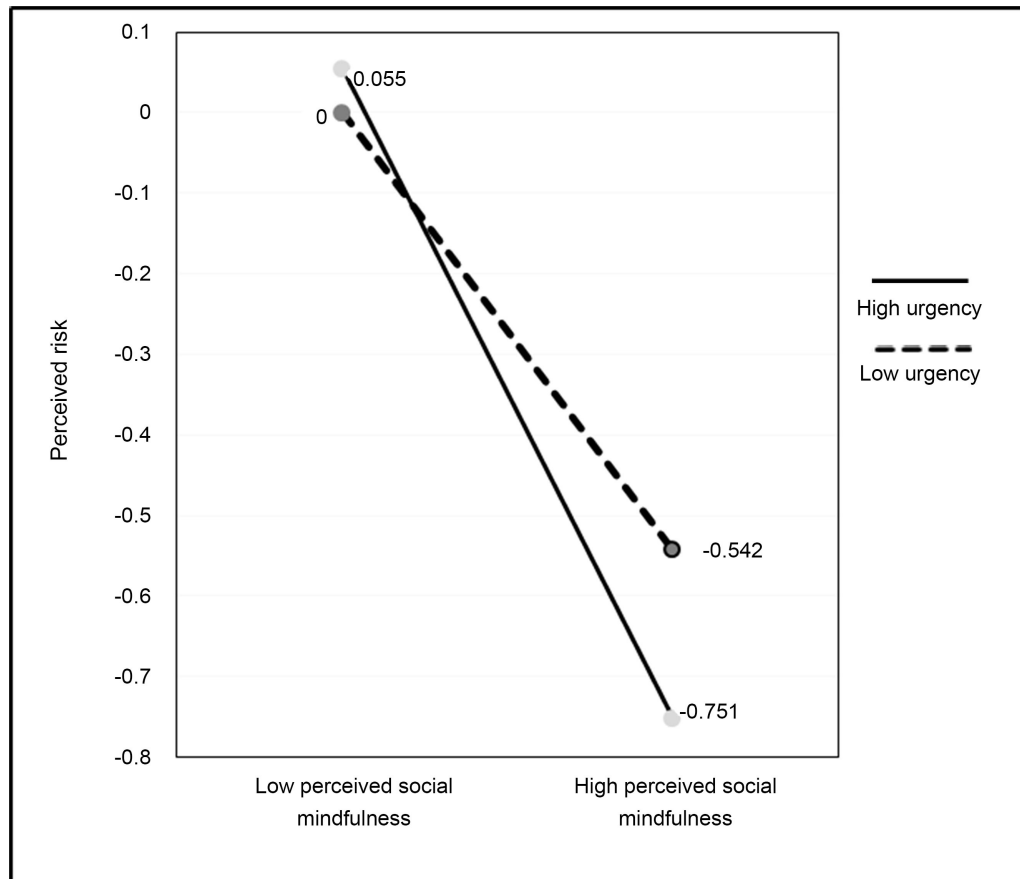
In Model 1, the independent variables perceived social mindfulness, perceived risk, and relationship-based self-esteem and trust repair were first analyzed by regression. In the moderated model, perceived social mindfulness and perceived risk have a significant effect on trust repair ( $\beta = -0.39$ ,  $t = -4.408$ ,  $p < 0.01$ ), and perceived social mindfulness and relationship-based self-esteem are not significant on trust repair.

In Model 2, the independent variables perceived social mindfulness, time urgency, and the interaction term between the two and relationship-based self-esteem were further regressed and analysed. The results showed a significant effect of the interaction term of perceived social mindfulness and time urgency ( $\beta = 0.127$ ,  $t = 2.208$ ,  $p < 0.05$ ). Thus time urgency has a moderating and positive effect on the effect of perceived social mindfulness on relationship-based self-esteem and H4b holds.

In model 3, further regression analyses of the independent variables perceived social mindfulness, time urgency and the interaction term and perceived risk ( $\beta = -0.264$ ,  $t = -3.467$ ,  $p < 0.05$ ). Therefore, it can be assumed that time urgency has a moderating role and a negative moderating role in the effect of perceived social mindfulness on perceived risk, and hypothesis H4a is valid. In order to visualise the moderating role of entrepreneurial passion, this paper draws a moderating role diagram, as shown in **Figure 2** and **Figure 3**.



**Figure 2.** Moderating effect of time urgency on relationship-based self-esteem.



**Figure 3.** Moderating effect of time urgency on perceived risk.

## 5. Discussion & Conclusion

### 5.1. Discussion

Based on control theory and interdependence theory, this study conducted two scenario experiments in accordance with the SoMi paradigm and collected data to explore the influence mechanism of customers' perception of social mindfulness expressed by AI customer service on trust repair in the process of co-creation of service recovery with AI customer service. The results of the study show that: 1) Perceived social mindfulness has a positive effect on trust repair. 2) In the process of co-creation recovery with AI customer service, there is a negative correlation between customers' perceived social mindfulness and perceived risk and a positive correlation with relationship-based self-esteem. 3) Perceived risk has a significant negative effect on trust restoration, relationship-based self-esteem has a significant positive effect on trust restoration and both play a mediating role between perceived social mindfulness and trust restoration. 4) Recovery time urgency negatively moderates the negative effect of perceived social mindfulness on perceived risk. 5) Recovery time urgency positively moderated the positive effect of perceived social mindfulness on relationship-based self-esteem. The research hypotheses are all supported, and the findings have some theoretical value for research in the field of social mindfulness.

**Theoretical Implications.** The main contributions of this paper are as follows: 1) In the context of the deepening development of China's AI market, the driving effect of social mindfulness on trust repair demonstrated by the service provider from a pro-social perspective is interpreted in depth, expanding the cognitive process of Lewicki and Brinsfield (Lewicki & Brinsfield, 2017)'s study on the trust repair of AI customer service behaviours in the context of service failures, and supporting the viewpoint of "Do not do to others what you would not want them to do to you" in the theory of service marketing. 2) Based on the interdependence theory and control theory, the mechanism and path of the role of perceived risk and relationship-based self-esteem in social mindfulness-driven trust repair are elaborated in detail from the perspective of the customer in the co-creation of recovery with AI customer service, and it is argued that the cognitive and affective roles of perceived social mindfulness will trigger the changes of perceived risk and relationship-based self-esteem, which can achieve the effect of trust repair on the service provider by enhancing or weakening the sense of control over the affairs, of which perceived risk and relationship-based self-esteem can be enhanced or weakened through the influence on trust repair. The effects of trust repair were found to be opposite to those of perceived risk and relationship-based self-esteem. The findings also suggest that social mindfulness has a direct positive effect on trust restoration, a finding that further validates the views of Van Doesum and Doukai et al. The trust repair behaviour driven by social mindfulness in the co-creation recovery process not only breaks through the previous direction constraints and way barriers in the service recovery process carried out by service organizations, but also helps to cross the step from experience to emotional economy, which provides theoretical support for service organizations to enhance pro-social behaviours in the marketing process. 3) The moderating effect of recovery urgency on the dual path of perceived social mindfulness is elucidated at the level of environment and atmosphere. While bridging the gap between previous research on the relationship between social mindfulness and time urgency, the study finds that restoring urgency plays an important role in the dual path of perceived social mindfulness, enriching the study of the impact of environmental and atmospheric factors on service recovery.

## 5.2. Managerial Implications

The findings of the study have important practical implications for service organizations in the service recovery phase in the era of the "emotional economy". Managers need to make full use of the advantages of customer involvement in service recovery and develop the appropriate capabilities to create a desirable recovery experience for customers. First of all, managers should realise that in the process of service recovery, customers are not only worried about the risks (especially economic risks) of recovery but also want to achieve the corresponding status and social value through a certain degree of control in the process of

recovery, which is achieved through the transition of control through the dual psychological paths brought about by the idea of social mindfulness. So managers can appropriately increase the training of corresponding skills and behavioural performance in the design of AI customer service and training of frontline staff, and at the same time, through the design of service interactions and physical environments, let the customers know that their value co-creating is appreciated, and through pro-social behaviours such as social mindfulness to improve the success rate of the organization's service recovery, and to strengthen the emotional connection with the customers.

Secondly managers should realise that human-computer collaboration represents the next frontier and that customer engagement is the focus of experience management, which means that organizations should make clever use of customer integration in their strategy development. For example, in newproduct/service development and incremental innovation, companies should not ignore or underestimate the integration of customer value co-creation. Especially for startups, from the initial stages of business operations, they may want to consider cleverly positioning their business to integrate customer value co-creation. Humans "dancing together" with AI has been described as a key change in the fifth industrial revolution. In conjunction with socio-technical theory, when social and technological factors interact, maximising one or the other without considering their strengths and weaknesses will only produce sub-optimal results. Therefore interpersonal relationships, empathy, and emotions are more important to frontline staff and customers at this stage of their lives than the mechanical and thinking tasks of the past, making it all the more important for managers to focus on each other to improve their emotional and empathetic skills in the interaction process and combine them with the thinking skills of AI to maximise the strengths of social and technological factors. In this process, human beings view intelligent customer service according to the social perception of warmth and competence, and can appropriately add pro-social behavioural elements similar to social mindfulness to enhance the degree of anthropomorphism of the AI, so that the two can be better integrated to enhance the customer's consumption experience and to achieve a smoother and more acceptable transition from thinking to emotion.

### **5.3. Limitations and Future Research Directions**

There are some limitations to this study, firstly in Confucian and collectivist cultures such as China, there is a preference for sharing and external orientation, service organizations may be encouraged to implement pro-social behaviours such as social mindfulness, customers are encouraged to participate in co-creation of service recovery, and these characteristics may be applicable to organizations and consumers in some Asian countries. Future research could validate the proposed model with cross-cultural samples, such as those in Europe and the United States, which are imbued with different cultures. The cross-sectional re-

search design used in this study fails to adequately consider the effects of trust repair in long-term relationships. For example, users may have a certain tolerance for frequent service failures of an organization, and trust repair strategies and effects may differ between multiple service failures and single service failure scenarios. Future research could adopt a longitudinal design or experimental approach, utilising cross-aggregation designs and multi-layer linear models to delve deeper into issues such as trust repair in long-term relationships. In addition, the perception of social mindfulness is affected by a variety of factors, including consumers' own values, emotions, and behavioral styles, all of which may have a potential impact on the perception of social mindfulness. Therefore, this paper is not comprehensive in the selection of control variables. Subsequent studies should consider more influencing factors as control variables in order to refine the conclusions of the study. At the same time, in the future, the relevant theories of social kindness can be materialized and applied in intelligent customer service, intelligent robots, and emotional intelligence.

### **Declaration of Interest Statement**

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### **Data Availability**

The data that support the findings of this study are available from the corresponding author, SC, upon reasonable request.

### **Acknowledgements**

This work was supported by Yunnan University of Finance and Economics Graduate Innovation Project Fund ("Medical Intelligence Peers: Exploring the Role of Identity Fusion in Medical AI and Healthcare Collaboration.", 2024YUFEYC050, Hao Meng). and Yunnan University of Finance and Economics Graduate Innovation Project Fund ("Is quantitative investment a challenger or a promoter in the market? An in-depth study based on the concept of sustainable investment." 2024YUFEYCO44, Zirui Wang).

### **Conflicts of Interest**

The authors declare no conflicts of interest regarding the publication of this paper.

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## Appendix A

### Scale Reliability and Validity

Variant	code	Items	Estimated Value	Cronbach's $\alpha$	AVE C.R.	Source of items
Willingness to cooperate	WC1	Would you like to work with him/her?	0.755	0.811	0.591 0.812	
	WC2	Are you willing to share your resources with him/her?	0.805			
	WC3	Are you willing to give up your time off to help him/her with his/her tasks?	0.743			
Desire to meet	DM1	I hope to meet him/her in real life	0.847	0.905	0.764 0.907	
	DM2	I would like to have dinner with him/her	0.892			
	DM3	I want him/her to be my colleague or classmate	0.882			
Liking	L1	I appreciate his/her performance in interactive games	0.876	0.893	0.746 0.898	Dou et al. (2018)
	L2	I especially hate him/her.	0.874			
	L3	I had a great time interacting with him/her	0.841			
Perceived self-interest level	PSI1	From his behaviour just now, you can see that he/she is a selfish person	0.922	0.943	0.746 0.898	
	PSI2	I can appreciate that he/she chose with full consideration of my feelings	0.96			
	PSI3	I can appreciate that he/she chose with full consideration of my feelings	0.883			
Perceived Social Mindfulness	WC	*	0.574	0.743	0.436 0.753	Dou et al. (2018)
	DM	*	0.772			
	L	*	0.696			
	PSI	*	0.579			
Relationship-based Self-esteem	RBSE1	I feel that I am a valued client of the service organisation	0.768	0.848	0.658 0.852	Guo et al. (2015)
	RBSE2	I assume that AI Customer Service will take my rights and interests into account during the service process	0.835			
	RBSE3	I feel that I am a co-operative participant in this service delivery process	0.83			
Perceived Risk	PR1	The feedback I've received in this co-creation recovery makes me less worried about the effectiveness of co-creation recovery	0.808	0.883	0.657 0.884	Walker et al. (2002)
	PR2	Co-creating service recovery with AI customer service is reliable	0.841			
	PR3	I think this co-creation service with AI customer service will go as I hope it will	0.734			
	PR4	I'm not too worried about the consequences of this failure to co-create a service with AI customer service	0.855			
Time Urgency	TU1	I feel anxious to finish as soon as possible	*	0.927	0.812 0.928	Collier & Barnes (2015)
	TU2	There was a pressure on me to complete the service recovery process as soon as possible	*			
	TU3	I feel some stress about the small amount of relevant resources I have been able to mobilise for the recovery process.	*			
Trust Repair (TR = IT – FT)	TR1	*	0.698	0.622	0.387 0.712	Jarvenpaa et al. (2000) and Pavlou (2003)
	TR2	*	0.664			
	TR3	*	0.509			

## Appendix B

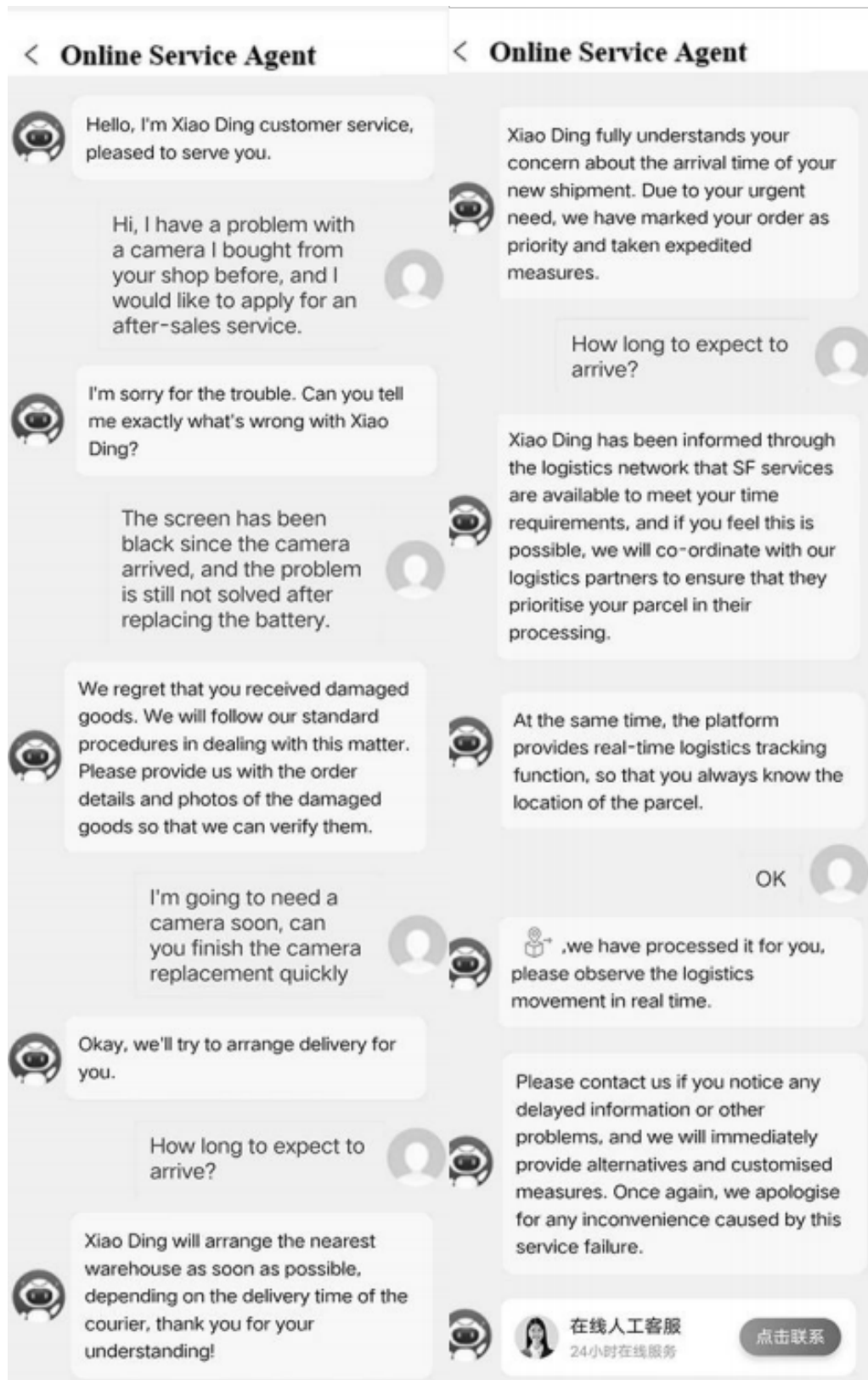
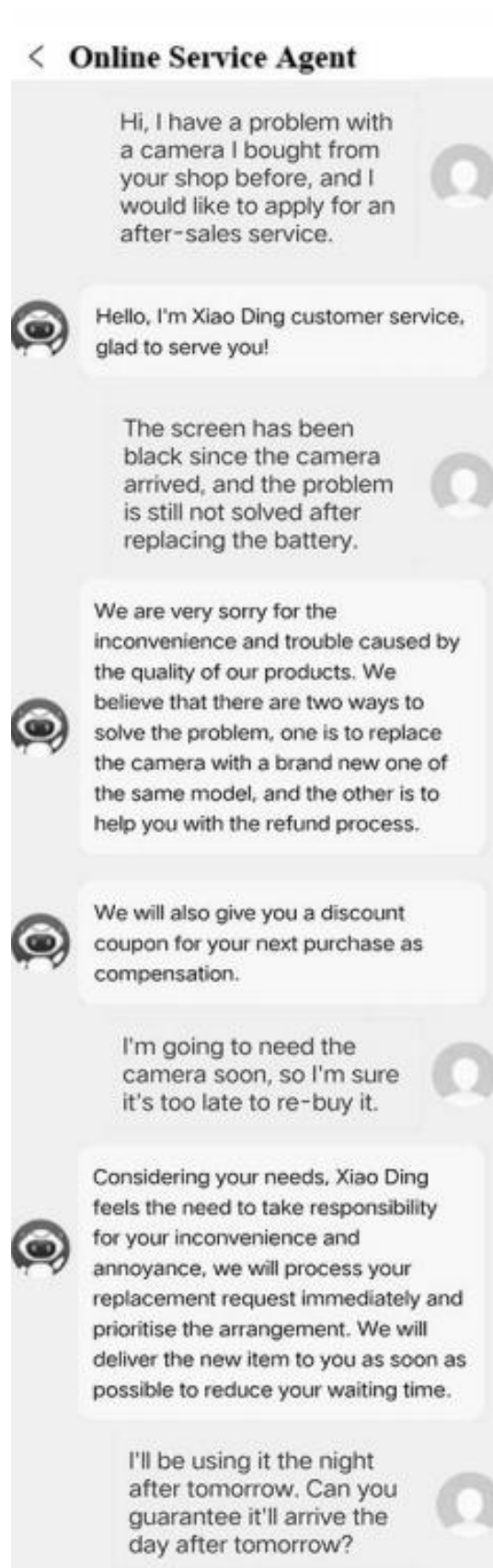
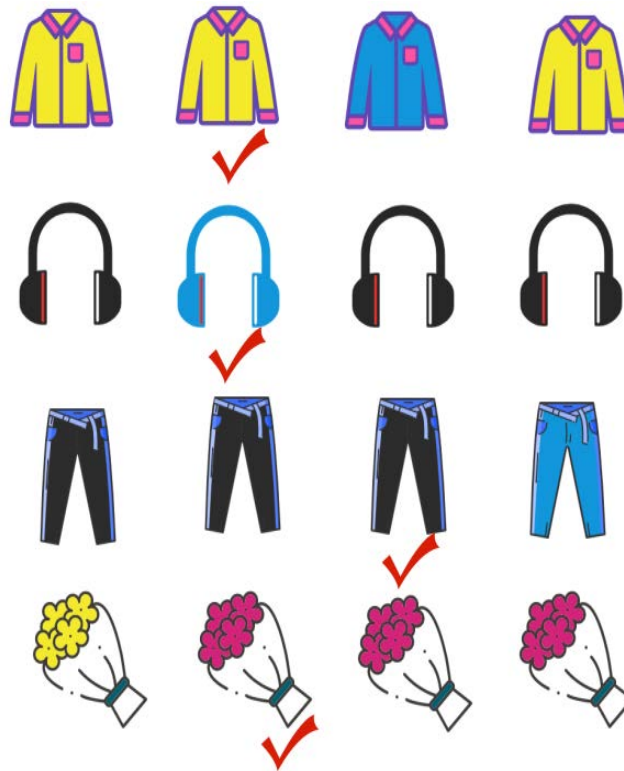


Figure B1. AI customer service shows high social mindfulness

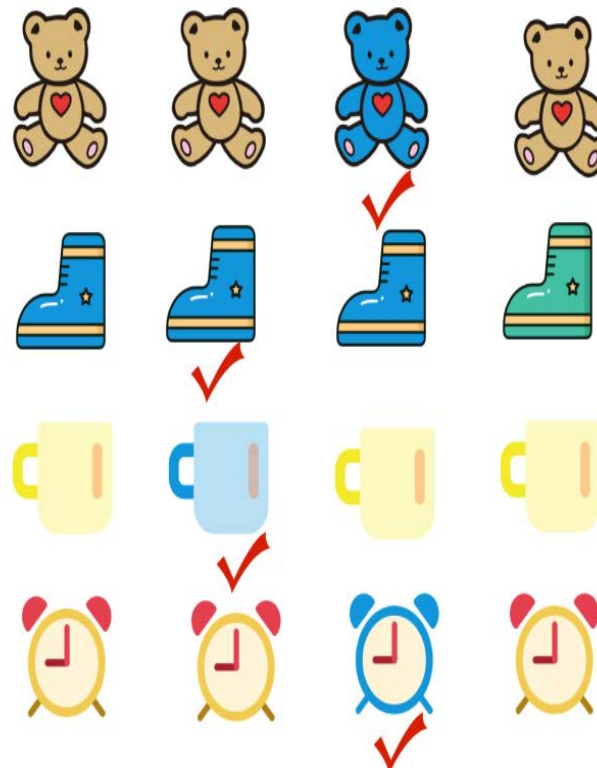


**Figure B2.** AI customer service show slow social mindfulness.

## Appendix C



**Figure C1.** Experimental materials for High social mindfulness.



**Figure C2.** Experimental materials for Low social mindfulness.