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Customers often react strongly to service failures, so it is critical that an organization's recovery efforts be equally strong and effective. In this article, the authors develop a model of customer satisfaction with service failure/recovery encounters based on an exchange framework that integrates concepts from both the consumer satisfaction and social justice literature, using principles of resource exchange, mental accounting, and prospect theory. The research employs a mixed-design experiment, conducted using a survey method, in which customers evaluate various failure/recovery scenarios and complete a questionnaire with respect to an organization they recently had patronized. The authors execute the research in the context of two different service settings, restaurants and hotels. The results show that customers prefer to receive recovery resources that "match" the type of failure they experience in "amounts" that are commensurate with the magnitude of the failure that occurs. The findings contribute to the understanding of theoretical principles that explain customer evaluations of service failure/recovery encounters and provide managers with useful guidelines for establishing the proper "fit" between a service failure and the recovery effort.

A Model of Customer Satisfaction with Service Encounters Involving Failure and Recovery

Organizations are facing more intense customer service pressures than ever before. When a service failure occurs, the organization's response has the potential either to restore customer satisfaction and reinforce loyalty or to exacerbate the situation and drive the customer to a competing firm. *Service recovery* refers to the actions an organization takes in response to a service failure (Gronroos 1988). Recovery management is considered to have a significant impact on customer evaluations, because customers are usually more emotionally involved in and observant of recovery service than in routine or first-time service and are often more dissatisfied by an organization's failure to recover than by the service failure itself (Berry and Parasuraman 1991; Bitner, Booms, and Tetreault 1990). Keaveney (1995) finds that

service failures and failed recoveries are a leading cause of customer switching behavior in service organizations. Therefore, well-executed service recoveries are important for enhancing customer satisfaction, building customer relationships, and preventing customer defections (Fornell and Wernerfelt 1987).

Although service recovery is recognized by researchers and managers as a critical element of customer service strategy, there are few theoretical or empirical studies of service failure and recovery issues. Studying service recovery is challenging because recovery is triggered by a service failure, making systematic empirical research difficult to conduct in either a laboratory or a field environment. Previous research on service recovery has focused on developing classification schemes (Bitner, Booms, and Tetreault 1990; Hoffman, Kelley, and Rotalsky 1995; Kelley, Hoffman, and Davis 1993) and providing correlational or anecdotal support for the effect of service recovery on customer satisfaction (Kelly and Davis 1994; Spreng, Harrell, and Mackoy 1995). Recently, Tax, Brown, and Chandrashekar (1998) examined the influence of customers' justice evaluations on satisfaction, trust, and commitment after a service complaint experience. However, to date, no one has developed a theory-driven model of customer satisfaction with service fail-

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ure/recovery encounters that considers proactive recovery situations, in which the organization initiates a recovery effort, as well as reactive recovery situations, in which the customer's complaint initiates the recovery effort.

In a recent review article, Rust and Metters (1996) called for interdisciplinary models of customer behavior in services marketing. We present an exchange framework for explaining customer evaluations of service failure/recovery experiences, drawing on behavioral principles of resource exchange, prospect theory, and mental accounting. From this framework, we derive a model of customer satisfaction with service failure/recovery encounters that includes three dimensions of perceived justice (a social exchange concept), as well as disconfirmation of expectations (a customer satisfaction concept). The objectives of this research are to (1) develop and test a model of customer satisfaction with service failure/recovery encounters, using an exchange framework; (2) determine the effects of various types of recovery efforts on customer evaluations in a variety of service failure contexts; and (3) provide managers with guidelines for establishing the proper "fit" between a service failure and the recovery effort.

Unlike prior studies, our model integrates perceived justice and expectancy disconfirmation, investigates specific aspects of the service failure and the recovery effort as antecedents to customer evaluations, and includes proactive and reactive recovery efforts. We treat service recovery as a "bundle of resources" that an organization can employ in response to a failure. By treating recovery in this manner, we are able to examine the specific determinants of an effective recovery and the relative importance of individual recovery attributes in restoring customer satisfaction across a variety of service failure conditions. We use a mixed-design experiment, conducted by survey, in which customers evaluate various service failure/recovery scenarios relative to an organization they recently had patronized. This research is performed in the context of two different service settings, restaurants and hotels.

CONCEPTUAL FRAMEWORK AND MODEL DEVELOPMENT

In the next three sections, we present a model and a set of hypotheses that describe the effects of service recovery efforts in various failure contexts on customers' perceptions of justice and judgments of satisfaction. The model provides a framework for considering how service failure context (type and magnitude) and service recovery attributes (compensation, response speed, apology, initiation) influence customer evaluations through disconfirmation and perceived justice, thereby influencing satisfaction with the service failure/recovery encounter. The hypotheses describe the effects of perceived justice on customer satisfaction; of recovery attributes on perceived justice; and of failure context, recovery attributes, and their interaction on perceived justice.

Effects of Perceived Justice and Disconfirmation on Customer Satisfaction

Oliver and Swan (1989a, b) were first to model the joint influence of disconfirmation and perceived justice on customer satisfaction, but they address only one aspect of perceived justice, the distributive (equity) aspect. Because the role of disconfirmation is well known, we focus on the ef-

fects of perceived justice on customer satisfaction with service failure/recovery encounters. Social exchange theorists have identified three dimensions of perceived justice that influence how people evaluate exchanges: *distributive justice*, which involves resource allocation and the perceived outcome of exchange (Adams 1965; Deutsch 1975); *procedural justice*, which involves the means by which decisions are made and conflicts are resolved (Leventhal 1980; Lind and Tyler 1988; Thibaut and Walker 1975); and *interactional justice*, which involves the manner in which information is exchanged and outcomes are communicated (Bies and Moag 1986; Bies and Shapiro 1987). On the basis of the results of their study involving customers' perceptions of fairness across four types of service businesses, Clemmer and Schneider (1996) conclude that customers also evaluate service encounters on three dimensions: outcome, the benefits (or lack thereof) customers receive as a result of the encounter; procedure, the organization's policies and methods that guide the encounter; and interaction, the quality of the interpersonal treatment and communication during the encounter.

We view a service failure/recovery encounter as a series of events in which a service failure triggers a procedure that generates economic and social interaction between the customer and the organization, through which an outcome is allocated to the customer.¹ Therefore, we expect that customer satisfaction with service failure/recovery encounters will be influenced by customers' perceptions of all three dimensions of justice—distributive, procedural, and interactional—after controlling for the effects of disconfirmation that arise from the service encounter.²

H₁: In service failure/recovery encounters, customer satisfaction will be related positively to perceptions of (a) distributive justice, (b) procedural justice, and (c) interactional justice.³

Effects of Service Failure Context and Recovery Attributes on Perceived Justice

A service failure/recovery encounter can be viewed as an exchange in which the customer experiences a loss due to the failure and the organization attempts to provide a gain, in the form of a recovery effort, to make up for the customer's loss. This notion is adapted from social exchange and equity theories (e.g., Homans 1961; Walster, Berscheid, and Walster 1973; Walster, Walster, and Berscheid 1978). Service failure/recovery encounters can be considered mixed exchanges with both utilitarian and symbolic dimensions. Utilitarian exchange involves economic resources, such as money, goods, or time, whereas symbolic exchange involves psychological or social resources, such as status, esteem, or empathy (Bagozzi 1975). Service failures can re-

¹This conceptualization was adapted from Bies and Moag (1986) and has been applied to complaint handling episodes (Tax 1993; Tax, Brown, and Chandrashekar 1998). Although the three dimensions originally were presented as a sequence of events, we do not consider them sequential because, in practice, many of the exchanges overlap or occur simultaneously.

²Several researchers have considered the influence of perceptions of justice (fairness) on customer evaluations and behavioral intentions (e.g., Blodgett, Granbois, and Walters 1993; Blodgett, Hill, and Tax 1997; Goodwin and Ross 1992; Tax, Brown, and Chandrashekar 1998). However, these studies do not consider the joint influence of perceived justice and expectancy disconfirmation.

³All hypotheses are stated under *ceteris paribus* conditions.

sult in the loss of economic (e.g., money, time) and/or social (e.g., status, esteem) resources for customers. Organizations may attempt to recover by offering customers economic resources in the form of compensation (e.g., a discount) or social resources (e.g., an apology). Therefore, we believe that customer evaluations of service failure/recovery encounters depend on the type and amount of resources lost and gained during the exchange. The nature of these resource exchanges will be determined by the type and magnitude of the failure that occurs and the various attributes of an organization's recovery effort.

Failure type. The services marketing literature recognizes two types of service encounter failures: outcome and process (Bitner, Booms, and Tetreault 1990; Hoffman, Kelley, and Rotalsky 1995; Keaveney 1995; Mohr and Bitner 1995). The outcome dimension of a service encounter involves what customers actually receive from the service, whereas the process dimension involves how they receive the service, that is, the manner in which it is delivered (Gronroos 1988; Parasuraman, Zeithaml, and Berry 1985). Therefore, in an outcome failure, the organization does not fulfill the basic service need or perform the core service (e.g., a reserved hotel room is unavailable because of overbooking), whereas in a process failure, the delivery of the core service is flawed or deficient in some way (e.g., a hotel desk clerk treats the customer rudely during check-in). In other words, an outcome failure typically involves a utilitarian exchange, and a process failure typically involves symbolic exchanges. The services marketing literature provides no information on which type of failure has more influence on customers' satisfaction judgments. Principles of resource exchange and mental accounting suggest that customers may classify the various types of resources lost due to a service failure into different categories or "accounts." We expect customers' evaluations to differ by type of failure because outcome and process failures represent different categories of loss.

Failure magnitude. We believe that principles of resource exchange also suggest that customer satisfaction judgments will differ by the magnitude of the failure. Specifically, as the size of the loss due to a failure gets larger, the customer will view the exchange as more inequitable and be dissatisfied. Moreover, previous research on how customers respond to service failures (e.g., Gilly and Gelb 1982; Hoffman, Kelley, and Rotalsky 1995; Richins 1987) suggests that the higher the magnitude or severity of service failure, the lower the level of customer satisfaction is.

We expect that the type and magnitude of the service failure will influence customers' evaluations of a service failure/recovery encounter because the failure context serves as a reference point from which customers judge the fairness of the encounter. Specifically, we believe that the failure context will determine customers' normative standards for recovery performance and affect the nature of the relationship between the recovery attributes and perceived justice. Therefore, the type and magnitude of the service failure will influence how customers respond to recovery attributes in forming perceptions of justice.

Service recovery attributes. We examine the influence of four different recovery attributes on customers' evaluations. Compensation, response speed, and apology are included because they are cited often in the business press (e.g., Hart,

Heskett, and Sasser 1990). They also have empirical support in the academic literature (as described subsequently), are particularly salient to customers, are easily acted on by managers, and can be manipulated through written scenarios in an experimental context. Recovery initiation, the fourth attribute, is included because it has received much attention in the business press but has not been addressed empirically. We expect these recovery attributes to affect customers' perceptions of distributive, procedural, and interactional justice, as is described in the next section. We also expect interaction effects between the failure context and the recovery attributes, as is described subsequently.

Summary

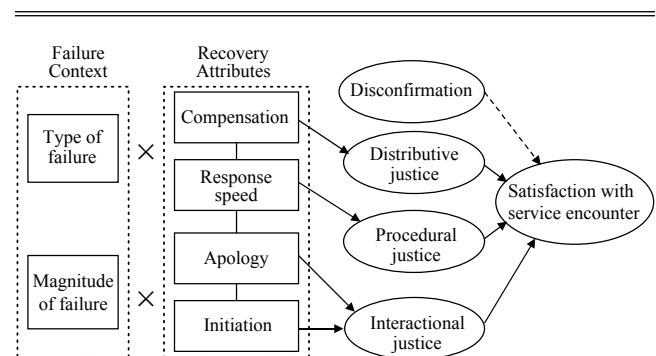
The model developed and tested here (see Figure 1) is based on an exchange framework and shows how customer evaluations of service failure/recovery encounters are influenced by two factors: service failure context (type and magnitude of failure) and service recovery attributes (compensation, response speed, apology, recovery initiation). These factors characterize an organization's performance during a service failure/recovery encounter and operate indirectly through disconfirmation and perceived justice (distributive, procedural, and interactional) to influence customer satisfaction. In the model, service encounter satisfaction is the customer's transaction-specific evaluation of the entire service encounter, including the initial service failure and the recovery experience.

RELATIONSHIPS BETWEEN RECOVERY ATTRIBUTES AND JUSTICE DIMENSIONS

Each of the four service recovery attributes shown in Figure 1 will influence at least one of the three types of perceived justice. The four attributes—compensation, response speed, apology, and recovery initiation—are expected to affect perceptions of distributive, procedural, and interactional justice in the following ways.

Compensation. Social exchange theory highlights the role of distributive justice as it relates to the allocation of costs and benefits in achieving equitable exchange relationships

Figure 1
A MODEL OF CUSTOMER SATISFACTION WITH SERVICE FAILURE/RECOVERY ENCOUNTERS



Notes: The "X"s denote interaction effects of type of failure with recovery attributes and magnitude of failure with recovery attributes. The dashed arrow indicates that disconfirmation is included in the model as a predictor variable.

(Adams 1965; Deutsch 1975, 1985). In terms of service recovery, distributive justice perceptions involve the allocation of compensation (in the form of discounts, free merchandise, refunds, coupons, and so forth) by the organization in response to the inequity caused by a service failure. Walster, Berscheid, and Walster (1973) have shown that compensation is a strategy for restoring equity to an exchange relationship when one party has been harmed by the other. Tax, Brown, and Chandrashekar (1998) use content analysis of qualitative evaluations of service complaint experiences to show that compensation is the most important recovery dimension associated with customers' perceptions of distributive justice. Therefore, exploratory research suggests that higher levels of compensation should result in higher distributive justice evaluations, such that

H₂: Compensation will have a positive effect on customers' perceptions of distributive justice.

Response speed. The issues of timing, responsiveness, and customer waiting have been addressed in the complaint and service encounter literature (Bitner, Booms, and Tetreault 1990; Clemmer and Schneider 1993, 1996; Kelley, Hoffman, and Davis 1993; Maister 1985; Parasuraman, Zeithaml, and Berry 1985; Taylor 1994). A quick recovery response to a service failure will enhance customers' evaluations (Clark, Kaminski, and Rink 1992; Gilly and Gelb 1982; Hart, Heskett, and Sasser 1990; Smart and Martin 1992). Specifically, the speed with which problems and complaints are handled has been identified as an important dimension of procedural justice (Blodgett, Hill, and Tax 1997; Clemmer and Schneider 1996; Tax, Brown, and Chandrashekar 1998).⁴ Therefore, we predict that the longer it takes for the service provider to effect a recovery, the greater the customer's perception that procedural justice has been violated will be. Alternatively,

H₃: A speedy recovery will have a positive effect on customers' perceptions of procedural justice.

Apology. In social exchange and equity theories, an apology is viewed as a valuable reward that redistributes esteem (a social resource) in an exchange relationship (Walster, Berscheid, and Walster 1973). An apology from the service provider communicates politeness, courtesy, concern, effort, and empathy to customers who have experienced a service failure and enhances their evaluations of the encounter (Hart, Heskett, and Sasser 1990; Kelley, Hoffman, and Davis 1993). An apology has implications for the quality of interpersonal treatment and communication during service recovery and has been associated with customers' perceptions of interactional justice (Blodgett, Hill, and Tax 1997; Clemmer and Schneider 1996; Goodwin and Ross 1989, 1992; Greenberg 1990).

H₄: An apology will have a positive effect on customers' perceptions of interactional justice.

Recovery initiation. Service recovery encompasses a much broader set of activities than complaint handling be-

cause it includes situations in which a service failure occurs but no complaint is lodged by the customer. An absence of complaints in service failure situations occurs when customers are unable or unwilling to lodge a complaint or when a customer-initiated complaint is unnecessary because front-line service personnel have already recognized and/or acknowledged the failure. Studies show that 70% to 95% of dissatisfied customers do not bother to complain (Harari 1992). In addition, organization-initiated recoveries are possible in many service failure situations (e.g., when an automobile mechanic realizes that a customer's car will not be ready at the time it was promised). Prior research has focused solely on those failure/recovery situations in which customers have filed a formal complaint with the organization (Blodgett, Granbois, and Walters 1993; Blodgett, Hill, and Tax 1997; Clark, Kaminski, and Rink 1992; Tax, Brown, and Chandrashekar 1998). In contrast, we capture noncomplainers and consider proactive (organization-initiated) service recovery efforts rather than purely reactive (customer-initiated) complaint handling efforts. Several researchers have suggested that proactive recovery efforts enhance customers' evaluations of the service provider (Berry 1995; Johnston 1995; Kelley, Hoffman, and Davis 1993; Schweikhart, Strasser, and Kennedy 1993). When the organization initiates a recovery, customer perceptions of interactional justice should be enhanced, because the customer is likely to view a proactive effort as an act of courtesy, a demonstration of honesty and forthrightness, and a show of empathic understanding and respect.

H₅: An organization-initiated recovery will have a positive effect on customers' perceptions of interactional justice.

INTERACTIONS BETWEEN FAILURE CONTEXT AND RECOVERY ATTRIBUTES

As described in the preceding section, we expect that each aspect of an organization's overall service recovery effort will influence a particular dimension of customers' justice perceptions. However, we also expect interaction effects on customers' evaluations. In this section, we examine how the service failure context, including both type and magnitude of failure, affects the relationship between the service recovery attributes and perceived justice.

Type of Failure and Service Recovery Attributes

Resource exchange theory, mental accounting principles, and prospect theory suggest that customer satisfaction with service failure/recovery encounters depends on the way resources are valued and categorized. According to resource exchange theory, people prefer exchanges of resources that are "in kind." Satisfaction is greater when resources from the same or similar categories are exchanged than when resources from different categories are exchanged (Brinberg and Castell 1982; Brinberg and Wood 1983; Foa and Foa 1976, 1980; Foa and Foa 1974; Foa et al. 1993). According to mental accounting principles, people use various implicit methods to assign resources to different mental accounts (Benartzi and Thaler 1995; Thaler 1985). We believe that people assign economic and social resources to different mental accounts. Prospect theory also suggests that, in individual decision making, resources are weighed differentially according to their utility (Kahneman and Tversky 1979).

⁴It should be noted that procedural justice also may involve dimensions of decision control, process control, and accessibility. However, these dimensions were effectively held constant in this study by the experimental manipulations. Therefore, our findings pertain primarily to the responsiveness and timeliness aspect of the broader procedural justice construct.

All these theories predict that customers will place greater value on exchanges involving proximal (similar) resources than on those involving distal (dissimilar) resources. Therefore, we expect that in service failure/recovery encounters, customers will prefer to receive, in exchange for the loss suffered, resources that match the type of loss (failure) they experienced. Because, as we believe, economic and social resources are classified in different mental accounts, they should be distal (dissimilar) resources. Thus, if a service failure leads to loss of an economic resource, customers will prefer to receive an economic resource as part of the recovery effort. If a service failure leads to loss of a social resource, they will prefer to receive a social resource as part of the recovery effort.

Specifically, we expect interaction effects between the type of service failure and the recovery attributes, because customers evaluate recovery efforts differently depending on whether a failure occurred in the service outcome (i.e., the core service) or the service process (i.e., the service delivery). When outcome failures occur (e.g., a reserved hotel room is unavailable because of overbooking), customers experience an economic loss. Therefore, customers' perceptions of distributive justice will be restored by recovery attributes that are economic resources, such as compensation (money). We also expect that the impact of an apology (a social resource) on customers' perceptions of distributive justice will be lower (i.e., have less utility) for outcome failures (an economic loss), because the resources are stored in separate mental accounts. In a similar fashion, customers' perceptions of procedural justice will be restored by recovery attributes, such as response speed (time). When process failures occur (e.g., a front-desk clerk is rude), customers experience a social loss. Therefore, customers' perceptions of interactional justice will be enhanced by recovery attributes, such as an apology or recovery initiation, that communicate respect and empathy (social resources) to the customer. We also expect that the impact of compensation (an economic resource) on customers' perceptions of interactional justice will be lower for process failures (a social loss), because the resources are stored in separate accounts. For example, when customers are treated rudely by a waiter, they will assign less value to a discount than to an apology.

Consistent with resource exchange principles, we expect that compensation and time (response speed) will be more proximal to economic resources, whereas apology and initiation will be more proximal to social resources. In terms of Thaler's (1985) model, proximity is synonymous with more weight; therefore, proximal resources will have a greater effect than distal resources on perceived justice. Thus, we believe that perceived justice will be enhanced when recovery attributes match the type of failure, such that

- H_{6a}: Compensation will have a greater (positive) effect on customers' perceptions of distributive justice when an outcome failure occurs than when a process failure occurs.
- H_{6b}: A speedy recovery will have a greater (positive) effect on customers' perceptions of procedural justice when an outcome failure occurs than when a process failure occurs.
- H_{6c}: An apology will have a greater (positive) effect on customers' perceptions of interactional justice when a process failure occurs than when an outcome failure occurs.
- H_{6d}: An organization-initiated recovery will have a greater (positive) effect on customers' perceptions of interactional jus-

tice when a process failure occurs than when an outcome failure occurs.

Magnitude of Failure and Service Recovery Attributes

According to social exchange and equity theories, exchange relationships should be balanced; that is, resources should be exchanged in equivalent amounts (Adams 1965; Deutsch 1975; Walster, Berscheid, and Walster 1973; Walster, Walster, and Berscheid 1978). When a service failure occurs, the exchange relationship is thrown out of balance. The amount of the customer's perceived loss depends on the magnitude of the failure. To restore balance, the service provider must offer the customer a gain of an amount sufficient to cover the loss. Customer satisfaction will depend on the magnitude of the perceived loss and the amount of resources offered in the recovery effort. Therefore, we expect that customers will seek balance and, in failure/recovery encounters, will prefer to receive, in exchange for the loss suffered, resources in amounts commensurate with the magnitude of the loss (failure) they experienced.

Prospect theory offers additional insight into how customers evaluate losses and gains. This theory asserts that people are more attuned to differences (relative to a reference point) than absolute amounts and that they are more sensitive to losses than gains (Kahneman and Tversky 1979; Tversky and Kahneman 1992). In most service encounters, customers do not expect a service failure, so the initial reference point is likely to be "no failure." Thus, we believe that customers will encode service failures as losses and weigh failures heavily (disproportionately) in their evaluations of service encounters (Berry and Parasuraman 1991).⁵

Mental accounting principles suggest that service failure/recovery encounters represent mixed losses (a larger loss with a smaller gain); that is, the loss from a failure is likely to be perceived as greater than the gain from a recovery. Mixed losses are segregated, in that losses and gains are valued separately (Thaler 1985). Service failure/recovery encounters also are segregated naturally over time because failure and recovery occur sequentially. Therefore, we believe that the losses from a failure and the gains from a recovery are evaluated separately. Because customers value losses disproportionately (i.e., losses loom larger than gains), the loss usually will be perceived as larger than the gain offered by the organization. Therefore, consistent with prospect theory and mental accounting principles, we expect that, in service encounters, customers will segregate their evaluations of failure and recovery and view the loss suffered as a result of a failure as being greater than an equivalent gain received in the form of a recovery effort.

Interaction effects between the magnitude of the service failure and the recovery attributes are expected to occur because customers require different levels of recovery depending on the severity of the failure. When a service failure occurs, the magnitude of the failure will determine the level of recovery required to restore perceived justice. Mental accounting principles and prospect theory imply that service recovery will be more effective when the magnitude of the failure is low than when it is high. When a high magnitude

⁵The negativity literature (e.g., Fiske 1980) provides further support for the notion that customers will weigh negative information (disproportionately) heavily in their perceptions of a service failure/recovery encounter.

Table 1
LIST OF MODEL VARIABLES

Description	Name	Label
<i>Predictor Variables (Manipulations)^a</i>		
Type of failure (where 0 = process and 1 = outcome)	TYPE	X ₁
Magnitude of failure (where 0 = low and 1 = high)	MAG	X ₂
Compensation (low/medium/high)	CPM	X ₃
	CPH	X ₄
Response speed (where 0 = delayed and 1 = immediate)	SPEED	X ₅
Apology (where 0 = not offered and 1 = offered)	APOL	X ₆
Recovery initiation (where 0 = customer and 1 = organization)	INIT	X ₇
<i>Predictor Variables (Measures)^b</i>		
Disconfirmation	DISC	X ₈
<i>Dependent Variables</i>		
Distributive justice	DJUST	Y ₁
Procedural justice	PJUST	Y ₂
Interactional justice	IJUST	Y ₃
Service encounter satisfaction	SESAT	Y ₄

^aDichotomous variables (TYPE, MAG, SPEED, APOL, INIT) were dummy coded so that the level coded as 1 represented a “higher” (in the case of the failure context) or “better” (in the case of the recovery attributes) level of the variable. Compensation was dummy coded using medium (CPM) and high (CPH), and the base category was low (no compensation).

^bThe service failure context and service recovery attributes were expected to influence disconfirmation and, ultimately, customer satisfaction. However, disconfirmation was not the focus of this study, so it was treated as an independent variable in the model.

failure occurs, the customer experiences a loss y to which a value $v(-y)$ is assigned. In attempting to recover, the service provider offers the customer a gain x to which the customer assigns a value $v(x)$. As the magnitude of the failure increases, the absolute value of the discrepancy between the perceived loss $v(-y)$ caused by the failure and the perceived gain $v(x)$ created by the recovery effort also increases. However, customers use a nonlinear value function to evaluate outcomes, so the perceived discrepancy increases at a decreasing rate. Therefore, as the magnitude of the failure y increases, the added value of the recovery effort x is smaller and the effect on customers’ perceptions of justice is smaller. Conversely, as the magnitude of the failure decreases, the effect of a recovery effort on customers’ evaluations is greater.

- H_{7a}: Compensation will have a greater (positive) effect on customers’ perceptions of distributive justice when magnitude of failure is low than when magnitude of failure is high.
- H_{7b}: A speedy recovery will have a greater (positive) effect on customers’ perceptions of procedural justice when magnitude of failure is low than when magnitude of failure is high.
- H_{7c}: An apology will have a greater (positive) effect on customers’ perceptions of interactional justice when magnitude of the failure is low than when magnitude of failure is high.
- H_{7d}: An organization-initiated recovery will have a greater (positive) effect on customers’ perceptions of interactional justice when magnitude of failure is low than when magnitude of failure is high.

Descriptions of the variables used in our analysis, with corresponding labels, are presented in Table 1. The set of equations describing the hypothesized relationships is presented in Table 2. Using our theoretical framework as a basis, we assume that all potential effects not accounted for in these equations are equal to zero or are very small. This assumption is tested empirically, as is described subsequently.

Table 2
SUMMARY OF MODEL EQUATIONS

<i>Distributive Justice</i>
$DJUST = \gamma_{10} + \gamma_{11}TYPE + \gamma_{12}MAG + \gamma_{1,1 \times 2}TYPE \times MAG + \gamma_{13}CPM + \gamma_{14}CPH + \gamma_{1,1 \times 3}TYPE \times CPM + \gamma_{1,1 \times 4}TYPE \times CPH + \gamma_{1,2 \times 3}MAG \times CPM + \gamma_{1,2 \times 4}MAG \times CPH + \epsilon_1.$
<i>Procedural Justice</i>
$PJUST = \gamma_{20} + \gamma_{21}TYPE + \gamma_{22}MAG + \gamma_{2,1 \times 2}TYPE \times MAG + \gamma_{25}SPEED + \gamma_{2,1 \times 5}TYPE \times SPEED + \gamma_{2,2 \times 5}MAG \times SPEED + \epsilon_2.$
<i>Interactional Justice</i>
$IJUST = \gamma_{30} + \gamma_{31}TYPE + \gamma_{32}MAG + \gamma_{3,1 \times 2}TYPE \times MAG + \gamma_{36}APOL + \gamma_{37}INIT + \gamma_{3,1 \times 6}TYPE \times APOL + \gamma_{3,2 \times 6}MAG \times APOL + \gamma_{3,1 \times 7}TYPE \times INIT + \gamma_{3,2 \times 7}MAG \times INIT + \epsilon_3.$
<i>Service Encounter Satisfaction</i>
$SESAT = \gamma_{40} + \gamma_{41}TYPE + \gamma_{42}MAG + \gamma_{4,1 \times 2}TYPE \times MAG + \gamma_{48}DISC + \beta_{41}DJUST + \beta_{42}PJUST + \beta_{43}IJUST + \epsilon_4.$

Notes: For notational convenience, parameters in the model equations (γ s, β s) are subscripted ij to match variable j (X s, Y s) in equation i . Therefore, $\gamma_{i,j \times k}$ denotes the coefficient of the interaction of X_j with X_k in equation i . Certain other main and interaction effects (see Tables 5–8), as well as a set of covariates (described in the Appendix), were included in each equation but for exposition purposes are not listed explicitly in the

RESEARCH DESIGN

Our research employed a mixed-design experiment using a survey method. This approach made it possible to test for causal relationships and include a more representative sample of service failures and customer responses than is possible using recall-based designs, such as the critical incident

technique.⁶ Customers evaluated written failure/recovery scenarios set in the context of service organizations they recently had patronized. The primary advantage of using scenarios is that they eliminate difficulties associated with observation or enactment of service failure/recovery incidents in the field, such as the expense and time involved (due to low incidence rates), ethical considerations, and the managerial undesirability of intentionally imposing service failures on customers. Furthermore, the use of scenarios reduces biases from memory lapses, rationalization tendencies, and consistency factors, which are common in results based on retrospective self-reports.

Sampling Frames and Data Collection Methods

Study 1 was conducted in a restaurant context, and Study 2 was conducted in a hotel context. In both studies, the samples were composed of customers who recently had patronized the service organization. The sample for Study 1 consisted of 375 undergraduate business students. Data were collected using individually completed questionnaires in groups of 20 to 40 subjects. The sample for Study 2 consisted of 602 customers of a midrange line of hotels owned by a large international chain. A probability sample of 2220 business travelers was selected from the general reservation list of customers who had recently stayed at one of its locations. Data were collected using mailed questionnaires. Of the 2220 instruments mailed, 602 questionnaires were returned and 203 were undeliverable, yielding a response rate of 29.85%.⁷ Whereas Study 1 was conducted across multiple organizations (restaurants), Study 2 was conducted across multiple locations of a single organization (hotel chain). In addition to the research being conducted in two different contexts, this aspect of the research design increased external validity because the results of Study 1 could be generalized across organizations in the same industry. It also offered a high degree of internal validity, because in Study 2, extraneous differences caused by heterogeneity among organizations in the same industry were controlled.

Experimental Design

The mixed-design experiment involved a 2×2 between-subjects design, in which type of failure (outcome versus process) and magnitude of failure (high versus low) were manipulated. Each subject was exposed to one of the four failure scenarios. Within each failure cell, the four service recovery attributes (compensation, response speed, apology, recovery initiation) were manipulated using a within-subjects design, similar to a conjoint task. The within-subjects task was based on a $3 \times 2 \times 2 \times 2$ design and resulted in 24 recovery profiles. Each subject was exposed to a subset of 8 profiles, with subjects completely randomized across subjects.

The format of the questionnaire used in the two studies was identical. Subjects began by either naming a restaurant (Study 1) or identifying a hotel location (Study 2) visited in the previous three months. Next, they answered a series of

open-ended questions about their experience with the organization (e.g., date of last visit, frequency of visits), followed by a short battery of structured questions regarding their loyalty to and satisfaction with the organization. Subjects then were asked to imagine a return visit to the restaurant or the hotel and were presented with a hypothetical service encounter in which a service failure occurred. Following a verbal protocol task in which they recorded their thoughts and feelings about the encounter, subjects responded to a series of measures regarding their evaluations of the service failure (a manipulation check for magnitude of failure, a measure of service encounter satisfaction after failure, and attribution measures) and their propensity to complain and/or exit. Customers then were given a set of instructions for evaluating the recovery profiles. After each profile, they responded to measures of disconfirmation, perceived justice, satisfaction, and behavioral intentions. Finally, they rated the importance of the recovery attributes, evaluated the realism of the failure scenarios and recovery profiles, and provided demographic and classification information.

Manipulation of Factors and Measurement of Variables

On the basis of the results of extensive pretesting, unavailable service was chosen as a representative outcome failure, and inattentive service was chosen as a representative process failure. These commonly occurring failures are applicable across a wide variety of service settings and are highly actionable by managers. Each failure type was manipulated at two levels, high and low.⁸ Respondents were assigned randomly to one of four failure scenarios, which appear in the Appendix.⁹ The within-subjects factors (the four recovery attributes) were manipulated in a format similar to a conjoint task. Compensation was varied at three levels (high, medium, none), expressed as percentage discounts. Response speed was manipulated at two levels (immediate or delayed), as were apology (present or absent) and recovery initiation (by organization's employee or by customer). The recovery profiles are described in the Appendix.¹⁰

⁸For both restaurants and hotels, we conducted extensive pretesting to ensure that a high magnitude process failure and a high magnitude outcome failure were viewed as having the same degree of severity and that a low magnitude process failure and a low magnitude outcome failure were viewed as having the same degree of severity, while ensuring that the low magnitude failure conditions had significantly lower severity ratings than the high magnitude conditions. We conducted mean difference tests on the manipulation checks for failure severity, which showed that there was no significant difference in severity within failure type for both restaurants and hotels. The results showed that customers responded differently to outcome versus process failures and, therefore, were able to distinguish outcome and process dimensions, though it is not important for customers themselves to be able to identify failures explicitly as such.

⁹Studies 1 and 2 are based on an identical research design. However, the data collection instrument required slight modifications in wording because of the different contexts. For purposes of illustration, we show the wording used in Study 2 (hotels). The wording used in Study 1 (restaurants) is available on request.

¹⁰There is some question about the presence of demand effects, namely, whether the recovery attributes should have been operationalized as "not offered an apology" and "no certificate" or merely should have been absent. We tested for the presence of demand effects in the following way: If we drop the apology condition and reestimate the equations, the results are unchanged, with the same estimates and significance levels for all other main and interaction effects. If we drop the "no certificate" cell and test with only two levels of compensation, the results are unchanged, with the same estimates and significance levels for all main and interaction effects including the remaining compensation effects. Therefore, these additional analyses indicate that demand effects do not explain our results.

⁶This is because customers tend to report on experiences that are unusually important to them in some way (i.e., ones that involve a large expenditure of money or extreme dissatisfaction) and because those who complain tend to be unrepresentative of the total consumer population.

⁷For Study 1, 355 of 375, and for Study 2, 549 of 602 surveys were deemed usable for data analysis. In both studies, a small percentage of surveys were unusable because of respondents' failure to follow instructions, unacceptable levels of item nonresponse, or obvious intraindividual unreliability in scale responses (i.e., identical ratings across all questions).

Study 1 was conducted in a controlled group setting in which subjects responded to multiple items for each dependent measure. Study 2 involved a mail survey of business travelers. We anticipated that the measurement task would be too time-consuming for these subjects, thereby causing an adverse effect on response rate. Consequently, the results from Study 1 were used to identify a subset of reliable and valid measures for Study 2. In Study 2, each dependent construct was represented by a single-item measure or an index created from a smaller number of measures (i.e., two to four) than was used in Study 1. The scale items used in Study 2 are presented in Table 3.¹¹ Measurement scales were adapted from previous studies of service encounters, customer satisfaction, and perceived justice. There were minor modifications in wording between Study 1 and Study 2 to account for differences in the service contexts.

MODEL ESTIMATION PROCEDURE

The mixed experimental design had three features that needed to be accounted for in the estimation procedure: scale effects, heteroscedastic disturbances, and individual differences. As a result, the equations were estimated using weighted least squares regression. The data were cross-sectional, with each customer evaluating one of four failure scenarios and 8 of 24 recovery profiles. To account for the effect of individual differences in scale use and measurement artifacts, the mean and coefficient of variation of the self-explicated importance ratings for each customer were calculated and used as covariates in all the equations.¹² Glesjer's (1969) test was used to test for heteroscedasticity of error terms due to the mixed design (Johnston 1972). This test revealed heteroscedasticity stemming from both the failure scenarios and the recovery profiles, which indicates that weighted least squares was the appropriate estimation technique. We calculated a separate weight for each of the 96 (4 × 24) combinations of failure scenarios and recovery profiles by (1) estimating least squares regressions for each of the equations, (2) grouping the residuals from each equation by the 96 failure/recovery combinations, and (3) calculating the population variance for each group. These weights were used in the final least squares estimation of the equations (Greene 1993).

Many researchers have suggested that customer evaluations of service encounters may be influenced by prior experience with the organization, attributions, attitude toward complaining, and demographic characteristics (e.g., Bitner 1990; Folkes 1984; Folkes, Koletsky, and Graham 1987; Richins 1987; Singh 1988, 1990; Tax, Brown, and Chan-

drashekar 1998; Zeithaml, Berry, and Parasuraman 1993). Therefore, to account for individual differences in prior experience, attributions, propensity to voice, propensity to exit, demographics, and type of facility, we included a set of covariates in the equations for both studies, as is described in Table 4.

Tests of Assumptions

We hypothesize that each of the three dimensions of perceived justice is affected by certain recovery attributes (H₂–H₅) and two-way interactions between recovery attributes and failure context (H₆–H₇). It is implicitly assumed that effects not included in the perceived justice equations are equal to zero or are very small. This assumption was tested using a series of nested model joint F-tests, in which full and reduced models were compared (Neter and Wasserman 1974, p. 88). The results indicate that for both studies, two sets of additional variables should be included

Table 3
SCALE ITEMS FOR VARIABLES (STUDY 2)

<i>Disconfirmation</i>
Seven-point scale, anchored at middle and endpoints ("Much Worse than Expected"/"As Expected"/"Much Better than Expected"). Adapted from Oliver and Swan (1989a, b).
1. The hotel's overall response to my problem was
<i>Distributive Justice</i>
Seven-point scale, anchored at middle and endpoints ("Strongly Disagree"/"Neither"/"Strongly Agree"). Adapted from Oliver and Swan (1989a, b) and Tax (1993).
1. The outcome I received was fair.
2. I did not get what I deserved. (R)
3. In resolving the problem, the hotel gave me what I needed.
4. The outcome I received was not right. (R)
<i>Procedural Justice</i>
Seven-point scale, anchored at middle and endpoints ("Strongly Disagree"/"Neither"/"Strongly Agree"). Adapted from Tax (1993).
1. The length of time taken to resolve my problem was longer than necessary. (R)
2. The hotel showed adequate flexibility in dealing with my problem.
<i>Interactional Justice</i>
Seven-point scale, anchored at middle and endpoints ("Strongly Disagree"/"Neither"/"Strongly Agree"). Adapted from Tax (1993).
1. The employees were appropriately concerned about my problem.
2. The employees did not put the proper effort into resolving my problem. (R)
3. The employees' communications with me were appropriate.
4. The employees did not give me the courtesy I was due. (R)
<i>Service Encounter Satisfaction</i>
Seven-point scale, anchored at endpoints ("Very Dissatisfied"/"Very Satisfied"). Adapted from Bitner and Hubbert (1994) and Oliver and Swan (1989a, b).
1. Think about both the problem you experienced and the hotel's handling of the problem. How do you feel about the organization on this particular occasion?

Notes: (R) = reverse coded.

¹¹The measures displayed high levels of reliability and convergent and discriminant validity according to conventional assessment procedures (e.g., Anderson and Gerbing 1988; Churchill 1979; Peter 1979, 1981). For example, Cronbach's alphas range from .88 to .93, individual items load on the proper factors for the three perceived justice constructs, and correlations among the variables representing different justice constructs are much smaller than the associated reliabilities. This result is not surprising because the scales are based on prior research. Additional information about the measurement scales is available on request.

¹²The ratings included four self-report measures, taken after the conjoint task, in which customers evaluated the importance of each of the four recovery attributes given the failure they experienced. The measures were created from these ratings because the ratings were based on the same scale as the measures of the dependent variables, but they were not predictor variables in any of the model equations.

Table 4
DESCRIPTION OF COVARIATES

<i>Study 1 (Restaurants)</i>	<i>Study 2 (Hotels)</i>	<i>Variable Descriptions</i>
<i>Scale Effects</i>		
IMPMEAN	IMPMEAN	Mean of self-explicated importance ratings
IMPCVAR	IMPCVAR	Coefficient of variation of self-explicated importance ratings
<i>Prior Experiences</i>		
YEARS	YEARS	Number of years respondent has been a customer of the organization
LOYAL ^a	LOYAL	Self-reported customer loyalty measure (seven-point scale)
STABLE	STABLE	Stability attribution—likelihood of a similar failure occurring again
WRKPRIOR	CLUB	Predisposition to respond differently Study 1: have worked in a restaurant before (yes = 1, no = 0) Study 2: member of hotel's frequent traveler club (yes = 1, no = 0)
n/a	EXPPROB	Prior experience—have experienced service problems before at this hotel
<i>Controllability Attributions</i>		
n/a	ATTRIB	Controllability attributions—index of two self-reported attribution measures (PREVENT is likelihood that hotel could have prevented the problem, and CONTROL is degree of control hotel had over the problem)
<i>Propensity to Voice/Exit</i>		
PROPCOMP	PROPCOMP	Propensity to complain—index of four (Study 1) or five (Study 2) items
PROPEXIT	PROPEXIT	Propensity to exit—single item (Study 1) or index of two items (Study 2)
<i>Type of Facility</i>		
RESTYPE	HOTTYPE	Type of facility: Study 1 used average cost per person as a proxy for the type of restaurant (in terms of expense); Study 2 used a constant and three dummy variables (HOTAIR, HOTMET, and HOTSUB) to represent four types of hotels: airport, metro, suburban, and other (downtown and expressway)
<i>Demographics</i>		
GENDER	GENDER	Male/female
AGE	AGE	Age in years

^aFor restaurants, LOYAL was modeled as LOYAL1 and LOYAL2, where LOYAL1 represents customers' self-reported loyalty ratings for the group of customers who had visited the named restaurant before and LOYAL2 is a dummy variable created to capture the mean shift in LOYAL1 associated with the group of respondents who were instructed to skip the loyalty question because it was their first visit to the named restaurant.

Notes: Correlations among the set of covariates were checked to ensure that admitting covariates into the equations would not lead to problems of collinearity in the model. After controlling for scale effects, the set of covariates accounted for less than 8% of the variance explained in each of the model equations for both restaurants and hotels.

in each of the perceived justice equations. The first set was composed of the main effects of the "other" recovery attributes (i.e., the remaining attributes not specifically included in a particular hypothesis); the second set was composed of the two-way interactions of the hypothesized recovery attribute(s) with the other (remaining) recovery attributes. (See "Other Interaction Effects" in Tables 6–8.) The effects of all other groups of two- and three-way interactions were not statistically significant.¹³

Another assumption of the model is that performance (in terms of the recovery attributes) operates only indirectly on satisfaction through disconfirmation and perceived justice. This assumption was tested by conducting a nested model joint F-test on the service encounter satisfaction equation that compared the full model (i.e., the model including both the effects of disconfirmation and perceived justice and the effects of the recovery attributes) with the reduced model (i.e., the model including only the effects of disconfirmation and perceived justice). For both restaurants and hotels, the

results of the joint F-tests indicated that the added parameters associated with the recovery attributes did not contribute significantly to the explanatory power of the model and, therefore, should not be included in the service encounter satisfaction equation. This result supports the assumption that the effects of recovery performance do not influence satisfaction directly but operate only indirectly through disconfirmation and perceived justice.¹⁴

RESULTS

The results for Studies 1 and 2 appear in Tables 5–8. Most of the proposed relationships are supported in both the restaurant and the hotel contexts. The overall fit of the model is good, considering that the equations were estimated with cross-sectional data resulting from a mixed-design experiment and collected, in part, in a field setting. The R² values for the service encounter satisfaction equations (see Table 5) are .76 for restaurants and .78 for hotels, and the R² values for the perceived justice equations (see Tables 6–8)

¹³In the distributive justice equations, some other interaction terms were significant ($p < .05$) and were retained in the final model equations. Specifically, two additional two-way interaction terms were included in the DJUST equation for the restaurant study, and three additional two-way interaction terms were included in the DJUST equation for the hotel study (see Table 6).

¹⁴As a check, reverse F-tests were conducted by comparing the full model with a reduced model, which included only the effects of the recovery attributes, to confirm that the effects of disconfirmation and perceived justice contributed significantly to the explanatory power of the model. For both restaurants and hotels, the results of these joint F-tests indicated that these effects were needed in the service encounter satisfaction equation.

Table 5
SERVICE ENCOUNTER SATISFACTION MODEL EQUATION RESULTS

Variable	Expected Sign	Restaurants	Hotels
		(Study 1)	(Study 2)
		Unstandardized Coefficient	Unstandardized Coefficient
<i>Hypothesized Effects</i>			
TYPE	?	-.055	-.126***
MAG	-	-.144***	-.096**
TYPE×MAG	?	-.053	-.168***
DISC	+	.334***	.301***
DJUST	+	.426***	.432***
PJUST	+	.029***	.040***
IJUST	+	.211***	.179***
	R ²	.76	.78
	Adjusted R ²	.75	.77
	F-statistic (degrees of freedom)	447.25 (19, 2734)	613.70 (22, 3916)
	p-value	.0001	.0001

**p* < .10.

***p* < .05.

****p* < .01.

Notes: Two-tailed tests.

Table 6
DISTRIBUTIVE JUSTICE MODEL EQUATION RESULTS

Variable	Expected Sign	Restaurants	Hotels
		(Study 1)	(Study 2)
		Unstandardized Coefficient	Unstandardized Coefficient
<i>Hypothesized Effects</i>			
TYPE	?	-.292***	.026
MAG	-	-.195*	.095
TYPE×MAG	?	-.013	-.586***
CPM	+	1.220***	1.350***
CPH	+	1.919***	2.040***
TYPE×CPM	+	.501***	-.002
TYPE×CPH	+	.385***	.177
MAG×CPM	-	.187	-.518***
MAG×CPH	-	.348***	-.096
<i>Other Main Effects</i>			
SPEED	+	.504***	.433***
APOL	+	1.520***	1.333***
INIT	+	.728***	.295***
<i>Other Interaction Effects</i>			
TYPE×SPEED	?	n/a	-.191**
TYPE×APOL	?	n/a	-.654***
SPEED×CPM	?	n.s.	.186*
SPEED×CPH	?	n.s.	n.s.
APOL×CPM	?	n.s.	.324***
APOL×CPH	?	-.243**	.446***
INIT×CPM	?	n.s.	n.s.
INIT×CPH	?	n.s.	n.s.
SPEED×APOL	?	.314***	.426***
INIT×APOL	?	-.253***	n/a
	R ²	.44	.48
	Adjusted R ²	.43	.47
	F-statistic (degrees of freedom)	65.69 (32, 2721)	102.80 (36, 4088)
	p-value:	.0001	.0001

**p* < .10.

***p* < .05.

****p* < .01.

Notes: Two-tailed tests. n/a = not applicable; n.s. = not significant.

Table 7
PROCEDURAL JUSTICE MODEL EQUATION RESULTS

Variable	Expected Sign	Restaurants (Study 1) Unstandardized Coefficient	Hotels (Study 2) Unstandardized Coefficient
<i>Hypothesized Effects</i>			
TYPE	?	.065	.018
MAG	-	.164	.372***
TYPE × MAG	?	.093	-.488***
SPEED	+	2.253***	2.654***
TYPE × SPEED	+	.103	.389***
MAG × SPEED	-	-.208*	-.504***
<i>Other Main Effects</i>			
CPM	+	.696***	n.s.
CPH	+	.868***	.475***
APOL	+	.642***	.189**
INIT	+	.532***	.285***
<i>Other Interaction Effects</i>			
SPEED × CPM	?	.300**	.299**
SPEED × CPH	?	.482***	.417***
SPEED × APOL	?	.452***	.478***
INIT × SPEED	?	n.s.	n.s.
R ²	.39	.44	.43
Adjusted R ²		.38	.43
F-statistic (degrees of freedom)		66.64 (26, 2727)	110.22 (29, 4105)
p-value		.0001	.0001

* $p < .10$.

** $p < .05$.

*** $p < .01$.

Notes: Two-tailed tests. n.s. = not significant.

range from .39 to .44 for restaurants and from .44 to .48 for hotels ($p < .0001$ for all). Across both studies, the patterns of the regression coefficients are consistent with the model specification. The model indicates that customers' level of satisfaction after a service failure depends on both the type and the magnitude of the failure they experience. We tested this prediction by comparing group means based on customers' satisfaction judgments after the service failure but prior to recovery. For both restaurants and hotels, customers who experienced process failures were more dissatisfied than those who experienced outcome failures, and customers who experienced high magnitude failures were more dissatisfied than those who experienced low magnitude failures.¹⁵ Finally, we tested the hypotheses by evaluating the statistical significance of the partial regression coefficients in the equations.¹⁶ In Table 9, we show the specific coeffi-

cient(s) involved in the test of each hypothesis and present a summary of the results.

The Influence of Perceived Justice on Service Encounter Satisfaction

The results of the tests of H_{1a} - H_{1c} demonstrate that for both restaurants and hotels, positive perceptions of distributive, procedural, and interactional justice significantly enhance customer satisfaction. As we expected, disconfirmation also has a positive and complementary influence on satisfaction. Taken together, the three dimensions of perceived justice account for more than 60% of the explained variance in service encounter satisfaction for both restaurants and hotels. This result is consistent with Oliver and Swan's (1989a, b) finding that disconfirmation complements fairness in the prediction of customer satisfaction but is the lesser of the two determinants. In our research, distributive justice accounts for a relatively large percentage of the overall effect of perceived justice on satisfaction. This finding is consistent with previous social exchange research that suggests that distributive justice may have a stronger influence on customer satisfaction because it is easier for customers to access information on outcomes than on procedures or interactions (Leventhal 1980).¹⁷

¹⁵The results of the mean comparison tests were as follows: $\bar{X}_{OUT/PRO} = 2.87/2.35$, $F_{(1,353)} = 13.61$, $p < .001$ and $\bar{X}_{HIGH/LOW} = 2.23/2.98$, $F_{(1,353)} = 29.43$, $p < .0001$ for restaurants; $\bar{X}_{OUT/PRO} = 2.33/2.01$, $F_{(1,547)} = 7.14$, $p < .01$ and $\bar{X}_{HIGH/LOW} = 1.68/2.69$, $F_{(1,547)} = 78.78$, $p < .0001$ for hotels.

¹⁶There is some question whether the effects of the recovery attributes are due to within-subjects variation. The study uses a usual mixed design in which respondents see only one of four possible failure conditions and then 8 (randomly assigned) of 24 possible recovery combinations. Therefore, within-subjects variation is not predominant and does not account for our results. We can demonstrate this feature in the following way: We estimate the same equations using only the first profile (i.e., recovery combination) from each respondent. The hypothesized effects of recovery attributes are still statistically significant at $p < .001$, despite the much smaller sample size. In other words, the effects of recovery attributes are highly statistically significant when we estimate the model with data that vary between subjects only. This result is particularly strong given that the model accounts for individual differences with an extensive set of covariates.

¹⁷Unlike in prior research, Tax, Brown, and Chandrashekar (1998) find that the effect of interactional justice is somewhat larger in magnitude than the effect of distributive or procedural justice. They also find that interactions among the three justice constructs influence satisfaction with complaint handling. There are two important reasons their results are different from this and other studies: (1) Their dependent variable is defined narrowly as satisfaction with complaint handling and (2) They do not control for disconfirmation and certain other covariates (e.g., attributions).

Table 8
INTERACTIONAL JUSTICE MODEL EQUATION RESULTS

Variable	Expected Sign	Restaurants	Hotels
		(Study 1)	(Study 2)
		Unstandardized Coefficient	Unstandardized Coefficient
<i>Hypothesized Effects</i>			
TYPE	?	.345***	.222**
MAG	-	-.001	.002
TYPE×MAG	?	-.027	-.419***
APOL	+	1.379***	1.360***
INIT	+	.765***	.491***
TYPE×APOL	-	-.127	-.421***
TYPE×INIT	-	.148	-.138
MAG×APOL	-	-.034	.070
MAG×INIT	-	.052	.054
<i>Other Main Effects</i>			
CPM	+	.941***	.767***
CPH	+	1.137***	1.013***
SPEED	+	.641***	.405***
<i>Other Interaction Effects</i>			
INIT×CPM	?	n.s.	n.s.
INIT×CPH	?	-.313***	n.s.
INIT×SPEED	?	n.s.	n.s.
INIT×APOL	?	n.s.	n.s.
APOL×CPM	?	n.s.	.329***
APOL×CPH	?	.287**	.646***
SPEED×APOL	?	.435***	1.035***
	R ²	.39	.47
	Adjusted R ²	.39	.47
	F-statistic (degrees of freedom)	57.26 (31, 2722)	107.34 (34, 4071)
	p-value	.0001	.0001

**p* < .10.

***p* < .05.

****p* < .01.

Notes: Two-tailed tests. n.s. = not significant.

The Effects of Recovery Attributes on Perceived Justice

H₂–H₅ address the effects of the service recovery attributes on each of the three dimensions of perceived justice.¹⁸ To test these hypotheses, each perceived justice equation was compared with a restricted model determined by the set of conditions (see Table 9) necessary to support the hypothesis. An F-test then was performed to evaluate the net effect of the associated recovery attribute. Perceptions of distributive justice are affected positively (and strongly) by compensation, thereby providing support for H₂. Similarly, perceptions of procedural justice are higher when the recovery is speedy (H₃), and perceptions of interactional justice are higher when the recovery includes an apology (H₄) and is initiated by the organization (H₅). These effects occur regardless of failure context and are supported for both restaurants and hotels.

The Moderating Effects of Failure Type

H_{6a}–H_{6d} predict that the size of the impact of each recovery attribute on customers’ perceptions of justice will differ depending on the type of failure experienced. In H_{6a}, we hypothesize that compensation will have a greater effect on perceptions of distributive justice when an outcome failure

occurs than when a process failure occurs. H_{6a} is supported in the restaurant context and weakly supported (*p* = .16) in the hotel context. H_{6b}–H_{6d} are supported in the hotel but not in the restaurant context. The results show that, in the hotel context, a speedy recovery has a greater effect on procedural justice after an outcome failure (H_{6b}), whereas both an apology and an organization-initiated recovery have a greater effect on interactional justice after a process failure (H_{6c}–H_{6d}). However, the effect of an organization-initiated recovery is supported weakly (*p* = .11).

The Moderating Effects of Failure Magnitude

H_{7a}–H_{7d} predict that a recovery attribute will have a greater effect on perceived justice when the magnitude of the failure is low. In the hotel context, both H_{7a} (compensation) and H_{7b} (response speed) are supported. In the restaurant context, the interaction effects involving compensation and response speed are also significant. However, for compensation, the signs of the regression coefficients are not in the expected direction (i.e., compensation has a smaller effect on perceptions of distributive justice when the magnitude of the failure is low). Additional tests were performed to compare the sizes of the interaction effects under high versus moderate levels of compensation (see Table 9, note b). In the hotel context, the difference is significant. When the magnitude of failure is low, the relative effect of a moderate level of compensation on perceptions of distributive

¹⁸Because the recovery attributes were coded 0/1, their relative effect sizes are represented by the unstandardized regression coefficients shown in Tables 5–8.

Table 9
SUMMARY OF HYPOTHESIS TEST RESULTS

Test		Restaurants	Hotels
H ₁ : Service encounter satisfaction (SESAT) is related positively to perceptions of (a) distributive justice (DJUST). (b) procedural justice (PJUST). (c) interactional justice (IJUST).	$\beta_{41} > 0$ $\beta_{42} > 0$ $\beta_{43} > 0$	Supported Supported Supported	Supported Supported Supported
H ₂ : Compensation (CPM/CPH) will have a positive effect on perceptions of distributive justice (DJUST). ^{a,b} $\gamma_{13} > 0$, $\gamma_{14} > 0$, $\gamma_{13} + \gamma_{1,1 \times 3} > 0$, $\gamma_{14} + \gamma_{1,1 \times 4} > 0$, $\gamma_{13} + \gamma_{1,2 \times 3} > 0$, and $\gamma_{14} + \gamma_{1,2 \times 4} > 0$		Supported	Supported
H ₃ : A speedy recovery (SPEED) will have a positive effect on perceptions of procedural justice (PJUST). ^a $\gamma_{25} > 0$, $\gamma_{25} + \gamma_{2,1 \times 5} > 0$, and $\gamma_{25} + \gamma_{2,2 \times 5} > 0$		Supported	Supported
H ₄ : An apology (APOL) will have a positive effect on perceptions of interactional justice (IJUST). ^a $\gamma_{36} > 0$, $\gamma_{36} + \gamma_{3,1 \times 6} > 0$, and $\gamma_{36} + \gamma_{3,2 \times 6} > 0$		Supported	Supported
H ₅ : An organization-initiated recovery (INIT) will have a positive effect on interactional justice (IJUST). ^a $\gamma_{37} > 0$, $\gamma_{37} + \gamma_{3,1 \times 7} > 0$, and $\gamma_{37} + \gamma_{3,2 \times 7} > 0$		Supported	Supported
H _{6a} : Compensation will have a greater effect on distributive justice (DJUST) when an outcome failure occurs. ^{a,b} $\gamma_{1,1 \times 3} > 0$, and $\gamma_{1,1 \times 4} > 0$		Supported	Supported
H _{6b} : A speedy recovery will have a greater effect on procedural justice (PJUST) when an outcome failure occurs. $\gamma_{2,1 \times 5} > 0$		Not supported	Supported
H _{6c} : An apology will have a greater effect on interactional justice (IJUST) when a process failure occurs. $\gamma_{3,1 \times 6} < 0$		Not supported	Supported
H _{6d} : An organization-initiated recovery will have a greater effect on interactional justice (IJUST) when a process failure occurs. $\gamma_{3,1 \times 7} < 0$		Not supported	Supported
H _{7a} : Compensation will have a greater effect on distributive justice (DJUST) when magnitude of failure is low. ^{a,b} $\gamma_{1,2 \times 3} < 0$, and $\gamma_{1,2 \times 4} < 0$		Reversed	Supported
H _{7b} : A speedy recovery will have a greater effect on procedural justice (PJUST) when magnitude of failure is low. $\gamma_{2,2 \times 5} < 0$		Supported	Supported
H _{7c} : An apology will have a greater effect on interactional justice (IJUST) when magnitude of failure is low. $\gamma_{3,2 \times 6} < 0$		Not supported	Not supported
H _{7d} : An organization-initiated recovery will have a greater effect on interactional justice (IJUST) when magnitude of failure is low. $\gamma_{3,2 \times 7} < 0$		Not supported	Not supported

^aThe tests of these hypotheses represent joint F-tests of the associated conditions.

^bThe tests of these hypotheses represent the most general case in which the effects of both levels of compensation (CPM and CPH) are nonzero. The effects of CPH relative to CPM also were tested.

Notes: Supported: $p < .01$ based on the results of the associated one-tailed F-test for joint hypotheses or two-tailed t-test for individual regression equation coefficients. Exceptions: H_{7b} is supported at $p < .10$ for restaurants, and H_{6a} and H_{6d} are weakly supported for hotels at $p = .16$ and $p = .11$, respectively, as is discussed in the "Results" section. Not supported: $p > .01$ based on the results of the associated one-tailed F-test for joint hypotheses or two-tailed t-test for individual regression equation coefficients. Reversed: $p < .01$ based on the results of the associated one-tailed F-test for joint hypotheses or two-tailed t-test for individual regression equation coefficients; however, the sign of the test statistic was not in the hypothesized direction.

justice is greater than the effect of a high level of compensation. In the restaurant context, no difference is observed. In both contexts, H_{7c} and H_{7d} are not supported, which suggests that the effects of an apology or an organization-initiated recovery on customers' perceptions of interactional justice may not differ on the basis of the magnitude of failure that occurs.

We find support for 8 of 16 hypothesized interaction effects across the two studies. In addition, our theoretical

framework predicts that all nonhypothesized interaction effects between failure context and recovery attributes will be zero or very small. Our results show that only 2 of 32 (less than 7%) nonhypothesized interaction effects were significant across the two studies. Therefore, interaction effects were preponderantly present when we hypothesized they would be found and overwhelmingly absent when our theoretical framework suggested they would not. These results provide strong support for our model.

DISCUSSION AND IMPLICATIONS

The first objective of this research was to develop a comprehensive model of customer satisfaction with service failure/recovery encounters, based on an exchange framework. The proposed model substantially expands our understanding of the theoretical principles explaining customer responses to service failure/recovery experiences, and the model relationships are robust across two service contexts. A second objective was to determine the effects of specific failure/recovery antecedents on customers' evaluations. The results of the hypothesis tests provide strong support for the effects of service recovery attributes on customers' perceptions of justice and the effects of perceived justice on satisfaction. The third objective was to provide managerial guidelines for effectively responding to customers by establishing the proper fit between a service failure and the recovery effort.

Service Encounter Satisfaction and Perceived Justice

The results of this research suggest that failure to include the influence of distributive, procedural, and interactional justice may lead to inappropriate conclusions and limit the explanatory power of models of customer satisfaction with service encounters. The results also imply that, in managing relationships with customers, organizations should consider perceptions of justice, especially after service failures occur. Most industry surveys do not include questions about fairness or justice. Rather, the focus remains on disconfirmation, a concept that has virtually defined customer satisfaction and service quality research in organizations. Our results suggest that to understand customer satisfaction better, managers must survey customers about both disconfirmation of expectations and perceptions of justice.

Service Encounter Satisfaction and Failure Context

When attempting to recover from a service failure, organizations should consider both the type and the magnitude of failure. In both service contexts, customers were less satisfied after a process failure than after an outcome failure. This suggests that, in face-to-face service encounters, process failures (such as inattentive service), which are directly attributable to the behavior of frontline employees, may detract more from satisfaction than outcome failures (such as unavailable service), which result from behind-the-scenes events. However, most organizations track and measure customer service performance on the basis of outcome dimensions (Germain and Cooper 1990), even though customers often cite process dimensions when asked about their criteria for evaluating service encounters (Bitner, Booms, and Tetreault 1990; Keaveney 1995).

Perceived Justice and Service Recovery Attributes

The recovery attributes appear to affect the three types of justice differentially, such that a recovery attribute has the most impact when it matches the type of justice. Although all the recovery attributes have some effect on each type of perceived justice, the percentage of the total variance explained by the matching recovery attribute is usually at least twice the amount explained by all the other attributes combined. Also, despite the presence of other significant effects from interactions among recovery attributes, as well as effects due to individual difference variables (represented by

the set of covariates), the effects of the recovery attributes dominate the model equations in terms of explanatory power. For example, compensation has the greatest effect on perceptions of distributive justice, whereas an apology has the greatest effect on perceptions of interactional justice. These results suggest that service recovery can be viewed by managers as a bundle of resources, in which each resource has a different proportional effect on the three dimensions of customers' justice evaluations. Therefore, to enhance perceptions of fairness, organizations should tailor their service recovery efforts by focusing on those resources in the bundle that have the greatest positive impact on customer responses.

Perceived Justice and Moderating Effects of Failure Type

The results show that the effect of service recovery attributes on customers' perceptions of justice differs on the basis of the type of failure experienced. Because customers assign a higher value to recovery efforts that specifically address the loss suffered due to a service failure, organizations can enhance customer evaluations when they respond in kind with resources that correspond to the type of failure. For example, the results indicate that customers assign a higher fairness value to compensation and quick action when they experience outcome failures. In contrast, the marginal return on an apology or a proactive response is higher when they experience process failures. An implication of this finding is that, in the case of process failures, certain no-cost actions, such as initiating a recovery and providing an immediate apology, may serve to restore customers' perceptions of justice (and ultimately, satisfaction) to the point that additional monetary compensation is superfluous.

Perceived Justice and Moderating Effects of Failure Magnitude

In the hotel context, the results show that both compensation and a speedy response have a greater incremental impact on customers' justice evaluations when the failure is less severe. The added value of these recovery resources is reduced as the customer's loss gets larger (i.e., the magnitude of the failure increases). This result provides insight into how customers value recovery efforts, which can help organizations gauge whether they are unnecessarily overcompensating customers. For example, in conditions of low failure magnitude, there is a dampening of the effect for compensation (for moderate versus high levels), which suggests that in certain circumstances, organizations may receive diminishing marginal returns in terms of improving customer evaluations.

In the restaurant context, compensation has a greater impact on customers' perceptions of justice when the failure is more severe. Austin and Walster (1974) developed an equity theory proposition that suggests that overrewarded consumers may be less satisfied than those who receive equitable rewards because they feel distress and guilt about the inequity of the exchange. Therefore, it is plausible that when restaurant customers receive compensation (in the form of a discount) for a low magnitude failure, the positive impact on their perceptions of justice is attenuated because they are uncomfortable with their reward. However, when the magnitude of the failure is high, they do not believe the gain is inequitable, and therefore, compensation has a greater impact

on their perceptions of justice.¹⁹ This suggests that, in some cases, the relationship between customer evaluations and a recovery attribute may be represented by a curvilinear (inverted-U) pattern.

In both the restaurant and hotel contexts, neither the effect of an apology nor the effect of recovery initiation differed by failure magnitude. One possible explanation is that a customer's value function for social resources (e.g., status, esteem) may differ from that of economic resources (e.g., money, time). Another explanation may be that, by manipulating only two levels of failure magnitude (high and low), the part of a customer's value function where a moderating effect of failure magnitude could be detected was not captured.

CONCLUSION

Enhancements to the comprehensive model might include broadening the scope of service failure context to include more types and levels of severity. Classifying failures as they relate to outcomes, procedures, or interactions may be particularly useful. Another possibility might be to manipulate service failures on the basis of attributions, particularly locus (whether the failure was the organization's or the customer's fault) and controllability (whether the failure was preventable by the organization or beyond its control). Other service recovery attributes, such as explanation and different forms of compensation (e.g., tied to repatronage), also may be added to the model.

There are many avenues for further research. It would be interesting to test the role of justice dimensions in customers' evaluations of service encounters that do not involve failure or recovery. Relationships in the model also might be compared across various customer groups and other industry settings. Customers may not be homogeneous in their response tendencies toward service failure/recovery encounters, and the relative importance of distributive, procedural, and interactional justice may depend on the nature of the service and the customer's relationship with the organization. A conjoint approach such as that used in this research enables managers to study customer responses to specific recovery efforts. This approach enables organizations to design service recoveries in a way traditionally reserved for the design of products, that is, by bundling attributes and exploring various combinations to find the "best" (i.e., most satisfying) solutions for customers.

In summary, the results of this research provide organizations with guidelines for developing service recovery procedures that improve customer service and enhance customer relationships. These guidelines can be used to implement service delivery systems that include provisions for appropriate recovery efforts, allocate recovery resources to maximize returns in terms of satisfaction, and train employees to recognize failures and reduce their effects on customers.

¹⁹This pattern of effects may have been enhanced because almost 50% of the subjects in Study 1 had experience working in restaurants. Therefore, they may have been more empathetic in their evaluations than business travelers in a hotel context. Also, students' responses to monetary compensation may be more elastic than the responses of business travelers because of differences in their financial positions.

APPENDIX

Service Failure Scenarios for Study 1 (Restaurants)

Outcome Failure/Low Magnitude—Unavailable Service. You and another person go to the restaurant for dinner to celebrate a special occasion. You are seated at your table. The waiter comes to take your order. You place your order. The waiter informs you that the restaurant is out of the entree you selected.

Outcome Failure/High Magnitude—Unavailable Service. You and another person go to the restaurant for dinner to celebrate a special occasion. You are seated at your table. The waiter comes to take your order. You place your order. The waiter informs you that the restaurant is out of the entree you selected. You make another selection. The waiter informs you that the restaurant is also out of your second choice of entree.

Process Failure/Low Magnitude—Inattentive Service. You and another person go to the restaurant for dinner to celebrate a special occasion. You are seated at your table. The waiter comes to take your order. You place your order. The waiter brings your beverages and entrees and leaves without asking if you need anything else. He doesn't refill your beverages while you're eating.

Process Failure/High Magnitude—Inattentive Service. You and another person go to the restaurant for dinner to celebrate a special occasion. You are seated at your table. The waiter comes to take your order. You place your order. The waiter brings your entrees and leaves without asking if you need anything else. He never brings your beverages, and he doesn't stop back to check on you while you're eating. He drops off the bill without asking if you want anything more.

Service Failure Scenarios for Study 2 (Hotels)

Outcome Failure/Low Magnitude—Unavailable Service. You are traveling on an important business trip. You arrive at the hotel at approximately 7:00 p.m. and go to the front desk to check in. The representative at the front desk looks up your prepaid reservation and informs you that your room is ready. However, it is not the type of room (in terms of number and size of beds and smoking or nonsmoking) that you had preferred and reserved.

Outcome Failure/High Magnitude—Unavailable Service. You are traveling on an important business trip. You arrive at the hotel at approximately 10:00 p.m. and go to the front desk to check in. The representative at the front desk looks up your prepaid reservation and informs you that the hotel is overbooked and you will have to stay at another hotel (several miles away) for the night.

Process Failure/Low Magnitude—Inattentive Service. You are traveling on an important business trip. You arrive at the hotel and go to the front desk to check in. You wait in line for five minutes. When you get to the desk, the representative answers a telephone call while you are trying to check in. When you get to your room, you find that the room has not been cleaned. You call the front desk and ask to be reassigned to a clean room. The representative assigns you to another room.

Process Failure/High Magnitude—Inattentive Service. You are traveling on an important business trip. You arrive at the hotel and go to the front desk to check in. You wait in line for ten minutes. When you get to the desk, the representative answers several telephone calls while you are try-

ing to check in. When you get to your room, you find that the room is already occupied by another guest. You have to return to the front desk to be assigned to another room because there is only one clerk on duty. When you finally get to your new room, you call the front desk to ask for directions to a dinner meeting. The representative puts you on hold and never comes back on the line.

Service Recovery Profile Manipulations (Restaurants and Hotels)

Service recovery profiles were virtually identical for hotel and restaurant customers. We show the recovery attribute statements for restaurant customers, with the words or phrases for hotel customers in parentheses. For example, restaurant customers read "You are given a 50% discount off your total bill," whereas hotel customers read "You are given a *certificate for a 100% discount off your one night's room bill.*" Italics are used herein to emphasize the difference between the two statements but were not seen by respondents.

Organization-Initiated/Customer-Initiated:

The waiter (hotel employee) acknowledges the problem *without your having to complain versus you complain* about the problem.

Speedy/Delayed Response:

You *immediately* receive the following response versus *after 15 (20) minutes*, you receive the following response.

Apology/No Apology:

You are offered an apology versus you are *not* offered an apology.

High/Medium/Low Compensation:

You are given a (certificate for a) 50 (100)% discount off your total (one night's room) bill versus you are given a (certificate for a) 20 (50)% discount off your total (one night's room) bill versus you are given *no* (certificate for a) discount off your total (one night's room) bill.

REFERENCES

- Adams, J. Stacy (1965), "Inequity in Social Exchange," in *Advances in Experimental Social Psychology*, Vol. 2, Leonard Berkowitz, ed. New York: Academic Press, 267-99.
- Anderson, James C. and David W. Gerbing (1988), "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach," *Psychological Bulletin*, 103 (3), 411-23.
- Austin, William and Elaine Walster (1974), "Reactions to Confirmations and Disconfirmations of Expectancies of Equity and Inequity," *Journal of Personality and Social Psychology*, 30 (2), 208-16.
- Bagozzi, Richard P. (1975), "Marketing as Exchange," *Journal of Marketing*, 39 (October), 32-39.
- Benartzi, Shlomo and Richard H. Thaler (1995), "Myopic Loss Aversion and the Equity Premium Puzzle," *Quarterly Journal of Economics*, 110 (1), 73-92.
- Berry, Leonard L. (1995), *On Great Service: A Framework for Action*. New York: The Free Press.
- and A. Parasuraman (1991), *Marketing Services: Competing Through Quality*. New York: The Free Press.
- Bies, Robert J. and Joseph S. Moag (1986), "Interactional Justice: Communication Criteria of Fairness," in *Research on Negotiation in Organizations*, Vol. 1, Roy J. Lewicki, Blair H. Sheppard, and Max H. Bazerman, eds. Greenwich, CT: JAI Press, 43-55.
- and Debra L. Shapiro (1987), "Interactional Fairness Judgments: The Influence of Causal Accounts," *Social Justice Research*, 1 (2), 199-218.
- Bitner, Mary Jo (1990), "Evaluating Service Encounters: The Effects of Physical Surroundings and Employee Responses," *Journal of Marketing*, 54 (April), 69-82.
- , Bernard H. Booms, and Mary Stanfield Tetreault (1990), "The Service Encounter: Diagnosing Favorable and Unfavorable Incidents," *Journal of Marketing*, 54 (January), 71-84.
- and Amy R. Hubbert (1994), "Encounter Satisfaction Versus Overall Satisfaction Versus Quality," in *Service Quality: New Directions in Theory and Practice*, Roland T. Rust and Richard L. Oliver, eds. Thousand Oaks, CA: Sage Publications, 72-94.
- Blodgett, Jeffrey G., Donald H. Granbois, and Rockney G. Walters (1993), "The Effects of Perceived Justice on Complainants' Negative Word-of-Mouth Behavior and Repatronage Intentions," *Journal of Retailing*, 69 (4), 399-428.
- , Donna J. Hill, and Stephen S. Tax (1997), "The Effects of Distributive, Procedural, and Interactional Justice on Postcomplaint Behavior," *Journal of Retailing*, 73 (2), 185-210.
- Brinberg, David and Pat Castell (1982), "New Directions in Equity Research," *Journal of Personality and Social Psychology*, 43 (2), 260-69.
- and Ronald Wood (1983), "A Resource Exchange Theory Analysis of Consumer Behavior," *Journal of Consumer Research*, 10 (December), 330-38.
- Churchill, Gilbert A. (1979), "A Paradigm for Developing Better Measures of Marketing Constructs," *Journal of Marketing Research*, 16 (February), 64-73.
- Clark, Gary L., Peter F. Kaminski, and David R. Rink (1992), "Consumer Complaints: Advice on How Companies Should Respond Based on an Empirical Study," *Journal of Services Marketing*, 6 (1), 41-50.
- Clemmer, Elizabeth C. and Benjamin Schneider (1993), "Managing Customer Dissatisfaction with Waiting: Applying Social-Psychological Theory in a Service Setting," in *Advances in Services Marketing and Management*, Vol. 2, Teresa A. Swartz, David E. Bowen, and Stephen W. Brown, eds. Greenwich, CT: JAI Press, 213-29.
- and ——— (1996), "Fair Service," in *Advances in Services Marketing and Management*, Vol. 5, Teresa A. Swartz, David E. Bowen, and Stephen W. Brown, eds. Greenwich, CT: JAI Press, 109-26.
- Deutsch, Morton (1975), "Equity, Equality, and Need: What Determines Which Value Will Be Used as the Basis of Distributive Justice?" *Journal of Social Issues*, 31 (3), 137-49.
- (1985), *Distributive Justice: A Social-Psychological Perspective*. New Haven, CT: Yale University Press.
- Fiske, Susan T. (1980), "Attention and Weight in Person Perception: The Impact of Negative and Extreme Behavior," *Journal of Personality and Social Psychology*, 38 (6), 889-906.
- Foa, Edna B. and Uriel G. Foa (1976), "Resource Theory of Social Exchange," in *Contemporary Topics in Social Psychology*, John W. Thibaut, Janet T. Spence, and Robert C. Carson, eds. Morristown, NJ: General Learning Press, 99-131.
- and ——— (1980), "Resource Theory: Interpersonal Behavior as Exchange," in *Social Exchange: Advances in Theory and Research*, Kenneth J. Gergen, Martin S. Greenberg, and Richard H. Willis, eds. New York: Plenum Press, 77-94.
- Foa, Uriel G. and Edna B. Foa (1974), *Societal Structures of the Mind*. Springfield, IL: Charles C Thomas.
- , Kjell Y. Tornblom, Edna B. Foa, and John Converse Jr. (1993), "Introduction: Resource Theory in Social Psychology," in *Resource Theory: Explorations and Applications*, Uriel G. Foa, John Converse Jr., Kjell Y. Tornblom, and Edna B. Foa, eds. San Diego, CA: Academic Press, 1-10.
- Folkes, Valerie S. (1984), "Consumer Reactions to Product Failure: An Attributional Approach," *Journal of Consumer Research*, 10 (March), 398-409.
- , Susan Koletsky, and John L. Graham (1987), "A Field Study of Causal Inferences and Consumer Reaction: The View from the Airport," *Journal of Consumer Research*, 13 (March),

- 534–39.
- Fornell, Claes and Birger Wernerfelt (1987), "Defensive Marketing Strategy by Customer Complaint Management: A Theoretical Analysis," *Journal of Marketing Research*, 24 (November), 337–46.
- Germain, Richard and M. Bixby Cooper (1990), "How a Customer Mission Statement Affects Company Performance," *Industrial Marketing Management*, 19 (February), 47–54.
- Gilly, Mary C. and Betsy D. Gelb (1982), "Post-Purchase Consumer Processes and the Complaining Consumer," *Journal of Consumer Research*, 9 (December), 323–28.
- Glesjer, H. (1969), "A New Test for Heteroscedasticity," *Journal of the American Statistical Association*, 64, 316–23.
- Goodwin, Cathy and Ivan Ross (1989), "Salient Dimensions of Perceived Fairness in Resolution of Service Complaints," *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, 2, 87–92.
- and ——— (1992), "Consumer Responses to Service Failures: Influences of Procedural and Interactional Fairness Perceptions," *Journal of Business Research*, 25 (2), 149–63.
- Greenberg, Jerald (1990), "Looking Fair Versus Being Fair: Managing Impressions of Organizational Justice," in *Research in Organizational Behavior*, Vol. 12, B.M. Staw and L.L. Cummings, eds. Greenwich, CT: JAI Press, 111–57.
- Greene, William H. (1993), *Econometric Analysis*. New York: Macmillan Publishing Company.
- Gronroos, Christian (1988), "Service Quality: The Six Criteria of Good Perceived Service Quality," *Review of Business*, 9 (Winter), 10–13.
- Harari, Oren (1992), "Thank Heaven for Complainers," *Management Review*, 81 (January), 59–60.
- Hart, Christopher W., James L. Heskett, and W. Earl Sasser Jr. (1990), "The Profitable Art of Service Recovery," *Harvard Business Review*, 68 (July/August), 148–56.
- Hoffman, K. Douglas, Scott W. Kelley, and Holly M. Rotalsky (1995), "Tracking Service Failures and Employee Recovery Efforts," *Journal of Services Marketing*, 9 (2), 49–61.
- Homans, George Caspar (1961), *Social Behavior: Its Elementary Forms*. New York: Harcourt, Brace & World.
- Johnston, J. (1972), *Econometric Methods*. New York: McGraw-Hill.
- Johnston, Robert (1995), "Service Failure and Recovery: Impact, Attributes and Process," in *Advances in Services Marketing and Management*, Vol. 4, Teresa A. Swartz, David E. Bowen, and Stephen W. Brown, eds. Greenwich, CT: JAI Press, 211–28.
- Kahneman, Daniel and Amos Tversky (1979), "Prospect Theory: An Analysis of Decision Under Risk," *Econometrica*, 47 (March), 263–91.
- Keaveney, Susan M. (1995), "Customer Switching Behavior in Service Industries: An Exploratory Study," *Journal of Marketing*, 59 (April), 71–82.
- Kelley, Scott W. and Mark A. Davis (1994), "Antecedents to Customer Expectations for Service Recovery," *Journal of the Academy of Marketing Science*, 22 (1), 52–61.
- , K. Douglas Hoffman, and Mark A. Davis (1993), "A Typology of Retail Failures and Recoveries," *Journal of Retailing*, 69 (4), 429–52.
- Leventhal, Gerald S. (1980), "What Should Be Done with Equity Theory? New Approaches to the Study of Fairness in Social Relationships," in *Social Exchange: Advances in Theory and Research*, Kenneth J. Gergen, Martin S. Greenberg, and Richard H. Willis, eds. New York: Plenum Press, 27–55.
- Lind, E. Allen and Tom R. Tyler (1988), *The Social Psychology of Procedural Justice*. New York: Plenum Press.
- Maister, David H. (1985), "The Psychology of Waiting Lines," in *The Service Encounter*, John D. Czepiel, Michael R. Solomon, and Carol F. Surprenant, eds. Lexington, MA: Lexington Books, 113–24.
- Mohr, Lois A. and Mary Jo Bitner (1995), "The Role of Employee Effort in Satisfaction with Service Transactions," *Journal of Business Research*, 32 (3), 239–52.
- Neter, John and William Wasserman (1974), *Applied Linear Statistical Models: Regression, Analysis of Variance, and Experimental Designs*. Homewood, IL: Richard D. Irwin.
- Oliver, Richard L. and John E. Swan (1989a), "Consumer Perceptions of Interpersonal Equity and Satisfaction in Transactions: A Field Survey Approach," *Journal of Marketing*, 53 (April), 21–35.
- and ——— (1989b), "Equity and Disconfirmation Perceptions as Influences on Merchant and Product Satisfaction," *Journal of Consumer Research*, 16 (December), 372–83.
- Parasuraman, A., Valarie A. Zeithaml, and Leonard L. Berry (1985), "A Conceptual Model of Service Quality and Its Implications for Future Research," *Journal of Marketing*, 49 (Fall), 41–50.
- Peter, J. Paul (1979), "Reliability: A Review of Psychometric Basics and Recent Marketing Practices," *Journal of Marketing Research*, 16 (February), 6–17.
- (1981), "Construct Validity: A Review of Basic Issues and Marketing Practices," *Journal of Marketing Research*, 18 (May), 133–45.
- Richins, Marsha L. (1987), "A Multivariate Analysis of Responses to Dissatisfaction," *Journal of the Academy of Marketing Science*, 15 (3), 24–31.
- Rust, Roland T. and Richard Metters (1996), "Mathematical Models of Service," *European Journal of Operational Research*, 91 (June), 427–39.
- Schweikhart, Sharon B., Stephen Strasser, and Melissa R. Kennedy (1993), "Service Recovery in Health Services Organizations," *Hospital & Health Services Administration*, 38 (Spring), 3–21.
- Singh, Jagdip (1988), "Consumer Complaint Intentions and Behavior: Definitional and Taxonomical Issues," *Journal of Marketing*, 52 (January), 93–107.
- (1990), "A Typology of Consumer Dissatisfaction Response Styles," *Journal of Retailing*, 66 (1), 57–99.
- Smart, Denise T. and Charles L. Martin (1992), "Manufacturer Responsiveness to Consumer Correspondence: An Empirical Investigation of Consumer Perceptions," *Journal of Consumer Affairs*, 26 (1), 104–28.
- Spreng, Richard A., Gilbert D. Harrell, and Robert D. Mackoy (1995), "Service Recovery: Impact on Satisfaction and Intentions," *Journal of Services Marketing*, 9 (1), 15–23.
- Tax, Stephen Saul (1993), "The Role of Perceived Justice in Complaint Resolutions: Implications for Services and Relationship Marketing," doctoral dissertation, Arizona State University.
- , Stephen W. Brown, and Murali Chandrashekar (1998), "Customer Evaluations of Service Complaint Experiences: Implications for Relationship Marketing," *Journal of Marketing*, 62 (April), 60–77.
- Taylor, Shirley (1994), "Waiting for Service: The Relationship Between Delays and Evaluations of Service," *Journal of Marketing*, 58 (April), 56–69.
- Thaler, Richard (1985), "Mental Accounting and Consumer Choice," *Marketing Science*, 4 (3), 199–214.
- Thibaut, John and Laurens Walker (1975), *Procedural Justice: A Psychological Analysis*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Tversky, Amos and Daniel Kahneman (1992), "Advances in Prospect Theory: Cumulative Representation of Uncertainty," *Journal of Risk and Uncertainty*, 5 (4), 297–323.
- Walster, Elaine, Ellen Berscheid, and G. William Walster (1973), "New Directions in Equity Research," *Journal of Personality and Social Psychology*, 25 (2), 151–76.
- , G. William Walster, and Ellen Berscheid (1978), *Equity: Theory and Research*. Boston, MA: Allyn and Bacon.
- Zeithaml, Valarie A., Leonard L. Berry, and A. Parasuraman (1993), "The Nature and Determinants of Customer Expectations of Service," *Journal of the Academy of Marketing Science*, 21 (1), 1–12.