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Drawing from need, motivation, and social exchange theories, this study conceptualizes and empirically examines the differential curvilinear effects of multiple determinants of loyalty intentions, including transactional satisfaction, trust, and value for relational exchanges. The authors conceptualize trust as a "motivator," satisfaction as a "hygiene," and value as a "bivalent" factor in consumer loyalty mechanisms. Using consumer data on relational exchanges in two different service contexts—retail clothing and nonbusiness airline travel—and accounting for different sources of error—namely, measurement, common method, and response style—the authors empirically investigate the hypothesized mechanisms. The data support the motivator, or the enhancing role of trust, and the hygiene, or the maintaining role of satisfaction, on loyalty intentions in both contexts. Although the authors also obtain consistent results for the influence of value, its role is aligned with a hygiene mechanism, not a bivalent mechanism. The authors contribute to the study of loyalty antecedents by (1) theoretically proposing the nature and shape of the influence of different loyalty determinants, (2) considering the simultaneous and differential effects of multiple determinants, and (3) drawing implications from the results for theory and managerial practice.

Curvilinear Effects of Consumer Loyalty Determinants in Relational Exchanges

Contemporary marketing thought appears to converge on the principle that understanding and hopefully winning customer loyalty is critical for a firm's long-term survival, innovativeness, and bottom-line returns. Both researchers and managers echo the received view that small changes in loyalty and retention (e.g., 5%) can yield disproportionately large changes in profitability (e.g., 25%–100%; Reichheld, Markey, and Hopton 2000; Reichheld and Teal 1996). This view is resonant in the shift of the marketing discipline away from the study of marketplace exchanges as transactions that need to be consummated to that of exchanges as relationships that need to be nurtured, preserved, and cultivated (Berry 1995; Grönroos 1995; Morgan and Hunt 1994).

Despite this emerging consensus, the discipline remains divided by the critical factors that can help a firm maintain and enhance consumer loyalty. Some researchers and practitioners extol the virtues of fully satisfying consumers by exceeding their expectations and infusing each exchange with delight and positive emotion (Jones and Sasser 1995; Rust and Oliver 2000). In contrast, Iacobucci, Grayson, and Ostrom (1994) and Hart and Johnson (1999) question whether simply delighting the consumer is sufficient for building long-term loyalty. Rather, Hart and Johnson (1999, pp. 10–11) argue that "a total trust strategy … is the ultimate test of consumer loyalty." Likewise, Schneider and Bowen (1999) note that a service firm can retain consumers and achieve profitability through reciprocal relationships that are founded on safeguarding and affirming consumer security, fairness, and self-esteem. Finally, some practitioners, including Gale (1994), Neal (1999), and other researchers, chide the discipline for falling prey to faddish trends in the search for shortcuts to achieve consumer loyalty. In the most explicit rebuttal yet, Neal (2000, p. 19) challenges marketers to consider that it is "value [that] drives loyalty, not satisfaction.… Satisfaction is a necessary

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but not sufficient component of loyalty." Notably, these debates and divides appear to grow in intensity and stridency as consumer loyalty continues to remain elusive and unpredictable.

We aim to conduct an empirical study that takes an initial step toward bridging these divides. Three aspects of our study are noteworthy. First, we develop and test a model for the mechanisms of loyalty intentions that examines simultaneously the effects of multiple determinants, including transactional satisfaction, trust, and value. To date, few studies have examined these competing, multiple predictors within a single, simultaneous model. Second, we do not rely on simple, linear conceptualizations to model the effect of individual predictors of loyalty intentions. Rather, we conceptualize complex mechanisms that involve curvilinear effects. These curvilinear hypotheses are based on need, motivation, and social exchange theories. Few previous studies have used a strong theoretical foundation to posit curvilinear effects of loyalty determinants (cf. Anderson and Mittal 2000). Third, we situate our study in ongoing relational exchanges in which consumers have established some level of a relationship with service providers on the basis of an experience stream of prior episodes. We do this to recognize that, compared with transactional exchanges, relational exchanges involve disparate substantive mechanisms and conceptual considerations (Garbarino and Johnson 1999; Morgan and Hunt 1994; Sirdeshmukh, Singh, and Sabol 2002). Although the study of transactional exchanges is important in its own right, a focus on relational exchanges ensures that our results are not contaminated by exchange heterogeneity and are likely to yield useful insights for relationship marketing theory and practice. Such insights offer fertile ground for further theoretical research and a sound foundation for managerial guidelines.

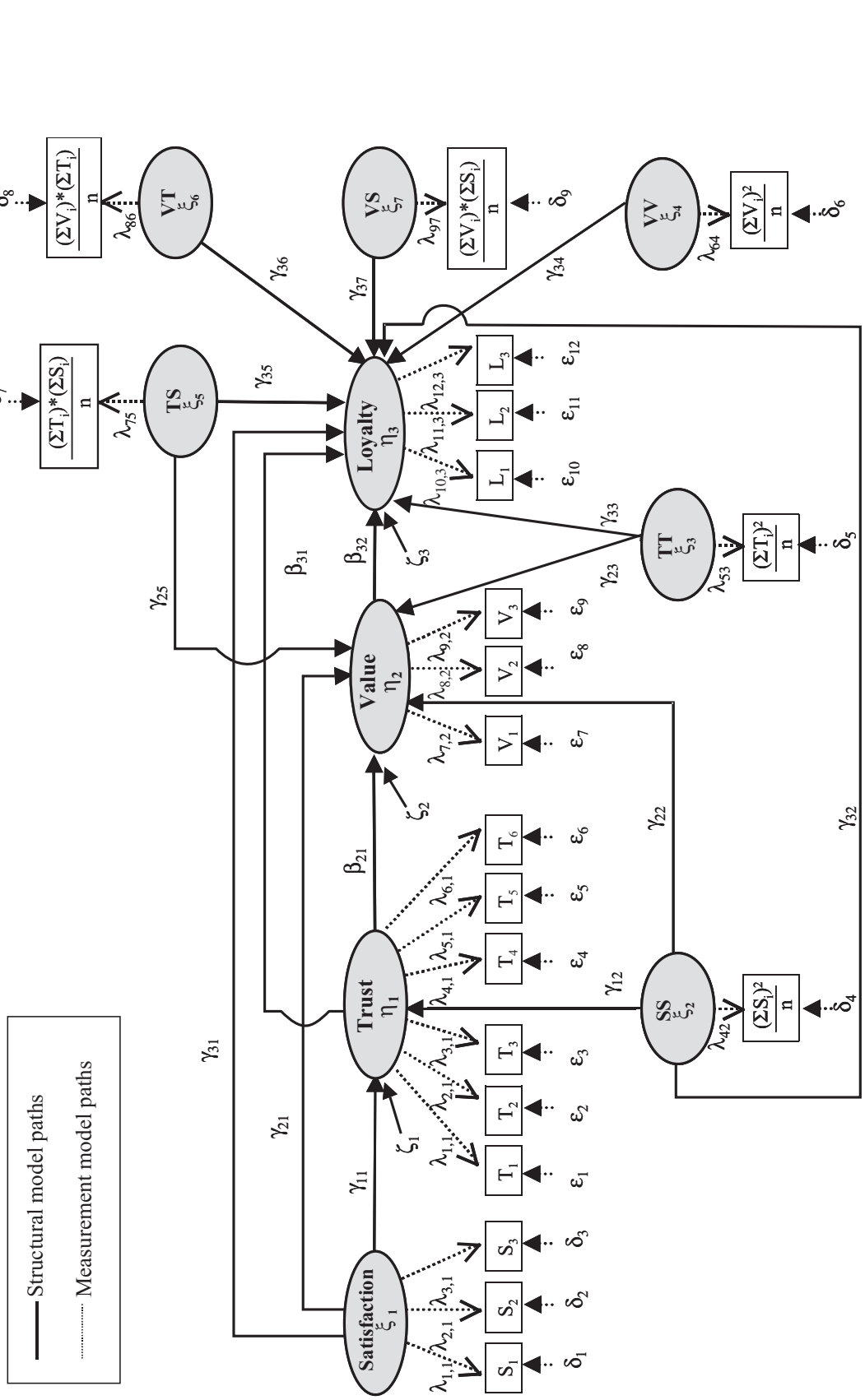
THE PROPOSED MODEL: THEORY AND HYPOTHESES

We develop hypotheses for the curvilinear mechanisms that affect loyalty intentions by focusing on three key determinants: transactional satisfaction, trust, and value. Although marketing literature identifies other antecedents of loyalty, we focus on these three constructs because of their prominent academic and managerial relevance. We recognize that there is significant debate and controversy about the linkages that connect satisfaction, trust, value, and loyalty intentions and about other constructs that may mediate and/or moderate these relationships. Our study does not aim to resolve these controversies and debates. Rather, we focus on contrasting the curvilinear relationships among satisfaction, trust, value, and loyalty intentions and do not focus particularly on the mediating pathways that link these constructs to loyalty intentions. Furthermore, although several different formulations for mediating mechanisms have been proposed, for the purposes of our simultaneous analysis, we choose a formulation that is rooted in the literature, has received theoretical and empirical support, and is relevant for our context of relational exchanges. The proposed formulation includes partial mediation effects in which an antecedent has both a direct and an indirect effect (i.e., mediated) on the dependent variable. Partial mediation respects the view that our understanding of mechanisms is tentative and evolving and that a definitive and consensual formulation has not yet emerged. We extend the literature by providing the theoretical foundation for and empirical insights into curvilinear dynamics.

Conceptual Definitions and Background of Loyalty Determinants

Figure 1 depicts the proposed model of consumer loyalty intentions for relational exchanges. We define "transaction-specific" satisfaction as the degree of fulfillment of some need, desire, goal, or other pleasurable end state that results from a specific exchange transaction between the consumer and a firm (Oliver 1997). Loyalty intentions are indicated by an inclination to perform a diverse set of behaviors that signal a motivation to enhance an ongoing relationship with the service provider, including repeat buying and greater share of wallet. In general, the satisfaction–loyalty literature anticipates the direct, linear, and positive effect of satisfaction on loyalty (cf. Anderson and Mittal 2000). Yet empirical studies often indicate that the relationship is indirect and complex (Mittal and Kamakura 2001; Mittal, Ross, and Baldasare 1998; Oliver 1999). Explanations for such discrepancies vary and are speculative. Oliver (1999, p. 34) notes that the direct relationship between satisfaction and loyalty might be "misspecified" and "mediated by other exchange-relevant constructs." The potential mediating variables must link (previous) transaction-specific satisfaction to the ongoing relational construct of loyalty. Garbarino and Johnson (1999), Woodruff (1997), and Sirdeshmukh, Singh, and Sabol (2002) suggest that relational trust and value act as the linking mediating variables. Consistent with these studies, we define "trust" as a consumer's confident beliefs that he or she can rely on the seller to deliver promised services, whereas we define "relational value" as the consumer's perceptions of the benefits enjoyed versus the cost incurred in the maintenance of an ongoing exchange relationship. This conceptualization of value coheres with studies by Neal (1999) and Woodruff (1997). Using the trust–commitment theory of relationship marketing, Garbarino and Johnson (1999) propose and demonstrate that whereas satisfaction mediates the relationship between trust and loyalty intentions for transactional exchanges, the mechanism is different for relational exchanges. In the latter case, trust mediates the effect of satisfaction on loyalty intentions, and therefore the role of satisfaction in affecting loyalty intentions becomes less central. Sirdeshmukh, Singh, and Sabol (2002) extend this finding by conceptualizing and providing evidence for the partial mediating role of relational value. Drawing from the theory of goal-directed behaviors, Sirdeshmukh, Singh, and Sabol argue that consumers seek relational value as the higher-order goal in marketplace exchanges and that this goal regulates their future intentions, including loyalty. This stems from an important theoretical development in the trust literature that involves the intrinsic and instrumental mechanisms of trust. In an intrinsic mechanism, trust is intrinsically functional in exchange relationships, and consumers reward service providers that they trust through a reciprocity mechanism with increased loyalty. In an instrumental mechanism, trust is a desired benefit in relational exchanges that is weighed against the costs of maintaining the relationship (Grisaffe and Kumar 1998). In this mechanism, trust enhances loyalty intentions to the extent that it contributes to relational value. The two trust mechanisms correspond to the direct and mediated effects on loyalty.

Figure 1
THE EMPIRICAL MODEL USED FOR TESTING THE RELATIONSHIP AMONG TRANSACTIONAL SATISFACTION, RELATIONAL TRUST, RELATIONAL VALUE, AND LOYALTY INTENTIONS



Notes: The correlations between exogenous variables ξ_1, ξ_2, ξ_3, ξ_4, ξ_5, ξ_6, and ξ_7 were estimated but are not shown for clarity. In addition, acquiescence, common method, category complexity, and demographic variables were modeled, but for clarity, they are not shown. TS = trust–satisfaction interaction term; VT = value–trust interaction term; VS = value–satisfaction interaction term; VV = value quadratic term; TT = trust quadratic term; and SS = satisfaction quadratic term.

Recognizing that alternative formulations exist in the literature (i.e., Fornell et al. 1996; see also the related American Customer Satisfaction Index [ACSI] stream of work), we note that the different formulations involve distinctions along two key factors: (1) the nature of exchange relationship as either relational or transactional and (2) the measurement level of the key constructs as either overall or specific. For example, the ACSI model neither conceptualizes satisfaction at the transaction (-specific) level nor distinguishes between relational and transactional consumers. Instead, the ACSI model conceptualizes satisfaction as a "cumulative" construct—that is, an overall assessment over all past transactions—and is measured by three indicators: (1) overall satisfaction, (2) expectancy disconfirmation, and (3) relative performance (Fornell et al. 1996). However, when satisfaction is defined at a transactional level, conceptualized as a degree of fulfillment, and a distinction is drawn between relational and transactional consumers, Garbarino and Johnson (1999) show that the role of satisfaction in affecting loyalty intentions becomes less central, and trust assumes greater importance. Likewise, from a practitioner perspective, Neal (1999) has been a strong proponent of the view that it is value, not satisfaction, that drives loyalty. For relational exchanges and satisfaction measured at the transactional level, it follows from the preceding body of work that the influence of transactional satisfaction on loyalty intentions would be partially mediated by relational trust and value.

Curvilinear Effects of Loyalty Determinants

We propose that the effects of loyalty determinants depict systematic curvilinearities that are captured by both significant linear and quadratic effects. Building on the need-gratification and dual-factor motivation theories (Herzberg 1966; Maslow 1943; Wolf 1970) in the context of relational exchanges (Houston and Gassenheimer 1987; Vargo and Lusch 2004), we propose that the curvilinearities involve either increasing or decreasing incremental effects on loyalty intentions. That is, for any given determinant, an "increasing incremental effect" implies that with higher values of this determinant, a unit change has an increasingly greater effect on loyalty intentions. In contrast, a "decreasing incremental effect" implies that with higher values of the determinant, a unit change has an increasingly smaller effect on loyalty intentions. In what follows, we provide theoretical arguments and extract hypotheses for the nature of curvilinearity for different loyalty determinants.

According to need-gratification and dual-factor motivation theories, individual needs can be broadly classified into two categories: (1) basic, lower-order, or hygiene needs and (2) growth, higher-order, or motivator needs (Herzberg 1966; Wolf 1970). To the extent that unfulfilled and desired needs trigger and maintain goal pursuit, these theories argue that when the environment is deficient in hygiene need fulfillment such that the lower-order needs remain unfulfilled, the person's goal pursuit is motivated mainly by basic, lower-order needs and not by growth, higher-order needs; however, when the environment fulfills lower-order needs, the individual goal pursuit is motivated mainly by higher-order needs. The key argument is that though higher-order needs fail to motivate goal pursuit until lower-order needs are fulfilled, beyond some point of hygiene fulfillment, increasing fulfillment of higher-order needs has increasing incremental effects on goal pursuit. In contrast, beyond this point of hygiene fulfillment, increasing fulfillment of lower-order needs has decreasing incremental effects on goal pursuit. In this sense, higher- and lower-order needs are monovalent, though their motivating potential is activated in different ranges of need fulfillment. Oliver (1997) expands on this argument by including a third set of bivalent needs that consistently motivate goal pursuit regardless of the level of fulfillment. In other words, a bivalent need has a monotonically increasing relationship with goal pursuit. We draw from the preceding notions of monovalent and bivalent needs to propose curvilinear hypotheses for the different loyalty determinants based on the role that each plays in relational exchanges. We note that relational exchanges go beyond transactional exchanges because they involve social exchange mechanisms in addition to fulfillment of economic goals (Vargo and Lusch 2004). However, because fulfillment of economic goals is a core and basic need in market-based exchanges, we conceptualize related mechanisms to be consistent with the hygiene role in need-gratification theories (Houston and Gassenheimer 1987). In contrast, because development of social bonds and relationships in market exchanges creates a generative mechanism that grows and enhances exchange benefits, we conceptualize related mechanisms to be consistent with the growth role in need-gratification theories (Vargo and Lusch 2004). Drawing on these conceptualizations, we propose that in relational exchanges, transaction-specific satisfaction acts as a basic, lower-order, hygiene-type need; consumers' trust in the service provider acts as a growth, higher-order need; and relational value in service exchanges serves a function similar to bivalent needs.

In our study, we define "satisfaction" as the degree of need fulfillment in a specific exchange transaction (Oliver 1997). Because satisfaction evaluations are based on the degree to which the service provider meets, fails to meet, or exceeds a consumer's expectations in a single, prior episode, economic, not social, aspects of exchange are likely to dominate the transactional focus. Did the product work as expected? Was the price fair? Such questions are likely to drive transactional satisfaction evaluations (Iacobucci, Grayson, and Ostrom 1994). However, satisfaction evaluations likely influence consumers' efforts to pursue and to maintain relational exchanges when the single instance yields negative information—that is, when the service provider fails to fulfill basic consumer expectations. In this case, a consumer's norms for episode performance are negatively disconfirmed on the basis of an experience stream of ongoing relational exchanges. In contrast, when the episode provides service performance that meets or exceeds transactional norms, satisfaction is not sufficient to influence loyalty intentions in relational exchanges (Garbarino and Johnson 1999). Thus, satisfaction likely has a hygiene effect on loyalty intentions such that it has a decreasing incremental effect beyond some point of expectation fulfillment. Furthermore, consistent with the work of Garbarino and Johnson (1999), the necessary condition for loyalty intentions in relational exchanges is the fulfillment of a higher-order need that relates to social aspects of exchange, namely, a consumer's trust in the service provider. This coheres with the notion that consumer trust is focused on expectations of a service provider's trustworthiness in a stream of future episodes (Sirdeshmukh, Singh,

and Sabol 2002). Thus, we expect that unit changes in a consumer's trust in the service provider have an increasingly greater effect on loyalty intentions after a basic level of exchange fulfillment has been achieved. Finally, relational value reflects both the social benefits and the economic costs of maintaining the present and future exchanges with the service provider. When costs exceed benefits, further increases in costs of relational exchanges are likely to erode loyalty. When the benefits are sufficient to cover the costs of relational exchanges, relational value continues to exert an influence on loyalty because relational value is likely to fulfill higher-order needs. In this sense, relational value reflects a consumer's consideration of both economic and social aspects of his or her relationship with the service provider. Thus, we expect that relational value is both a necessary and a sufficient condition for loyalty intentions, which is consistent with its bivalent mechanism.

Although studies have examined some of the preceding effects, none has empirically examined the simultaneous effects of all the posited curvilinear relationships in a single study. This is a critical gap in the literature that renders current interpretations ambiguous. For example, Oliva, Oliver, and MacMillan (1992) find that satisfaction and loyalty are related in a linear and nonlinear fashion, depending on transaction costs. Likewise, Mittal and Kamakura (2001) and Gómez, McLaughin, and Wittink (2004) find evidence of nonlinearities for the relationship between overall satisfaction and behavioral loyalty. Johnson and Auh (1998) consider the role of trust in a multivariate mechanism in which satisfaction and loyalty depict significantly different effects, depending on the nature of the environment. However, none of the studies proposes or examines the different forms of curvilinear relationships for disparate determinants of loyalty. On the basis of our discussion, we propose the following:

H_1: Transaction satisfaction has a decreasing incremental effect such that it has (a) a positive, linear effect and (b) a negative, quadratic effect on loyalty intentions.

H_2: Consumers' trust in the service provider has an increasing incremental effect such that it has (a) a positive, linear effect and (b) a positive, quadratic effect on loyalty intentions.

H_3: Consumers' perception of relational value has a symmetrically increasing effect such that it has (a) a positive, linear effect but (b) no quadratic effect on loyalty intentions.

Note that we do not propose any hypotheses for the curvilinear relationships of transactional satisfaction on trust or for transactional satisfaction and trust on relational value. As in prior research (Anderson and Mittal 2000), our theoretical development focuses on loyalty intentions as the dependent variable of interest. For intermediate dependent variables, such as relational value and trust, the theoretical foundation is not strong enough to posit specific hypotheses. For this reason, we view the potential for curvilinearities in these linkages as a tentative position that may be explored with the data at hand. If the results are promising, researchers may be encouraged to theorize these linkages and to test them more rigorously.

RESEARCH DESIGN

We selected two service industries, retail clothing purchases and nonbusiness airline travel, for our study. We selected the specific industries to allow for some commonality in terms of structural and relational characteristics. For our study, we focused on exchanges that were likely to depict relational characteristics. For the retail category, we asked consumers to focus on exchanges with a clothing store that involved at least a $50 purchase during one visit and at least two visits over the past six months. If consumers did not have retail exchanges that satisfied the preceding qualifying criteria, we asked them to return the uncompleted survey. For the airline-travel category, we asked consumers to focus on exchanges with an airline company for which they hold a frequent-flyer account and have made at least one nonbusiness trip during the past six months.

Sample

For each category, the sample consisted of 1230 randomly selected individual consumers who earned $35,000 or higher and resided in the metropolitan area of a large Midwestern city in the United States. Two waves of questionnaires were mailed to all sampled households along with a cover letter; there was a four-week gap between mailings. In the retail category, the first wave resulted in 182 returned surveys, and the second wave resulted in 143 responses, for a total of 325 returned surveys and a 26% response rate. However, only 153 (84%) of the responding consumers in the first wave and 93 (65%) of the respondents in the second wave met prequalifying criteria. Overall, this yields a qualifying rate of 76% for the retail category. In the airline category, the first wave produced 160 responses, of which 72 respondents (45%) met the prequalifying criteria. Of the 141 responses in the second wave, 41 respondents (29%) met the prequalifying criteria. Thus, we obtained a total of 301 responses (a response rate of 25%), of which 113 respondents met the prequalifying rate, which yielded a qualifying rate of 38%.

In the aggregate sample, a majority of the respondents had a college degree or higher, were white, and were married. Overall, 50% of respondents were male. However, there was a significant gender imbalance in each service category; 70% of respondents in the retail sample were female, and only 29% in the airline sample were female. We conducted a wave analysis to examine the profile differences of early and late respondents, but this indicated no significant demographic differences except for a higher educational level for the first-wave respondents in the airline category ($\chi^2 = 10.85$, $p < .01$). We found no significant differences between early and late respondents for the study constructs (satisfaction, trust, value, and loyalty) regardless of service context ($F = .01$ to 1.39, $p > .20$). In addition, to the extent that a disproportionate number of males (females) did not respond to the retail (airline) survey, there is a potential for nonresponse bias because gender may influence the posited mechanisms of loyalty intentions.

Measurements

We present the correlation matrix of study constructs in Table 1. We drew all operational measures from the literature. We used a three-item measure for loyalty intentions based on the work of Zeithaml, Berry, and Parasuraman (1996). This measure used a ten-point scale ranging from "very likely" to "very unlikely." Respondents rated the likelihood of doing most of their future shopping (i.e., share of

Table 1
MEANS, STANDARD DEVIATIONS, AND INTERCORRELATIONS FOR THE STUDY CONSTRUCTS

	Loyalty Intentions	*Relational Value*	*Relational Trust*	*Transaction Satisfaction*	*Category Complexity*	*Acquiescence Bias*
Retail Sample						
Loyalty intentions	—	.56	.51	.41	.30	–.03
Relational value	.49	—	.59	.54	.44	.01
Relational trust	.48	.54	—	.61	.24	.07
Transactional satisfaction	.33	.46	.56	—	.37	.00
Category complexity	–.06	.08	–.13	.06	—	–.05
Acquiescence bias	–.02	.03	.09	.02	–.04	—
Mean	7.32	7.68	7.25	6.78	6.38	1.15
Standard deviation	1.78	1.56	1.54	2.23	2.16	1.30
Airline Sample						
Loyalty intentions	—	.63	.57	.36	.24	–.17
Relational value	.59	—	.77	.66	.40	–.74
Relational trust	.51	.71	—	.64	.51	–.47
Transactional satisfaction	.24	.57	.51	—	.54	–.23
Category complexity	.16	.01	.11	.19	—	–.38
Acquiescence bias	.04	–.63	–.36	–.09	–.39	—
Mean	6.83	7.29	6.37	7.46	6.61	.50
Standard deviation	1.84	1.62	1.79	2.14	1.73	1.57

Notes: Zero-order correlations are in the upper matrix; correlations adjusted for common method are in the lower matrix.

category wallet), of repeating purchase, and of spending more than 50% of their clothing budget with the specific provider (worded appropriately for the airline category). Likewise, we adapted a three-item measure of relational value from existing research; respondents were asked to evaluate the prices paid, time spent, and effort involved in relation to the benefits obtained to maintain an ongoing relationship with the focal provider. We measured this on a ten-point scale with anchors ranging from "extremely good value" to "extremely poor value" and from "highly reasonable" to "highly unreasonable." For relational trust, we adapted a six-item measure, with three items each to measure trust in frontline employees and company policies and practices. Respondents provided judgments on a ten-point scale with anchors ranging from "very low integrity" to "very high integrity" and from "highly untrustworthy" to "highly trustworthy." Finally, we included three items to measure transaction-specific consumer satisfaction with the last experience. We used a ten-point scale with anchors ranging from "highly unsatisfactory" to "highly satisfactory," from "very unpleasant" to "very pleasant," and from "terrible" to "delightful."

Method of Analysis

To test the hypotheses, we formulated the following system of equations:

$$(1)\quad \eta_1(\text{trust}) = \gamma_{11}(\text{satisfaction}) + \gamma_{12}(\text{satisfaction}^2) + \gamma_{13}(\text{method}) + \gamma_{14}(\text{acquiescence}) + \zeta_1,$$

$$(2)\quad \eta_2(\text{value}) = \gamma_{21}(\text{satisfaction}) + \gamma_{22}(\text{satisfaction}^2) + \beta_{21}(\text{trust}) + \gamma_{23}(\text{trust}^2) + \gamma_{24}(\text{method}) + \gamma_{25}(\text{acquiescence}) + \zeta_2, \text{ and}$$

$$(3)\quad \eta_3(\text{loyalty}) = \gamma_{31}(\text{satisfaction}) + \gamma_{32}(\text{satisfaction}^2) + \beta_{31}(\text{trust}) + \gamma_{33}(\text{trust}^2) + \beta_{32}(\text{value}) + \gamma_{34}(\text{value}^2) + \gamma_{35}(\text{method}) + \gamma_{36}(\text{acquiescence}) + \zeta_3,$$

where η refers to endogenous variables, and ζ represents disturbance terms. The γ and β indicate coefficients for the influence of exogenous and endogenous variables, respectively.

In estimating the preceding equations, we were sensitive to three concerns: unhypothesized interactions, measurement error, and contextual variability. For the first concern, although we did not hypothesize interaction effects, several researchers have cautioned against excluding interaction terms. For example, Ganzach's (1997) simulation study shows that misleading quadratic effects were obtained when interactions and multicollinearity were present but the interaction terms were not modeled (see, also, Cohen et al. 2003). Noting that including unhypothesized interaction effects may be theoretically unappealing, Ganzach (1997) emphasizes that to reduce the probability of Type I and Type II errors, both quadratic and interaction terms should be included even if one of them is not suggested by theory. Thus, we amended Equations 1–3 to include the relevant interaction terms. For example, Equation 2 includes a single term for the interaction between satisfaction and trust. Likewise, Equation 3 includes three two-way interaction terms involving the satisfaction, trust, and value constructs.

Another key concern was that measurement error might undermine the statistical significance and/or curtail the magnitude of quadratic effects, thus making them difficult to detect (Busemeyer and Jones 1983). To overcome this threat, researchers have suggested estimation methods that explicitly model measurement error in the quadratic variables. We used one such approach: the two-step version of Ping's (1998) single-indicant estimation method (2SI) for latent continuous variables. Because of the potential of correlated error terms, we used structural equation modeling (SEM) for simultaneous estimation of multiple equations with latent variables. To address these concerns jointly, we used the 2SI-SEM (single-indicant estimation method within SEM) for our model estimations. The 2SI-SEM estimation involved using the following equations in which X and Z represent the independent latent variables used to

estimate the factor loadings and measurement error for the quadratic and interaction terms (Ping 1998):

(4) $\lambda_{x:x} = \Gamma_x\Gamma_x$, where $\Gamma_x = (\Sigma\lambda_{xi})/n_x$, and n_x is the number of X indicators;

(5) $\varepsilon_{x:x} = 4\Gamma_x{}^2\mathrm{Var}(X)\theta_x + 2\theta_x{}^2$, where $\theta_x = (\Sigma\varepsilon_{xi})/n_x{}^2$;

(6) $\lambda_{x:z} = \Gamma_x\Gamma_z$, where Γ_x is as previously, $\Gamma_z = (\Sigma\lambda_{zi})/n_z$, and n_z is the number of Z indicators; and

(7) $\varepsilon_{x:z} = \Gamma_x{}^2\mathrm{Var}(X)\theta_z + \Gamma_z{}^2\mathrm{Var}(Z)\theta_x + \theta_x\theta_z$, where $\theta_z = (\Sigma\varepsilon_{zi})/n_z{}^2$.

Although there are several procedures for estimating quadratic and interaction effects with latent constructs (for a review, see Schumacker and Marcoulides 1998), we chose a method that produces robust estimates and is suitable for theoretical models that include both mediated and moderated relationships (Cortina, Chen, and Dunlap 2001, pp. 356–58). Furthermore, to avoid nonessential multicollinearity problems, we followed Cohen and colleagues' (2003, pp. 204–262) recommendation for standardizing all observed variables.

A final concern involves identifying patterns that appear consistently across contexts. An advantage of the SEM approach is that it allows for simultaneous estimation of all model equations for the retail and airline data using the multiple group option in SEM software, EQS. By constraining parameters to be equal across groups, we obtain a direct evaluation of the consistency in the magnitude and direction of estimated coefficients across contexts. As a result, based on the Lagrange-multiplier (LM) test, coefficients with significant statistical difference between groups can be sequentially released until the further freeing up of constraints fails to enhance model fit.

Common Method and Acquiescence Bias

Because we used a cross-sectional survey, we needed to consider and control for several sources of bias to reasonably test the hypotheses. We considered the following two sources: (1) common method bias due to a single instrument of data collection and (2) acquiescence bias due to a person's tendency to agree with items regardless of content. Both sources likely inflate common variance and obfuscate differential effects. However, they require different approaches to control for their effects. To control for common method bias, we followed Lindell and Whitney's (2001) recommendation to include a construct (i.e., category complexity) that is theoretically unrelated to study constructs. The category-complexity construct involves a consumer's perceived complexity in shopping for products/services in a given category (e.g., retail or airline) and does not pertain to the specific service provider with whom the consumer had ongoing relational exchanges.[1] We used the indicators of category complexity to identify a common method factor whose loadings were constrained to be equal across all indicators in accord with the work of Lindell and Whitney (2001). To control for acquiescence bias, we followed Baumgartner and Steenkamp's (2001) recommendation to identify a matched set of positively and negatively worded items. We identified six items in the retail sample and two items in the airline sample,[2] and we computed a difference score between the positively and negatively worded item for each set/individual per Baumgartner and Steenkamp's guideline. Finally, we included common method and acquiescence latent factors in each of the structural equations estimated to partial out the effects of a common instrument and individual heterogeneity due to response style bias (Equations 1–3).

RESULTS

We first examined psychometric properties by estimating a multigroup confirmatory factor analysis (CFA) model that involves all four study constructs as well as the common method and acquiescence bias latent constructs for the airline and retail data. This model fits the data reasonably well with the following fit statistics: $\chi^2 = 1276.27$, degrees of freedom (d.f.) = 491; comparative fit index (CFI) = .91; normed fit index (NFI) = .86; nonnormed fit index (NNFI) = .88; and root mean square error of approximation (RMSEA) = .070 (90% confidence interval [CI]: .065 to .075). Without exception, each item loads on its hypothesized factor with large, significant loadings. With just one exception, the measurement parameters achieve invariance across the two contexts (LM test p values > .10). Each construct has estimated reliabilities that exceed .85 and variance extracted that exceeds .70, which indicates convergent validity (Fornell and Larcker 1981). Without exception, each construct extracts variance that is larger than the highest variance it shares with any other construct, thus providing support for discriminant validity. Finally, reliabilities of quadratic and interaction terms range from .79 to .93 and from .81 to .92, respectively. Overall, the study constructs evidence acceptable reliability and convergent and discriminant validity.

Overall Assessment

To estimate whether the inclusion of quadratic and interaction effects is empirically meaningful, we followed Ganzach's (1997) hierarchical procedure. We entered the quadratic latent variables in a linear model, followed by the interaction latent variables. Incremental inclusion of quadratic variables in a model with only linear terms yields a significant improvement ($\Delta\chi^2 = 42.9$, d.f. = 12, $p < .01$). Likewise, the inclusion of interaction terms in a model with both linear and quadratic terms yields a significant improvement ($\Delta\chi^2 = 18.29$, d.f. = 8, $p < .05$). Thus, it appears that the proposed curvilinear model along with the interaction terms is appropriate for understanding loyalty mechanisms.[3] To identify cross-context consistency, we

[1]We used three semantic differential items to measure category complexity with anchors from "very difficult" to "very simple," from "highly complicated" to "very straightforward," and from "very stressful" to "very easy" for both retail and airline contexts.

[2]An example of a matched set of items is as follows: (a) The store employees treat you with suspicion when you return products for a refund (negative), and (b) The store employees go out of the way to solve consumer problems (positive).

[3]On the basis of the work of McCallum and Mar (1995), we tested whether the quadratic terms explained higher variance in the dependent variables than the interaction terms. The interaction-terms model increased R^2 of loyalty intentions by 3% in the retail and 5% in the airline sample

included additional constraints in the estimated model with linear, quadratic, and interaction terms. Only nonsignificant constraints were retained in accordance with the LM test. Finally, as we note in Table 2, to control for extraneous sources of variance, we estimated three additional models by sequentially including the common method (second adjusted model) bias, the acquiescence bias (third adjusted model), and the significant demographic variables (fourth adjusted model). The fit statistics for the final model were as follows: χ^2 = 1449.36, d.f. = 557; CFI = .90; NFI = .85; NNFI = .86; and RMSEA = .07 (90% CI: .066 to .075). Next, we interpret the estimated coefficients and test hypotheses.

compared with the main-effects model, whereas quadratic terms increased R^2 by 7% and 5%, respectively.

Test of Hypotheses

The final model provides meaningful explanation of the dependent variables, with R^2 values ranging from .43 to .51 for loyalty intentions, from .42 to .70 for relational value, and from .52 to .64 for trust. The final adjusted model in Table 2 indicates that satisfaction has a positive linear effect on loyalty intentions in both service contexts, but this effect is not significant (B = .08, $p > .10$). In addition, the quadratic effect of satisfaction is supported only in the retail sample but not in the airline sample (B = –.33, $p < .05$; B = –.09, $p > .10$, respectively). This provides partial support for H_1. As H_2 predicts, trust has a positive, significant, and consistent main effect (B = .31, $p < .05$) and a positive and consistent quadratic effect (B = .14, $p < .05$) on loyalty intentions across the service contexts. This strongly supports H_2. Finally, value has a positive and significant main effect (B = .33, $p < .05$) and a significant, negative quadratic effect (B =

Table 2

ESTIMATED COEFFICIENTS FOR THE CURVILINEAR RELATIONSHIPS AMONG TRANSACTIONAL SATISFACTION, RELATIONAL TRUST, RELATIONAL VALUE, AND LOYALTY INTENTIONS AFTER ACCOUNTING FOR COMMON METHOD, INDIVIDUAL RESPONSE STYLE, AND MEASUREMENT ERROR[a,b]

Constructs		*Retail Data*				*Airline Data*			
Dependent	*Independent*	*Coeff1*[c]	*Coeff2*[c]	*Coeff3*[c]	*Coeff4*[c]	*Coeff1*[c]	*Coeff2*[c]	*Coeff3*[c]	*Coeff4*[c]
Trust									
	Satisfaction	**.52**	**.58**	***.31***	***.30***	**.52**	**.58**	***.27***	***.27***
	Satisfaction^2	**–.09**	**–.10**	*–.04*	***–.06***	**–.09**	**–.10**	***–.15***	***–.15***
	Common method	—	***–.16***	***–.37***	***–.37***	—	*.06*	*–.12*	*–.11*
	Aquiescence	—	—	***.53***	***.52***	—	—	***.41***	***.42***
Relational Value									
	Satisfaction	**.20**	**.23**	***.13***	***.12***	**.20**	**.23**	***.34***	***.35***
	Trust	***.32***	***.19***	***.29***	***.38***	***.50***	***.43***	***.48***	***.47***
	Satisfaction^2	***–.19***	***–.18***	**–.17**	**–.16**	*–.09*	*–.09*	**–.17**	**–.16**
	Trust^2	**–.16**	**–.12**	***–.29***	***–.23***	**–.16**	–.12	***–.16***	*–.15*
	Trust × satisfaction	**.29**	**.24**	**.39**	**.36**	**.29**	**.24**	**.39**	**.36**
	Common method	—	*.09*	*.04*	*.08*	—	.06	***–.13***	***–.14***
	Aquiescence	—	—	***.17***	***.13***	—	—	***.22***	***.21***
Loyalty Intentions									
	Satisfaction	.08	**.19**	.08	.08	.08	**.19**	.08	.08
	Trust	**.28**	**.28**	**.29**	**.31**	**.29**	**.28**	**.29**	**.31**
	Value	**.42**	**.36**	**.35**	**.33**	**.42**	**.36**	**.35**	**.33**
	Satisfaction^2	***–.36***	***–.38***	***–.33***	***–.33***	*–.11*	*–.13*	*–.09*	*–.09*
	Trust^2	**.14**	**.15**	**.15**	**.14**	**.14**	**.15**	**.15**	**.14**
	Value^2	*–.11*	***–.13***	*–.10*	***–.12***	***–.26***	***–.26***	***–.25***	***–.29***
	Value × trust	–.04	–.02	–.04	–.01	–.04	–.02	–.04	–.01
	Value × satisfaction	**.22**	**.22**	**.21**	**.20**	**.22**	**.22**	**.21**	**.20**
	Common method	—	*.04*	–.10	–.09	—	*.07*	–.10	–.09
	Aquiescence	—	—	*–.05*	*–.05*	—	—	*–.09*	*–.06*

Overall Fit Indices	*Unadjusted Model*	*Adjusted Model 1*	*Adjusted Model 2*	*Adjusted Model 3*
χ^2 (d.f.)	1078.20 (341)	1295.03 (450)	1328.57 (484)	1449.36 (557)
NFI	.87	.86	.85	.85
NNFI	.88	.88	.88	.86
CFI	.90	.90	.90	.90
SRMR[d]	.08	.08	.09	.09
RMSEA (90% CI)	.08 (.076–.087)	.076 (.071–.080)	.073 (.068–.078)	.070 (.066–.075)

[a]The reported coefficients are unstandardized estimates from the maximum likelihood method. Results from four separate estimations are included: a first unadjusted model in which the common method, acquiescence bias, and demographics were not included; a second adjusted model in which only common method was included; a third adjusted model in which both common method and acquiescence bias factors were included; and a fourth adjusted model in which significant demographic variables were also included in the third adjusted model (sex, marital status, age, and household size).

[b]The significant coefficients are in bold. Coefficients that differ across the retail and airline context are in italics.

[c]The "Coeff1," "Coeff2," "Coeff3," and "Coeff4" refer to estimated coefficients from the first unadjusted, second adjusted, third adjusted, and fourth fully adjusted models, respectively.

[d]SRMR = standardized root mean-square residual.

−.12, $p < .05$, for the retail; B = −.29 for the airline context). This partially supports H_3. With regard to interactions, only the interaction effect involving satisfaction and value on loyalty intentions is significant, and this effect is consistent across the service contexts (B = .20, $p < .01$).

Although no mediation effects were hypothesized, we tested for the partial mediated effect of trust on the satisfaction–loyalty intentions relationship as Baron and Kenny (1986) recommend. Our results show that both linkages involved in the mediation effect, satisfaction–trust and trust–loyalty, are significant. Notably, satisfaction has a significant, positive linear effect on trust ($B_{retail} = .30$; $B_{airline} = .27$, $p < .01$) and a significant and negative quadratic effect ($B_{retail} = -.06$, $p < .05$; $B_{airline} = -.15$, $p < .01$). Furthermore, as H_2 predicts, trust has a significant and positive effect on loyalty. In addition, the elimination of mediating pathways of trust yields a change in χ^2 of 50.17 (d.f. = 4, $p < .01$), thus providing support for the partial mediation effects of trust.

Likewise our results provide support for the partial mediation effect of value on the satisfaction–loyalty intentions link. The main effect of satisfaction on value is positive and significant ($B_{retail} = .12$, $p < .05$; $B_{airline} = .35$, $p < .01$), and its quadratic effect on value is negative and significant (B = −.16, $p < .01$). In addition, value has a significant effect on loyalty (B = .33, $p < .01$). To test this statistically, we estimated a nested model without the pathway mediated by value. These mediating pathways yield a significant χ^2 change of 18.21 (d.f. = 4, $p < .01$), supporting a mediation effect of value.[4]

To examine the mediation of value in the trust–loyalty relationship, we note that trust has a significant and positive linear effect on value ($B_{retail} = .38$; $B_{airline} = .47$, $p < .01$). Furthermore, the quadratic effect of trust on value is significant but negative in the retail data (B = −.23, $p < .01$) but is nonsignificant in the airline data (B = −.15, $p < .10$). Because trust has a direct, positive, and significant linear effect on loyalty intentions as well, our results suggest that trust has a total effect on loyalty of .44 and .47 in the retail and airline contexts, respectively, that is composed of two effects: (1) a direct, positive effect of .31 and (2) a mediated effect through values of .12 and .15, respectively. To test this mediated effect statistically, we estimated a nested model by eliminating the mediating pathway and obtained a χ^2 of 31.24 (d.f. = 4, $p < .01$).

DISCUSSION

This study proposes and empirically examines the curvilinearities involving the simultaneous influence of multiple determinants of loyalty intentions for ongoing relational exchanges. Theoretically, this study departs from most of the previous work by providing a theory-based framework for understanding the distinct and differential curvilinear effects of satisfaction, trust, and value on loyalty intentions. Nevertheless, our point of departure is not at anticipating the curvilinear effects per se. Both researchers and practitioners have offered conjectures and suggestions and recognize the need to examine such effects. Our departure is in drawing from need and motivation theories of loyalty determinants to synthesize systematically these conjectures and suggestions to propose testable hypotheses for differential curvilinear effects. Moreover, using data from two different service contexts, we provide evidence for curvilinear effects of each antecedent on loyalty intentions. Before discussing the evidence and its complications, we highlight some limitations.

Limitations

For a balanced appreciation of our findings, we must consider several limitations. First, this study has limited generalizability because of the regional sampling plan we used. Moreover, although we used multiple industry contexts to enhance validity, we recognize that the sample size for the airline context is smaller than that for retail clothing. This occurred mainly because of a lower qualifying rate for the former context. Further research is needed to test the generalizability of our conclusions in other industry contexts. Second, because of the cross-sectional nature of the study, the self-report data, and several other factors—including common method variance, spurious cause–effect inferences, and problems of self-generated validity—the reported findings are biased. A longitudinal design is needed for valid cause–effect inferences. In this sense, our evidence is tentative. Third, several procedures exist for accounting for measurement error in quadratic terms in SEM. In this study, we used one such approach, the 2SI approach, which, though superior to ordinary least squares regression, has its own limitations. Fourth, our analysis does not include individual dispositional measures that may moderate the proposed relationships or introduce unmodeled heterogeneity. Fifth, the operationalization of the value construct mainly captures the economic dimension of the exchange relationship. Further research might find it useful to enhance the breadth of the value construct. Likewise, we used a transaction-specific conceptualization of the satisfaction construct, but we recognize that other conceptualizations at the overall or global level are plausible. Sixth, beyond satisfaction, trust, and value mechanisms, other loyalty mechanisms are plausible and need to be considered. Despite these recognized limitations, our results yield insights into the relative influence of different determinants and curvilinear mechanisms. We discuss each in turn.

Relative Influence of Loyalty Determinants

The findings of our study provide evidence into the relative curvilinear effects of satisfaction, trust, and value on loyalty intentions. Consumers' judgments of relational trust and value emerge as the determinants with strong, significant, and consistent direct linear-term effects on loyalty intentions (B = .31 and .33, respectively, $p < .01$) combined with significant but opposite quadratic effects (B = .14 and −.12/−.29, respectively, $p < .05$). With regard to transactional satisfaction, we obtained a weak but positive linear

[4]Competing theoretical models (i.e., ACSI studies) propose the mediation effect of satisfaction on the value–loyalty relationship. Therefore, we tested the value–trust–satisfaction–loyalty model using Lee and Hershberger's (1990) and McCallum and colleagues' (1993) procedures. We find empirical evidence for the superiority of our proposed model based on information-based indices (Akaike information criterion and consistent Akaike information criterion) and other heuristics (e.g. NFI). Notably, we find no differences between the competing models for the size and significance of the estimated linear, quadratic, and interaction coefficients in the loyalty equation.

effect on loyalty (B = .08) and an opposite but significant quadratic effect (for retail/airline, B = −.33/−.09, $p < .01$). Because the estimated effects are akin to partial regression coefficients, our results suggest that trust and value have independent, direct effects on loyalty intentions after controlling for satisfaction. Thus, we have sufficient evidence to indicate that it is unlikely that focusing on any single determinant, regardless of the apparently compelling and vigorous defense of its proponents, can secure loyalty intentions. Reality is just more complex. To maintain and enhance consumer loyalty, managers must simultaneously focus on and optimize both relational trust and value.

It would be unfortunate, and certainly inappropriate, if our results were taken to imply that transactional satisfaction is not important in loyalty judgments. Rather, our results establish that transactional satisfaction is a key driver of consumer trust in the service provider (B = .30/.27, $p < .01$) and continues to have residual direct effects on value even after the effect of trust is partialled out (B = .12/.35, $p < .05$). Notably, considering the total effects on value and loyalty intentions, satisfaction has a substantial influence, with respective effect coefficients exceeding .35. As we noted previously, much of this total effect is mediated through trust and value. Moreover, its quadratic effect on loyalty intentions is significant and consistent with theoretical expectations. Finally, satisfaction has positive, significant, and consistent interaction effects on value and loyalty intentions when it is considered jointly with trust and value, respectively. In other words, satisfaction has both direct and indirect effects on loyalty that are statistically significant, theoretically meaningful, and nontrivial. As such, the role of transactional satisfaction on loyalty cannot be underestimated.

The Triadic Mechanisms of Satisfaction, Trust, and Value

To highlight the simultaneity in curvilinear effects of loyalty determinants, Figure 2 plots the predicted loyalty intentions against the observed scores of satisfaction, trust, and value separately for the retail and airline data.[5] Figure 2, Panel A, reveals that in the retail context, satisfaction and trust are associated with opposite influences on loyalty intentions. Whereas satisfaction depicts a significant decreasing rate of return, trust is associated with an increasing rate-of-return influence on loyalty intentions. The influence of trust conforms to its hypothesized motivator effect, and the influence of satisfaction conforms to its posited hygiene effect. Notably, the incrementally decreasing effect of satisfaction is largely subdued in the airline context, and the incremental increases in trust are associated with disproportionately higher loyalty intentions relative to the retail context (Figure 2, Panel D). This effect is mainly because the hygiene effect of satisfaction indicated by the quadratic effect is threefold larger in magnitude in the retail context than in the airline context (in absolute value). Thus, whereas our data confirm that satisfaction and trust yield differential effects on loyalty intentions in accord with their posited hygiene and motivator roles, respectively, the motivator role of trust is dominant in the airline context.

Likewise, similar patterns for the influence of trust and value on loyalty intentions are evident in Figure 2, Panels B and E. In both contexts, value is associated with an incrementally decreasing effect, whereas trust depicts an incrementally increasing effect. Furthermore, because the hygiene effect of value is more than twofold stronger in the airline context, the motivator effect of trust on loyalty intentions is disproportionately higher in the retail context. With regard to value, our results are inconsistent with the bivalent hypothesis. Depending on whether theory or data are given preference, there are two potential explanations. Theoretically, the value construct we used is operationalized more closely with economic aspects of the exchange. For relational exchanges, it may be useful to consider the social dimensions of benefits provided and costs incurred. A more comprehensive operationalization of the value construct may confirm its bivalent role. Alternatively, the consistent evidence for the hygiene role of value may imply that the calculus of benefits and costs in relational exchanges does not rise to a level to fulfill the higher-order expectations of consumers. Our data cannot sort through these competing explanations.

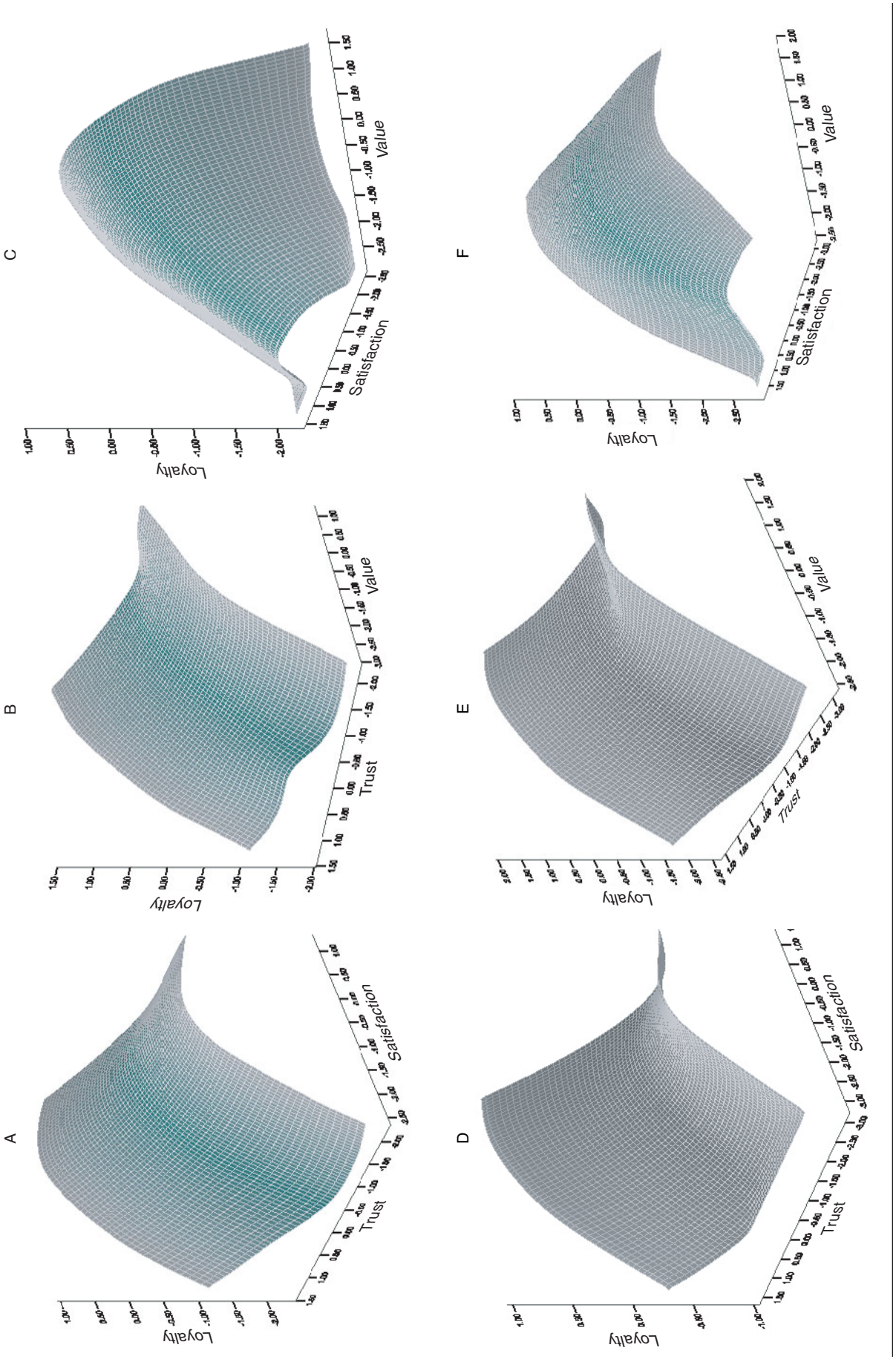
Finally, Panels C and F in Figure 2 depict the simultaneous effect of two hygiene factors, satisfaction and value, on loyalty intentions. Because of a significant and positive interaction influence, the curvilinear effects of these hygiene factors are distinctive. Providing greater value offsets the incrementally decreasing effect of satisfaction on loyalty intentions, and vice versa. Thus, if a firm uses the satisfaction or value mechanism to retain consumer loyalty, it is essential that increases in satisfaction are matched with increases in value. Otherwise, investments in the satisfaction or value mechanism are unlikely to be productive. Note that loyalty intentions decrease with increasing satisfaction when value remains low. This might explain why some satisfied consumers defect (Jones and Sasser 1995).

MANAGERIAL IMPLICATIONS AND CONCLUDING NOTES

For too long, managerial practice has emphasized simple and singular factors and mechanisms in its search for the instrument to help maintain and enhance consumer loyalty. Within our study's validity boundaries, we can confirm that searches guided by simplicity and singularity are probably unproductive. The empirical processes, as we know them, conform to a worldview that is complex and curvilinear. Ensuring satisfaction in individual transactions and positive relational value appears consistently as hygiene factors in loyalty mechanisms. Without fulfillment of these essential lower-order exchange needs, managers are unlikely to maintain the loyalty of a consumer base. Beyond this essential fulfillment, it appears more rewarding to invest in efforts to enhance trust mechanisms that allow fulfillment of higher-order, motivator needs in relational exchanges. Further complexities emerge because of the interrelationships among the loyalty determinants. Satisfaction affects trust and value judgments, and trust plays a direct role in shaping consumers' value evaluations. In these complexities, the hygiene role of satisfaction and value and the moti-

[5]The predicted value of loyalty intentions is based on estimated coefficients from the fourth adjusted model in Table 2. The three-dimensional graphs are partial plots over the observed domains of the two independent variables included; the third independent variable is assumed to be held constant at its average value.

Figure 2
CURVILINEAR EFFECTS OF SATISFACTION, TRUST, AND VALUE ON LOYALTY INTENTIONS IN RETAIL (TOP PANELS: A–C) AND AIRLINE CONTEXTS (BOTTOM PANELS: D–F)



vator role of trust remain consistently compelling. Managers are likely to have the urge to sort through our results to address the bottom-line question, Which loyalty determinant is most important? Our response is that they all are. Balancing investments in loyalty determinants to match the target segment and relational context is a crucial issue that deserves careful analysis. Although this analysis is needed for each market situation, we can extend some broad guidelines from our work. Consider a manager who faces two target segments, one that is generally loyal to the product or service offered and one that occasionally uses the product or service offered but does not evidence strong loyalty. In this context, our results suggest that managers should invest in trust-building factors for the first segment while holding their current investments in satisfaction and value; for the second segment, managers should fine-tune their satisfaction and value investments without necessarily investing additional resources in trust-building activities. Thoughtful, rigorous analysis and careful tracking of consumer loyalty mechanisms can oil the engine of relationship marketing. Here, theory and method do not stand apart; they blend together to reveal clear and compelling, albeit complex and curvilinear, insights.

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