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## RESEARCH REPORT

## A Cross-Lagged Test of the Association Between Customer Satisfaction and Employee Job Satisfaction in a Relational Context

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Due to its practical importance, the relationship between customer satisfaction and frontline employee (FLE) job satisfaction has received significant attention in the literature. Numerous studies to date confirm that the constructs are related and rely on this empirical finding to infer support for the “inside-out” effect of FLE job satisfaction on customer satisfaction. In doing so, prior studies ignore the possibility that—as suggested by the Service Profit Chain’s satisfaction mirror—a portion of the observed empirical effect may be due to the “outside-in” impact of customer satisfaction on FLE job satisfaction. Consequently, both the magnitude and direction of the causal relationship between the constructs remain unclear. To address this oversight, this study builds on multisource data, including longitudinal satisfaction data provided by 49,242 customers and 1,470 FLEs from across 209 retail stores, to examine the association between FLE job satisfaction and customer satisfaction in a context where service relationships are the norm. Consistent with predictions rooted in social exchange theory, the results reveal that (a) customer satisfaction and FLE job satisfaction are reciprocally related; (b) the outside-in effect of customer satisfaction on FLE job satisfaction is predominant (i.e., larger in magnitude than the inside-out effect); and (c) customer engagement determines the extent of this outside-in predominance. Contrary to common wisdom, the study’s findings suggest that, in relational contexts, incentivizing FLEs to satisfy customers may prove to be more effective for enhancing FLE and customer outcomes than direct investments in FLE job satisfaction.

**Keywords:** FLE job satisfaction, customer satisfaction, satisfaction mirror hypothesis, service profit chain, cross-lagged panel design

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*The “mirror” probably occurs in its simplest form in the restaurant where waitpersons enthusiastic about their jobs not only communicate their enthusiasm to customers but also go out of their way to make customers’ dining experiences pleasant. Customer satisfaction is expressed through both comments and often a larger-than-normal tip, reinforcing the relationship and increasing the waitperson’s enthusiasm for the next customer encounter (Heskett, Sasser, & Schlesinger, 1997, p. 101).*

As part of the Service Profit Chain, the satisfaction mirror posits a reciprocal causal relationship between frontline employee (FLE) job satisfaction and customer satisfaction (Heskett, Jones, Loveman, & Sasser, 1994; Heskett et al., 1997). As the opening passage illustrates, the satisfaction mirror is characterized by a cycle of self-reinforcing exchanges between customers and FLEs that ultimately enhances both parties’ outcomes. Given FLEs’ role in this

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cycle, top executives often prioritize FLE job satisfaction (Chun & Davies, 2009), investing substantial resources toward that end (Tkaczyk, 2010) in hopes that satisfied employees will result in satisfied customers.

Empirical research over the last two decades largely affirms the wisdom of investing in FLE job satisfaction as a mechanism for increasing customer satisfaction. Numerous studies infer support for the “inside-out” effect of FLE job satisfaction on customer satisfaction based on the finding of a positive relationship between the two constructs (e.g., Evanschitzky, Groening, Mittal, & Wunderlich, 2011; Netemeyer, Maxham, & Lichtenstein, 2010). Unfortunately, prior research does not allow for the possibility that the theorized “outside-in” mirror effect, that is, customer satisfaction’s impact on FLE job satisfaction, may account for a meaningful portion of the observed empirical relationship between FLE job satisfaction and customer satisfaction. Consequently, the magnitude and direction of the relationship remain unclear (Payne & Webber, 2006), and, more broadly, an adequate test of the satisfaction mirror has yet to be performed.

To address this oversight in the literature, we employ a cross-lagged panel design to perform the first robust test of the satisfaction mirror hypothesis. Specifically, we employ a cross-lagged panel design to test the satisfaction mirror hypothesis at the FLE-level of analysis in a context where ongoing service relationships are the norm (Guterk, Bhappu, Liao-Troth, & Cherry, 1999). Cross-lagged panel designs involve collecting the same data from the same respondents at two different points in time and then estimating the relationship between variables of interest while controlling for each variable’s level at the first time point. Such designs are considered to offer the strongest indication of causality in the field (Lang et al., 2011) because they involve temporal separation between the cause and effect and are able to exclude stable third variables as a rival explanation for the observed relationships (Lian, Ferris, Morrison, & Brown, 2014). The cross-lagged panel we employ in this study includes satisfaction data provided at two time points (1 year apart) by 49,242 customers and 1,470 FLEs across 209 stores of the same retail chain.

Our investigation of the FLE job satisfaction-customer satisfaction relationship is grounded in social exchange theory (SET; Blau, 1964), which provides strong reason to suspect that the satisfaction mirror exists, is the product of a reciprocity cycle motivated by customers’ and FLEs’ desire to repay the firm for benefits provided (Cropanzano & Mitchell, 2005; Evanschitzky et al., 2011), and varies in nature depending upon whether or not a social bond between FLEs and customers is present (Maertz, Griffeth, Campbell, & Allen, 2007). Importantly, we rely on this latter premise of SET to contribute a richer characterization of the satisfaction mirror effect to the literature. Specifically, we leverage SET to propose that (a) in contexts where service relationships are the norm, the outside-in effect of customer satisfaction on FLE job satisfaction is likely to be predominant or stronger in magnitude than the reciprocal inside-out effect; and (b) as customer engagement increases so too does the extent of outside-in predominance. This deeper understanding of the satisfaction mirror afforded by SET—and supported by the study data—implies that the mirror effect may be susceptible to the influence of contextual factors that induce predominance of one effect over the other, and, thus determine *when* organizational objectives are best achieved via investments in either FLE job satisfaction or customer satisfaction.

Before explicating these ideas more fully, we review prior empirical research to provide adequate context for our current study.

### Prior Research on the FLE Job Satisfaction—Customer Satisfaction Relationship

Our review of prior research, summarized in Table 1, reveals that the relationship between FLE job satisfaction and customer satisfaction has received widespread empirical attention across numerous disciplines, particularly over the last decade. Unfortunately, with the exception of Ryan, Schmit, and Johnson (1996) and Bernhardt, Donthu and Kennett (2000)—who did not specify casual direction—all prior studies are grounded in the perspective that FLE job satisfaction is antecedent to customer satisfaction. Consequently, prior research has neglected the possibility that customer satisfaction can causally influence FLE job satisfaction and, by extension, has failed to confirm the existence of a satisfaction mirror (Payne & Webber, 2006).

Our literature review also reveals that the FLE job satisfaction-customer satisfaction relationship has been examined primarily at the unit- and FLE-levels of analysis, with only two studies conducted at the dyadic level. Furthermore, we find that out of the 22 studies that have investigated the FLE job satisfaction-customer satisfaction relationship, 13 have employed cross-sectional data, with the remaining nine studies using either repeated cross-sectional, time-lagged or meta-analytic data (see Table 1 for a definition of each data type). While studies based on these data have yielded useful insight, none of the studies have employed the type of data (i.e., cross-lagged panel data) that provides the basis for making strong inferences about the casual ordering of the constructs and, hence, cannot offer guidance regarding the true nature of the FLE job satisfaction-customer satisfaction relationship (Lang et al., 2011).

## Theoretical Background and Hypotheses

### The Satisfaction Mirror Constructs

*FLE job satisfaction* is defined as “a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences” (Locke, 1976, p. 1300). Further, we define *customer satisfaction* as an individual’s cumulative, global, and favorable evaluation of a firm based on personal experiences over time (Voss, Godfrey, & Seiders, 2010). As these definitions imply, both FLE job satisfaction and customer satisfaction are used here to refer to each party’s overall satisfaction with the firm, as opposed to satisfaction with specific aspects of the job or with the FLE who provides the service. This approach to conceptualizing the study constructs is consistent with the Service Profit Chain framework (Heskett et al., 1997) because it recognizes that it is the totality of FLEs’ and customers’ experience with a firm that shapes their approach toward one another. As indicated in Table 1, it is also consistent with prior empirical work on the FLE job satisfaction-customer satisfaction relationship, which has predominately employed global measures of satisfaction with the firm to investigate the relationship between the constructs. Keeping these points in mind, we now turn to SET to develop our study hypotheses.

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Table 1  
*Summary of Empirical Research on the Frontline Employee (FLE) Job Satisfaction-Customer Satisfaction Relationship*

Study	Theory	Type of data used to test relationship	Analysis level	Aggregation units	Customer (employee) sample size	Customer (employee) measure	Context	Hypothesis	Conclusion
Ryan, Schmit, & Johnson (1996)	ASA Model	Repeated cross-sectional	Unit	131	NI (NI)	Firm (Facets)	Services	Nondirectional	CSAT → ESAT*
Loveman (1998)	Profit Chain	Cross-sectional	Unit	386	NI (NI)	Firm (Facets)	Services	ESAT → CSAT	No Effect
Bernhardt, Donthu, & Kennett (2000)	Service Quality	Repeated cross-sectional	Unit	382	342,308 (3,009)	Transaction (Firm)	Retail	Nondirectional	Non-directional
Silvestro & Cross (2000)	Profit Chain	Cross-sectional	Unit	15	NI (NI)	Facets (Facets)	Retail	ESAT → CSAT	No effect
Koys (2001)	Profit Chain; ASA Model	Repeated cross-sectional	Unit	24	5,565 (1,774)	Unit (Firm)	Retail	ESAT → CSAT	ESAT → CSAT
Harter, Schmidt, & Hayes (2002)	NI	Meta-analytic	Unit	N/A	N/A (N/A)	NI (Facets)	Meta	ESAT → CSAT	ESAT → CSAT
Brown & Chin (2004)	Emotional Contagion	Time-lagged	FLE	240	3,926 (240)	Firm (Facets)	B2B	ESAT → CSAT	No effect
Homburg & Stock (2004)	Emotional Contagion	Cross-sectional	FLE	164	328 (164)	Firm (Firm)	B2B	ESAT → CSAT	ESAT → CSAT
Homburg & Stock (2005)	Balance Theory	Cross-sectional	FLE	164	328 (164)	Firm (Firm)	B2B	ESAT → CSAT	ESAT → CSAT
Payne & Webber (2006)	Social Exchange Theory	Cross-sectional	Dyad	N/A	249 (249)	Firm (Work)	Services	ESAT → CSAT	ESAT → CSAT
Wangenheim, Evanschitzky, & Wunderlich (2007)	ASA Model; Balance Theory; Emotional Contagion	Cross-sectional	FLE	1659	53,645 (1,659)	Firm (Firm)	Retail	ESAT → CSAT	ESAT → CSAT
Brown & Lam (2008)	NI	Meta-analytic	Mixed	N/A	N/A	N/A (N/A)	Meta	ESAT → CSAT	No effect
Subramony, Krause, Norton, & Burns (2008)	Emotional Contagion; Service Quality	Time-lagged	Unit	126	NI (1,530)	Firm (Facets)	B2B	ESAT* → CSAT	ESAT* → CSAT
Chi & Gursoy (2009)	Profit Chain	Cross-sectional	Unit	250	3,346 (2,023)	Firm (Firm)	Services	ESAT → CSAT	ESAT → CSAT
Homburg, Wieseke, & Hoyer (2009)	Profit Chain	Cross-sectional	FLE	258	597 (258)	Firm (Firm)	Services	ESAT → CSAT	No Effect
Netemeyer, Maxham, & Lichtenstein (2010)	Emotional Contagion; Profit Chain	Cross-sectional	Unit	306	57,656 (1,615)	Firm (Firm)	Retail	ESAT → CSAT	ESAT → CSAT
Whitman, Van Rooy, & Viswesvaran (2010)	Emotional Contagion	Meta-analytic	Unit	N/A	N/A (N/A)	N/A (N/A)	Meta	ESAT → CSAT	ESAT → CSAT
Evanschitzky, Groening, Mittal, & Wunderlich (2011)	Generalized Social Exchange Theory	Cross-sectional	FLE	933	20,742 (933)	Firm (Firm)	Retail	ESAT → CSAT	ESAT → CSAT
Grandy, Goldberg, & Pugh (2011)	Emotional Contagion; Profit Chain	Time-lagged	Unit	328	NI (NI)	Transaction (Facets)	Retail	ESAT → CSAT	ESAT → CSAT
Chuang, Judge, & Liaw (2012)	Profit Chain	Cross-sectional	Dyad	N/A	204 (204)	Unit (Firm)	Mixed	ESAT → CSAT	ESAT → CSAT

(table continues)

Table 1 (continued)

Study	Theory	Type of data used to test relationship	Analysis level	Aggregation units	Customer (employee) sample size	Customer (employee) measure	Context	Hypothesis	Conclusion
Evanschitzky, Sharma, & Prykop (2012)	ProfitChain	Cross-sectional	FLE	18	188 (18)	Firm(Facets)	B2B	ESAT→CSAT	ESAT→CSAT
Evanschitzky, Wangenheim, & Wunderlich (2012)	ProfitChain	Cross-sectional	Unit	119	135,746 (5,488)	Firm (Firm)	Retail	ESAT→CSAT	ESAT→CSAT

*Note.* ESAT = FLE job satisfaction; CSAT = customer satisfaction; NI = not indicated; N/A = not applicable; ASA = attraction, selection, attrition; Cross-sectional data = data collected from FLEs and customers at approximately the same point in time; Repeated cross-sectional data = data collected from a group of FLEs and a group of customers at approximately the same point in time, with the procedure repeated during a second data collection wave (respondents across waves are not the same); Time-lagged data = data collected from both FLEs and customers with their collection separated by a theoretically-determined amount of time; Meta-analytic data = data collected from prior studies that have examined the FLE job satisfaction-customer satisfaction relationship; Firm = measure of (FLE or customer) global satisfaction with firm; Unit = global measure of customer satisfaction with a unit that is part of a firm; Facets = measure of FLE satisfaction with different aspects of job; Transaction = measure of customer satisfaction with last visit; B2B = business-to-business.  
<sup>a</sup> = Study employs an employee morale measure as an indicator of FLE job satisfaction.

## An SET-Based Explanation for the Satisfaction Mirror

Construed broadly, SET relies on norms to explain the behaviors that ensue when one party (the sender) provides another (the receiver) with a valued economic, social, or emotional benefit (Blau, 1964; Homans, 1961; Thibaut & Kelley, 1959). The norm of reciprocity—SET's best known norm or exchange rule—posits that when one party initiates an action to benefit another party, the recipient acquires an unspecified future obligation to respond in kind (Emerson, 1976). If the recipient responds by providing a benefit the sender values, the foundation for ongoing exchange is established and the development of a long-term social exchange relationship becomes possible (Cropanzano & Mitchell, 2005).

Scholars frequently use SET to explore the relationship between firms, their employees, and firm outcomes (Colquitt, Baer, Long, & Halvorsen-Ganepola, 2014). In particular, the norm of reciprocity has been used to argue that the benefits firms provide their employees lead to desirable firm outcomes because they motivate employees to pay their debt to the firm by engaging in behaviors the firm values (Lavelle, Rupp, & Brockner, 2007). While repayment behaviors are not prescribed within social exchange arrangements, employees often choose to reciprocate through exceptional in- and extra-role performance because such behaviors are highly visible and valued by the firm (e.g., Bettencourt, Brown, & MacKenzie, 2005; Eisenberger, Armeli, Rexwinkel, Lynch, & Rhoades, 2001; Settoon, Bennett, & Liden, 1996).

Consistent with the Service Profit Chain, we build on SET and the norm of reciprocity to suggest that job satisfaction—a favorable evaluation of the intrinsic and extrinsic benefits a job provides—motivates FLEs to repay the firm for employment benefits received through behaviors that enhance customer satisfaction. We posit this occurs because customers are the focus of FLEs' daily work efforts and, consequently, behaviors directed toward helping customers (e.g., locating a difficult-to-find product for a customer) represent a natural, highly valued, and visible avenue through which a satisfied FLE can repay an employer for the intrinsic and extrinsic benefits the job provides (Bettencourt et al., 2005).

Further, we posit that the reciprocity cycle does not end there but, rather, continues as satisfied customers interested in future exchange with the firm engage in behaviors aimed at reciprocating the benefits received (Evanschitzky et al., 2011). Importantly, given that the benefits customers receive from their exchange with the firm are highly intertwined with and often inseparable from the FLEs who are tasked with helping customers (Hartline, Maxham, & McKee, 2000; Palmatier, Scheer, & Steenkamp, 2007), we anticipate that satisfaction with the firm will trigger customer repayment behaviors directed toward both the firm and FLEs (e.g., expressions of appreciation), ultimately improving FLEs' job satisfaction. That is, we anticipate that while FLEs engage in customer-oriented behaviors to relieve their felt obligation to the employer, such behaviors also elicit gratitude-laden customer responses that increase FLE job satisfaction and are intended to repay FLEs for their role in creating a satisfactory experience with the firm (Beatty, Mayer, Coleman, Reynolds, & Lee, 1996).

*Hypothesis 1 (H1):* FLE job satisfaction and customer satisfaction exert a positive reciprocal effect on each other.

### Relative Magnitude of the Mirror Effects

As the preceding exposition suggests, we predict that a positive, reciprocal relationship exists between FLE job satisfaction and customer satisfaction, with each construct affecting the other as part of an ongoing influence cycle. What we have yet to consider, however, is whether these reciprocal effects are likely to be equal in their magnitude (i.e., bidirectional) or of differing magnitudes, with one being relatively stronger than the other (i.e., predominant; Meier & Spector, 2013; Rosenberg, Schooler, & Schoenbach, 1989). We anticipate that our study context favors the emergence of a predominant outside-in effect, an expectation we discuss next.

As noted earlier, our study is carried out in a setting where exchange between customers and FLEs is facilitated through a service relationship or relational arrangement, as opposed to isolated service encounters (Guttek, 1995). Service relationships are characterized by a “history of shared interaction” and the anticipation of future engagement (Guttek et al., 1999, p. 219), both of which make it likely that social exchange between customers and FLEs is the norm in our particular research context (Cropanzano & Mitchell, 2005).

We posit that this prevalence of social exchange produces a predominant outside-in effect because it simultaneously makes the inside-out effect weaker and the outside-in effect stronger. We address the weakening of the inside-out effect first. As we explain in our arguments for H1, in the absence of social exchange between FLEs and customers, FLE behaviors toward customers are mostly a function of their desire to repay the firm for providing a satisfactory work experience. In such environments, increasing job satisfaction produces enhanced FLE efforts on behalf of customers that improve customer satisfaction, and are ultimately reflected in a positive relationship between FLE job satisfaction and customer satisfaction. However, when engaged in satisfactory social exchange with both their employer and customers, FLEs can be motivated to perform helpful behaviors directed toward customers by their felt obligation to the firm and/or to the customers they serve. Research grounded in SET suggests that, in such circumstances, FLE helping behaviors directed toward customers are likely to be motivated more by a sense of obligation to customers than to the firm (Lavelle et al., 2007). This occurs because—due to the extent and intensity of their day-to-day contact with customers—the benefits FLEs receive from working with customers and their social debt to those customers are more salient to FLEs than is their more global obligation to the firm (Maertz et al., 2007). As a result, FLE job satisfaction ultimately has less influence on customer satisfaction in the presence of customer-FLE social bonds. Empirically, this expectation is supported by studies which find that the impact of third variables (e.g., organizational support) on employee job outcomes is diminished in the presence of social exchange between employees and those with whom they have day-to-day work contact (Kamdar & Van Dyne, 2007; Maertz et al., 2007).

We now turn our attention to the proposed strengthening of the outside-in effect. The benefits customers accrue via their exchange with the firm are highly intertwined with and often inseparable from the FLEs who are tasked with helping customers (Beatty et al., 1996; Hartline et al., 2000; Palmatier et al., 2007). In relational contexts, this inseparability—and, by extension, customers’ dependence on a focal FLE—becomes even more pronounced as

FLEs take on a central role in the value creation process (Sirdeshmukh, Singh, & Sabol, 2002). As a consequence, satisfied customers interested in securing continued benefits through exchange with the firm become highly motivated to strengthen their bond and cooperation with the FLE as a necessary step toward that end (Beatty et al., 1996; Bettencourt, 1997). This added motivation leads customers satisfied with the firm to direct—in a more intense and frequent manner—verbal (e.g., enthusiastic “thank-you’s”) and behavioral (e.g., customer referrals) expressions of gratitude toward the FLE that not only help the satisfied customer secure future benefit flows (Lawler & Thye, 1999) but also serve to improve FLE job satisfaction. Broadly speaking, this expectation is supported by empirical work demonstrating that social actors are strategic in how they allocate resources directed toward achieving valued outcomes within social exchange arrangements (e.g., Rapp, Bachrach, & Rapp, 2013).

*Hypothesis 2 (H2):* In relational exchange environments, the outside-in effect of customer satisfaction on FLE job satisfaction will be predominant, such that it will be stronger in magnitude than the inside-out effect of FLE job satisfaction on customer satisfaction.

### The Moderating Role of Customer Engagement

All service relationships are not created equal (Guttek et al., 1999), and, thus, relationship factors may determine the extent of outside-in predominance observed. We consider this possibility by exploring the moderating role of *customer engagement*, a variable that offers an indication of the customer-FLE bond strength (Bijmolt et al., 2010), and is defined here as the extent to which customers voluntarily perform behaviors that benefit a firm or its actors but are not necessary for transacting exchange (Jaakkola & Alexander, 2014).

As the preceding definition implies, engaged customers participate in discretionary activities or perform extrarole behaviors (e.g., attend events, refer customers, etc.) that are beneficial to FLEs (Vivek, Beatty, Dalela, & Morgan, 2014). Research suggests that, as the object of such behaviors, FLEs feel socially indebted to customers and develop a strong motivation to relieve that felt debt by engaging in behaviors that benefit customers (Bove, Pervan, Beatty, & Shiu, 2009). Thus, while FLEs operating in relational contexts are likely to feel some level of social indebtedness to customers, the magnitude and saliency of that felt debt will be magnified with increasing customer engagement. Given that felt debt to customers is expected to supersede job satisfaction as a motivator of FLE helping behaviors toward customers (Lavelle et al., 2007; Maertz et al., 2007), the preceding line of reasoning implies that the impact of FLE job satisfaction on customer satisfaction (i.e., inside-out effect) is likely to be further diminished in relational contexts as customer engagement increases.

In contrast, we expect that increasing customer engagement should serve to accentuate the outside-in effect in relational contexts. Our expectation is rooted in the notion that highly engaged customers have a proclivity for engaging in activities (e.g., repeat purchasing, provision of constructive suggestions for improvement) that promote FLE job satisfaction (e.g., van Doorn et al., 2010; Vivek et al., 2014). When combined with satisfied customers’ motivation to enact behaviors intended to secure continued

benefit flows from FLEs in relational contexts (Beatty et al., 1996; Bettencourt, 1997), this proclivity serves to enhance the intensity and frequency of customer actions that promote FLE job satisfaction, and should thus accentuate the magnitude of the outside-in mirror effect. Taken together, the preceding arguments suggest that, in relational contexts, increasing customer engagement accentuates outside-in predominance due to a simultaneous weakening of the inside-out effect and strengthening of the outside-in effect.

*Hypothesis 3 (H3):* In relational exchange environments, the predominance of the outside-in effect will be greater when customer engagement is higher.

## Method

### Procedures

**Overview.** We gathered and matched longitudinal data on 49,242 customers and 1,470 FLEs representing 209 retail stores of a 1,200-store, multichannel (online, catalog, mobile, social, and storefront) retailer that sells specialty apparel and ready-to-wear accessories. Within this retail chain, FLEs are responsible for managing their own set of customers. Customers are assigned a primary FLE after the first store transaction, and that particular FLE assists them with their store visits and personal shopping services over time. This aspect of our study context made it possible for us to match FLEs and individual customers across the two data collection waves, a necessary precondition for testing the hypotheses.

Our retail partner routinely surveys its customers and employees, and we were allowed to add our own survey questions to a larger, two-wave data collection effort within the firm (this is the first study published using any of the data derived from this broader effort). The data collection process began with the selection of a sample of stores for inclusion in the study using a proportional stratified random sampling technique based on geographic region and store revenue (26% of all stores in the chain were selected for participation). This procedure resulted in a sample of stores that is representative of the entire retail chain along several critical dimensions (see Supplemental Online Appendix A for details on the correspondence between geographic strata and the study sample). In line with prior research examining similar or related phenomena, we employed a 1-year time lag between the two data collection waves (De Cuyper, Mäkikangas, Kinnunen, Mauno, & Witte, 2012; Koys, 2001; Örtqvist & Wincent, 2010; Ryan et al., 1996; Van Iddekinge et al., 2009). Time 1 FLE and customer survey data were collected between January and February 2011, and Time 2 FLE and customer survey data were collected between January and February 2012, with each data collection period remaining open for 1 month.

**FLE data.** We sent online surveys to the 1,642 FLEs from the 209 stores in our sample. After 1 week, the FLEs were sent a reminder e-mail asking them to complete the survey at their earliest convenience. FLEs were encouraged but not required to complete the surveys using any computer with an Internet connection. Over the two data collection waves, 1,470 FLEs submitted their surveys with completed responses, yielding an approximate 90% FLE response rate. An average of seven (ranging from four to

nine) FLEs per store participated in the study and were subsequently matched to their corresponding stores (which employed a total of eight FLEs on average). Subsequent analyses revealed that the FLE sample is representative of the population, with two exceptions: participants had slightly more experience (overall  $M = 19$  months) and held slightly more 2- or 4-year college degrees (overall proportion = 45%) than nonparticipants (see Supplemental Online Appendix B for further details on the representativeness of the samples).

**Customer data.** Our retail partner programmed its point-of-sale systems at the participating 209 stores to randomly offer customers an invitation statement (on their receipts) to complete a survey. The statement invited customers to visit an independent, research-specific website and complete a survey in exchange for a 25% discount on their next purchase. The participating customers then visited the web site, completed the survey, and received a printable coupon with a barcode discount number. Once again, we used proportional stratified random sampling to ensure that the number of customers included in the sample across geographic regions was proportional to the percentage of revenue generated by stores across the different regions. Using this procedure, we sent 212,347 survey invitations and ultimately collected Time 1 and Time 2 data from 49,242 customers, yielding (a) response rates ranging from 12% to 43% across the 209 stores, with an overall customer response rate of 23%; and (b) an average of 33.5 completed customer surveys per FLE, ranging from 25 to 41. The customer surveys were matched to the FLE using appropriate linking variables<sup>1</sup> and, once this matching process had been completed, our industry partner provided us with matched archival data on customer engagement (i.e., customer participation in FLE-hosted events) for the 12-month period between Time 1 and Time 2. Representativeness testing revealed no differences between participants and nonparticipants.

### Measures

**Measures of satisfaction.** We measured FLE job satisfaction and customer satisfaction using three-item scales adapted from prior research (Aaker, Fournier, & Brasel, 2004; Netemeyer et al., 2010). Both constructs were measured using 7-point Likert-type scales anchored by 1 = *strongly disagree* and 7 = *strongly agree*. FLE job satisfaction items include: "All in all, I am satisfied with my present job at (retailer)," "All things considered (pay, promotion, supervisors, co-workers, etc.), I am satisfied with my present job;" and "Generally speaking, I am very satisfied with my job." Customer satisfaction items include: "I am completely satisfied with (retailer)," "I am completely pleased with (retailer)," and "(retailer) is turning out better than I expected." Cronbach's alpha values for the Time 1 (Time 2) measures of FLE job satisfaction and customer satisfaction are .98 (.99) and .97 (.98), respectively.

**Confirmatory factor analysis.** Given the hierarchical (nested) and longitudinal nature of the data, we evaluated the satisfaction measures' psychometric adequacy in two separate

<sup>1</sup> The customers were asked upon checkout to identify their focal FLE and the FLE's employee number was appended to the transaction data. Customers were linked to the store by the store number, which was appended to the transaction data upon checkout as well. The employee records link each employee to a particular store number.

confirmatory factor analyses (CFAs): one for the Time 1 and Time 2 measures of FLE job satisfaction ( $n = 1,470$ ) and the other for the Time 1 and Time 2 measures of customer satisfaction ( $n = 49,242$ ). As is the norm with longitudinal data, we applied the same factor structure to the constructs at Time 1 and Time 2 and allowed the measurement errors for the same items across the two time periods to covary (Little, Preacher, Selig, & Card, 2007). Based on the study findings and Hu and Bentler's (1999) combinatorial rule for assessing model fit (standardized root-mean-square residual [SRMR]  $\leq .08$  and comparative fit index [CFI]  $\geq .95$ ), we conclude that the models provide a very good fit to the data (FLE job satisfaction:  $\chi^2_{(5)} = 1.74, p > .05, CFI = 1.00$ , and SRMR = .00; customer satisfaction:  $\chi^2_{(5)} = 100.13, p < .05, CFI = 1.00$ , and SRMR = .00). The results also indicate that all item loadings are significant ( $p < .01$ ), with standardized loadings in excess of .90. Moreover, the measures exhibit high composite reliabilities (all exceeding .90) and average variances extracted (all exceeding .90), both which support the conclusion that the measures are reliable and possess convergent validity (Anderson & Gerbing, 1988; Fornell & Larcker, 1981).

**Longitudinal measurement invariance.** Longitudinal configural and metric invariance are necessary preconditions for estimating cross-lagged panel effects (Lang et al., 2011). Configural invariance is present when identical factor structures provide a good fit to the measurement data across time periods (Little et al., 2007), a standard our measures conform to per the CFA results. Metric invariance, in contrast, is established by evaluating the change in model fit that occurs when construct loadings for the same items are constrained to be equal across time periods (Lang et al., 2011). Imposing the loading equality constraint across Time 1 and Time 2 resulted in the following fit statistics for the FLE job satisfaction and customer satisfaction measures, respectively:  $\chi^2_{(8)} = 148.1, p < .05$  and CFI = .994;  $\chi^2_{(8)} = 483.7, p < .05$ , CFI = .999. The loading equality constraint thus resulted in a .006 and .001 change in the CFI for the study's measures (relative to the CFA results); such small changes in fit (i.e.,  $\Delta CFI \leq .010$ ) support the conclusion of metric invariance across time (Chen, 2007; Cheung & Rensvold, 2002).

**Aggregation of customer satisfaction.** In order to test the satisfaction mirror hypothesis, it was necessary to first aggregate measures of customer satisfaction to the FLE level. Consistent with prior research (e.g., Ployhart, Weekley, & Ramsey, 2009), we rely on an additive composition model (Chan, 1998) to explain the functional relationship between the individual satisfaction measures provided by our respondents and the aggregate (mean) measures used to test the relationship of interest. In the case of satisfaction, such a model is most appropriate because the construct is a truly individual-level phenomenon that does not reference a shared group property. In the case of additive models, within-group homogeneity and interrater agreement are not necessary to support aggregation of the individual-level variables (i.e., to compute group means); however, it is important to consider the reliability of the group mean, typically assessed via ICC(2) (Bliese, 2000).<sup>2</sup> In our study, the ICC(2) values for Time 1 and Time 2 customer satisfaction are .78 and .87, respectively. These values exceed the established standard (.70), support aggregation, and suggest that relationships estimated using these constructs are unlikely to be biased due to sampling error (Bliese, 2000; Ployhart et al., 2009).

**Measure of customer engagement.** Consistent with prior research (e.g., Vivek et al., 2014) customer engagement was operationalized as the mean number of FLE-hosted events (e.g., trunk shows, one-on-one concierge fashion consultations, preview parties, etc.) in which the group of customers served by an FLE participated. The measure captures the post-Time 1 events in which customers participated (i.e., events participated in after the first wave of satisfaction data were collected) prior to the start of Time 2 (when the second wave of satisfaction data were collected).

## Analytical Procedures and Results

To test the study hypotheses, we estimated a series of models (labeled A–F) that are summarized in Table 2 and explained in our discussion of each hypothesis test below. All of the models were estimated in Mplus 7.1 using a computational algorithm that accounts for the nesting of customer-FLE dyads in stores to provide unbiased (i.e., correct) standard error and model fit estimates. To aid in the interpretation of the results and enhance the comparability of the subgroup effects reported as part of H3, all model variables were standardized prior to analysis and unstandardized coefficients are reported throughout (Kim & Ferree, 1981). A summary of all construct descriptive statistics and interconstruct correlations is provided in Table 3.

**H1: Test of the satisfaction mirror.** To test H1, we utilized our panel data to estimate the cross-lagged relationship between customer satisfaction and FLE job satisfaction. As Figure 1 illustrates, a cross-lagged analysis requires that we specify an auto-correlation (i.e., stability) path for each model construct (e.g., Time 1 FLE job satisfaction  $\rightarrow$  Time 2 FLE job satisfaction); this path offers insight into how much construct levels vary over time (Schaufeli, Maassen, Bakker, & Sixma, 2011). In addition, it requires that we model a cross-lagged (causal) effect between the constructs of interest (e.g., Time 1 customer satisfaction  $\rightarrow$  Time 2 FLE job satisfaction) and specify a covariance between the Time 1 exogenous variables and a covariance between the error terms for the Time 2 endogenous variables, resulting in a fully saturated model (Little et al., 2007; Schneider, White, & Paul, 1998). Within this type of design, statistically significant cross-lagged effects of one variable on another (i.e., the diagonal paths in Figure 1) provide the strongest possible evidence of causality in field research (Lang et al., 2011).

Prior to estimating the full cross-lagged model, we specified and tested a series of intermediate models (A–C in Table 2) to gauge whether adding the cross-lagged (causal) paths improved model fit and contributed to explained variance in the dependent variables above and beyond the stability effects. Relative model fit was assessed using the Akaike Information Criterion (AIC), with lower values indicating better fit (Lian, Ferris, Morrison, & Brown, 2014). Model A includes the stability effects only (e.g., Time 1 customer satisfaction  $\rightarrow$  Time 2 customer satisfaction) and suggests that both customer satisfaction ( $\beta = .94, p < .01$ ) and FLE job satisfaction ( $\beta = .85, p < .01$ ) exhibit great stability from Time 1 to Time 2. Model B adds the cross-lagged effect of FLE job satisfaction on customer satisfaction and reveals that adding the

<sup>2</sup> While not necessary to justify aggregation, we report ICC(1) values for customer satisfaction here to provide readers with insight into respondent similarity within groups; these values are .10 (Time 1) and .16 (Time 2).

Table 2  
Results of Models Estimated to Test Hypotheses 1–3

Model description	Hypothesis 1			Hypothesis 2		Hypothesis 3		
	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H
Model path estimates								
T1 FLE job sat → T2 FLE job sat	.85	.85	.80	.81	.83	.82	.79	.81
T1 Customer sat → T2 Customer sat	.94	.92	.95	.93	.92	.88	.76	.89
T1 FLE job sat → T2 Customer sat	—	.06	—	.05	.08	.05	.03	.04
T2 customer sat → T2 FLE job sat	—	—	.14	.14	.08	.09	.17	.11
Outside-in to inside-out ratio	—	—	—	73%	50%	62%	87%	75%
Variance explained (%)								
Customer satisfaction	89.0	89.3	89.2	89.5	89.4	86.3	76.5	86.3
FLE job satisfaction	72.6	73.0	74.3	74.7	74.3	74.9	68.4	74.8
Model fit statistics								
Akaike Information Criterion (AIC)	11,324	11,290	11,227	11,197	11,221	10,224	10,230	10,230
Chi-square (df)	111.6 (2)	77.6 (1)	28.9 (1)	0 (0)	21.1 (1)	0 (0)	11.4 (1)	11.4 (1)

Note. All path estimates are statistically significant at  $p < .05$ . Unstandardized coefficients are reported.

Table 3  
Construct Properties and Correlations

Measure	Mean	SD	1	2	3	4	5
1. FLE job satisfaction - T1	3.99	1.89	1.00				
2. FLE job satisfaction - T2	4.01	2.10	.83	1.00			
3. Customer satisfaction - T1	4.00	.64	.20	.26	1.00		
4. Customer satisfaction - T2	4.85	.81	.22	.28	.93	1.00	
5. Customer engagement	9.46	1.88	.24	.30	.60	.65	1.00

Note. FLE = frontline employee; T1 = Time 1; T2 = Time 2; SD = standard deviation;  $n = 1,470$ . Customer engagement was measured during the year that transpired between T1 and T2. All correlations are statistically significant at  $p < .05$ .

path resulted in an improvement in model fit ( $\Delta AIC = -34$ ), and a 0.3% increase in the amount of variance explained in Time 2 customer satisfaction. Model C extends Model A by adding the cross-lagged effect of customer satisfaction on FLE job satisfaction and indicates that adding the path resulted in an improvement in model fit ( $\Delta AIC = -97$ ), and a 1.7% increase in the amount of variance explained in Time 2 FLE job satisfaction. Finally, Model D involved a test of the full cross-lagged model, whose results are also graphically depicted in Figure 1. Both cross-lagged paths remained significant in the full model, thus offering support for H1 and confirming the existence of a satisfaction mirror. Specifically, the results reveal that Time 1 FLE job satisfaction is a significant predictor ( $\beta = .05, p < .01$ ) of Time 2 customer satisfaction, and Time 1 customer satisfaction is a significant predictor ( $\beta = .14, p < .01$ ) of Time 2 FLE job satisfaction (the managerial relevance of these relatively small effects is discussed in the practical implications section). The full cross-lagged model provided the best fit to the data ( $\Delta AIC = -127$ ).<sup>3,4</sup>

**H2: Relative magnitude of the mirror effects.** In H2 we propose that, in a relational context, the outside-in mirror effect is predominant. To test H2, we estimated Model E, an additional cross-lagged model. However, in this model, the inside-out and outside-in effects were constrained to be equal. We then examined  $\chi^2$  values to compare the fit of the constrained to that of the unconstrained model (Model D), with a significant scaled  $\chi^2$  difference test used to infer support for the hypothesis (Satorra & Bentler, 2001). The results of this analysis reveal a significant worsening of model fit when the inside-out and outside-in effects are constrained to be equal ( $\Delta\chi^2 = 21.1, 1 \text{ d. f.}, p < .01$ ). This result, along with the findings reported in H1 of an outside-in effect three times as large as the inside-out effect, offers strong support for H2.

**H3: Moderating role of customer engagement.** In H3, we argue that the predominance of the outside-in effect is magnified (attenuated) when customer engagement levels are high (low). To test the hypothesis, we closely followed the procedures outlined by Wetzel, Hammerschmidt, and Zablah (2014) and, thus, began by estimating an unconstrained multigroup model (Model F) using two subsamples, one for the low customer engagement group and one for the high customer engagement group (the two subsamples were created by applying a median split to the moderator). For each model, we also estimated the relative magnitude ( $R_{\text{out-in}}$ ) of the outside-in effect by dividing the outside-in effect ( $\beta_{\text{out-in}}$ ) by the sum of the inside-out ( $\beta_{\text{in-out}}$ ) effect and the outside-in effect as follows:

$$R_{\text{out-in,c}} = \frac{\beta_{\text{out-in}}}{\beta_{\text{in-out}} + \beta_{\text{out-in}}} \times 100\% \quad (1)$$

where c stands for the value of the moderator such that 1 = low customer engagement and 2 = high customer engagement.

To test whether the relative magnitude of the outside-in effect ( $R_{\text{out-in}}$ ) is statistically different across moderator subsamples, we then specified and tested an additional multigroup model (Model G) with  $R_{\text{out-in}}$  constrained to equality across both subgroups. As before, we used scaled  $\chi^2$  values to compare the fit of the constrained model with that of the unconstrained model and interpreted a significant  $\Delta\chi^2$  test as offering support for the moderation hypothesis.

The results of this analysis reveal that the ratio of the outside-in effect relative to the inside-out effect is 62% under conditions of low customer engagement and increases to 87% under conditions of high customer engagement. A ratio of 62% (87%) indicates that when customer engagement is low (high), the outside-in effect accounts for 62% (87%) of the total cross-lagged effects, while the inside-out effect accounts for the remaining 38% (13%). Importantly, constraining the ratios to equality resulted in a significant worsening of model fit ( $\Delta\chi^2 = 11.4, 1 \text{ d. f.}, p < .01$ ), a finding that supports H3. As a basis for comparison, the ratio of the outside-in to inside-out effects across the entire sample is 73%—a ratio that is consistent with the predominance of the outside-in effect noted in our test of H2—and, as predicted in H3, is larger than the ratio of the effects when customer engagement is low (62%) and smaller than the ratio of the effects when customer engagement is high (87%).

## Theoretical Contributions

From a theoretical standpoint, our study contributes to the literature in two important ways. First, we use SET to advance formal theoretical arguments in support of the satisfaction mirror hypothesis and provide initial empirical evidence confirming the existence of a satisfaction mirror effect. In so doing, this study affirms the Service Profit Chain's utility as a conceptual framework for understanding the interpersonal dynamics that characterize frontline interactions between employees and customers. Second, our study contributes to a more robust understanding of the satisfaction mirror by demonstrating that—in contexts where service relationships are used to facilitate exchange—the outside-in effect of customer satisfaction on FLE job satisfaction is predominant, and, moreover, that increasing customer engagement en-

<sup>3</sup> Given that the FLE job satisfaction-customer satisfaction relationship has often been investigated at the unit-level of analysis, we decided to leverage our data to perform a cross-lagged analysis at the unit-level. The results of our testing also confirm the presence of a satisfaction mirror at the unit-level. Specifically, they indicate that Time 1 unit-level FLE job satisfaction is a significant predictor ( $\beta = .09, p < .01$ ) of Time 2 unit-level customer satisfaction and Time 1 unit-level customer satisfaction is a significant predictor ( $\beta = .17, p < .01$ ) of Time 2 unit-level FLE job satisfaction.

<sup>4</sup> Given the growing interest in dispersion models, we specified and tested a cross-lagged model that included FLE job satisfaction, customer satisfaction, and the variance in customer satisfaction as constructs. In addition to affirming the preceding results, the analyses revealed that as FLE job satisfaction increases, variance in customer satisfaction decreases ( $\beta = -.07, p < .01$ ). Variance in customer satisfaction did not have a significant effect on FLE job satisfaction ( $\beta = .00, p > .10$ ).

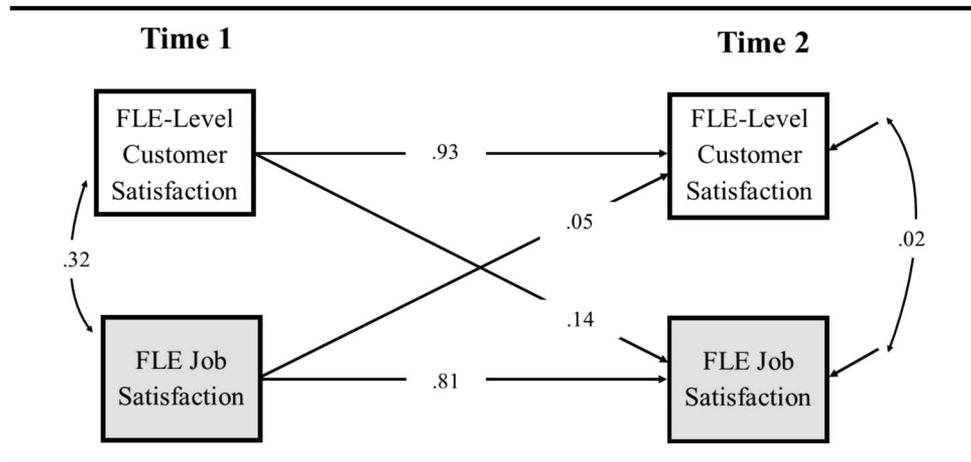


Figure 1. Results of the cross-lagged test of the satisfaction mirror hypothesis. Unstandardized coefficients are reported for all model paths. FLE = frontline employee. All model paths are statistically significant at  $p < .05$ .

hances the magnitude of this predominance. These findings are critical to our theoretical understanding of the satisfaction mirror as they suggest that the reciprocity cycle that underlies the satisfaction mirror (Heskett et al., 1997) is susceptible to the influence of boundary conditions that can induce predominance of one effect over the other, thus altering the calculus about when investments in FLE job satisfaction or customer satisfaction are likely to result in the intended organizational outcomes.

Furthermore, by virtue of our conceptualization of the satisfaction mirror as a positive reciprocity triangle (involving the firm, FLEs, and customers) and empirical findings, we all but exclude the possibility that the inside-out and outside-in effects are of an offsetting positive and negative (i.e., countervailing) nature. However, our research does not exclude the possibility that, under other conditions, the satisfaction mirror effects may be equal in magnitude (i.e., bidirectional) or the inside-out effect may be predominant. In fact, as we discuss next, our theorizing and empirical findings lead us to conjecture that a focus on whether future customer-FLE or customer-firm exchange is expected in a particular context (Cropanzano & Mitchell, 2005) may provide for an improved understanding of when satisfaction mirror effects are likely to be outside-in predominant, inside-out predominant, or bidirectional.

Based on SET, we argued that the presence of a social bond between customers and FLEs produces a predominant outside-in effect of customer satisfaction on FLE job satisfaction, and that the strength of the social bond present (as indicated by customer engagement levels) determines the relative extent of the predominance observed. We made these predictions on account of two factors. First, when a social bond exists between customers and FLEs, the inside-out effect is weakened because FLEs' obligation to their customers becomes more salient, thus superseding job satisfaction as a day-to-day motivator of FLE behaviors toward customers (Maertz et al., 2007). Second, in the presence of customer-FLE social bonds, the outside-in effect is strengthened because customers realize that continued satisfaction with the firm depends upon establishing a cooperative and cordial relationship with their focal FLE; this realization leads customers to engage in

behaviors that benefit the FLE (e.g., loyalty and referrals), and, by extension, enhance their job satisfaction (Beatty et al., 1996; Bettencourt, 1997).

Importantly, while relational contexts are proposed to result in weaker inside-out effects and stronger outside-in effects, this does not imply that the satisfaction mirror captures a zero-sum relationship. That is, it is possible to envision situations in which bidirectional effects or inside-out predominance is likely. For instance, in exchange contexts where customers interact with a different FLE when engaged in ongoing exchange with the same firm over time (e.g., fast food restaurants and call centers), bidirectional effects are more likely because neither party has a vested interest in the other; rather, it is FLEs' and customers' satisfaction with the firm (and their corresponding desire to continue to engage in exchange with the firm) that will determine their behaviors toward one another. In contrast, in transactional customer-FLE encounters where the anticipation of future exchange is limited (e.g., getting a new license at the department of motor vehicles), inside-out predominance is more likely because the lack of a social bond between frontline actors magnifies the role of job satisfaction as a driver of FLE behaviors toward customers, while—at the same time—satisfied customers' motivation to express gratitude toward FLEs is curtailed because they do not intend to deepen their relationship with the firm.

Extrapolating further from the preceding discussion, our theorizing implies that outside-in predominance is most likely in situations where future customer-firm and customer-FLE exchange is anticipated. In contrast, it suggests that bidirectional satisfaction mirror effects are most likely when future customer-firm exchange is expected but future customer-FLE exchange is not. Finally, it implies inside-out predominance is likely to be most common in situations where the expectation of future customer-firm and customer-FLE exchange are both low. Accordingly, future research that either confirms or challenges our conjecture that the anticipation and nature of future exchange determines the form (e.g., bidirectional vs. predominant) of the satisfaction mirror effects is vital for furthering theoretical understanding of the FLE job satisfaction–customer satisfaction relationship. We recom-

mend experimental designs be used for such research given the insurmountable difficulties likely associated with collecting cross-lagged panel data in nonrelational contexts. In addition, given the remarkable stability of satisfaction phenomena revealed by our data, research which offers insight into how this stability varies across contexts that differ in regard to the expectation of customer-FLE and customer-firm exchange would be valuable. Such research, could help establish realistic benchmarks, across contexts, regarding the likely pay-off of interventions to improve customer and FLE satisfaction.

### Practical Implications

The satisfaction mirror is part of a larger framework, the Service Profit Chain, which posits a circular relationship between investments in FLE job satisfaction, customer satisfaction, and firm performance. In confirming the existence of a satisfaction mirror, our study supports a key linkage in this influential framework. However, it also reveals that the mirror effects are relatively small in magnitude, which raises the question of whether these effects have meaningful implications for firm performance as espoused by the framework. The answer to this question is “yes.” Specifically, prior research concludes that very small changes in satisfaction (e.g., a tenth of a point change in satisfaction on a 7-point scale) have substantial implications for firm performance and should thus be pursued (e.g., Anderson, Fornell, & Rust, 1997; Bernhardt et al., 2000; Gupta & Zeithaml, 2006; Hallowell, 1996). This point is best made by Ryan et al. (1996) who suggest that one might be inclined to conclude that “with such small effect sizes, pursuing a link between attitudes and productivity in a given organization is not worth continued examination. However . . . the ability to increase market share or reduce credit losses by just a few percentage points translates into a substantial sum of money” (p. 877). Supplemental Online Appendix C details the performance implications of small changes in satisfaction for the stores in our study.

As we articulated in the article’s opening, the dominant view is that investments in FLE job satisfaction “pay off” because they lead to improvements in customer satisfaction. While our data confirm this is the case, they also reveal that, in relational contexts, customer satisfaction’s impact on FLE job satisfaction is substantially larger in magnitude than the reciprocal effect. For managers this finding implies that to maximize both customer and FLE welfare, firms should prioritize incremental investments in customer satisfaction (e.g., more flexible return policies) over those designed to directly improve FLE job satisfaction (e.g., enhancements to employee recognition programs). This prescription requires that managers view customer satisfaction not only as an important outcome metric (as is the norm) but also as a powerful “lever” (alongside other factors, such as pay and training) for improving FLE job outcomes. Managers that adopt this recommendation should, however, proceed with caution as such an approach can hurt morale if FLEs construe it as a signal that the firm cares more about customers (and profits) than them.

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