Service Climate and Disconfirmation of Expectations as Predictors of Customer Satisfaction: A Cross-Level Study

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ABSTRACT

We integrate disconfirmation of customer expectations and service climate concepts in the prediction of customer satisfaction with services, using a cross-level approach. A total of 60 Spanish hotels participated in the present study. Data from 105 work units and 1,040 customers confirmed the existence of a dual corridor of influence with disconfirmation and service climate as simultaneous significant predictors of customer satisfaction. The manuscript concludes with a discussion of our results and implications for practice and future research.

Key words: service climate, disconfirmation of expectations, customer satisfaction

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Because of the complexity of reality, researchers are usually forced to investigate restricted areas of phenomena using specialized approaches. However, the simultaneous consideration of different perspectives or traditions permits advances in knowledge, especially in a era where developments of multilevel methodologies facilitate the interrelation of concepts pertaining to different levels of construct and measurement (see Kozlowski & Klein, 2000). For example, the joint inclusion of predictors corresponding to different levels of construct can increase the predictability of relevant criteria for organizations, managers, and workers. One of the research areas where this integrative strategy is possible is the investigation of customer satisfaction, integrating concepts underlying consumer and organizational behavior approaches.

Customers who are satisfied with a specific service or good are disposed to repeat the experience of purchase. Companies manage customer satisfaction to increase competitive advantage, assuming that favorability of customer evaluations produces better organizational results. Previous studies confirmed positive associations between customer satisfaction and post-purchase phenomena such as loyalty (Bolton, 1998; Chandrashekaran, Rotte, Tax, & Grewal, 2007; LaBarbera & Mazursky, 1983) and word of mouth (Jones & Reynolds, 2006; Swan & Oliver, 1989). Also, customer evaluations have a significant impact on economical success and profitability (Anderson, Fornell, & Lehmann, 1994; Rust, Zahorik, & Keiningham, 1995). For these reasons, researchers and practitioners have been interested in predicting customer satisfaction, using different frameworks for research. In general terms, two important approaches can be distinguished. First, the marketing management approach centers the attention on consumer behavior, exploring the role of variables that refer to the characteristics and performance of the product and, especially, the manner in which these attributes of products are interpreted and evaluated by customers (e.g., Oliver, 1980, 1993). Second, the management of organizational behavior focuses on services and, especially, on how the service provider behavior impacts on customer evaluations (e.g., Bowen & Schneider, 1988; Pugh, 2001; Ryan & Ployhart, 2003) and service quality (Hui, Chiu, Yu, Cheng, & Tse, 2007). Because these two approaches aim to predict customer satisfaction and service quality, they share the same objective. However, they differ in their seminal traditions and the level of their central constructs.

For over 20 years, each of these two approaches has emphasized a different perspective in order to explain customer satisfaction. From the marketing management approach and consumer behavior research, the most widely accepted theory is the expectation-disconfirmation model (e.g., Kopalle & Lehmann, 2001; Niedrich, Kiryanova, & Black, 2005; Oliver, 1980; Yim, Chan, & Hung, 2007), assuming that customers compare their perceptions of performance with previous expectations in order to evaluate goods and services. In contrast, the organizational behavior approach has emphasized the concept of service climate (e.g., Bowen & Schneider, 1988; Dietz, Pugh, & Wiley, 2004; Schneider, Salvaggio, & Subirats, 2002), arguing that the creation of a climate for excellence in service organizations is necessary to assure customer satisfaction. These two concepts (disconfirmation of expectations and service climate) are well consolidated predictors, but they pertain to different traditions and literatures and they are manifested at different levels of construct. Although the joint influence of these constructs can show a better understanding of customer satisfaction with services, they have been developed separately. With this in mind, our investigation contributes to previous research efforts by simultaneously...
considering disconfirmation of expectations and service climate in the prediction of customer satisfaction. This integration requires the design of a cross-level design where individual (disconfirmation) and work unit (service climate) concepts predict customer evaluations of services at the same time. Consequently, this study aims to respond to the following two related questions: Are disconfirmation of expectations and service climate simultaneous robust predictors of customer satisfaction? Can the joint influence of these two concepts offer a more powerful prediction of customer satisfaction integrating concepts from different levels of construct?

**THEORETICAL FRAMEWORK**

**Disconfirmation of Expectations**

After some initial efforts (e.g., Cardozo, 1968), the influential research work by Oliver (1980) consolidated the expectation-disconfirmation model as the dominant perspective in predicting customer satisfaction from the marketing and consumer behavior research. This model describes an individual cognitive process where the customer compares his/her previous expectations to perceptions of performance. The final customer judgment is defined as (dis)confirmation of expectations. When performance meets (confirmation) or exceeds (positive disconfirmation) previous expectations, customers are satisfied. In contrast, when the product or service falls short of previous expectations (negative disconfirmation), customers are dissatisfied. The meta-analysis by Szymanski and Henard (2001) confirmed disconfirmation of expectations as a strong antecedent of customer satisfaction. Also, disconfirmation of expectations was reinforced as the direct predictor of customer satisfaction in a recent longitudinal investigation (Hsu, Yen, Chiu, & Chang, 2006).

The family of *seminal theories and concepts* underlying disconfirmation of expectations are based on “adaptation level” (Helson, 1948; Oliver, 1980), “opponent-process” (Oliver, 1981; Solomon, 1980) and “assimilation” (Olson & Dover, 1979; Woodruff, Cadotte, & Jenkins, 1983) theories. From the adaptation level theory, it is assumed that humans evaluate stimuli in relation to a standard. The configuration of this standard, or adaptation level, is based on the perceptions of the stimulus, the context, and the psychological and physiological peculiarities of the organism. Once it is created, the adaptation level helps to determine additional subject evaluations, satisfying stability needs. Congruently, the opponent process describes a homeostatic dynamic where the body tends to maintain the previous level of excitation, countering disruptive stimuli. Further evaluations will present a similar tone to that describing previous adaptation level or standard of a person, maintaining homeostasis over time. However, important impacts in his/her experiences with the stimulus will produce changes in the final tone of an evaluation, modifying the level of adaptation and creating a new level of homeostasis.

Oliver (1980, 1981) translated the adaptation level concept and the opponent process to the study of customer satisfaction, in terms of (dis)confirmation of expectations. Customer expectations are considered as an adaptation level or standard. These expectations are created by the product itself (e.g., previous experiences of the customer, brand connotations, and symbolic elements), the context (e.g., communications from salespeople and social referents), and individual peculiarities (e.g., persuasibility and perceptual distortion). The customer tends to maintain stability and prior levels of homeostasis but disconfirmation experiences are disruptive, provoking changes in customer evaluations. Thus, customer (dis)satisfaction is based on experiences with the product or service that confirm (confirmation) or not (positive or negative disconfirmation) previous expectations. For example, a very positive disconfirmation, in the purchase of a product or use of a service, will increase customer satisfaction and will change the prior levels of adaptation and homeostasis.
Congruently with the arguments involved in the adaptation level and opponent process, the assimilation theory argues for the existence of a "zone of indifference" in customer evaluations (Olson & Dover, 1979; Woodruff et al., 1983). When performance perceptions are close to previous expectations, performance is located within an acceptable zone and it is assimilated toward previous expectations. This situation causes confirmation of expectations and a low conscious processing of information, indicating indifference. In contrast, when the distance from previous expectations is great enough to locate performance perceptions outside the zone of indifference, disconfirmation of expectations occurs and the consciousness of information processing increases. Negative disconfirmation is reserved for the worst performance experiences (generating dissatisfaction), while positive disconfirmation corresponds to the best performance experiences (generating satisfaction) (see Woodruff et al., 1983).

Given the factors involved in the formation of disconfirmation of expectations, the level of the disconfirmation construct is individual. As Kozlowski and Klein indicated "the level of a construct is the level at which it is hypothesized to be manifest in a given theoretical model" (2000: 27). Disconfirmation judgments occur when the customer has direct experience with the performance of a specific good or service. It could be assumed that different customers of a specific product or service are subjected to similar stimuli, generating shared consumer experiences. However, there are important reasons to conclude that disconfirmation is manifested at the individual level. A component of disconfirmation judgments involves the formation of expectations before the purchase of a good or the use of a service. These previous expectations respond to different aspects related to perceptual and situational individual differences (Niedrich et al., 2005; Oliver, 1980; Olson, Roese, & Zanna, 1996; Woodruff et al., 1983). A portion of within-person variability is based on individual differences related to perceptual aspects such as persuasibility and perceptual distortion (Oliver, 1980). In addition, individuals differ in situational based experiences that impact on their previous expectations. Customers have different personal prior experiences with the focal good or service and they can process differential information from communication with salespeople and other people (e.g., Niedrich et al., 2005). Also, during consumption experiences there are not strong conditions for the emergence of shared disconfirmation judgments among customers (see for a review of conditions for emergence, Kozlowski & Klein, 2000). Social interaction among customers is limited, hindering consensual views, and the use of a specific good or service does not assure the customers in question are subjected to similar stimuli during consumption experiences. For example, companies can adapt their products and services to satisfy different segments of customers, increasing divergence. Diversity is especially remarkable in the service sector, given that the intangibility, heterogeneity and uncertainty associated with service delivery (see Larsson & Bowen, 1989; Parasuraman, Zeithaml, & Berry, 1985) hinder the possibility of prescribing consistent and stable employee behaviors in face-to-face interactions with customers.

In sum, disconfirmation of expectations reflects an individual level process where it is assumed that customers compare previous expectations with perceptions of performance in order to evaluate goods and services. Accordingly, positive disconfirmation experiences (performance perceptions are higher than previous expectations) are especially able to increase customer satisfaction.

Service Climate

Schneider, White, and Paul defined service climate as "employee perceptions of the practices, procedures, and behaviors that get rewarded, supported, and expected with regard to customer service and customer service quality" (1998: 151). Researchers argued
that service climate is the “missing link” between internal and external service performance (e.g., Andrews & Rogelberg, 2001; Jong, Ruyter, & Lemmink, 2005). It is assumed that managers can (re)design work conditions (in terms of service climate) existing among boundary workers (employees who physically interact with customers) to improve customer satisfaction and service quality perceptions. In other words, the customer is sensitive to the climate for service existing among employees who deliver the service he/she receives (Schneider et al., 1998). The peculiarities of service organizations reinforce the existence of this linkage (see Parasuraman et al., 1985), given that in most services the customer is physically present while the service is delivered, interacting with employees and observing performance at the service site. More than 20 years of history of the investigation on service climate repeatedly has demonstrated the existence of significant links from employee perceptions of service climate to customer satisfaction and service quality perceptions (see Ryan & Ployhart, 2003; Schneider, Bowen, Ehrhart, & Holcombe, 2000), including cross-sectional (e.g., Dietz et al., 2004; Jong et al., 2005; Salanova, Agut, & Peiró, 2005; Schneider & Bowen, 1985) and longitudinal (Schneider et al, 1998, 2002) research efforts.

The **seminal theories and concepts** of service climate are present in the interactionist perspective (Lewin, 1951) and in the introduction of the climate concept in the research of organizational behavior (see Kozlowski & Klein, 2000; Ostroff, Kinicki, & Tamkins, 2003). Assuming from interactionism that human behavior is as function of both person and situation, early experimental studies created social climates or atmospheres - by introducing different leadership styles - and explored behavioral and attitudinal consequences of these climates on group members (Lewin, Lippitt, & White, 1939). Based on topics proposed by Lewin and colleagues, the climate concept was introduced in the 1960s and the influential review by James and Jones (1974) helped to define the climate concept, contributing to the development of this research area in two relevant directions.

First, these authors differentiated between objective characteristics of the organizational context and individual interpretations of this context. Objective characteristics of the context are considered as antecedents of climate, while employee perceptions and interpretations help to attribute meaning to the objective context. Considering climate as a function of both the context and the individual, a top-down cross-level investigation has been developed in the climate research based, with perceptions and interpretations mediating the links from contextual factors at higher levels to individual level outcomes (see Kozlowski & Klein, 2000). Second, James and Jones distinguished between psychological and organizational climate, indicating that when homogeneous individual perceptions exist they can be aggregated to reflect a property of the organization as a whole (organizational climate) beyond individual interpretations of work conditions (psychological climate). This idea has been central in the climate research area, reinforcing the interest in the emergent phenomena (see Ostroff, Kinicki, & Tamkins, 2003). It is assumed that organizational groups and units present conditions for emergence. Group members are subjected to similar events, structures, and processes. In their social interactions, they share experiences and interpretations of the group and organizational life and different forces reduce diversity and increase a shared interpretation of climate. For example, Kozlowski and Klein remarked the role of the processes of attraction-selection-attrition, socialization, and leadership (2000: 10).

The service climate literature focused the attention on a specific facet of organizations: the service. Early climate research efforts referred to a broad definition of organizational climate, but researchers argued for the existence of different specific climates (e.g., safety, service). Schneider, Wheeler, and Cox concluded that “strategically focused climate measures produce stronger
relationships with specific organizational outcomes than less-focused measures" (1992: 705). When a theme is important for an organization, it generates a specific climate (Dietz et al., 2004) and, therefore, multiple climates often exist within organizations (Schneider et al., 1998). In the service sector, one of the most important specific climates is service climate.

Learning from previous research efforts on general organizational climate, researchers have proposed service climate as a mediator from internal organizational context to customer satisfaction and evaluations of service quality (e.g., Salanova et al., 2005; Schneider, Ehrhart, Mayer, Saltz, & Niles-Jolly, 2005). In addition, there is agreement about the idea that the level of the service climate construct is higher than individual, describing shared perceptions among employees who pertain to work units (e.g., Hui et al., 2007) or branches (e.g., Schneider et al, 1998). Thus, researchers assumed that employees interact and share experiences, generating consensual views about the importance the organization attributes to service quality and conditions existing to improve customer satisfaction.

In short, service climate is a specific climate describing shared employees perceptions concerning the conditions for service quality in their organizational environment. The existence of a climate for service is able to impact positively on external customer satisfaction.

A Dual Corridor of Influence

We can conclude that disconfirmation of expectations and service climate are two well-established predictors of customer evaluations. However, they pertain to different conceptual and theoretical traditions of research and management and they are manifested at different levels of construct. We know of no empirical studies that have investigated the joint influence of disconfirmation and service climate on customer reactions.

This is an important omission because the integration of these two concepts could improve the understanding of customer evaluations of services and the linkage existing between internal and external service performance. There is a need to test if both disconfirmation and service climate are robust and significant predictors when they are simultaneously included in the customer satisfaction equation model. Also, the consideration of different levels helps to remove obstacles in order to articulate models considering the organization as an open system where variables at different levels (e.g., group, individual) are simultaneously considered. Kozlowski and Klein (2000) remarked that bridging the gap between macro and micro can be considered as an indicator of maturation in theory and research. As in other research areas, efforts devoted to investigate service quality and customer satisfaction from a cross-level approach are in their initial steps (e.g., Hui et al., 2007). This research study aims to contribute to these initial efforts by integrating disconfirmation of expectations and service climate in the prediction of customer satisfaction.

Disconfirmation and service climate describe two corridors of influence in predicting customer satisfaction. Disconfirmation judgments require the elaboration of previous expectations, which are compared with actual performance. However, different elements of service performance are only available for the customer during consumption experiences and, therefore, the customer is not able to generate previous expectations. Tse and Wilton indicated that “learning” is an important motive for customers, especially with new products and services, and they can be satisfied if a product or service performs, regardless of disconfirmation judgments (1988: 205). Characteristics of services (e.g., intangibility, heterogeneity and simultaneity) (see Parasuraman et al., 1985) accentuate difficulties in order to anticipate all facets of service quality and elaborate previous expectations. In fact, Larsson and Bowen (1989) argued that the frequently participation of customer in services increases
uncertainty. In addition to disconfirmation, the customer is sensitive to service performance by boundary workers during consumption and service climate has a critical role in providing service excellence. Climate for service can assure certain level of customer satisfaction even in situations of uncertainty.

To consider additively disconfirmation and service climate in the prediction of customer satisfaction, we designed a mixed determinant cross-level model (Kozlowski & Klein, 2000). This model specifies multi-level predictors (individual disconfirmation of expectations and service climate in work units) of a single-level outcome (individual customer satisfaction). Some previous research studies considered aggregate customer perceptions of service quality as the outcomes of service performance (e.g., Schneider et al., 1998, 2002), focusing the attention on the evaluation of external specific attributes of services (e.g., security) that could be shared by customers of a branch. In contrast, we have opted for the consideration of customer evaluations based on internal reactions and experiences, defining customer satisfaction as the favorability of the customer evaluation related to his/her consumption experiences (Hunt, 1977, Westbrook, 1980). Our conception of customer satisfaction focuses on the individual experiences and reactions based on his/her selection of a service or good (e.g., Oliver, 1980, 1993; Tse & Wilton, 1988). It permits to relate customer satisfaction with both disconfirmation and service climate, describing a cross-level design. Satisfaction experienced by a customer is explained by his/her individual disconfirmation processing, but also by perceived service climate among boundary employees who deliver the service.

We are aware that this design challenges the predictive power of service climate. Disconfirmation and customer satisfaction are at the same level of construct and they share the source of data (the customer), amplifying relationships existing between these two constructs. Nevertheless, if service climate maintain robustness - when the impact of disconfirmation is simultaneously considered in predicting customer satisfaction - it will be reinforced as predictor of customer satisfaction, facilitating a contribution to the bridge between micro and macro in service organization studies and integrating individual and group processes in the prediction of customer satisfaction. With this in mind, we formulate the following two hypotheses to be empirically tested:

Hypothesis 1. Positive disconfirmation of expectations will be positively related to customer satisfaction at the individual level

Hypothesis 2. Service climate at work unit level will predict customer satisfaction at the individual level once individual disconfirmation of expectations was simultaneously included in the satisfaction equation

METHODS

Sample and Procedure

The sites for this research were 60 hotels located in the Spanish Mediterranean Coast. There were two separate sources of data for this study: (1) survey data from boundary employees, and (2) survey data from customers. In each hotel two work units were considered: waiters or waitresses and receptionists. These two types of work units satisfy relevant boundary conditions for predicting customer attitudes (Dietz et al., 2004). Dietz and colleagues observed that frequency of contact between customers and employees and proximal target for service climate increased the relationship between service climate and customer attitudes. Satisfying contact requirements in service encounters, waiters and receptionists need to contact with customer as an important part of their daily work, describing a high frequency of social interaction. Also, the specific work units of receptionists and waiters have some latitude to decode general guide-
lines and policies, generating specific perceptions of service climate that are proximal to customers and facilitating "linkages" between internal and external performance.

Participant hotels represented the two main Spanish hospitality industry models in the Mediterranean Coast: 1) "sun-and-sand hotels" serving customers who were seeking recreation in sun-and-sand facilities; and 2) "conference hotels" serving customers who were on business trips. Three employees were randomly selected from each work unit and invited to participate in the study. When an employee declined to participate, another employee was randomly selected from the same work unit, whenever possible (response rate 90%). Only work units with three employee usable surveys were considered in this study. This sampling plan resulted in a final sample of 105 work units (51 composed by receptionists and 54 composed by waiters and waitresses), with 153 employees working in hotel receptions and 162 employees working in restaurants as waiters or waitresses (45.2% females, 50% males, and 4.8% missing data). A total of 65 work units (62%) pertained to the "sun-and-sand" industry model, while the other 40 work units (38%) pertained to the "conference" industry model. In each work-unit, employees worked at the same level in the organizational hierarchy, they performed similar tasks, they had the same goals and the same supervisor, and they interacted with each other during their daily work. A group of 10 customers for each work unit was also interviewed (response rate, 95%). To be eligible as customer of hotel reception, the customer had to have spent more than three nights in the hotel in question. The criterion for restaurants was that customers had either lunch or dinner there. Because of missing data, 10 customer surveys were deleted. The final sample was made up of 1040 customers (44.7% females; 53.1% males; and 2.2% missing data).

In the context of a more general research project, researchers made an appointment with the manager of each hotel and requested permission to interview 3 receptionists, 3 waiters or waitresses, 10 customers evaluating the hotel (lodging) and 10 customers evaluating the restaurant of the hotel. Participation in the survey was voluntary and anonymous for both employees and customers. Data were collected at the service sites, using a "real time approach" were the assessment occurs during on-site experience and reflects a direct evaluation of the focal service in question (Stewart & Hull, 1992). Employees filled in the questionnaires during breaks. All the employees completed the survey administered by a researcher on company time and in absence of managerial personnel. The cooperation of hotel customers was requested, taking advantage of the moment they were using the reception service. Researchers explicitly indicated to hotel customers that they should have in mind only the lodging service of the hotel, excluding the restaurant. For restaurants, the researchers requested the participation of customers after their consumption experience (lunch or dinner) with the focal restaurant. Researchers explicitly indicated to customers that they should have in mind only the restaurant, excluding the lodging service.

**Measures**

**Disconfirmation of expectations.**

Disconfirmation of expectations was assessed with a three-item measure describing problems, benefits, and overall disconfirmation (Oliver, 1980; Oliver & Swan, 1989). We used a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). A sample item was "The problems in this hotel/restaurants were fewer than I expected". As in previous research efforts (e.g., Oliver, 1980) the focus of this measure was on the individual. The customer is forced to refer to a comparison between his/her own expectations and perceptions. The alpha reliability was .86.

**Service climate.** To assess service climate, we used the four-item reduced version (Salanova et al., 2005) of the Global Service Climate Scale
Items were scored on a 7-point scale ranging from 1 (completely agree) to 7 (completely disagree). This measure described a summary of the climate for service as it is perceived by boundary employees. A sample item was “Employees are provided with tools, technology, and other resources to support the delivery of quality work and service”. The alpha reliability was .84.

**Customer satisfaction.** We assessed customer satisfaction with a three-item reduced version (Gotlieb, Grewal, & Brown, 1994) of the measure of customer satisfaction developed by Oliver (1980). Items were scored on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). This measure referred to individual satisfaction and feelings about the choice of the hotel or restaurant. A sample item was “I feel happy about my decision concerning the choice of this hotel/restaurant”. The alpha reliability was .96.

**Control variables.** We controlled for the effect of type of work-unit (dummy variable) because service encounters are partially different for hotel receptions / restaurants. Regarding the use of reception services, contacts between customers and employees tend to be brief and multiple. In contrast, each use of the restaurant (for lunch or dinner) tends to extend more over time than the prototypical use of a specific reception service, affecting the intimacy of the service encounter and customer evaluations. We also controlled for the effect of “sun-and-sand” / “conference” industry models (dummy variable). It is reasonable to expect that these two types of hospitality industries present differential business dynamics, given that they serve customers with different needs and expectations, impacting on service encounters and customer evaluations. The first model (“sun-and-sand”) focuses on facilities and services oriented to pleasure and leisure, while the second model (“conference”) centers on functional services to facilitate customer business activities.

**Data aggregation.** We statistically justified aggregation of service climate by exploring within-work unit agreement and reliability and between-work units differences. The median values on average deviation index $AD_{MJ}$ (Burke, Finkelstein, & Dusig, 1999) and interrater agreement index $r_{wg(J)}$ (James, Demaree, & Wolf, 1984) were .65 and .77, respectively. Because $AD_{MJ}$ is below 1 cutoff value and $r_{wg(J)}$ is above .70 cutoff value, agreement at the work-unit level was satisfactory. The ICC(2) value, indicating interrater reliability, was .68. ICC(2) was satisfactory because its value was above the .60 cutoff value for this statistic (Glick, 1985). Finally, one-way analysis of variance (ANOVAs) indicated that work-units differed significantly on their employee perceptions of service climate ($F(111, 333) = 3.17, p < .01$). The ICC (1) showed that 44% of the variance in individual perceptions of service is explained by group membership.

**RESULTS**

Table 1 presents means, standard deviations, and correlations among the key variables of this study. It can be observed that both disconfirmation of expectations and service climate were significantly related to customer satisfaction. In contrast, no significant relationship was observed between disconfirmation and service climate. These results were congruent with the idea that disconfirmation and service climate are independent concepts in the prediction of customer satisfaction. In addition, the magnitude of the relationship between disconfirmation and customer satisfaction was remarkably greater than that corresponding to the climate-satisfaction link. The strong association between disconfirmation and customer satisfaction is explained, in part, because they share the same level of construct (individual) and the same source of data (the customer).
TABLE 1
Descriptive Statistics and Correlations

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>s.d.</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Disconfirmation</td>
<td>5.40</td>
<td>1.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Service climate</td>
<td>4.99</td>
<td>1.06</td>
<td>.06</td>
<td></td>
</tr>
<tr>
<td>3. Customer satisfaction</td>
<td>5.81</td>
<td>1.33</td>
<td>.68**</td>
<td>.13**</td>
</tr>
</tbody>
</table>

** p < .01

What is not clear in Table 1 is if service climate maintain a significant impact on customer satisfaction when the influence of disconfirmation of expectations is simultaneously considered. For that, we used a hierarchical linear modeling method (HLM). More specifically, we computed three nested models: the null model, the random coefficient regression model, and the intercepts as outcomes model. Table 2 presents a summary of findings corresponding to these models.

TABLE 2
Hierarchical Linear Model for Cross Level Analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>Null Model</th>
<th>Individual Level Predictors</th>
<th>Adding Group Level Predictors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>5.81**</td>
<td>2.07**</td>
<td>1.60**</td>
</tr>
<tr>
<td>Disconfirmation</td>
<td>0.69**</td>
<td>0.69**</td>
<td></td>
</tr>
<tr>
<td>Level 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of work unit</td>
<td>0.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of industry</td>
<td>- 0.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service climate</td>
<td>0.09**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within-unit residual variance</td>
<td>1.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$R^2$ within-team b</td>
<td></td>
<td>0.54</td>
<td></td>
</tr>
<tr>
<td>$R^2$ between-team c</td>
<td></td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>Deviance</td>
<td>3406.62</td>
<td>2734.53</td>
<td></td>
</tr>
</tbody>
</table>

** p < .01
The Null Model

To test multilevel hypotheses, a necessary precondition is that there must be significant within and between work unit variance in the outcome variable (Gavin & Hofmann, 2002; Hofmann, 1997). Accordingly, customer satisfaction was specified as the outcome variable and nor Level 1 (individual) neither Level 2 (work unit) predictors were included in the model. Within-work unit variance component in customer satisfaction was 1.35 ($p < .001$) and the between-work unit variance component was .41 ($p < .001$). Indices indicated significant within and between work unit variance, providing a basis for examining individual and work unit level predictors. Results indicated that 23% of the variance in customer satisfaction resided between groups.

Random Coefficient Regression Model

We used the random coefficient regression model to test the first hypothesis: customers who perceive high levels of positive disconfirmation between what they expected the service to be and what it really is will present higher ratings of satisfaction with the service. So, the next step in the hierarchical regression model was to predict the variation of the regression coefficients in customer satisfaction by introducing an explanatory variable at the individual level (disconfirmation). This regression equation consists of the Level 1 (individual) slopes regressed into a unit vector, which is used to model the intercept term. The $z$ test associated with this parameter assesses whether the intercept term significantly differs from zero. Results provide support for the hypothesis 1. They revealed that the pooled within-group slope was significant in the hypothesized direction (slope = .69; $z$ = 29.09, $p < .001$).

This model offers further information. The residual from the level 1 equation (the variance in $e_i$) now represents the residual within-work unit variance. Using this value, in addition to the total within-work unit variance from the previous null model ($(total within-group variance - residual variance)/ total within-group variance$), we observed that 54% of the within-group variance in customer satisfaction was accounted for by confirmation (see Bryk & Raudenbusch, 1992; Hofmann, 1997; Gavin & Hofmann, 2002). Results also showed significant variance across groups in the Level 1 intercepts (slope = .19; $z$ = 5.14; $p < .01$). After controlling for individual-level disconfirmation of expectations, between-work unit variance in customer satisfaction was significant. Those results indicated that we could proceed to test hypothesis 2.

Intercepts as Outcomes Model

Intercepts as outcomes model was used to test hypothesis 2. This hypothesis stated that service climate at the work unit level would predict variance in customer satisfaction beyond that explained by confirmation of expectation and control variables (type of work unit and type of industry model). Results showed that work unit service climate was significant and positively related to customer satisfaction (slope = .09; $z$ = 2.00, $p < .05$), supporting hypothesis 2. Using the total intercept variance component from the random coefficient regression model and the residual variance for the intercept in this model, we calculated that work unit climate for service accounted for 13 % of the between-group variance in the intercept term. Accordingly, findings showed that work unit climate for service predicted customer satisfaction at the individual level once individual disconfirmation of expectations was simultaneously considered.

DISCUSSION

Our study confirmed that disconfirmation of expectations (H1) and service climate (H2) were simultaneous significant predictors of customer satisfaction with services. Using a cross-level approach, we contributed to previous research efforts integrating concepts with different levels of construct in the same
customer satisfaction equation model. Scores in an individual-level construct (customer satisfaction) were significantly predicted by both individual (disconfirmation) and work unit (service climate) level concepts.

Theoretical Implications

A manner in which research can produce advances in knowledge is the integration of previous independent traditions to improve the understanding of specific phenomena. Our study reflects an initial effort of integration to obtain a better prediction of a critical criterion for organizations and managers: customer satisfaction with services. Traditionally, the impact of central concepts pertaining to marketing management (disconfirmation of expectations) and organizational behavior (service climate) approaches have been studied independently. There is a consolidated research tradition studying relationships between disconfirmation and customer satisfaction (Oliver, 1980; Szymanski & Henard, 2001; Yim et al., 2007). Also, a substantial literature exists on the service climate-customer satisfaction links (Schneider & White, 2004). Although these two approaches worked separately, they share one of their critical goals: the prediction of customer evaluations. Our findings revealed that the additive combination of disconfirmation and service climate improves the predictive power of customer satisfaction variance. In other words, when researchers focus the attention on the expectation-disconfirmation model they are obviating a significant portion of variance that is explained by service climate. Similarly, when scholars center their efforts on service climate they are obviating the role of individual processes. In contrast, the simultaneous consideration of these two approaches could offer a richer portrait of customer responses. This study provides an initial step in developing integrative strategies oriented to obtain a more powerful prediction of customer satisfaction with services.

More specifically, our findings were congruent with the idea that a dual corridor of influence exists in the prediction of customer satisfaction. First, individual processes have a significant role. We corroborated that individual differences in customer satisfaction with services are significantly predicted by a process where customers compare their previous expectations with their perceptions of service performance. When performance meets or exceeds previous expectations, customers are satisfied (e.g., Hsu et al., 2006). Second, there are learning and non-anticipated experiences that are able to predict an additional portion of customer satisfaction variance (see Tse & Wilton, 1988). Disconfirmation requires the formation of expectations before a consumption experience. Nevertheless, some attributes cannot be anticipated by customers (e.g., if goods or services are new), hindering the elaboration of previous expectations. This situation is especially remarkable in the service sector. It is well known that services have some peculiarities (Parasuraman et al., 1985), presenting higher levels of intangibility, heterogeneity, and uncertainty than goods. With this in mind, it is generally more difficult to elaborate previous expectations for services than for goods. The customer evaluates information about service climate that is only available during the experience of consumption. Given that the customer is usually physically present at the service site while the service is delivered, he/she is sensitive to efforts for excellence in service quality (Schneider et al., 1998, 2002). Some of these efforts cannot be anticipated and captured in previous customer expectations. Our results were consistent with this argument, showing that service climate is able to predict customer satisfaction beyond the predictive power of disconfirmation of expectations.

Perhaps the major contribution of our study is that the simultaneous impact of disconfirmation and service climate on customer satisfaction not only helps to link separate traditions or literatures, it also reinforces a systemic and open view of organizations where concepts at different levels of construct and measurement are integrated. Scholars
and practitioners generally argue that critical outcomes (e.g., customer satisfaction) are based on processes and structures pertaining to different organizational levels (individual, group, organizational as a whole). Consequently, researchers are increasing their attention to test multi-level and cross-level models. Nevertheless, because the investigation on cross-level issues is still scarce in different research areas, there is a need to extend and generalize these efforts. In fact, Kozlowski and Klein (2000) argued that testing and establishing models with different levels of construct increases the maturity of research and science. Congruently, the present effort helps to bridge the gap between individual (disconfirmation) and unit work (service climate) levels in predicting customer satisfaction with services.

Implications for Practice

Marketing managers view confirmation of expectations as a useful tool in order to increase customer satisfaction. Specific strategies such as advertisement, design of goods and services, social communication, and sale promotions are used to generate expectations and to confirm (positively, if possible) these expectations. Firms which provide a service or good close to customer expectations are more likely to satisfy and retain customers. Given that customers generate and modify their expectations based in part on previous expectations with the firm, managers are forced to periodically monitor customer expectations in order to satisfy changes in expectations (e.g., Tam, 2005).

The management of disconfirmation assumes that the different facets of service quality can be monitored and anticipated by managers before consumption experiences. However, in services where the customer is usually physically present during the delivery of the service -interacting with boundary employees and frequently participating in the production of the services- non anticipated aspects of quality have a critical role. In fact, the participation of customers in the operations of service organizations is a major source of uncertainty (Larsson & Bowen, 1989). In this context, the existence of a climate for excellence among boundary employees of work units provides a complementary managerial strategy to the confirmation of customer expectation. Even in situations of uncertainty, service climate can facilitate an atmosphere where customer satisfaction is a priority. In addition to marketing plans, management activities related to organizational behavior and human resource empowerment could be necessary tools in order to improve service climate and assure customer satisfaction. For example, Schneider et al. (2005) observed that leadership behavior was a significant precursor of unit service climate.

In sum, practitioners should be aware that they can improve customer satisfaction using complementary strategies pertaining to different managerial areas and considering variables from different levels of construct and analysis. More specifically, our results suggest a dual corridor of influence where practitioners from marketing and organizational behavior are involved, increasing the predictability of customer satisfaction with services. A critical outcome for organizations (customer satisfaction) can be improved with the participation of different departments or areas of companies and taking into account individual and work unit processes.

Limitations and Future Research Directions

Disconfirmation of expectations and service climate are two significant predictors of customer satisfaction, and they represent central concepts of two consolidated approaches to customer evaluations of services: consumer and organizational behavior. However, there are other alternatives. From marketing and consumer behavior studies other cognitive, affective, and attribute bases of individuals have been established as significant predictors of customer satisfaction (e.g., Oliver, 1993). Also, organizational scholars proposed leadership and
employee citizenship behaviors as antecedents of customer satisfaction (Schneider et al., 2005). The present study is an initial effort to integrate two literatures in the prediction of customer evaluations, but future studies could improve the understanding of customer satisfaction by incorporating additional concepts and determinants in more complex models. The use of cross-level designs may be useful in order to facilitate the integration of traditions with concepts manifested at different levels of construct.

As we indicated before, our design presented an asymmetry against service climate. Disconfirmation of expectations and customer satisfaction shared the same individual level of construct and were measured with the same source of data (the customer), while service climate was manifested at the work unit level and was measured by employee perceptions. Thus, relationships between disconfirmation and customer satisfaction could be somewhat inflated as a result of common method variance. Because service climate was robust in the prediction of customer satisfaction beyond disconfirmation, climate for service was reinforced in this study as a significant precursor of customer satisfaction. Nevertheless, in future attempts other measures of disconfirmation (e.g., objective conditions) could be used to test the contribution of each concept to customer satisfaction more accurately.

Our study might communicate the implicit message that the impact of the dual corridor of influence corresponding to disconfirmation and service climate is present at the same level in different types of services and consumption experiences. However, a contingency approach can be explored in future studies to improve the investigation of the role of these two concepts in the prediction of customer satisfaction. For example, it is reasonable to expect that under situations of great uncertainty and ambiguity (when the elaboration of previous expectations is difficult) the impact of service climate on customer satisfaction will increase. In addition, there are services with an important emotional content where customer reactions emerge over time as a result of the direct social interaction with service providers (Price & Arnould, 1999). In these kinds of services the role of service climate could also be critical.

Conclusion

Our study confirmed that disconfirmation of customer expectations and employee perceptions of service climate are simultaneous significant predictors of customer satisfaction with services. Accordingly, the present effort contributes to previous knowledge by integrating critical concepts pertaining to consumer and organizational behavior approaches and suggesting a dual corridor of influence in the prediction of customer evaluations. Findings also supported a systemic and open view of organizations where concepts at different levels of construct and measurement are considered. In spite of its limitations, this study helps to open new research questions in order to facilitate and improve the integration of different traditions and literatures in the prediction of customer satisfaction.
REFERENCES


