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

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**LINKING SERVICE CLIMATE AND DISCONFIRMATION OF  
EXPECTATIONS TO CUSTOMER SATISFACTION: A CROSS-LEVEL  
STUDY**

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**LINKING SERVICE CLIMATE AND DISCONFIRMATION OF  
EXPECTATIONS TO CUSTOMER SATISFACTION: A CROSS-LEVEL  
STUDY**

Research addressing customer satisfaction has not been conducted within an integrated framework. Two approaches have been developed separately with different levels of construct and analysis: organizational and consumer behavior. Our research study provides an initial step in developing integrative strategies with the joint consideration of service climate and disconfirmation of expectations. We link these two concepts to customer satisfaction with services, using a cross-level approach. Data from 105 work units and 1033 customers confirmed the existence of a dual corridor of relationships, with independent and significant links from disconfirmation and service climate to customer satisfaction. The manuscript concludes with a discussion of our results and implications for practice and future research.

Keywords: cross-level study; customer satisfaction; disconfirmation of expectations;  
service climate

# **LINKING SERVICE CLIMATE AND DISCONFIRMATION OF EXPECTATIONS TO CUSTOMER SATISFACTION: A CROSS-LEVEL STUDY**

Due to the complexity of reality, researchers are usually forced to investigate restricted areas of specific phenomena using specialized approaches. However, the simultaneous consideration of different perspectives or traditions allows advances in knowledge to be made, especially in an era when the development of multilevel methodologies facilitates the interrelation of concepts pertaining to different construct and measurement levels (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 in the investigation of customer satisfaction.

Customer satisfaction is considered a key factor in the evaluation of organizational performance. Companies try to enhance customer satisfaction in order to assure their competitive advantage, assuming that favorability of customer evaluations produces better organizational results. Empirical research has supported this assumption by showing positive associations between customer satisfaction and post-purchase phenomena, such as loyalty (Bolton, 1998; Chandrashekar, Rotte, Tax, & Grewal, 2007; LaBarbera & Mazursky, 1983), word of mouth (Jones & Reynolds, 2006; Swan & Oliver, 1989) and economic success or profitability (Anderson, Fornell, & Lehmann, 1994). For these reasons, researchers and practitioners have been interested in the antecedents of customer satisfaction. However, research addressing this issue has not been conducted within an integrated framework. Researchers from two different fields,

consumer and organizational behavior, have adopted two differentiated approaches to the study of customer satisfaction antecedents. For over 20 years, each of these two approaches has emphasized a different perspective in explaining customer satisfaction.

The consumer behavior approach has explored how different attributes of the product, in terms of its characteristics and performance, are interpreted and evaluated by customers (e.g., Oliver, 1980, 1993). In contrast, the focus of the organizational behavior field has been directed toward the provision of services and, especially, how the service provider's behavior impacts on customer evaluations (e.g., Bowen & Schneider, 1988; Pugh, 2001; Ryan & Ployhart, 2003) and service quality (Hui, Chiu, Yu, Cheng, & Tse, 2007). These two approaches converge in their aim to understand the outcomes of service performance. However, they differ in their seminal traditions and the level of their central constructs.

Research within the consumer behavior research field has been grounded theoretically in the expectation-disconfirmation model (e.g., Kopalle & Lehmann, 2001; Niedrich, Kiryanova, & Black, 2005; Oliver, 1980; Yim, Chan, & Hung, 2007). This theory proposes that customer satisfaction is the result of an individual level process where customers compare their perceptions of performance with previous expectations in order to evaluate goods and services. In contrast, research within the organizational behavior field emphasizes the role of an organizational or work unit level variable, service climate, in the prediction of customer satisfaction (e.g., Bowen & Schneider, 1988; Dietz, Pugh, & Wiley, 2004; Griffith, 2001; Schneider, Salvaggio, & Subirats, 2002). This approach considers that the creation of a climate for excellence in service organizations is necessary to ensure customer satisfaction.

Although the joint consideration of service climate and disconfirmation of expectations can provide 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 customer satisfaction equation. This strategy requires a cross-level design where individual (disconfirmation and satisfaction) and work unit (service climate) concepts are considered at the same time (see Figure 1).

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Insert Figure 1 about here

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## **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 consumer behavior research. This model describes an individual cognitive process where the customer compares his/her previous expectations with his/her actual 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 good 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 a direct predictor of customer satisfaction in a recent longitudinal study (Hsu, Yen, Chiu, & Chang, 2006).

The family of *seminal theories and concepts* underlying disconfirmation of expectations is based on the “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 homeostatic dynamics where the body tends to maintain the previous level of excitation, countering disruptive stimuli. Further evaluations will present a similar tone to the one describing the previous adaptation level or standard of a person, maintaining homeostasis over time. However, important impacts on 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 good or service that confirm or fail to confirm previous expectations. For example, a very positive disconfirmation will increase customer satisfaction and 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 with 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 (Hsu et al., 2006; Oliver, 1980). As Kozlowski and Klein (2000) indicated “the level of a construct is the level at which it is hypothesized to be manifest in a given theoretical model” (p. 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 good 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 situationally 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, conditions for the emergence of shared disconfirmation judgments among customers are not strong (for a review of conditions for emergence, see Kozlowski & Klein, 2000). Social interaction among customers is limited, hindering consensual views, and the use of a specific good or service does not assure that the customers in question are subjected to similar stimuli during consumption experiences. For example, companies can adapt their goods 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. Positive disconfirmation experiences (performance perceptions are higher than previous expectations) are especially able to increase customer satisfaction.

### *Service Climate*

Schneider, White, and Paul (1998) 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” (p. 151).

Researchers have argued that service climate is the “missing link” between internal (organizations and work-units) and external (customers) perspectives (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 research on service climate has repeatedly 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 on organizational behavior (see Kozlowski & Klein, 2000; Ostroff, Kinicki, & Tamkins, 2003). Assuming from interactionism that human behavior is a function of both the person and the 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 was carried out in the climate research, 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 (1974) 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 has been a central idea in the climate research area, reinforcing the interest in the emergent phenomena (see Ostroff et al., 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, some factors that have been shown to influence this process are: attraction-selection-attrition, socialization, and leadership (Kozlowski & Klein, 2000).

The service climate literature focused attention on one specific facet of organizations: the service. Early climate research focused on global or molar concepts of climate. In the last few decades, some authors have pointed out the existence of different specific climates related to a specific organization's goals (e.g., safety, service). Schneider, Wheeler, and Cox (1992) concluded that "strategically focused climate measures produce stronger relationships with specific organizational outcomes than less-focused measures" (p. 705). When a topic is important for an organization, it generates a specific climate (Dietz et al., 2004). 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 the 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 the individual, describing shared perceptions among employees who pertain to the same work units (e.g., Hui et al., 2007) or branches (e.g., Schneider et al., 1998). Thus, researchers assume 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 employee 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.

### *Customer satisfaction*

Some of the 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 of individuals, defining customer satisfaction as the favorability of the customer evaluation related to his/her consumption experiences (Hunt, 1977; Westbrook, 1980; Martínez-Tur, Peiró, Ramos, & Moliner, 2006). 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 refers to an individual judgment that a good or service has provided a pleasurable level of consumption-related fulfilment (Oliver, 1997).

### *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 in research and management, they are manifested at different levels of construct, and they focus on different phenomena and processes. We know of no empirical studies that have investigated the joint contribution of disconfirmation and service climate to customer reactions. This is an important omission because the contribution of these two concepts could improve the understanding of customer evaluations of services and the linkage existing between internal and external service perspectives.

The consideration of different levels will also help to remove obstacles to articulating models that consider the organization as an open system (connecting internal and external perspectives), where variables at different levels (e.g., group, individual) are simultaneously considered. Kozlowski and Klein (2000) remarked that bridging the gap between different levels of construct can be considered an indicator of maturity in theory and research. As in other research areas, efforts devoted to investigating service outcomes from a cross-level approach are in their initial phases (e.g., Hui et al., 2007). This research study aims to contribute to these initial efforts by considering disconfirmation of expectations and service climate simultaneously in understanding customer satisfaction.

Disconfirmation and service climate describe two independent corridors of relationships leading to 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 to the customer during consumption experiences and, therefore, the customer is not able to generate previous expectations. Tse and Wilton (1988) indicated that “learning” is an important motive for customers, especially with new goods and services, and they can be satisfied if a good or service performs well, regardless of disconfirmation judgments (p. 205). Characteristics of services (e.g., intangibility, heterogeneity and simultaneity) (see Parasuraman et al., 1985) accentuate difficulties in anticipating all the facets of service quality and elaborating previous expectations. In fact, Larsson and Bowen (1989) argued that the frequent participation of the customer in services increases uncertainty. In addition to disconfirmation, the customer is sensitive to service performance by boundary workers during consumption, and service climate plays a critical role in

providing service excellence. Climate for service can assure a certain level of customer satisfaction, even in situations of uncertainty.

To additively consider disconfirmation and service climate, 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) (see Figure 1). This allows us to relate customer satisfaction with both disconfirmation and service climate, describing a cross-level design. Satisfaction experienced by a customer is connected to his/her individual disconfirmation processing, but also to perceived service climate among boundary employees who deliver the service.

We are aware that this design challenges the power of service climate to contribute to customer satisfaction. Disconfirmation and customer satisfaction are at the same level of construct, and they share the same source of data (the customer), amplifying relationships existing between these two constructs. Nevertheless, if service climate maintains robustness -when the contribution of disconfirmation is simultaneously considered in the customer satisfaction equation-, it will be reinforced, facilitating a contribution to the bridge between different levels of construct in service organization studies and considering individual and group processes in the understanding of customer satisfaction.

## **METHOD**

### *Sample and Procedure*

This investigation extended previous research efforts on service climate in Spanish hotels by introducing simultaneously individual customer responses of disconfirmation and satisfaction. The sites for this research were 60 hotels located on

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/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 the proximal target for service climate increased the relationship between service climate and customer attitudes. Satisfying contact requirements in service encounters, waiters/waitresses and receptionists need to have contact with customers as an important part of their daily work, describing a high frequency of social interaction. The specific work units of receptionists and waiters/waitresses also have some latitude to decode general guidelines and policies. This generates specific perceptions of service climate that are proximal to customers, and facilitates “linkages” between internal and external perspectives.

Participant hotels represented the two main Spanish hospitality industry models on 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. Only work units with three usable employee surveys were considered in this study. This sampling plan resulted in a final sample of 105 work units (51 composed of receptionists and 54 composed of waiters and waitresses), with 153 employees working in hotel receptions and 162 employees working in restaurants as waiters/waitresses (45.2 % females, 50% males and 4.8 missing data). The average organizational tenure of the sample in this study was 8.47 years, and the average tenure



in the current workplace was 7.43 years. A total of 65 work units (62 %) were in the “sun-and-sand” industry model, while the other 40 work units (38 %) were in 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. To be eligible as a customer of hotel reception, the customer must 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, the final sample was made up of 1033 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”, where the assessment occurs during on-site experience and reflects a direct evaluation of the focal service in question (Stewart & Hull, 1992). This “real time approach” facilitates a high response rate (90 % for employees and 95 % for customers). Employees filled in the questionnaires during breaks. All the employees completed the survey administered by a researcher on company time and in the 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 take into account 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 take into account only the restaurant, excluding the lodging service.

### *Measures*

To facilitate our research in real service settings, we opted for short measures of the constructs involved. Nevertheless, we considered measures that are well-established in the literature.

***Disconfirmation of expectations.*** Disconfirmation of expectations was assessed with a three-item measure describing problems, benefits and overall disconfirmation (Oliver, 1980; Oliver & Swan, 1989): “There were fewer problems in this hotel/restaurant than I expected”; “The advantages of this hotel/restaurant were better than I expected”; and “The quality in this hotel/restaurant was better than I expected”. We used a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). 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 coefficient was .86. We submitted the polychoric correlation matrix for the 3 items to a confirmatory factor analysis (CFA) to confirm the one-factor structure of the measure. The weighted least square method of estimation as implemented in LISREL 8.3 (Jöreskog & Sörbom, 1993) was used. The fit indices showed a perfect fit of the one-factor model ( $\chi^2(0) = .00, p = 1.00; RMSEA = .00$ ).

***Service climate.*** To assess service climate, we used the four-item reduced version (Salanova et al., 2005) of the Global Service Climate Scale (Schneider et al., 1998): “Employees in our organization have knowledge about the job and the skills required to deliver superior quality work and service”; “Employees receive recognition

and rewards for the delivery of superior work and service”; “The overall quality of service provided by our organization to customers is excellent”; “Employees are provided with tools, technology and other resources to support the delivery of quality work and service”. 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. The alpha reliability coefficient was .84. The CFA showed an acceptable fit for the one-factor solution:  $\chi^2(2) = 6.50, p < .05$ ; RMSEA = .08; NFI = .99; NNFI = .97; CFI = .99; GFI = .1.00; AGFI = .98.

**Customer satisfaction.** We assessed customer satisfaction with a three-item reduced version (Gotlieb, Grewal, & Brown, 1994; Martínez-Tur et al., 2006) of the measure of customer satisfaction developed by Oliver (1980): “I feel happy about my decision concerning the choice of this hotel/restaurant”; “I believe I did the right thing when I used this hotel/restaurant”; and “In the future, I will be happy to come to this hotel/restaurant”. Items were scored on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). As in the study by Oliver (1980), our measure of customer satisfaction described a single factor that referred to individual satisfaction and feelings about the choice of the hotel or restaurant. The alpha reliability coefficient was .96. The CFA showed a perfect fit ( $\chi^2(0) = .00, p = 1.00$ ; RMSEA = .00), confirming a one-factor structure of this measure.

Since disconfirmation of expectations and customer satisfaction were obtained from a single source of data (the customer), common method variance could inflate the association between the two variables. To examine this possibility, we carried out the Harman’s Single-Factor test. This test is one of the most widely used techniques to address the issue of common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The basic assumption of this technique states that if a substantial

amount of common method variance is present, either a single factor will emerge from the factor analysis or one general factor will account for the majority of the covariance among the measures. To address this hypothesis, we used confirmatory factor analysis (CFA). The results from the CFA confirmed that a single general factor did not explain our data as well as the theoretically predicted two-factor model (see Table 1). Therefore, on the basis of these results we can conclude that disconfirmation of expectations and customer satisfaction can be considered as different concepts and, consequently, measured independently from each other and as separate factors.

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Insert Table 1 about here  
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***Control variables.*** We controlled for the effect of type of work-unit (dummy variable) because service encounters are somewhat different for lodging vs. restaurant services. Regarding the use of lodging 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 lodging service, affecting the intimacy of the service encounter and customer evaluations. We also controlled for the effect of the “sun-and-sand” / “conference” industry models (dummy variable). It is reasonable to expect that these two types of hospitality industries would 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 toward 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 unit

differences. The median values on the average deviation index  $AD_{M(J)}$  (Burke, Finkelstein, & Dusig, 1999) and the interrater agreement index  $r_{wg(J)}$  (James, Demaree, & Wolf, 1984) were .65 and .77, respectively. Because  $AD_{M(J)}$  is below the 1.17 cutoff value and  $r_{wg(J)}$  is above the .70 cutoff value, agreement at the work-unit level was satisfactory (Dunlap, Burke, & Smith-Crowe, 2003). In addition, the intra-class correlations ICC (1) and ICC (2) were calculated (James, 1982). The ICC (1) (.44) showed that 44% of the variance in individual perceptions of service is explained by group membership. This value is clearly above the median values typically reported in the literature of .11 (James, 1982) and .12 (Bliese, 2000). The ICC(2) value, indicating interrater reliability, was .68, which is considered satisfactory (Glick, 1985; Klein et al., 2000). Finally, one-way analysis of variance (ANOVAs) indicated that work-units differed significantly in their employee perceptions of service climate ( $F(111, 333) = 3.17, p < .01$ ).

As in previous literature, disconfirmation of expectations has been theoretically formulated at the individual level. However, we also explored for inter-individual consistency in order to confirm the more individual nature of disconfirmation of expectations. Although median values of indices corresponding to within-work unit agreement and reliability and between-work unit differences ( $AD_{M(J)} = .91; r_{wg(J)} = .84; ICC(2) = .64; F(116, 1029) = 2,83, p < .01$ ) suggested the existence of a certain level of shared disconfirmation of expectations, only 15% of the individual variance is explained by group membership ( $ICC(1) = .15$ ). Therefore, judgments of disconfirmation of expectations are mainly explained by individual characteristics.

## RESULTS

Table 2 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. 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).

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Insert Table 2 about here  
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What is not clear in Table 2 is whether service climate maintains a significant relationship with customer satisfaction when individual disconfirmation of expectations is simultaneously considered (see Table 3). To achieve this aim, we used hierarchical linear modeling as implemented in the R statistical package. More specifically, we computed three nested models: the null model, the random coefficient regression model and the intercepts as outcomes model. Table 3 presents a summary of findings corresponding to these models.

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Insert Table 3 about here  
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### *The Null Model*

To assess 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 neither the Level 1 (individual) nor the Level 2 (work unit) variables were included in the model. The within-work unit variance component in customer satisfaction was 1.35 ( $p < .001$ ), and the between-work unit variance component was .41 ( $p < .001$ ). These indices indicate 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 relationship between disconfirmation of expectations and customer satisfaction. More specifically, we predicted the variation of the regression coefficients in customer satisfaction by introducing a 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. Our results provide support for a significant positive relationship between disconfirmation of expectations and customer satisfaction ( $PE = .69$ ;  $p < .001$ ).

This model offers further information. The residual from the level 1 equation (the variance in  $e_{ij}$ ) 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 ( $1 - (\text{variance with predictor} / \text{variance without predictor})$ ), we observed that 45% of the within-group variance in customer satisfaction was accounted for by disconfirmation (see Bryk & Raudenbusch, 1992; Gavin & Hofmann, 2002; Hofmann, 1997).

#### *Intercepts as Outcomes Model*

The intercepts as outcomes model was used to test whether service climate at the work-unit level would predict variance in customer satisfaction beyond that predicted by disconfirmation of expectations and the control variables (type of work unit and type of industry model). Our results showed that work-unit service climate was significant and positively related to customer satisfaction ( $PE = .09; p < .05$ ). 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 59 % 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 and control variables were simultaneously considered.

## **DISCUSSION**

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

### *Theoretical Implications*

One way in which research can produce progress in knowledge is through the joint consideration of previous independent traditions to improve the understanding of specific phenomena. In this sense, our study reflects an initial effort to obtain a better prediction of a critical criterion for organizations and managers: customer satisfaction.



Our findings revealed that the additive combination of disconfirmation and service climate improves the predictive power of customer satisfaction variance. In this sense, this study provides an initial step in developing integrative strategies oriented toward obtaining a more powerful prediction of customer satisfaction with services.

More specifically, our findings were congruent with the idea that a dual corridor of relationships 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 whereby 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 noteworthy in the services sector. It is well known that services have some peculiarities (Parasuraman et al., 1985), presenting higher levels of intangibility, heterogeneity and uncertainty than goods do. 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 being 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 greatest contribution of our study is that the simultaneous consideration of disconfirmation and service climate not only helps to link separate traditions or literatures, but it also reinforces a systemic and open view of organizations. In addition to the internal and external perspectives, concepts at different levels of construct and measurement are considered. 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 the attention they pay to testing 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 work-unit (service climate) levels in predicting customer satisfaction with services. Customer satisfaction cannot be reduced to intrapersonal judgments (disconfirmation) or to environments of service delivery (service climate). This research study helps to overcome the artificial distinction between disciplines and approaches. Customer satisfaction requires the consideration of intrapersonal processes with an individual level of construct, but service performance also includes the generation of excellence in service climate from a collective point of view with a level of construct higher than the individual.

### *Implications for Practice*

Marketing managers view confirmation of expectations as a useful tool for increasing customer satisfaction. Specific strategies, such as advertising, design of goods and services, social communication and sale promotions, are used to generate expectations and confirm (positively, if possible) these expectations. Firms that provide services or goods that are 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 experiences 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 for the confirmation of customer expectations. 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 improving service climate and ensuring customer satisfaction. For example, Schneider et al. (2005) observed that leadership behavior was a significant precursor of unit service climate.

In sum, our results suggest that the joint involvement of practitioners from marketing and organizational behavior would increase the predictability of a critical outcome for organizations: customer satisfaction.

#### *Limitations and Future Research Directions*

Disconfirmation of expectations and service climate are two significant predictors of customer satisfaction. However, there are other alternatives. In 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). Moreover, organizational scholars have proposed leadership and employee citizenship behaviors as antecedents of customer satisfaction (Schneider et al., 2005). Future studies could improve the understanding of customer satisfaction by incorporating additional concepts and determinants into more complex models. Employing cross-level designs may be useful in order to facilitate the integration of traditions with concepts manifested at different levels of construct.

Research could also expand on the multilevel nature of the constructs considered. Previous research has shown that many constructs of interest to organizational researchers behave at different levels at the same time (Bliese, Chan, & Ployhart, 2007). As mentioned in the introduction, although the construct of service climate seems to be better captured at the collective level, climate is considered as a multilevel phenomenon operating at different levels. All levels of the construct refer to the same content (climate), but they describe different phenomena (individual perceptions vs. shared perceptions). In a similar way, disconfirmation of expectations could be considered at different levels of construct and analysis. Although most of the disconfirmation of expectations variance was explained by individual differences, we

found these judgments are shared to some extent by customers of the same service. In addition, we observed variability between services in the level of agreement on disconfirmation of expectations. Therefore, future research could explore precursors of convergence in customer perceptions and experiences. For example, the consistency in service performance or the consistency in stimuli of the communication plans of companies could increase agreement among customer evaluations.

As we indicated above, 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. However, the results of the Harman Test indicate that common method variance is not a generalized problem in our research study. 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 could be used. Spreng and Page (2003) compared five types of disconfirmation measures, including the one used in our research study. Using other alternative measures of disconfirmation, as well as combining laboratory and field investigations, researchers may be able to corroborate the existence of the dual corridor corresponding to service climate and disconfirmation.

Our study might communicate the message that the dual corridor of relationships 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, service climate could play a more critical role than disconfirmation.

### *Conclusion*

Our study confirmed that disconfirmation of customer expectations and employee perceptions of service climate are simultaneous significant predictors of customer satisfaction with services. In spite of its limitations, this study helps to raise new research questions, in order to facilitate and improve the integration of different traditions and literatures in the prediction of customer satisfaction.

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Table 1

*Goodness of fit Tests and fit Indices for Harman Test*

Model	$\chi^2$	<i>df</i>	RMSEA	NFI	NNFI	CFI	GFI	AGFI
1 factor	210.72	9	.142	.98	.98	.99	.99	.98
2 factors	32.96	8	.053	1.00	1.00	1.00	1.00	1.00

Note RMSEA = root mean square error of approximation; NFI = normed fit

index; NNFI = non-normed fit index; CFI = comparative fit index; GFI =

goodness of fit index; AGFI = adjusted goodness of fit index

Table 2

*Descriptive Statistics and Correlations*

	<i>M</i>	<i>SD</i>	1	2
1. Disconfirmation	5.40	1.23		
2. Service climate	4.99	1.06	.06	
3. Customer satisfaction	5.81	1.33	.68**	.13**



Table 3

*Results of hierarchical linear modeling*

	Parameter			
	estimate	SE	df	t test
Step 1				
(Intercept)	2.07	.14	927	14.91**
Disconfirmation	.69	.02	927	28.98**
Step 2				
(Intercept)	1.60	.30	926	5.34**
Disconfirmation	.69	.02	926	29.02**
Type of industry	-.14	.10	102	-1.32
Type of work unit	.19	.10	102	1.90
Service climate	.09	.05	102	1.96*

\*\*  $p < .01$ ; \*  $p < .05$

## Figure Captions

*Figure 1.* The research model

