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ORGANIZATIONAL CLIMATE AND PERFORMANCE: AN
EXAMINATION OF CAUSAL PRIORITY

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ORGANIZATIONAL CLIMATE AND PERFORMANCE: AN EXAMINATION OF
CAUSAL PRIORITY

By

Anthony S. Boyce

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ABSTRACT

ORGANIZATIONAL CLIMATE AND PERFORMANCE: AN EXAMINATION OF CAUSAL PRIORITY

By

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Research and theory suggest that there is a relationship between organizational climate and organizational performance. However, there exists both limited and conflicting evidence as to whether climate is a cause of performance, vice-versa, or the two are reciprocally related. The current study examines this issue of causal priority using a longitudinal research design where data were collected on multiple occasions over a period of six years for both organizational climate and performance. Data on organizational climate and unit-level customer satisfaction were collected separately for sales departments and service departments in 95 automobile dealerships. For sales departments, unit-level sales data were also collected. Using cross-lagged panel analyses, it was found that organizational climate exhibited causal priority over customer satisfaction in both sales and service departments. Stable causal relationships emerged more quickly, after one year, in service departments, while for sales departments stable causal relationships were observed only at two-year lags. For sales departments, organizational climate and customer satisfaction were both observed to have causal priority over unit-level sales at two-year lag intervals, but the effects were small. Additionally, customer service was found to fully mediate the causal relationship between organizational climate and unit-level sales. No evidence of reciprocal relationships, where organizational performance would have also predicted subsequent

organizational climate, were observed. The results of this study are discussed in terms of their implications for the study of causal relationships between organizational climate and performance, how the results compare to the results of prior research, possible directions for future research, and potential limitations.

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To Sarah Kaye Conklin Boyce, my best friend and wife, for her continual support,
insightful ideas, and charming wit.

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Introduction

As organizations continually face greater competition and high profit expectations from Wall Street, it becomes increasingly important for all functions to prove their value to the organization. There are well known metrics for tracking the value added by finance or marketing departments, but assessing the bottom-line contributions of the human resources (HR) function is more difficult because the outcomes are often less tangible (Becker, Huselid, & Ulrich, 2001; Lev, 2001; Russ-Eft & Preskill, 2005; Smith, 2003). How, for example, does HR show the value, in terms of enhancing organizational performance, of a climate change intervention or an employee involvement program? When one considers the fact that HR-related expenses account annually for over \$1,000 per employee, excluding the 42% of operating expenses that go directly to salaries (Dooney & Smith, 2006), the answer to this question becomes even more pressing. Recently researchers operating from a variety of backgrounds, including human resource management, organizational behavior, and industrial-organizational psychology, have begun to address this problem by attempting to link some of the outcomes of the HR function directly to indicators of organizational performance. Some efforts at linkage research (Wiley, 1996) have focused on linking bundles of human resource management practices (e.g., objective selection, formal training programs) to organizational performance (e.g., Huselid, 1995; Huselid, Jackson, & Schuler, 1997; Wright, Gardner, Moynihan, & Allen, 2005). Other efforts have focused on HR's responsibility for maintaining a motivating environment by looking at how employee perceptions of the work climate and attitudes relate to organizational performance (e.g., Borucki & Burke, 1999; Schmit & Allscheid, 1995; Schneider, Hanges, Smith, & Salvaggio, 2003). The

rationale behind both types of linkage studies is that demonstration of causal links between HR outcomes and organizational performance can help to prove the strategic value of the HR function. However, with a few exceptions (e.g., Koys, 2001; Kozlowski & Farr, 1988; Ryan, Schmit, & Johnson, 1996; Schneider, White, & Paul, 1998), HR linkage studies have utilized cross-sectional designs useful for showing that the outcomes of HR covary with organizational performance, but not useful in establishing causal links (Shadish, Cook, & Campbell, 2002).

The current study contributes to the ability of HR to prove its value by investigating the causal link between organizational climate and important indicators of organizational performance. The current study addresses several limitations of prior research on this topic. First, this study utilizes a longitudinal design in which climate perceptions and indicators of organizational performance are assessed over six years. Such a design allows for much stronger causal inferences than previous research and also allows for investigation of reverse causality and reciprocal relationships sometimes observed in the empirical literature (e.g., Ryan et al., 1996; Schneider et al., 1998). Second, the sample is comprised of independently owned and operated organizations in the same industry, carrying the exact same products, and focusing on the exact same indicators of performance. Many previous studies have utilized samples within a single organization, which may contribute to range restriction in climate perceptions, or samples of organizations in different industries which creates problems in justifying common indicators of performance. Finally, the indicators of organizational performance chosen in the current study (i.e., customer satisfaction and unit-level sales) were chosen because of their proximity to employee behavior and insulation from some of the external forces

(e.g., CEO scandals, downsizing) that can influence more macro-level indicators of performance sometimes utilized in prior research (e.g., return on investment, profit, etc.).

Before describing the current study in greater detail, it is first necessary to briefly review the concept of climate. Next, the theoretical justifications for expecting a causal relationship between climate and organizational performance will be reviewed. Empirical research focusing on such relationships will also be reviewed with particular attention given to the limitations of much of the existing research for demonstrating causal links. Finally, the current study and hypotheses will be discussed in detail.

Climate

Climate, as a concept, has its roots in Lewinian field theory, which proposes that behavior (B) is a function of both the person (P) and the environment (E; i.e., $B=f(P,E)$; Lewin, 1951). In this model, individuals bring goals or desires with them to situations, which are then perceived and interpreted in terms of these goals. These perceptions of the environment, and their implications for an individual's goals, then serve as guides for subsequent action. The influence of Lewin's field theory on the conceptualization of climate can be clearly seen in various definitions of climate offered in the organizational literature:

“...climate refers to individual attributes, namely the intervening psychological process whereby the individual translates the interaction between perceived organizational attributes and individual characteristics into a set of expectancies, attitudes, behaviors, etc.” (James & Jones, 1974, p. 1110)

“[Climate] can be thought of as psychologically meaningful descriptions of contingencies and situational influences that individuals use to apprehend order, predict outcomes, and gauge the appropriateness of their organizational behaviors.” (Kopelman, Brief, & Guzzo, 1990: p. 294)

“I define climate as incumbents’ perceptions of the events, practices, and procedures and the kinds of behaviors that get rewarded, supported, and expected in a setting.” (Schneider, 1990, p. 384).

Although semantic differences are present, common across all of these definitions is a focus on *perceptions* of the environment and the implications of these perceptions for the individual. Thus, in line with the above definitions, but in more general terms, organizational climate is defined here as the shared perceptions employees attach to organizational events, policies, practices, and procedures (Ostroff, 1993; Schneider & Reichers, 1983).

In line with Lewin’s field theory, climate perceptions are thought to arise as employees engage in sense-making behaviors aimed at understanding the implications of these organizational features (i.e., events, policies, practices, and procedures) for the self in terms of the types of attitudes and behaviors that are rewarded and supported by the organization (James & James, 1989; Kopelman et al., 1990; Schneider & Reichers, 1983; Weick, 1995). Thus, climate perceptions serve as the mediating mechanism through which organizational features influence individuals’ behavior and attitudes. For example, organizational features perceived by employees as encouraging collaboration, such as the

implementation of team building exercises, will indicate to individuals that positive attitudes toward, and behavior consistent with, collaboration are endorsed by the organization. Leadership and management also influence this perceptual sense-making process by the nature of their roles as gatekeepers and framers of organizational information and through their implementation of organizational practices, policies, and procedures (e.g., Kozlowski & Doherty, 1989; Litwin & Stringer, 1968; McGregor, 1960).

James and Jones (1974) made a widely-embraced distinction between *psychological climate*, individuals' perceptions of the work environment, and *organizational climate*, shared perceptions of the work environment aggregated across individuals. This conceptualization of organizational climate as a higher-level isomorph of psychological climate (Kozlowski & Klein, 2000) prompted researchers to explore the processes through which climate perceptions came to be shared. Payne and Pugh (1976) took a top-down structural approach and argued that shared perceptions arise directly from the shared environments in which coworkers operate. Thus, workers within a single unit or organization come to have shared perceptions because of shared environmental features, while workers across different units or organizations have different shared perceptions because of the different environmental features they experience. Other researchers view shared climate perceptions as emerging from bottom-up processes.

The attraction-selection-attrition (ASA) approach suggests that shared perceptions emerge as a function of the homogeneity of persons within an organization (Schneider, 1987; Schneider, Goldstein, & Smith, 1995). From this perspective, individuals with similar attitudes, values, goals, etc. are initially *attracted* to organizations, organizations

select individuals similar to those already within the organization, and dissimilar individuals eventually *attrit* from the organization. Over time, this ASA process results in a relatively homogenous group of individuals with common climate perceptions. The symbolic interactionist approach suggests that psychological climate perceptions are negotiated and further refined through social interaction with colleagues resulting in the emergence of shared organizational climate perceptions that are mutually determined by the individual and the group (Rentsch, 1990; Schneider & Reichers, 1983). It is likely that all of these processes contribute to the emergence of a shared organizational climate within particular units or organizations, and dissimilar organizational climates between units or organizations.

Aside from efforts at understanding the nature and emergence of climate, researchers have also focused attention on the appropriate content, or dimensions, of climate. Much of this focus has centered on molar dimensions of climate thought to be widely applicable and beneficial to all employees and organizations, although agreement on the exact content and labels of the dimensions has varied widely (James & James, 1989; Ostroff, 1993; Ostroff, Kinicki, & Tamkins, 2003; Pritchard & Karasick, 1973). On the basis of both empirical and theoretical work on human needs, job satisfaction, and climate (e.g., Alderfer, 1972; Campbell, Dunnette, Lawler, & Weick, 1970; Elizur, 1984; Katz and Van Maanen, 1977), Ostroff (1993) proposed a comprehensive taxonomy composed of three higher order facets that has gained some popularity in the literature (e.g., Carr, Schmidt, DeShon, & Ford, 2003). Ostroff's *affective facet* focuses on participation, involvement, and social relations among workers, the *cognitive facet* focuses on psychological involvement, innovation, and development, and the

instrumental facet focuses on task involvement and work processes, such as structure.

James and James (1989) took the molar conception of climate one step further by presenting evidence that a single higher-order general climate factor underlies the dimensions of climate. These authors argued that this higher-order factor should be expected given that climate perceptions are based on an individual's consideration of the implications organizational features have for the self in terms of promoting behaviors and attitudes that are consistent with employees' and, by extension, organizational well-being.

Although the molar dimensions of climate have proved valuable in terms of predicting outcomes important to organizations (e.g., Brown & Leigh, 1996; Carr et al., 2003; Day & Bedeian, 1991; Parker et al., 2003) some researchers have argued for, and embraced, more specific climate dimensions focused on particular referents (e.g., Schneider, 1975; Schneider, 1990; Zohar, 1980). On the basis of critical reviews suggesting that the relationships between organizational climate and organizational effectiveness were weak at best (e.g., Campbell, Dunnette, Lawler, & Weick, 1970; Payne & Pugh, 1976), Schneider and his colleagues argued that the molar conception of climate was too broad and inclusive to prove useful as a predictor of important organizational outcomes (e.g., Schneider, 1975; Schneider, Parkington, & Buxton, 1980). The alternative advocated was for a more particular conceptualization of climate with a particular referent or strategic focus in line with an organization's goals—that is, a climate *for* something. Schneider and his colleagues argued that this conception of a climate for something is more effective in predicting specific outcomes because it is operationalized at a level of specificity matching many relevant criteria (Schneider, 1975;

Schneider, 1990). Some support for this notion has been found by research relating climates for safety, service, or technical updating to correspondingly narrow individual- and organizational-level criteria (e.g., Kozlowski & Hults, 1987; Schneider et al., 1998; Zohar, 2000). Despite the increasing popularity of this more specific conceptualization of climate, researchers continue to find empirical justification, in the form of predicted relationships, with the molar conceptualization of climate adopted in the current study as well (e.g., Ostroff, 1993; Carr et al., 2003; Parker et al., 2003).

In summary, organizational climate is defined as the shared perceptions employees attach to organizational events, policies, practices, and procedures. These perceptions are based at the individual-level, and over time may emerge to be shared at the group-level, as employees engage in sense-making aimed at understanding the implications of organizational features in terms of the behaviors and attitudes endorsed by the organization. Thus, these shared perceptions are viewed as the mediating mechanism between features of the organization and the collective attitudes and behaviors of employees. Regardless of whether one adopts a molar or specific perspective on the content of climate, climate perceptions, by definition of having implications for collective attitudes and behaviors of employees, are expected to have implications for organizational performance. The next section briefly reviews the process through which climate perceptions can impact organizational performance as well as prior empirical research attempting to establish such links.

Link between Organizational Climate and Performance

Theoretical arguments. A number of researchers have provided models linking climate to organizational effectiveness (James & Jones, 1976; Kopelman et al., 1990;

Ostroff & Bowen, 2000; Ostroff et al., 2003). Common among all these models is the proposition that climate influences attitudes (e.g., job satisfaction, organizational commitment) and, both directly and indirectly through attitudes, motivation and behavior (e.g., task-focused, organizational citizenship behavior, turnover). Employee's behaviors then combine to impact performance. Although almost completely ignored in the discussion of these theories, it should be noted that some of the models do include feedback loops flowing from organizational performance back to climate (e.g., James & Jones, 1976).

The processes whereby climate influences organizational performance operate in parallel at both the individual- and group-levels. Additionally, within variables, there are reciprocal relationships between the two levels. For example, as discussed previously, psychological and organizational climates can mutually influence one another as individuals and groups negotiate their perceptions of the environment (Schneider & Reichers, 1983). Likewise, collective attitudes and behaviors can exert top-down contextual influences on individual attitudes and behaviors, which themselves combine through bottom-up emergent processes to manifest as collective attitudes and behaviors (Kozlowski & Klein, 2000). Cross-level relationships between variables are also proposed to exist. For example, organizational climate can impact individual attitudes above-and-beyond the individual-level influence of psychological climate (Naumann & Bennett, 2000). Although it is important to recognize the multi-level nature of these processes, the conceptual focus of the current study is at the group-level. Therefore, the individual-level, emergent, and cross-level processes will only be discussed when necessary for understanding the primary focus of the current research.

Climate perceptions influence the attitudes and behaviors of employees (e.g., Carr et al., 2003; Kozlowski & Hults, 1987; Ostroff, 1993), and collective attitudes and behaviors have implications for organizational performance (e.g., Ostroff, 1992; Ryan et al., 1996; Schneider & Bowen, 1985). From a variety of perspectives on motivation it can be seen that, at the individual-level, climate perceptions can influence the performance of job-related behaviors by promoting adoption of goals (Locke & Latham, 1990), positive, or negative, attitudes (Ajzen & Fishbein, 1980; Ajzen, 1985), or instrumentalities (e.g., Campbell & Pritchard, 1976; Vroom, 1964) towards the behaviors. For example, climate perceptions related to the importance of cooperation in an organization indicate to employees that cooperation is supported and rewarded by the organization. In such a situation, expectancy-valence theories predict that employees are more likely to both adopt goals related to cooperating and helping coworkers and to pursue those goals because they believe it will lead to desired rewards. In a direct test of this notion, James, Hartman, Stebbins, and Jones (1977) demonstrated that psychological climate was related to employees' instrumentalities and valences for particular behaviors. Additionally, a meta-analysis by Parker and his colleagues (2003) also demonstrated significant relationships between motivation and molar climate. Beyond direct effects on motivation, climate perceptions may influence performance through an effect on job attitudes.

A number of researchers have argued that climate perceptions impact employee motivation and behavior through job attitudes, such as job satisfaction and organizational commitment (e.g., Friedlander & Margulies, 1969; Lawler, Hall, & Oldham, 1974; Kopelman et al., 1990). Job satisfaction theory and research suggests that a climate characterized by the promotion of attitudes and behaviors beneficial to employee well-

being is likely to result in positive affective evaluations of one's job (i.e., job satisfaction; Hackman & Oldham, 1976; Locke, 1976; James & James, 1989). Additionally, given that many of the common dimensions of climate specifically focus on perceptions that the environment supports attitudes and behaviors commonly associated with employee well-being (e.g., involvement, cooperation, growth, role clarity, etc.; James et al., 2008) it is not surprising that positive climate perceptions relate to job satisfaction (Carr et al., 2003; Parker et al., 2003). Similarly, climate perceptions are likely to influence organizational commitment as employees develop obligations of reciprocation and feelings of identification with organizations perceived as promoting an environment conducive to their personal welfare (e.g., Mathieu & Zajac, 1991; Meyer & Herscovitch, 2001). This is also consistent with Blau's (1964) conception of social exchange theory which predicts that if employees perceive that the organization is concerned for their well-being, they will develop an implicit obligation to reciprocate by carrying out relevant job-related behaviors. The empirical relationships between climate and job satisfaction and climate and commitment are well-established in the literature (e.g., Carr et al., 2003; Kozlowski & Hults, 1987; Parker et al., 2003; Pritchard & Karasick, 1973). Job attitudes, in turn, have implications for employee behavior as satisfied and committed employees are more likely to engage in greater task-relevant and extra-role behavior while on the job (e.g., LePine, Erez & Johnson, 2002; Likert, 1961; McGregor, 1960; Mowday, Porter, & Steers, 1982; Weiss & Cropanzano, 1996) and less likely to engage in withdrawal behaviors (e.g. Griffeth, Hom & Gaertner, 2000; Muchinsky, 1977). Furthermore, while not examining the mediating motivational or attitudinal mechanisms, many studies have demonstrated relationships between climate perceptions and a number of job-related

behaviors including organizational citizenship (Schneider, Ehrhart, Mayer, Saltz, & Niles-Jolly, 2005), continuing education (Kozlowski & Hults, 1987), safety behaviors (Hofmann & Stetzer, 1996; Oliver, Cheyne, Tomás, & Cox, 2002), and, more generally, job performance (e.g., Pritchard & Karasick, 1973). Therefore, there exists ample theoretical and empirical evidence that climate can influence the performance of job-related behaviors.

Both Kopelman and his colleagues (1990) and Ostroff and Bowen (2000) propose that the relationships between attitudes, behaviors, and performance are greater at the group- or organizational-level than at the individual-level. For example, there are many potential individual responses to dissatisfaction, although some are more likely than others. A given employee may respond to dissatisfaction by being tardy or absent, withholding information, or even working harder to improve performance. Likewise, a satisfied employee could engage in helping coworkers, working harder, or simply maintaining current-levels of effort. Thus, at the individual-level there are many possible behavioral responses, with varying implications for organizational performance, to the experience of satisfaction. However, aggregated across many different employees the net effect, at the group-level, of satisfaction can be much greater because of the accumulation of organizationally-desirable or undesirable behaviors (Ostroff, 1992). Similar arguments could be made for the impact of commitment and motivation on behavior as well as for the impact of employee behaviors on organizational performance. For example, Mathieu and Kohler (1990) demonstrated that unit-level absenteeism has effects distinct from individual-level absenteeism. On this topic, Ostroff and Bowen (2000) concluded, “From a levels perspective, this suggests a bottom-up process whereby individuals’ attitudes and

behaviors combine to emerge into a collective effect that is greater than the simple additive effects across individuals,” (p. 228-229).

Therefore, there is ample theoretical evidence for the supposition that organizational climate has a causal influence on organizational performance, through an impact on employees’ job-related attitudes and behaviors. Additionally, there are a number of cross-sectional studies demonstrating such relationships (e.g., Borucki & Burke, 1999; Ostroff, 1992; Schneider & Bowen, 1985; Schneider et al., 2005). Despite theoretical evidence of a causal pathway from climate to organizational performance, only a few studies have attempted to empirically establish this causal link.

Empirical evidence of causality. Schneider and his colleagues (1998) examined the causal relationship of organizational climate for service and customer perceptions of service quality. Service climate and customer service perceptions data were collected in 1990 and 1992 for over 100 bank branches. The authors examined the causal priority of service climate by conducting a cross-lagged panel analysis. The results indicated reciprocal causality between service climate and customer service perceptions, with no indication that one construct was the greater cause. However, the finding of equal cross-lags may also be indicative of spuriousness, that is the two variables may be caused by a third, unmeasured, variable (Kenny & Harackiewicz, 1979). Additionally, the generalizability of this finding is tempered by the study’s use of only two time periods and units within a single organization.

Neal and Griffin (2006) examined causal links in the context of safety. These authors assessed safety climate and individual safety motivation at two time points and linked climate and motivation to prior and subsequent levels of accidents, at the unit-

level, over a five year period. Supporting theoretical arguments that climate influences employee motivation, the researchers found a significant positive relationship between group safety climate and safety motivation two years later. However, the researchers failed to find a significant relationship between group-level climate and subsequent measures of group-level accidents assessed one and three years later, although the results were in the expected direction. The lack of significance for climate predicting accidents is likely due to the small sample available for the group-level analyses (i.e., $n=33$). Although this study did not address climate linkages to organizational performance directly, it does demonstrate a longitudinal link between climate and employee motivation.

Gelade and Ivery (2003) conducted a linkage study that, while not strictly longitudinal, is also relevant to this issue of causality. In an effort to demonstrate that correlations observed between climate and subsequent measures of organizational performance indicators were not due to unmeasured human resource management practices, these authors collected data from 137 geographically defined bank branch clusters. The results revealed that relationships between molar climate and subsequent organizational performance could not be explained by their common dependence on human resource management practices. Although this study does help to rule out some human resource management practices (i.e., staffing level, overtime, and professional development) as a third variable explanation for climate-performance linkages, there are other human resource practices that remain to be tested (e.g., employee involvement practices, incentive compensation, etc.).

In summary, the empirical literature on climate-performance linkages at the organizational- or unit-level provides sparse evidence of the causal pathway often cited in the theoretical literature. At best, there is evidence for reciprocal causality. A few studies have addressed the linkage between group-level employee attitudes and organizational performance. Although employee attitudes are distinct from climate perceptions, the theoretical position of job-related attitudes as a mediator of the climate-performance link indicates that evidence of the attitude-performance causal pathway increases the plausibility of the climate-performance causal link.

Indirect evidence of causality: Research on attitudes. Ryan, Schmit, and Johnson (1996) examined the causal ordering of group-level employee satisfaction and indicators of organizational performance across two time periods. Data were collected from over 140 branches of a financial services organization and outcomes included turnover, customer payment delinquency, and customer satisfaction. Turnover was significantly predicted by employee satisfaction over time. Counterintuitively, the cross-lagged panel analysis of employee and customer satisfaction and payment delinquency revealed that the causal priority flowed from customer delinquency and satisfaction to employee satisfaction. In fact, the cross-lagged relationships from employee satisfaction to subsequent customer delinquency and satisfaction did not reach traditional significance levels. This suggests that, at least in some circumstances, indicators of organizational performance cause employee satisfaction. However, the results should be interpreted with caution given the data were collected from a single organization over only two time periods.

Koys (2001) conducted a similar study examining employee satisfaction, organizational citizenship behavior, and organizational performance indicators. In this study, data were collected at two points in time from 28 chain restaurants. Regression analyses demonstrated that employee satisfaction was a significant predictor of subsequent customer satisfaction, and customer satisfaction was not a significant predictor of subsequent employee satisfaction. Additional analyses showed that managers' ratings of employees' organizational citizenship behaviors were positively related to subsequent year's profits; again no evidence of reverse causality was observed. Although the sample size for this study was quite small, the results indicate that causal priority flows from employee attitudes and behaviors to customer satisfaction.

Schneider, Hanges, Smith, and Salvaggio (2003) examined job satisfaction and macro indicators of firm financial performance (e.g., return on assets and earnings per share) longitudinally. Job satisfaction data were collected from a relatively small sample (n=250) of employees in 35 companies, although some companies did not participate in some years. The data, analyzed over one-, two-, three-, and four-year time lags, showed that indicators of financial performance had causal priority over the various aggregated satisfaction measures. However, there was also some evidence of reciprocity. Unfortunately, all organizations in this study did not use the same job satisfaction items nor did a single organization necessarily use the same items over time and thus the results should be interpreted cautiously.

On balance, the conclusions one can draw from empirical studies examining attitude-performance links at the organizational level are very similar to those examining climate-performance links: reciprocal causality is likely and it is unclear if either

climate/attitudes or organizational performance have causal priority. Despite the fact that theory posits climate and attitudes as having causal priority, it is not unreasonable to expect that employees base their climate perceptions (especially service climate perceptions), at least partially, on the feedback they receive from customers as customers themselves constitute a salient feature of the environment. For example, if the customers are giving negative feedback then it is reasonable that employees will respond to this feedback by perceiving a lack of service climate in their organization. Heskett et al. (1997) referred to the relationship between employees and customers in service organizations as a “mirror” implying that what happens for both has reciprocal influences like those found by Schneider and his colleagues (1998) and Ryan and her colleagues (1996). Likewise, the results of Schneider et al. (2003) are not necessarily surprising when one considers that organizations with greater financial performance are likely to have greater resources available to devote to human resource practices that yield greater employee satisfaction (Wright & Gardner, 2003; Wright et al., 2005).

A note on causality. Shadish, Cook, and Campbell (2002), on the basis of John Stuart Mill’s work on the topic, highlighted the necessary conditions that must exist to make inferences of a causal relationship: First, the cause must be related to the effect. Second, the cause must precede the effect in time, that is the cause must be demonstrated to exhibit causal priority. Finally, plausible alternative causal explanations for the effect must be ruled out. These conditions are difficult to meet for any topic, but especially difficult when studying emergent organizational variables, like climate and organizational performance, that are very difficult to adequately create and manipulate in experimental lab studies. Prior research on organizational climate has been successful in demonstrating

that the purported cause (i.e., climate) is *related* to the effect (i.e., organizational performance; e.g., Borucki & Burke, 1999; Ostroff, 1992; Schneider & Bowen, 1985; Schneider et al., 2005). Longitudinal, non-experimental studies, utilizing cross-lagged panel analyses, however, have largely yielded inconclusive (i.e., conflicting) results with respect to causal priority (e.g., Ryan et al., 1996; Schneider et al., 1998). Gelade and Ivery's (2003) study helped to rule out some types of human resource practices as plausible alternative explanations, but several alternatives continue to exist. Additionally, Schneider et al.'s (1998) analyses failed to rule out spuriousness as a potential explanation of the observed correlations.

The Current Study

The current study contributes to the knowledge base on the causal relationship between organizational climate and indicators of organizational performance by adding a number of design features absent in the limited previous empirical research. First, the current study uses data collected from multiple contexts (i.e., vehicle sales departments and vehicle service departments). Second, the data is collected from multiple organizations (i.e., dealerships) that carry the same products and have common performance indicators, but nevertheless are owned and operated independently of one another. Third, data is collected repeatedly over a period of six years allowing utilization of cross-lagged panel analyses to examine causal priority. Fourth, a non-equivalent control group is used to compare the organizational performance of those organizations completing the climate measure, and subsequent action-planning process, to those organizations that did not participate in this process over this time period.

As previously reviewed, it is often asserted that climate is a cause of organizational performance (e.g., Kopelman et al., 1990; Ostroff & Bowen, 2000; Ostroff et al., 2003). The empirical research to date has largely been inconclusive with respect to this causation and has even provided limited evidence of possible third variable causation or reverse causality. However, the research to date has also suffered from several limitations that make it imprudent to hypothesize spuriousness or reverse causality. Thus, the following hypotheses concerning causal priority are proposed:

Hypothesis 1a: Department-level climate perceptions will predict customer satisfaction over time more strongly than vice-versa in both sales and service departments.

Hypothesis 1b: Department-level climate perceptions for sales departments¹ will predict dealership vehicle sales over time more strongly than vice-versa.

Theoretical treatments of the organizational climate-performance linkage have largely ignored aspects of reciprocity, even though some researchers did include feedback loops suggestive of reciprocity in their graphical models (James & Jones, 1976; Ostroff & Bowen, 2000; Ostroff et al., 2003). As mentioned previously, there is some evidence that customer feedback may represent a salient aspect of the work environment perceived by employees, and thus may influence employees' climate perceptions (Schneider et al., 1998; Ryan et al., 1996). Therefore, the following hypothesis concerning reciprocity is proposed:

¹ Similar to Hypothesis 1a, a predictive relationship for sales would be expected in *both* vehicle sales and service departments. However, sales data were unavailable for service departments, therefore, Hypothesis 1b focuses solely on sales departments.

Hypothesis 2: Department-level climate perceptions and customer satisfaction will be reciprocally related over time.

Customer satisfaction is commonly believed to be important to an organization's success because satisfied customers are more likely to make repeat purchases (e.g., Grewal & Sharma, 1991; Heskett, Jones, Loveman, Sasser, & Schlesinger, 1994; LaBarbera & Mazursky, 1983; Söderlund, 2002; Yi, 1990) and spread positive word-of-mouth about the organization (e.g., Kohli & Jaworski, 1990; Maxham, 2001; Maxham & Netemeyer, 2003; Richins, 1983; 1987; Swan & Oliver, 1989). Both repeat purchases and positive word-of-mouth have implications for an organization's future sales. In fact, word-of-mouth has been shown to have a major influence on individual's purchasing behavior (e.g., Arndt, 1967; Grewal & Sharma, 1991; Price & Feick, 1984; Schiffman, 1971; Söderlund, 2002). In the current context, word-of-mouth is likely to have an influence on getting potential customers in the door, which should increase sales. Thus, it is likely that customer satisfaction mediates the relationship between organizational climate and sales. However, once a potential customer is in the dealership, other employee behaviors that may be unrelated to customer satisfaction but influenced by climate perceptions, such as willingness to negotiate and closing the sale, would presumably also influence whether or not a sale is actually made. Therefore, it is likely that customer satisfaction only partially mediates the relationship between climate perceptions and vehicle sales.

Hypothesis 3: The relationship between sales department climate perceptions and vehicle sales will be partially mediated by department-level customer satisfaction.

Employee surveys in an organization are often accompanied by a subsequent feedback session which is then followed by an action planning process in which organizational leaders, and sometimes employees, attempt to develop plans and procedures for addressing opportunities for improvement highlighted by survey results (Church & Wacławski, 1998). Such feedback and action planning processes are sometimes asserted to motivate change by organizational development theorists (French & Bell, 1995; Nadler, 1996; Nicholas, 1982; Solomon, 1976) and may explain one mechanism through which organizational climate levels can be increased. While there has been relatively little research on the effectiveness of feedback for motivating change at the group- or organizational-levels, there is some empirical evidence that survey feedback is an effective intervention in relation to increasing employee attitudes and perceptions (e.g., Bowers, 1973; Brown, 1972; Ryan, Horvath, & West, 2003).

From a theoretical standpoint, the influence of feedback and action planning can be understood as operating at the first and second stages of Lewin's (1951) three-stage theory of change. Lewin proposed that the first stage of organizational change involves an "unfreezing" process where organizational members are confronted by evidence (e.g., survey feedback) indicating the need for change that overcomes their natural inclination to continue operating in the present way. Lewin's second stage represents the actual change process. At this stage, organizational members take steps to identify what exactly needs to be changed, develop plans for (e.g., action planning), and implement these

changes. As changes are implemented, employees engage in the sense-making process of interpreting the features in terms of their implications for the types of behaviors and attitudes supported and endorsed by the organization (i.e., employees form new climate perceptions). Over time, as these perceptions come to be shared, through the mechanisms discussed previously (e.g., leadership communications, social interaction, ASA), a new organizational climate is likely to emerge—the final “refreezing” stage of Lewin’s model.

As part of the current study, the management of dealerships participating in the climate survey process attended survey feedback and action-planning sessions facilitated by outside consultants. Therefore, in accordance with the assumptions of theorists in the organizational development literature and the limited empirical evidence available on the topic, the following hypothesis is proposed:

Hypothesis 4: Climate levels will increase over the period of the study.

If climate is related to customer satisfaction and climate increases over the course of the study, then one would expect that participating organizations should have greater customer satisfaction at the conclusion of the study than organizations that do not participate in the climate survey and accompanying action-planning process. Note that climate survey data and vehicle sales data is not available for non-participating organizations. Thus, the following hypothesis is proposed:

Hypothesis 5: Organizations participating in the climate survey and action-planning process will have greater customer satisfaction at the conclusion of the

study than organizations not participating in the climate survey and accompanying action-planning process.

Research questions. The issue of *time* is largely unaddressed in the literature on climate and organizational performance. Drawing on theories of organizational change, such as Lewin's (1951) change model discussed above, there is recognition that it takes time for organizational features to change, time for this change to impact organizational climate, and time for the climate to impact individual and organizational performance (e.g., Ostroff et al., 2003). However, there is little discussion of exactly *how much* time is required for this process to unfold and what factors might influence the length of this process.

Specification of this time frame is particularly important for cross-lagged panel analyses, used in the current study, as the causal lag time period can have a large influence on the observed results (Kenny & Harackiewicz, 1979). If the lag examined is too short for the causal process to unfold, any causal effect observed is likely to underestimate the true causal effect. Similarly, if the lag examined is too long, then the observed causal effect may be underestimated because the causal impact has dissipated. Previous researchers have observed cross-lagged effects at two-year lags (Schneider et al., 1998) for climate and organizational performance and one-year lags (Ryan et al., 1996) for employee satisfaction and organizational performance. However, in both cases, the causal lag was determined by the availability of data. Given the lack of theoretical guidance on the optimal lag for climate and organizational outcomes, the present study

investigated these effects at one-, two-, and three-year lags, in the context of the following research question:

Research Question 1: Over what lag period(s) do relationships between organizational climate and performance emerge?

Although there is no concrete theoretical or empirical guidance on which to base a determination of the causal lag period in the current study, speculation about the differences in the context of the customer service between the two types of departments suggests that the causal lag periods between climate and customer satisfaction may differ. Contextual differences in the *intangibility* of the service experience and the *immediacy of feedback* suggest that changes in organizational climate may impact outcomes for service departments more quickly than for sales departments.

The concept of intangibility was originally developed to explain the distinction between a tangible good and an intangible service (Shostack, 1977). However, services themselves also vary in their degree of intangibility (Schneider, 1990; Schneider & Bowen, 1985). The intangibility of a service refers to the extent to which customer satisfaction is ultimately based on customers' impressions of the experience (e.g., customer satisfaction ratings of service quality in a retail store) versus being judged, at least partially, on the basis of a physical (i.e., *tangible*) outcome (e.g., whether a vehicle was fixed correctly; Ryan & Ployhart, 2003; Schneider, 1990).

As intangibility increases, customers must rely more heavily on the behaviors of the service provider to form their impressions of service quality (Bowen & Schneider,

1985) because objective evidence is lacking. However, organizations have less control over employees in the provision of intangible services as the intangibility makes it more difficult to explicitly define the behaviors that employees should demonstrate. This suggests that changes in organizational climate will take more time to influence customer satisfaction in an intangible than in a more tangible service context because the specific behaviors required in the former context will take more time for the organization to recognize and reinforce and more time for the employees to discover and adopt. Whereas in a more tangible service context, changes in organizational climate may influence customer satisfaction more quickly because the specific behaviors supported and expected by the organization are likely to be more obvious and apparent to both the organization and the employees.

In the current study, the customer service experience in service departments is likely to be more tangible in that customer satisfaction is largely inseparable from the objective and observable outcomes of the experience (i.e., whether the vehicle was fixed completely, correctly, and on time). In sales departments, the customer service experience is more intangible as customer satisfaction with the experience is largely based on customers' impressions of whether, for example, the experience was pleasant and whether the sales person was knowledgeable, helpful and courteous. The difference in the tangibility of the service experience between the departments is also reflected in the content of the customer satisfaction surveys. The service department survey focuses on the "service visit overall" and includes content focused on the tangible outcomes of whether the vehicle was fixed correctly and on time. The sales department survey focuses customers' impressions of the overall "purchase and delivery experience" and is

explicitly separated from customers' satisfaction with the outcome of the service (i.e., the vehicle) both in the wording of the questions and through the provision of a separate satisfaction questionnaire focused on the vehicle itself. Therefore, organizational climate may impact customer satisfaction, and vice-versa, more quickly in service departments than in the less tangible context of sales departments.

Contextual differences influencing the proximity of customer feedback may also impact the length of the causal lag between organizational climate and outcomes. Proximal feedback on the success of a service encounter is likely to either reinforce the behaviors leading to the successful encounter or discourage the behaviors leading to an unsuccessful encounter (Herrnstein, 1970; Thorndike, 1911). Distal customer feedback, however, makes it more difficult to systematically determine which behaviors led to a successful service encounter and which did not. As employees attempt to identify the new behaviors in line with a new or modified organizational climate, the proximity of customer feedback may influence how quickly this process unfolds and employees adopt the new behaviors thereby influencing the causal lag observed between changes in climate and changes in customer satisfaction.

In the current study, customer feedback in service departments is likely to be more proximal than in sales departments. Distal customer feedback is received in the form of customer surveys on a quarterly basis in both departments. However, in service departments, employees are likely to receive proximal feedback from dissatisfied customers whose vehicles are not fixed on time or correctly. This proximal feedback affords the organization and employees an immediate opportunity to learn from the situation by determining what behaviors led to the negative outcome and also allows for

an opportunity to “make it up” to the customer at the moment of dissatisfaction. In sales departments, however, employees are unlikely to receive proximal negative feedback as cognitive dissonance theory (Festinger, 1957) suggests that someone who just spent thousands of dollars on a new vehicle is unlikely to behave in a way that conveys dissatisfaction in the moment, regardless of whether the customer is ultimately pleased with the service they received. Thus, differences between the departments in the proximity of customer feedback may result in a longer causal lag between climate and customer satisfaction, and vice-versa, being observed for sales than for service departments.

In line with the above speculation concerning contextual moderators of the relationship between organizational climate and performance, the following research question was investigated:

Research Question 2: Do differences between sales and service departments exist in the causal lag periods between climate and customer satisfaction?

James and Jones (1976) and Ostroff and her colleagues (2000; 2003) note the external environment is an indirect influence on organizational climate. However, the discussion ends with this recognition and a further note that climate is rarely studied as an outcome. One plausible environmental influence is local economic conditions. For example, it is possible that employees in units residing in economically depressed areas have lower climate perceptions because the depressed economy may contribute to employee anxiety about the health of the organization. On the other hand, a booming

local economy may create conditions of optimism that contribute to either higher initial levels or increases in climate perceptions over time. Although not an environmental variable, organizational size represents an additional contextual variable that may influence the level and change of climate perceptions. For instance, larger organizations could have multiple subclimates (Ostroff et al., 2003) that impede the pace of climate change efforts resulting in more gradual increases over time. The following research questions will be examined to explore these potential economic and contextual influences on climate levels and growth trajectories.

Research Question 3: Do differences in the initial levels and growth trajectories of organizational climate exist across organizations (i.e., dealerships)? If so, do local economic conditions or organizational size account for some of this variability across organizations?

Control variables. Local economic conditions and organizational size could also influence the organizational performance indicators of interest in this study. It is quite probable that both variables influence the number of vehicles a dealership sells in a year. Additionally, it is possible that organizational size impacts customer service perceptions as well. For example, in larger organizations it may be more difficult for customers to navigate the organization when seeking answers to questions which could negatively impact customer satisfaction. Therefore, local economic conditions and organizational size will be controlled for in most analyses, with the exception of those focused on Research Question 3 where these variables are of substantive interest.

Summary

Many researchers and practitioners alike appear to assume that the causal direction flows from climate to organizational performance. Unfortunately, the existing empirical research provides only limited evidence both for and against this assumption. The core purpose of the current study is to contribute to the systematic evaluation of this assumption by examining causal direction in the context of a longitudinal study with a number of design features aimed at addressing some of the limitations of prior research. Although no single study can definitively prove causation, or even causal priority, the current study is an important contribution to the body of research on which any convincing causal claims must rely.

Method

Sample and Procedure

Over the six years of the study, complete data were collected from a total of 95 franchise automobile dealerships selling and servicing identical products from a single automobile manufacturer. At least some data were collected from a total of 599 dealerships over the course of the study. Unfortunately, there was substantial missing data for over 500 of these dealerships. The missing data primarily resulted from many dealerships not participating in the climate survey until later years, if at all. Given the amount of missing data, it was determined that imputation and other methods of dealing with missing data were inappropriate. Additionally, departments with less than three respondents were dropped from the analyses due to aggregation concerns. Therefore, the primary sample for most analyses consists of 95 sales departments and 95 service departments for which complete climate survey and outcome data were collected across the entire six years of the study. An additional sample of 44 sales and service departments for which only customer satisfaction data were available will be used as a control group for Hypothesis 5.

Climate survey data were collected at each of the four collection periods from approximately 1,200 sales department employees and 3,000 service department employees within the dealerships (see Table 1). The average number of sales department employees within each dealership responding to the climate survey across measurement periods was approximately 13 with a range of three to 42 employees. The average

Table 1: Summary of Overall Sample Sizes for Each Department and Each Year

	Year			
	2000	2001	2002	2004
Sales Departments	1,226	1,194	1,239	1,179
Service Departments	3,190	2,999	3,045	2,784

number of service department employees within each dealership responding to the climate survey across measurement periods was approximately 32 with a range of four to 131 employees. No information on the demographics of respondents or response rates within the dealerships or departments was available.

Data were collected via paper-and-pencil measures in 2000 and 2001, but were collected via a secure internet site in 2002 and 2004. During 2000 and 2001, representatives of an external consulting firm conducted data collection at each dealership. All employees were requested to attend the data collection sessions during normal working hours, but participation was voluntary. Likewise, during 2002 and 2004, all employees were provided with instructions on how to access the web-based survey and were requested, but not compelled, to complete the survey during working hours.

Data were collected in 2000 early in the 1st quarter (i.e., January and February). For subsequent years, data were collected towards the end of the 4th quarter. This resulted in some differences in the amount of time between data collection periods, with the time lapse between 2000 and 2001 being approximately 2 years, between 2001 and 2002 being 1 year, and between 2002 and 2004, again, being approximately 2 years. In order to account for these differences, and allow for alignment between time periods in which data were collected for the other substantive variables in this study (i.e., customer satisfaction and vehicle sales), climate data collected in 2000 were considered Time 1, 2001 as Time 3, 2002 as Time 4, and 2004 as Time 6. Climate data were unavailable for Time 2 and Time 5. Table 2 summarizes this information for each variable.

Survey results were first reported back to the management of each dealership by consulting firm representatives. The survey feedback sessions included formal

presentation of the results, normative comparisons to other organizations and dealerships, and action-planning procedures. The action-planning focused on identifying opportunity areas, brainstorming potential reasons for the results, and developing short- and long-term plans for addressing the underlying issues reflected in the survey results. Management had responsibility for making the results available to non-management employees.

Customer satisfaction surveys were mailed to *all* customers purchasing or having a vehicle serviced. Surveys were mailed to customers by, and returned to, an independent consulting firm. On average, 41 surveys were available, on a quarterly basis, for each dealership's sales department and 85 surveys were available for each service department. The response rates were approximately 50% for sales departments and 35% for service departments. In order to more closely align the time periods in which customer satisfaction and climate data were collected, the customer satisfaction data from approximately two quarters preceding and succeeding collection of the climate survey data were averaged to construct this variable for analyses at each time period. Therefore, the data for Time 3, for example, was composed of customer satisfaction data from the third and fourth quarters of 2001 and the first and second quarters of 2002. For Time 1, however, only data from the two quarters succeeding (i.e., first and second quarters of 2000) climate data collection were available (see Table 2).

The number of new vehicle sales for each dealership was available on a quarterly basis. On average dealerships included in this study sold approximately 93 vehicles (Median = 77), each quarter. No vehicle sales information was available for 2002. Similar to the procedure used for customer satisfaction, the sales data from the two quarters

Table 2: Summary of Data Collection Time Periods

	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6
Cliomate	2000: Q1	N/A	2001: Q4	2002: Q4	N/A	2004: Q4
Customer Satisfaction	2000: Q1, Q2	2000: Q3, Q4 2001: Q1, Q2	2001: Q3, Q4 2002: Q1, Q2	2002: Q3, Q4 2003: Q1, Q2	2003: Q3, Q4 2004: Q1, Q2	2004: Q3, Q4 2005: Q1, Q2
Vehicle Sales	2000: Q1, Q2	2000: Q3, Q4 2001: Q1, Q2	2001: Q3, Q4	2003: Q1, Q2	2003: Q3, Q4 2004: Q1, Q2	2004: Q3, Q4 2005: Q1, Q2

preceding and succeeding collection of the climate survey data were averaged to construct this variable for analyses at each time period. For Times 1 and 4, only sales data from the two quarters approximately succeeding climate data collection (i.e., first and second quarters of 2000 and 2003, respectively) were available. For Time 3, only data from the two quarters approximately preceding climate data collection (i.e., third and fourth quarters of 2001) were available (see Table 2). The distribution of sales across dealerships exhibited a negative skew, so sales data were logarithmically transformed prior to analyses to account for this skew.

Measures

Climate survey. The proprietary climate survey used in this study consists of 60 items assessed using a 5-point likert-type scale ranging from strongly disagree to strongly agree. This instrument was designed to measure the key aspects of Denison's (1990) model of effective organizational cultural values which has theoretical roots in the human relations movement (e.g., McGregor, 1960), Schein's (1985; 1992) culture theory, and the Competing Values Framework (e.g., Cameron & Quinn, 1999; Quinn & Rohrbaugh, 1983). Drawing on each of these theories and research streams as well as on his own extensive quantitative and qualitative research, Denison proposed that effective cultures are characterized, at more visible levels, by values and practices focusing on employee involvement, internal consistency, adaptability, and a clear mission (e.g., Denison, 1990; Denison & Mishra, 1995). While some theorists have argued that the alignment, or fit, between an organization's culture and its environment is necessary for organizational effectiveness (e.g., Cameron & Quinn, 1999; Perrow, 1970; Quinn & Rohrbaugh, 1983), Denison argues that effective organizations have all of these cultural values and that the

balancing and simultaneous pursuit of the competing demands these values represent is the key to organizational effectiveness (Dension, 1990; Denison & Mishra, 1995).

Recognizing that cultural values, and the deeper-level assumptions on which they are based, are difficult to assess quantitatively in organizations (Ashkanasy, Broadfoot, & Falkus, 2000; Schein, 1990; 2000), Denison developed the perception-based measure used in the current study to assess the *climate-level* manifestations of these assumptions and values. This method of measurement is also consistent with the notion that employees' *perceptions* of organizational features, and the organizational features themselves, are important mediators of the impact culture can have on organizational performance (Kopelman et al., 1990; Ostroff et al., 2003). Denison's measure is organized around employees' climate perceptions reflecting the four cultural values identified in Denison's model. The *employee involvement* dimension assesses employee's perception of the work environment as encouraging empowerment, team-based cooperation, and individual learning and development (e.g., "Decisions are usually made at the level where the best information is available"). The *internal consistency* dimension measures employees' perceptions of organizational features as promoting a clear set of espoused values, agreement on these values, and the individual and inter-departmental coordination that should arise from this common and agreed upon set of values (e.g., "There is good alignment of goals across levels"). The *adaptability* scale contains items focused on assessing employees' perceptions that the work environment is oriented toward learning from its competitors and customers and has practices and procedures that promote flexible and adaptive responses at both the organizational- and employee-level (e.g., "Customer comments and recommendations often lead to changes."). The *mission*

dimension assesses employees' perceptions that the organization has a clearly articulated strategic direction that provides context for action and goals against which progress can be tracked (e.g., "There is a long-term purpose and direction").

Although Denison's measurement dimensions are based in culture theory, the dimensions exhibit overlap with some existing dimensions and taxonomies of molar climate (e.g., James & James, 1989; Ostroff, 1993). For example, Ostroff (1993) developed a comprehensive taxonomy that included three higher-order facets. Ostroff's affective facet focuses on involvement and social relations among workers, elements of which are reflected in both Denison's employee involvement and internal consistency dimensions. The cognitive facet, focusing on growth, innovation, autonomy, and intrinsic rewards, is partially reflected in Denison's dimensions of employee involvement and adaptability. However, Ostroff's instrumental facet and Denison's mission dimension each seem to be unique to the particular models.

Denison and his colleagues (2006) assessed the factor structure of this measure on the basis of over 35,000 employees from 160 different organizations. As expected the four factor model provided good fit to the data (RMSEA=.048, CFI=.98), but the latent factors had an average intercorrelation .90. Consistent with prior research looking at molar climate dimensions, this degree of intercorrelation at the latent-level suggests that a higher-order general climate factor underlies responses to this measure (e.g., James & James, 1989; Gelade & Ivery, 2003; Parker, 1999). James and James (1989) argued that the emergence of a general climate factor should be expected given that climate perceptions are based on an individual's consideration of the implications organizational features have for the self. A confirmatory factor analysis using all of the available data,

across all time periods, from the current study demonstrated that a single higher-order factor fit the data (RMSEA=.04, SRMR=.03, CFI=.92, TLI=.91) equally as well as the four factor model (RMSEA=.04, SRMR=.03, CFI=.92, TLI=.91). Therefore, for the purposes of this study, the Denison climate measure will be interpreted and analyzed as a single molar indicator of a climate for effectiveness.

In order to justify aggregating individuals' perceptions of climate to the organizational-level, it is first necessary to show that a minimum degree of consensus exists among group members (Bliese, 2000). Statistical justification of this consensus relies on demonstration of adequate within-group agreement ($r_{wg(j)}$), interrater reliability (ICC1), and group mean reliability (ICC2). The $r_{wg(j)}$ values were computed using equations for multiple-item scales provided by James, Demaree, and Wolf (1984). When using the $r_{wg(j)}$ as an index of within-group agreement, it is necessary to specify a null random response distribution against which the observed distribution of ratings is compared. Although most researchers tend to use only a uniform null distribution, many researchers have argued that other plausible null distributions should be used for comparison as well (e.g., Bliese, 2000; James et al., 1984; Kozlowski & Hattrup, 1992). Evidence of a slight negative skew was observed in the current dataset when examining individuals' climate response frequencies, therefore $r_{wg(j)}$ estimates were computed utilizing both a uniform and a slightly negatively skewed null distribution. The average $r_{wg(j)}$ values, across years, observed for sales departments were .97 using a uniform and .88 using a slightly skewed null distribution, which represent the upper and lower limits

of the actual $r_{wg(j)}$ values (Kozlowski & Hults, 1987; see Table 3). For service departments, the average $r_{wg(j)}$ values were .98 using a uniform and .92 using a slightly skewed null distribution (see Table 3). All of these values are above the .70 cutoff commonly referred to (e.g., Schneider et al., 2003), but rarely cited (Lance, Butts, & Michels, 2006), in the literature.

Interrater reliability was examined using equations provided by Bliese (2000) for ICC1. The average ICC1, across years, was .18 for sales and .14 for service departments (see Table 3). These values are above the median ICC1 of .12 observed in the organizational literature by James (1982) and within the range (.05 to .20) reported by Bliese (2000). The reliability of the group means was also examined using equations provided by Bliese (2000) for ICC2. The average ICC2, across years, was .74 for sales and .84 for service departments (see Table 3).

In summary, the within-group agreement, interrater reliability, and group mean reliability observed in the current data provides ample justification for aggregation. Therefore, individuals' climate perceptions will be averaged to obtain organizational climate values for each dealership.

Customer satisfaction. Mean customer responses to a single customer satisfaction survey item were available on a quarterly basis for each sales department: "Based on your overall purchase/lease and delivery experience, how satisfied are you with *XYZ Dealership*." Similar mean customer responses to a single item were available for each service department: "Based on this service visit overall, how satisfied are you with *XYZ Dealership*?" Customers made ratings on a 4-point likert-type rating scale

Table 3: Summary of Climate Aggregation Statistics for Each Department and Each Year

	Year															
	2000				2001				2002				2004			
	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
	$r_{wg(i)}$	$r_{wg(i)}$	ICC1	ICC2	$r_{wg(i)}$	$r_{wg(i)}$	ICC1	ICC2	$r_{wg(i)}$	$r_{wg(i)}$	ICC1	ICC2	$r_{wg(i)}$	$r_{wg(i)}$	ICC1	ICC2
Sales Departments	.97	.90	.15	.70	.97	.87	.19	.75	.98	.91	.18	.74	.96	.87	.20	.75
Service Departments	.99	.95	.14	.84	.98	.91	.15	.84	.99	.95	.13	.83	.97	.90	.15	.84

1 Uniform null distribution

2 Slightly negatively skewed distribution

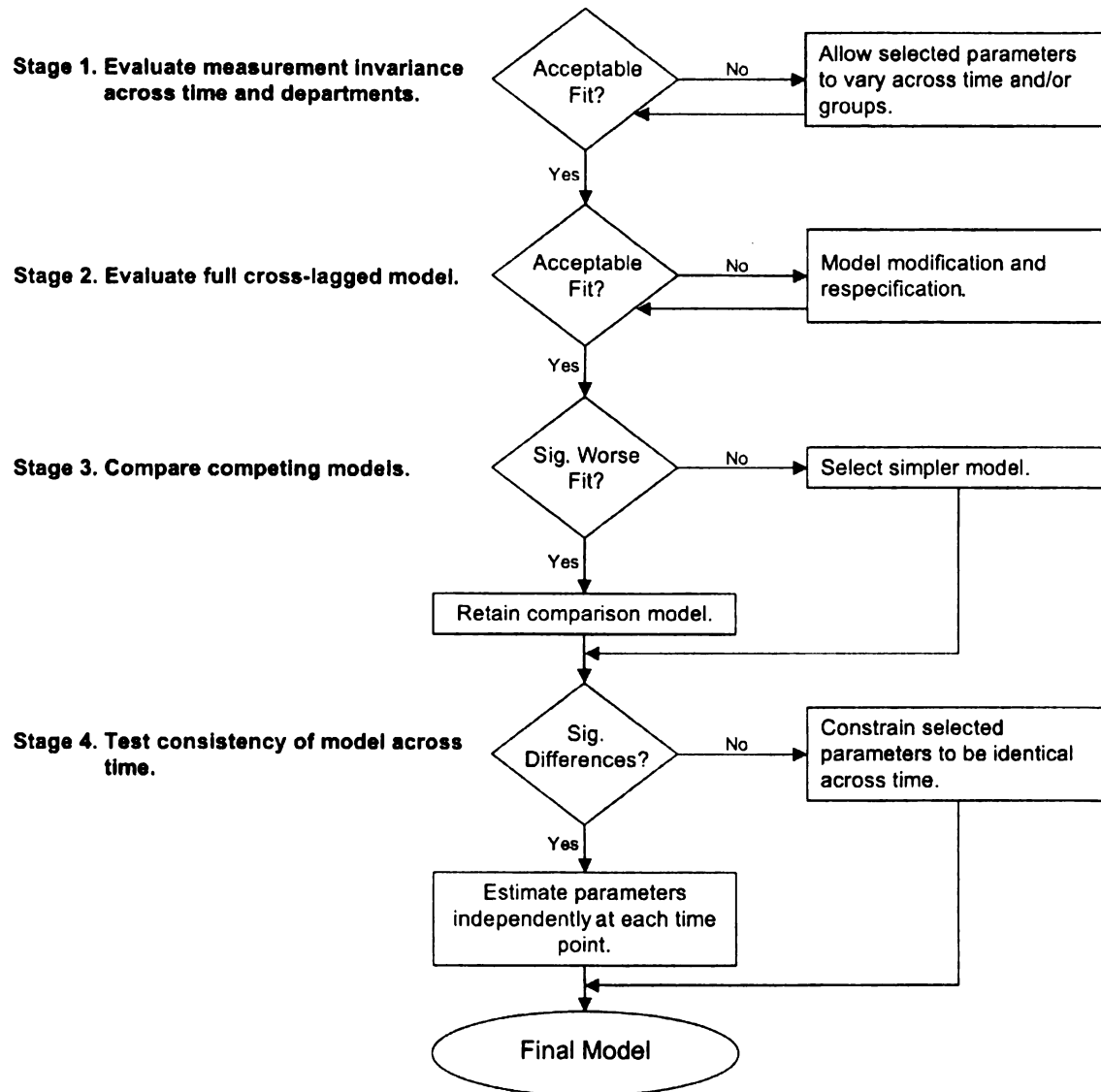
ranging from “Not At All Satisfied” to “Completely Satisfied.” Customer satisfaction, like vehicle sales, will be treated as a descriptive outcome variable rather than an aggregated construct that represents the shared perceptions of customers.

Control variables. The number of employees within each dealership was not available. However, all employees were provided with an opportunity, and encouraged, to fill-out the climate survey at each administration. Therefore, department size was approximated by averaging the number of respondents from each department across all four climate survey data collection points. Unemployment rates for the statistical metropolitan areas in which each dealership is located were used as indicators of local economic conditions. This information was obtained from U.S. Bureau of Labor Statistics website (<http://bls.gov>).

Analytic Strategy

Figure 1 depicts the overall analytic strategy used to examine Hypotheses 1a, 1b, 2, 3, and Research Questions 1 and 2. The analyses progressed through four stages: (1) evaluation of measurement invariance over time and across departments; (2) evaluation of the full cross-lagged reciprocal model; (3) evaluation of simpler competing models; and (4) evaluation of the consistency of the models across time. Stages 2 through 4 were repeated separately for each department, and, for the sales department, for each outcome (i.e., customer satisfaction and vehicle sales). This analytic strategy imposes and compares increasingly strict assumptions about the underlying relationships of the variables depicted in the model and allowed for examination of the substantive hypotheses as well as differences in the hypothesized relationships over time.

Figure 1: Analytic Strategy



Valid inferences about the similarity or differences of structural relationships are contingent upon evidence that the constructs of interest have the same underlying meaning and are measured consistently across time and between groups. Thus, the first stage in the analytic process (Stage 1) involved investigation of the invariance of the climate measure across departments and time according the procedures outlined by Vandenberg and Lance (2000).

Cross-lagged panel analyses began with the full cross-lagged reciprocal model (Stage 2). The key features of this model are: (1) cross-lagged paths from climate to subsequent outcomes (i.e., satisfaction or sales); (2) cross-lagged paths from outcomes to climate; (3) autoregressive paths within constructs; and (4) residual correlations between climate and outcomes within each measurement occasion. The cross-lagged paths estimate the hypothesized relationships. The autoregressive lags control for prior levels of the variable of interest when estimating the impact of the cross-lagged variable. The residual correlations were included on the basis of evidence, provided by Anderson and Williams (1992), that failure to account for these correlations can lead to biased estimates of the cross-lagged effects. At this stage, all structural paths were allowed to vary across time periods and departments. The impact of wave-skipping autoregressive lags (e.g., Time 1 to Time 3, Time 2 to Time 4, etc.) were also investigated at this stage on the basis of findings in previous cross-lagged research that these paths often improve model fit (e.g., Hays, Marshall, Wang, & Sherbourne, 1994; Madon, Willard, Guyll, Trudeau, & Spoth, 2006).

Stage 3 models compared competing, more parsimonious, models to the full cross-lagged reciprocal model by constraining selected cross-lagged paths to zero. The first model examined the alternative that climate influences outcomes over time, but outcomes have no direct effect on climate, by constraining the cross-lagged paths from outcomes to climate to be zero. The second model examined the converse where outcomes influence climate over time, but climate has no direct effect on the outcomes. The final model in this stage, an autoregressive null model, examined the alternative that no direct causal relationships exist among the variables by constraining all cross-lagged

paths to zero.

Assessment of the consistency of the models over time was examined at Stage 4. The first set of models at this stage constrained the autoregressive lags within a construct to be equal over time (e.g., all one year autoregressive lags within a construct were constrained to be equal). This model examined whether, for example, customer satisfaction consistently influenced subsequent measures of customer satisfaction to the same degree, or whether these relationships changed over the period of the study. Next, consistency of the cross-lagged paths was assessed by constraining corresponding cross-lags to be equal over time. This model examined whether, for example, the impact of climate on subsequent customer satisfaction increased, decreased, or remained stable over time.

Stages 2 through 4 were repeated for the different time lags over which the cross-lagged climate-outcome relationships may emerge (i.e., 1 year, 2 year, and 3 year lags) in order to investigate Research Questions 1 and 2. As noted previously, specification of the appropriate causal lag time period can have a large influence on the results of cross-lagged panel analyses. If the causal lag examined is too short for the causal process to unfold, any causal effect observed is likely to underestimate the true causal effect. Similarly, if the causal lag examined is too long, then the observed causal effect may be underestimated because the causal impact has dissipated.

Stages 2 through 4 were slightly modified for the examination of Hypothesis 3 (i.e., customer satisfaction partially mediates the relationship between climate and vehicle sales) to account for the addition of a third set of variables. Stage 2 examined the hypothesized partial mediation model. Stage 3 examined a full mediation model and

more restricted models constraining selected cross-lagged effects to zero. Stage 4, again, examined consistency of the resulting model across time.

The best-fitting model resulting from each stage served as the initial comparison model for the subsequent stage of analyses. On the basis of Hu and Bentler's (1998; 1999) recommendations, model fit was assessed using the following criteria: $SRMR \leq .08$ and $(RMSEA \leq .06 \text{ or } CFI \geq .95)$. Chi-square statistics are also reported, and used for model comparisons, but were not considered in assessment of overall model fit. Comparisons between nested models were assessed with the chi-square difference test (Bentler & Bonett, 1980). All measurement and structural models were estimated using Amos 7.0.

Hypothesis 4 was examined by means of a dependent groups t-test comparing Time 1 climate perceptions to Time 6 climate perceptions. Hypothesis 5 was examined with repeated-measures ANOVA with participation in the climate survey process as the between-subjects factor. Research Question 3 was examined via longitudinal growth modeling analyses with time nested within departments using HLM 6.04.

Results

Descriptive Statistics

Tables 4 and 5 contain means, standard deviations, reliabilities, and intercorrelations for all variables. An increasing trend is evident for both mean climate perceptions and satisfaction over time and across departments, though not for vehicle sales. For sales departments, the pattern of correlations between climate perceptions and satisfaction with sales were generally in the hypothesized direction (i.e., positive). However, the correlations with vehicle sales were both slight and largely not significant. For service departments, the pattern of correlations between climate and satisfaction were generally in the hypothesized direction and significant. Unemployment figures were largely unrelated to both sales and satisfaction, across both departments, indicating that unemployment is not a necessary control variable for subsequent analyses. Department size was consistently positively related to vehicle sales indicating its importance as a control variable for subsequent analyses involving vehicle sales.

Measurement Invariance

Measurement invariance (Stage 1) of the climate survey across time and departments was examined at the department-level using item parcels defined by Denison's four dimensions (i.e., Involvement, Consistency, Adaptability, Mission; see Appendix for item parcel covariance matrices) in accordance with the procedures outlined by Vandenberg and Lance (2000), with one exception. Some authors have noted that the omnibus test suggested by Vandenberg and Lance as the first step in establishing invariance can lead to erroneous conclusions (Byrne, 1998; Raju, Laffitte, & Byrne,

Table 4: Descriptive Statistics and Intercorrelations - Sales Departments

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Climate Time 1	3.67	0.33	(.98)																					
2. Climate Time 3	3.70	0.41	.49	(.99)																				
3. Climate Time 4	3.81	0.37	.41	.36	(.99)																			
4. Climate Time 6	3.84	0.41	.16	.40	.31	(.99)																		
5. Sales Satisfaction Time 1	3.71	0.15	.17	.18	.13	.14	--																	
6. Sales Satisfaction Time 2	3.74	0.14	.13	.26	.02	.19	.66	--																
7. Sales Satisfaction Time 3	3.75	0.10	.22	.22	-.01	-.02	.38	.47	--															
8. Sales Satisfaction Time 4	3.76	0.11	.20	.10	.25	.06	.49	.51	.54	--														
9. Sales Satisfaction Time 5	3.80	0.08	.24	.28	.15	.18	.41	.32	.36	.50	--													
10. Sales Satisfaction Time 6	3.81	0.09	.18	.27	.21	.19	.43	.27	.37	.45	.47	--												
11. Sales Time 1	1.87	0.32	.05	.16	.01	.10	.25	.34	.14	.22	.14	.22	--											
12. Sales Time 2	1.81	0.31	.05	.15	-.01	.06	.24	.31	.12	.21	.10	.18	.98	--										
13. Sales Time 3	1.87	0.30	.07	.14	.01	.07	.30	.30	.13	.24	.14	.27	.95	.96	--									
14. Sales Time 4	1.85	0.31	.06	.13	.02	.09	.21	.26	.06	.18	.16	.18	.92	.93	.93	--								
15. Sales Time 5	1.91	0.30	.06	.19	.00	.09	.20	.28	.10	.16	.17	.21	.93	.94	.93	.98	--							
16. Sales Time 6	1.95	0.29	.11	.21	.01	.10	.21	.26	.11	.20	.17	.27	.91	.92	.92	.96	.98	--						
17. Department Size	12.69	6.10	-.10	.03	-.08	-.05	-.08	-.04	.05	-.10	-.15	-.14	.27	.27	.22	.20	.22	.18	--					
18. Unemployment Time 1	3.75	0.75	.01	.19	.07	.20	.01	-.06	-.08	-.17	-.05	-.22	-.07	-.08	-.13	-.02	.00	.00	.00	--				
19. Unemployment Time 2	4.51	0.77	.05	.17	.10	.21	.01	-.08	-.04	-.18	.03	-.23	-.10	-.11	-.17	-.08	-.07	-.08	.02	.86	--			
20. Unemployment Time 3	5.54	0.83	.08	.16	.07	.16	.00	-.06	-.01	-.19	.06	-.21	-.07	-.09	-.15	-.03	-.03	-.04	-.02	.76	.94	--		
21. Unemployment Time 4	5.69	0.81	.03	.03	.00	.02	-.05	-.06	-.02	-.16	.07	-.22	-.13	-.14	-.20	-.10	-.10	-.13	-.02	.60	.82	.91	--	
22. Unemployment Time 5	5.30	0.75	-.03	-.06	-.07	.01	-.01	-.03	-.03	-.14	.04	-.16	-.08	-.09	-.12	-.05	-.06	-.09	.02	.55	.70	.74	.91	--
23. Unemployment Time 6	4.93	0.94	-.09	-.13	-.05	.00	-.06	-.11	-.08	-.09	.03	-.02	-.05	-.05	-.04	-.04	-.06	-.11	.08	.34	.41	.40	.59	.74

Note. Correlations in bold are significant at $p < .05$. Correlations in bold-italics are significant at $p < .01$.

Table 5: Descriptive Statistics and Intercorrelations - Service Departments

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Climate Time 1	3.41	0.26	(.98)															
2. Climate Time 3	3.44	0.28	.49	(.98)														
3. Climate Time 4	3.50	0.30	.45	.48	(.98)													
4. Climate Time 6	3.54	0.33	.39	.52	.40	(.98)												
5. Service Satisfaction Time 1	3.49	0.16	.16	.03	.11	.04	—											
6. Service Satisfaction Time 2	3.49	0.14	.23	.13	.16	.13	.72	—										
7. Service Satisfaction Time 3	3.50	0.15	.27	.21	.31	.16	.56	.60	—									
8. Service Satisfaction Time 4	3.55	0.13	.31	.39	.39	.26	.37	.49	.68	—								
9. Service Satisfaction Time 5	3.60	0.12	.19	.30	.41	.28	.36	.28	.45	.67	—							
10. Service Satisfaction Time 6	3.61	0.13	.17	.27	.25	.13	.25	.23	.40	.58	.62	—						
11. Department Size	31.48	13.93	.04	.09	.03	.17	-.10	-.06	.01	.02	-.01	-.08	—					
12. Unemployment Time 1	3.75	0.75	.08	.20	.08	.22	.02	.04	-.10	-.13	-.18	-.03	.00	—				
13. Unemployment Time 2	4.51	0.77	.06	.21	.00	.21	.08	.14	-.10	-.06	-.05	.05	-.06	.86	—			
14. Unemployment Time 3	5.54	0.83	.08	.23	-.01	.13	.07	.15	-.08	-.01	-.02	.04	-.07	.76	.94	—		
15. Unemployment Time 4	5.69	0.81	.03	.14	-.11	-.03	.02	.09	-.11	-.05	-.04	.03	-.10	.60	.82	.91	—	
16. Unemployment Time 5	5.30	0.75	.00	.08	-.14	-.02	-.05	.02	-.18	-.09	-.10	.02	-.09	.55	.70	.74	.91	—
17. Unemployment Time 6	4.93	0.94	.02	.06	.00	-.03	-.19	-.14	-.16	-.09	-.04	.04	-.05	.34	.41	.40	.59	.74

Note. Correlations in bold are significant at $p < .05$. Correlations in bold-italics are significant at $p < .01$.

2002). Therefore, this step was excluded from interpretation, but, for completeness, the results of the omnibus test (Model 0) are included, along with the results of the other models, in Table 6. Correlations among measurement errors of the same observed variables across all measurement occasions were included in the models because repeated measures of the same variable generally results in correlated measurement errors (Bollen, 1989; Kessler & Greenberg, 1981).

Examination of equivalence of factor patterns (i.e., configural invariance) with factor loadings freely estimated across both time and departments indicated that the model fit the data well (Model 1). The second set of measurement models assessed metric equivalence by constraining the factor loadings to be equal across departments (Model 2a), time (Model 2b), and both time and departments (Model 2c). Neither Models 2a,

$\chi^2_{diff} (12, N = 190) = 12.87, ns$, nor 2b, $\chi^2_{diff} (18, N = 190) = 18.11, ns$, fit the data

significantly worse than the configural model. Furthermore, Model 2c did not fit the data

significantly worse than 2a, $\chi^2_{diff} (9, N = 190) = 11.74, ns$, nor 2b, $\chi^2_{diff} (3, N = 190) =$

6.50, *ns*, indicating that the latent constructs are measured similarly across both

departments and time. Next, scalar invariance was examined by constraining intercept terms to be equal across departments (Model 3a) and time (Model 3b). The results of the scalar invariance analyses indicated a significant reduction in fit of the models to the data

across departments, $\chi^2_{diff} (16, N = 190) = 123.60, p < .01$. Similarly, the failure of

Model 3b to converge suggests that scalar invariance is not present across time in the responses to the climate survey across both departments and time and that no further tests of more restrictive forms of measurement invariance are justified.

Table 6: Summary of Fit Indices for Measurement Invariance Analyses

Model	Stage 1: Measurement Invariance					Comparison Model	Δ Chi-Square	Δ df
	SRMR	CFI	RMSEA	Chi-Square	df			
0 Omnibus Test	.06	.99	.04	157.57	120	--	--	--
1 Configural Invariance - Departments & Time	.02	.99	.06	232.62	148	--	--	--
2a Metric Invariance - Departments	.02	.99	.05	245.50	160	Model 1	12.87	12
2b Metric Invariance - Time	.02	.99	.05	250.73	166	Model 1	18.11	18
2c Metric Invariance - Departments & Time	.02	.98	.05	257.23	169	Model 2a	11.74	9
3a Scalar Invariance - Departments	.06	.97	.08	380.83	185	Model 2b	6.50	3
3b Scalar Invariance - Time*	--	--	--	--	193	Model 2c	123.60	16
						--	--	--

Note. Chi-square values in bold are significant at $p < .05$. Chi-square values in bold-italics are significant at $p < .01$.

*Failed to converge.

Although full measurement invariance was not supported, the existence of metric invariance provides sufficient justification for proceeding with the structural analyses of interest in the present study (Bollen, 1989; Cheung & Rensvold, 1998). Consequently, all subsequent analyses included longitudinal equality constraints on factor loadings.

Cross-lagged Panel Analyses

Customer satisfaction.

Service departments. Hypothesis 1a, proposing that climate perceptions would predict customer satisfaction over time more strongly than vice-versa, and Hypothesis 2, proposing a reciprocal relationship, were examined according the staged approach discussed above. Summaries of model fit and comparisons for all one-, two-, and three-year lag models are presented in Tables 7, 8, and 9, respectively.

The initial full cross-lagged reciprocal model for one-year lags (Model 1) did not satisfy all of the criteria for acceptable fit of the model to the data (i.e., SRMR > .08). However, an alternative model (Model 1a) including wave-skipping autoregressive lags (e.g., Time 1 to Time 3, Time 2 to Time 4, etc.) did result in acceptable fit, and fit significantly better than the initial model without the wave-skipping autoregressive lags,

$\chi^2_{diff} (6, N = 95) = 38.29, p < .01$. As would be expected, a similar pattern of results was

observed for both the two-, $\chi^2_{diff} (6, N = 95) = 39.10, p < .01$, and three-year lag

models, $\chi^2_{diff} (6, N = 95) = 38.86, p < .01$. Therefore, Model 1a was retained as the

comparison model for subsequent stages of analyses for each of the different lag periods.

The results for the one-year lag models diverged from the two- and three-year lag models

Table 7: Summary of Fit Indices for Service Department Climate and Customer Satisfaction One-Year Cross-Lagged Models

Model	SRMR	CFI	RMSEA	Chi-Square	df	Comparison Model	Δ Chi-Square	Δ df
Stage 2: Evaluate Full Cross-Lagged Model								
1 Full Cross-lag	.12	.98	.07	256.79	182	Model 1a	38.29	6
Full Cross-lag With Wave-Skipping Autoregressive	.04	.99	.05	218.50	176	--	--	--
1a Lags								
Stage 3: Compare Competing Models								
2 Cross-lagged - Climate -> Customer Sat. Only	.05	.99	.05	222.73	179	Model 1a	4.23	3
3 Cross-lagged - Customer Sat. -> Climate Only	.09	.98	.06	238.04	179	Model 1a	19.54	3
4 Autoregressive Null (no cross-lags)	.11	.98	.06	242.60	182	Model 2	19.87	3
Stage 4: Test Consistency of Model Across Time								
5 Equal Autoregressive Lags	.07	.99	.05	238.14	188	Model 2	15.41	9
6 Equal Cross-lags (within construct)	.08	.99	.06	239.38	190	Model 5	1.23	2

NOTE: Chi-square values in bold are significant at $p < .05$. Chi-square values in bold-italics are significant at $p < .01$.

Table 8: Summary of Fit Indices for Service Department Climate and Customer Satisfaction Two-Year Cross-Lagged Models

Model	SRMR	CFI	RMSEA	Chi-Square	df	Comparison	Model	Square	Δ Chi-Square	Δ df
Stage 2: Evaluate Full Cross-Lagged Model										
1 Full Cross-lag	.15	.97	.08	277.54	182	Model 1a	Model 1a	39.10		6
1a Full Cross-lag With Wave-Skipping Autoregressive Lags	.09	.98	.06	238.44	176	--	--	--		--
Stage 3: Compare Competing Models										
2 Cross-lagged - Climate -> Customer Sat. Only	.09	.98	.06	239.08	179	Model 1a	Model 1a	0.64		3
3 Cross-lagged - Customer Sat. -> Climate Only	.11	.98	.06	241.98	179	Model 1a	Model 1a	3.54		3
4 Autoregressive Null (no cross-lags)	.11	.98	.06	242.60	182	Model 2	Model 2	3.52		3
						Model 3	Model 3	0.62		3
Stage 4: Test Consistency of Model Across Time										
5 Equal Autoregressive Lags	.12	.98	.06	256.18	191	Model 4	Model 4	13.58		9
6 Equal Cross-lags (within construct)	Not Applicable									

NOTE: Chi-square values in bold are significant at $p < .05$. Chi-square values in bold-italics are significant at $p < .01$.

Table 9: Summary of Fit Indices for Service Department Climate and Customer Satisfaction Three-Year Cross-Lagged Models

Model	Stage 2: Evaluate Full Cross-Lagged Model				Chi-Square		Comparison Model		Δ Chi-Square	Δ df
	SRMR	CFI	RMSEA	Model	df	Model	df	Model		
1 Full Cross-lag	.15	.97	.07	277.65	184	Model 1a	178	38.86	6	
1a Full Cross-lag With Wave-Skipping Autoregressive Lags	.09	.98	.06	238.79	178					
Stage 3: Compare Competing Models										
2 Cross-lagged - Climate -> Customer Sat. Only	.09	.98	.06	239.38	180	Model 1a	180	0.59	2	
3 Cross-lagged - Customer Sat. -> Climate Only	.11	.98	.06	241.95	180	Model 1a	180	3.16	2	
4 Autoregressive Null (no cross-lags)	.11	.98	.06	242.60	182	Model 1a	182	3.81	4	
Stage 4: Test Consistency of Model Across Time										
5 Equal Autoregressive Lags	.12	.98	.06	256.18	191	Model 4	191	13.58	9	
6 Equal Cross-lags (within construct)	Not Applicable									

NOTE: Chi-square values in bold are significant at $p < .05$. Chi-square values in bold-italics are significant at $p < .01$.

for subsequent stages of analyses, so the results of all one-year lag models will be discussed next followed by a discussion of the two- and three-year lag models.

Models 2, 3, and 4 compared the full cross-lagged models from Stage 2 analyses to the alternative, more parsimonious Stage 3 models. Model 2, which constrained the one-year cross-lagged effects of customer satisfaction on climate to be zero, fit the data

well and did not fit significantly worse than Model 1a, $\chi^2_{diff} (3, N = 95) = 4.23, ns$.

Model 3, which constrained the one-year cross-lagged effects of climate on customer satisfaction to be zero, did not provide acceptable fit, and fit the data significantly worse

than Model 1a, $\chi^2_{diff} (3, N = 95) = 19.54, p < .01$. Similarly, Model 4, an autoregressive

null model with no cross-lagged effects, did not result in acceptable fit. Additionally, the

autoregressive null model fit the data significantly worse than Model 2, $\chi^2_{diff} (3, N = 95)$

$= 19.87, p < .01$. These results indicate that, for service departments, there is a direct effect of climate on subsequent customer satisfaction for one-year lags, but there is no direct, reciprocal, effect of customer satisfaction on subsequent climate.

Analyses were conducted next to examine the consistency of the one-year lag model across time (Stage 4). Model 5, which constrained the autoregressive lags to be equal over corresponding time periods, provided acceptable fit to the data, and did not fit

the data significantly worse than Model 2, $\chi^2_{diff} (9, N = 95) = 15.41, ns$. Imposing

additional constraints of equal cross-lags across the different time periods (Model 6) also

provided acceptable fit and did not fit the data significantly worse than Model 5, χ^2_{diff}

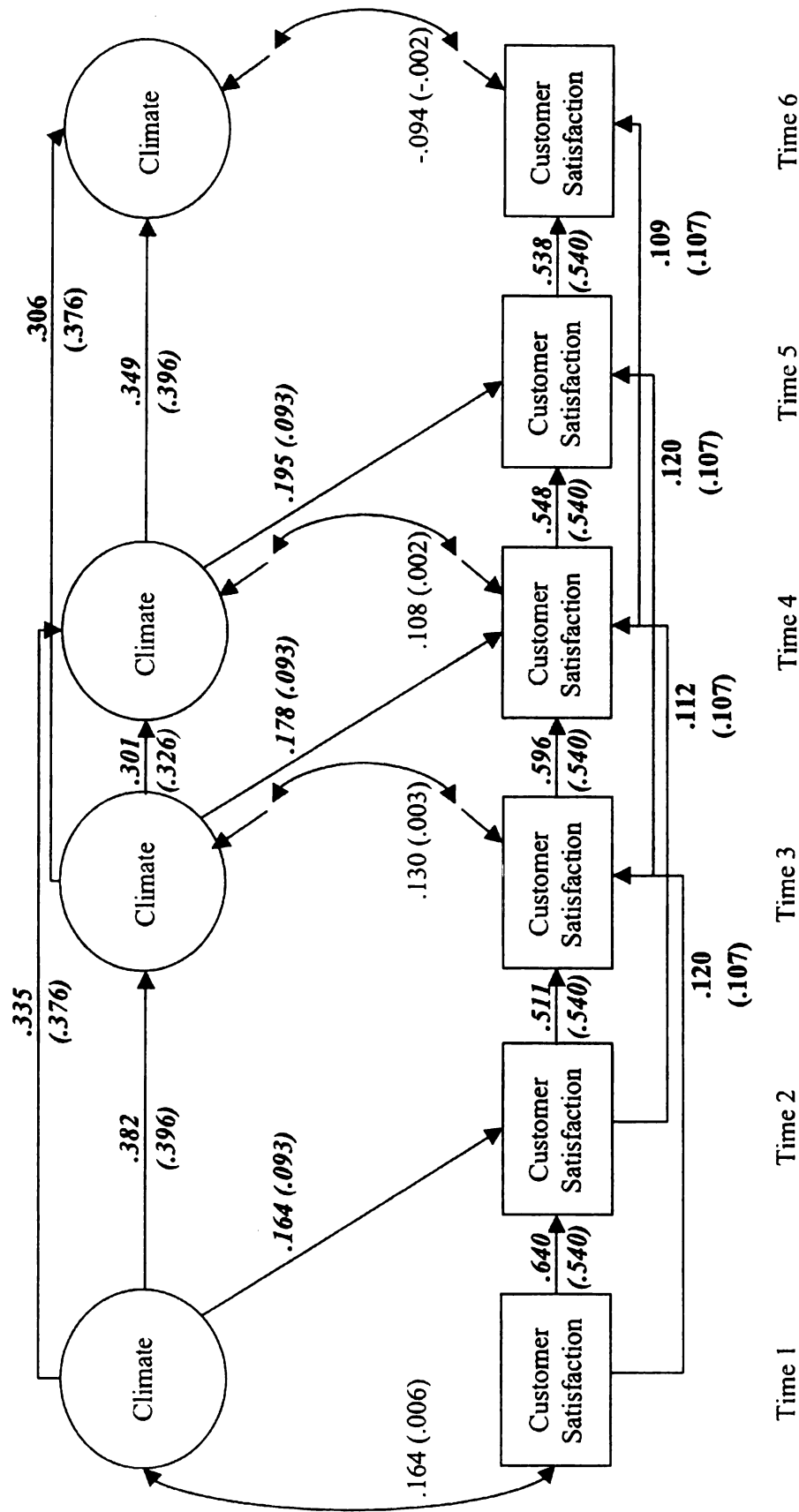
$(2, N = 95) = 1.23, ns$. This indicates that the influence of climate on customer

satisfaction is stable across the one-year lags. Model 6, including both equal autoregressive and equal cross-lags, was retained as the final one-year lag model for service departments.

Examination of two- and three-year lag models indicated that no cross-lagged effects existed at these longer lag periods. For both sets of models, the autoregressive null model (Model 4) did not fit the data significantly worse than models containing cross-lagged effects. Furthermore, none of the models for two- and three-year lags met all of the criteria for acceptable model fit. Thus, one-year lags appear to be the optimal time lag available in the current study for examination of the longitudinal effects of climate and customer satisfaction in service departments.

Overall, the one-year lag model with equal cross-lagged effects from climate to customer satisfaction and equal autoregressive lags (Model 6) provided the best fit to the data for service departments. Final parameter estimates for this model are provided in Figure 2. The cross-lagged paths from climate to customer satisfaction were stable over time and significant—standardized estimates ranged from .16 to .20 (note that the coefficients were constrained to be equal in the unstandardized solution, but standardization leads to slightly different estimates). There was no evidence of reciprocal relationships from customer satisfaction to climate. Therefore, for service departments, the results support the hypothesis that climate has causal priority over customer satisfaction (Hypothesis 1a), but fail to support the hypothesis of reciprocal relationships over time (Hypothesis 2).

Figure 2: Final Model for Service Department Climate and Customer Satisfaction



NOTE: Standardized path coefficients are shown with unstandardized estimates in parentheses. Values in bold are significant at $p < .05$. Values in bold-italics are significant at $p < .01$. For clarity, measurement model and disturbance parameters have been omitted from the figure.

Sales departments. The same staged approach was used to examine Hypotheses 1a and 2 for sales departments. Tables 10, 11, and 12, respectively, contain summaries of model fit and comparisons for the one-, two-, and three-year lag models. Similar to the results for the service departments, the addition of wave-skipping autoregressive lags (Model 1a) resulted in significantly increased model fit for all three sets of models. Also similar to the service department models, the remaining models for the different lags diverged. However, for sales departments, it was the results of the subsequent *two*-year lag models that diverged while the results of the *one*- and *three*-year lag models were similar. Therefore, the results of the two-year lag sales department models will be considered next followed by a discussion of the one- and three-year lag models.

The results for the two-year lag sales department models for climate and customer satisfaction followed a similar pattern to the results of the one-year lag models for service departments. Model 2, estimating only the cross-lagged effects of climate on customer satisfaction, fit the data well, did not fit significantly worse than the full cross-lagged Model 1a, $\chi^2_{diff}(3, N = 95) = 1.72, ns$, and fit the data significantly better than the autoregressive null model (Model 4), $\chi^2_{diff}(3, N = 95) = 10.08, p < .05$. Model 3, which estimated only the cross-lagged effects of customer satisfaction on climate, fit the data significantly worse than Model 1a, $\chi^2_{diff}(3, N = 95) = 10.08, p < .05$. Thus, Model 2 was retained as the best fitting model at this stage of analyses.

Table 10: Summary of Fit Indices for Sales Department Climate and Customer Satisfaction One-Year Cross-Lagged Models

	SRMR	CFI	RMSEA	Chi-Square	df	Comparison Model	Δ Chi-Square	Δ df
Stage 2: Evaluate Full Cross-Lagged Model								
1 Full Cross-lag	.13	.97	.07	267.24	182	Model 1a	40.72	6
1a Full Cross-lag With Wave-Skipping Autoregressive Lags	.07	.98	.06	226.52	176	--	--	--
Stage 3: Compare Competing Models								
2 Cross-lagged - Climate -> Customer Sat. Only	.09	.98	.06	233.23	179	Model 1a	6.71	3
3 Cross-lagged - Customer Sat. -> Climate Only	.07	.98	.05	227.64	179	Model 1a	1.12	3
4 Autoregressive Null (no cross-lags)	.09	.98	.06	234.53	182	Model 1a	8.01	6
Stage 4: Test Consistency of Model Across Time								
5 Equal Autoregressive Lags	.10	.97	.06	264.70	191	Model 4	30.17	9
6 Equal Cross-lags (within construct)	Not Applicable							

NOTE: Chi-square values in bold are significant at $p < .05$. Chi-square values in bold-italics are significant at $p < .01$.

Table 11: Summary of Fit Indices for Sales Department Climate and Customer Satisfaction Two-Year Cross-Lagged Models

	SRMR	CFI	RMSEA	Chi-Square	df	Comparison Model	Chi-Square	Δ	df
Stage 2: Evaluate Full Cross-Lagged Model									
1 Full Cross-lag	.12	.97	.07	257.67	182	Model 1a	34.94		6
1a Full Cross-lag With Wave-Skipping Autoregressive Lags	.06	.98	.05	222.73	176	--	--		--
Stage 3: Compare Competing Models									
2 Cross-lagged - Climate -> Customer Sat. Only	.06	.98	.05	224.45	179	Model 1a	1.72		3
3 Cross-lagged - Customer Sat. -> Climate Only	.08	.98	.06	232.81	179	Model 1a	10.08		3
4 Autoregressive Null (no cross-lags)	.09	.98	.06	234.53	182	Model 2	10.08		3
Stage 4: Test Consistency of Model Across Time									
5 Equal Autoregressive Lags	.09	.98	.06	256.66	188	Model 2	32.21		9
6 Equal Cross-lags (within construct)	.06	.98	.05	225.09	181	Model 2	0.64		2

NOTE: Chi-square values in bold are significant at $p < .05$. Chi-square values in bold-italics are significant at $p < .01$.

Table 12: Summary of Fit Indices for Sales Department Climate and Customer Satisfaction Three-Year Cross-Lagged Models

	SRMR	CFI	RMSEA	Chi-Square	df	Comparison Model	Δ Chi-Square	Δ df
Stage 2: Evaluate Full Cross-Lagged Model								
1 Full Cross-lag	.13	.97	.07	272.89	184	Model 1a	42.95	6
Full Cross-lag With Wave-Skipping Autoregressive	.08	.98	.06	229.94	178	--	--	--
1a Lags								
Stage 3: Compare Competing Models								
2 Cross-lagged - Climate -> Customer Sat. Only	.08	.98	.06	230.94	180	Model 1a	1.00	2
3 Cross-lagged - Customer Sat. -> Climate Only	.09	.98	.06	233.55	180	Model 1a	3.61	2
4 Autoregressive Null (no cross-lags)	.09	.98	.06	234.53	182	Model 1a	4.58	4
Stage 4: Test Consistency of Model Across Time								
5 Equal Autoregressive Lags	.10	.97	.06	264.70	191	Model 4	30.17	9
6 Equal Cross-lags (within construct)	Not Applicable							

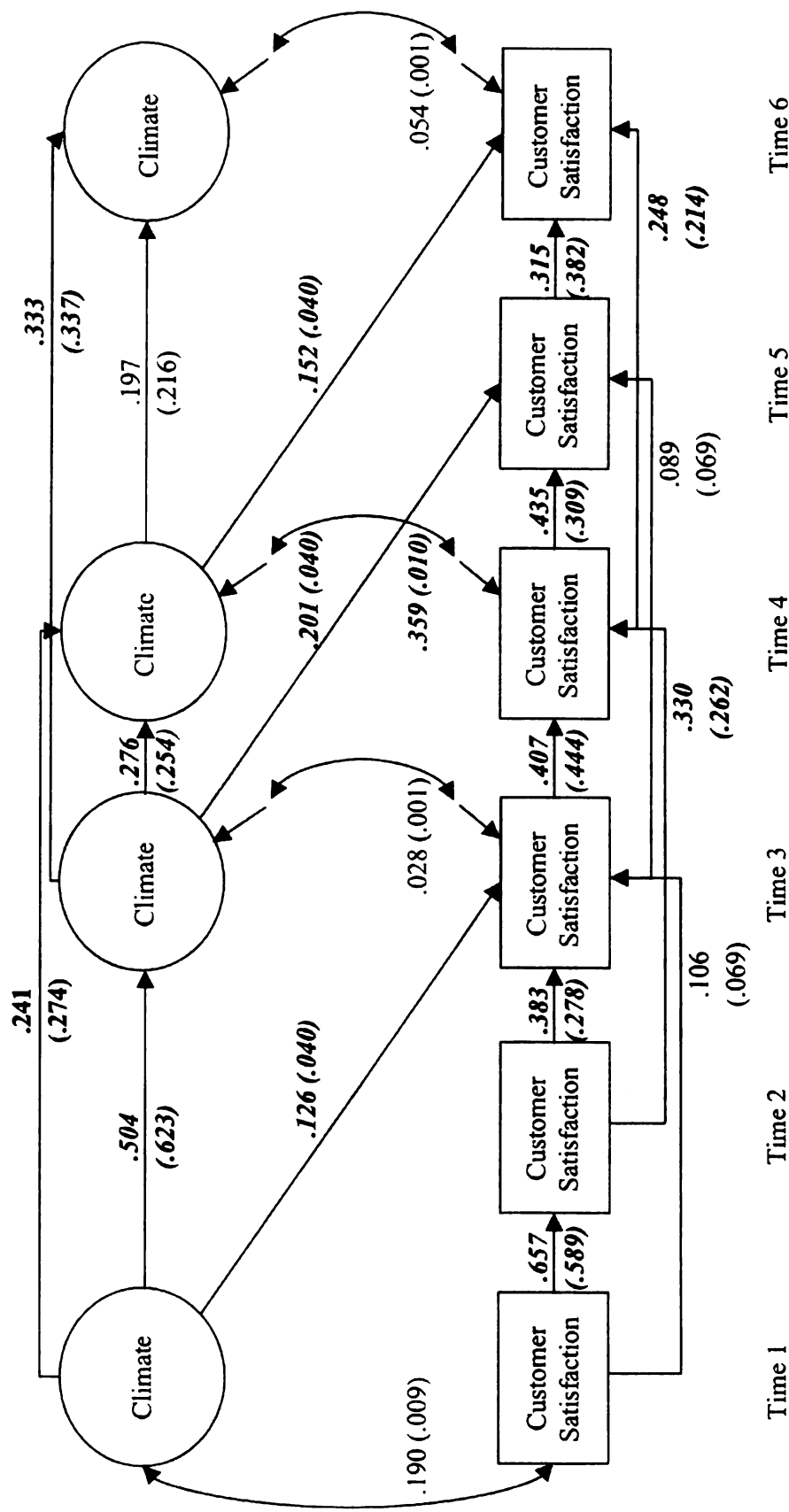
NOTE: Chi-square values in bold are significant at $p < .05$. Chi-square values in bold-italics are significant at $p < .01$.

Examination of the consistency of the two-year lag model across time (Stage 4), revealed that, in contrast to the results for service departments, the autoregressive lags within construct were not stable over time as Model 5 fit the data significantly worse than Model 2, $\chi^2_{diff} (9, N = 95) = 32.21, p < .01$. However, comparison of Model 6 to Model 2, demonstrated that the cross-lagged effects of climate on customer satisfaction were stable over time, $\chi^2_{diff} (2, N = 95) = .64, ns$. These results indicate that, for sales departments, there is a stable direct effect of climate on subsequent customer satisfaction for two-year lags, but there is no direct, reciprocal, effect of customer satisfaction on subsequent climate.

Examination of one- and three-year lag sales department models indicated that no cross-lagged effects existed at these lag periods. For both sets of models, the autoregressive null model (Model 4) did not fit the data significantly worse than models containing cross-lagged effects. Furthermore, the models for one- and three-year lags generally failed to meet all of the criteria for acceptable model fit. In contrast to the results observed for service departments, the two-year lag period appears to be the optimal time lag available in the current study for examination of the longitudinal effects of climate and customer satisfaction in sales departments.

Overall, for sales departments, the two-year lag model with equal cross-lagged effects from climate to customer satisfaction (Model 6) provided the best fit to the data. Final parameter estimates for this model are provided in Figure 3. The cross-lagged paths from climate to customer satisfaction were stable over time and significant—standardized

Figure 3: Final Model for Sales Department Climate and Customer Satisfaction



NOTE: Standardized path coefficients are shown with unstandardized estimates in parentheses. Values in bold are significant at $p < .05$. Values in bold-italics are significant at $p < .01$. For clarity, measurement model and disturbance parameters have been omitted from the figure.

estimates ranged from .13 to .20 (note that the coefficients were constrained to be equal in the unstandardized solution, but standardization leads to slightly different estimates). There was no evidence of reciprocal relationships from customer satisfaction to climate. Therefore, for sales departments, the results support the hypothesis that climate has causal priority over customer satisfaction (Hypothesis 1a), but fail to support the hypothesis of reciprocal relationships over time (Hypothesis 2).

Summary. The results for both service and sales departments were similar in indicating that climate perceptions impact subsequent customer satisfaction but customer satisfaction does not impact subsequent climate perceptions, and, therefore, climate has causal priority over customer satisfaction. Additionally, for each department, the magnitudes of the longitudinal cross-lagged effects were equal over time indicating that changes in climate perceptions have a stable impact on subsequent customer satisfaction. However, despite the consistency of the effect within each department, results suggest that the causal process unfolds more rapidly in the service departments than in the sales departments.

Vehicle sales. Hypothesis 1b proposed that climate perceptions would predict vehicle sales over time more strongly than vice-versa. The same staged analytic process described above in the context of customer satisfaction was used to investigate this hypothesis. Department size was related to the number of vehicle sales and, therefore, was used as a control variable in all analyses. Across all three sets of models, the Stage 2 models with wave-skipping autoregressive lags (Model 1a) again provided significantly better fit than the models without these additional autoregressive lags (Model 1). Similar to the results of the sales department models examining climate and customer

satisfaction, the results of the two-year lag model diverged from the similar results of the one- and three-year lag models, and will be discussed first. Summaries of model fit and comparisons for all one-, two-, and three-year lag models are presented in Tables 13, 14, and 15, respectively.

The results for the two-year lag sales department models for climate and vehicle sales followed the same pattern as the results of the two-year lag models for customer satisfaction. Model 2, with cross-lagged effects from climate to vehicle sales, fit the data well, did not fit the data significantly worse than the full cross-lagged model (Model 1a),

$\chi^2_{diff} (3, N = 95) = 2.92, ns$, and fit the data significantly better than the autoregressive

null model (Model 4), $\chi^2_{diff} (3, N = 95) = 8.10, p < .05$. Alternative Model 3, with only cross-lagged effects from vehicle sales to climate, fit the data significantly worse than

Model 1a, $\chi^2_{diff} (3, N = 95) = 8.10, p < .05$. Therefore, consistent with the sales

department results for the two-year lag model of climate and customer satisfaction,

Model 2 was the best fitting model.

Similar results to sales department analyses with customer satisfaction were also obtained for the consistency of the two-year lag model over time: Model 5 (equal

autoregressive lags) fit the data worse than Model 2, $\chi^2_{diff} (9, N = 95) = 37.19, p < .01$,

and Model 6 (equal cross-lagged effects) did not, $\chi^2_{diff} (3, N = 95) = 1.72, ns$. These

results indicate that there is a stable direct effect of climate on subsequent vehicle sales

for two-year lags, but there is no reciprocal effect of vehicle sales on subsequent climate.

Table 13: Summary of Fit Indices for Sales Department Climate and Vehicle Sales One-Year Cross-Lagged Models									
	SRMR	CFI	RMSEA	Chi-Square	df	Comparison Model	Chi-Square	Δ	df
Stage 2: Evaluate Full Cross-Lagged Model									
1 Full Cross-lag	.09	.96	.09	348.83	197	Model 1a	50.33		6
Full Cross-lag With Wave-Skipping Autoregressive	.04	.97	.08	298.51	191	--	--		--
1a Lags									
Stage 3: Compare Competing Models									
2 Cross-lagged - Climate -> Vehicle Sales Only	.06	.97	.08	300.68	194	Model 1a	2.18		3
3 Cross-lagged - Vehicle Sales -> Climate Only	.04	.97	.08	299.47	194	Model 1a	0.96		3
4 Autoregressive Null (no cross-lags)	.06	.97	.08	301.65	197	Model 1a	3.14		6
Stage 4: Test Consistency of Model Across Time									
5 Equal Autoregressive Lags	.07	.97	.08	338.10	206	Model 4	36.45		9
6 Equal Cross-lags (within construct)	Not Applicable								
NOTE: Chi-square values in bold are significant at p<.05. Chi-square values in bold-italics are significant at p<.01.									

Table 14: Summary of Fit Indices for Sales Department Climate and Vehicle Sales Two-Year Cross-Lagged Models									
	SRMR	CFI	RMSEA	Chi-Square	df	Comparison Model	Chi-Square	Δ	df
Stage 2: Evaluate Full Cross-Lagged Model									
1 Full Cross-lag	.09	.96	.09	340.40	197	Model 1a	49.77	--	6
Full Cross-lag With Wave-Skipping Autoregressive	.04	.98	.07	290.63	191	--	--	--	--
1a Lags									
Stage 3: Compare Competing Models									
2 Cross-lagged - Climate -> Vehicle Sales Only	.05	.98	.07	293.55	194	Model 1a	2.92		3
3 Cross-lagged - Vehicle Sales -> Climate Only	.04	.97	.08	298.73	194	Model 1a	8.10		3
4 Autoregressive Null (no cross-lags)	.06	.97	.08	301.65	197	Model 2	8.10		3
Stage 4: Test Consistency of Model Across Time									
5 Equal Autoregressive Lags	.07	.97	.08	330.73	203	Model 2	37.19		9
6 Equal Cross-lags (within construct)	.06	.98	.07	296.41	196	Model 2	2.86		2
NOTE: Chi-square values in bold are significant at $p < .05$. Chi-square values in bold-italics are significant at $p < .01$.									

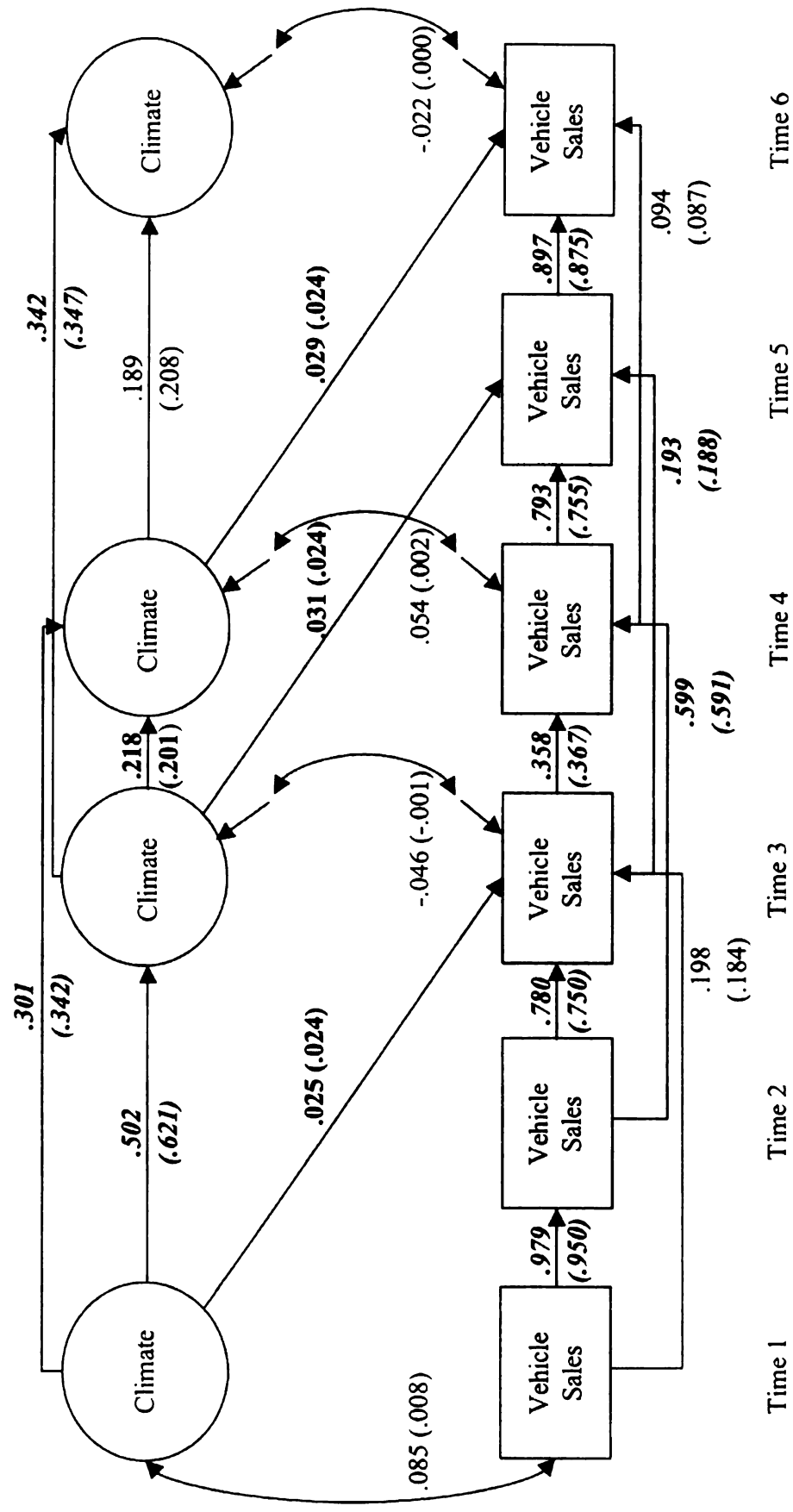
Table 15: Summary of Fit Indices for Sales Department Climate and Vehicle Sales Three-Year Cross-Lagged Models							
	SRMR	CFI	RMSEA	Chi-Square	df	Comparison Model	Δ Chi-Square Δ df
Stage 2: Evaluate Full Cross-Lagged Model							
1 Full Cross-lag	.10	.96	.09	350.69	199	Model 1a	51.06 6
1a Full Cross-lag With Wave-Skipping Autoregressive Lags	.06	.97	.08	299.63	193	--	-- --
Stage 3: Compare Competing Models							
2 Cross-lagged - Climate -> Vehicle Sales Only	.06	.97	.08	299.92	195	Model 1a	0.29 2
3 Cross-lagged - Vehicle Sales -> Climate Only	.06	.97	.08	301.35	195	Model 1a	1.72 2
4 Autoregressive Null (no cross-lags)	.06	.97	.08	301.65	197	Model 1a	2.02 4
Stage 4: Test Consistency of Model Across Time							
5 Equal Autoregressive Lags	.07	.97	.08	338.10	206	Model 4	36.45 9
6 Equal Cross-lags (within construct)	Not Applicable						
NOTE: Chi-square values in bold are significant at p<.05. Chi-square values in bold-italics are significant at p<.01.							

Examination of one- and three-year lag models of climate and vehicle sales indicated that no cross-lagged effects existed at these lag periods. For both sets of models, the autoregressive null model (Model 4) did not fit the data significantly worse than models containing cross-lagged effects. These results are consistent with the results of the sales department models for climate and customer satisfaction, and provide additional evidence that the climate to organizational outcomes causal process takes approximately two years to unfold for sales departments.

The two-year lag model with equal cross-lagged effects from climate to sales (Model 6) provided the best fit to the data. Final parameter estimates for this model are provided in Figure 4. The cross-lagged paths from climate to vehicle sales were small, but stable over time and significant—standardized estimates were approximately .03 (note that the coefficients were constrained to be equal in the unstandardized solution, but standardization leads to slightly different estimates). There was no evidence of reciprocal relationships from vehicle sales to climate. The results provide only tentative support for the hypothesis that climate has causal priority over vehicle sales (Hypothesis 1b), due to the small effect size.

Customer satisfaction and vehicle sales. Hypothesis 3 proposed that customer satisfaction would partially mediate the relationship between climate perceptions and vehicle sales. The sales department models described above were used to inform the construction of the mediation models estimated to examine this hypothesis. That is, the previous results indicated that the mediation models did not require the inclusion of cross-lagged effects of customer satisfaction on climate and vehicle sales on climate.

Figure 4: Final Model for Sales Department Climate and Vehicle Sales



NOTE: Standardized path coefficients are shown with unstandardized estimates in parentheses. Values in bold are significant at p<.05. Values in bold-italics are significant at p<.01. For clarity, measurement model, disturbance, and control variable parameters have been omitted from the figure.

Prior results also indicated that it was unnecessary to examine one- or three-year cross-lagged effects of climate on customer satisfaction or vehicle sales. In order to further inform construction of the mediation models, an additional set of models examining the relationship between customer satisfaction and vehicle sales were also examined and are discussed next.

The same staged approach used to examine the bivariate relationships involving climate was used to examine the longitudinal relationships between customer satisfaction and vehicle sales. Summaries of model fit and comparisons for all one-, two-, and three-year lag models are presented in Tables 16, 17, and 18, respectively. For all three models, the inclusion of wave-skipping autoregressive lags (Model 1a) significantly improved model fit. Similar to both prior sets of sales department models, two-year lags appeared to be the optimal time period for longitudinal relationships to emerge between customer satisfaction and vehicle sales. For both the one- and three-year lag models, the autoregressive null model (Model 2) was the best fitting model, indicating no cross-lagged relationships were present at these lag periods, while for the two-year lag analyses Model 6, containing equal cross-lagged effects of customer satisfaction on vehicle sales and no reciprocal effects, provided the best fit to the data.

Similar to the results for climate and vehicle sales, the cross-lagged effects of customer satisfaction on vehicle sales were small, but stable over time and significant—standardized estimates ranged from .02 to .04 (note that the coefficients were constrained to be equal in the unstandardized solution, but standardization leads to slightly different estimates). Final parameter estimates for Model 6 are provided in Figure 5. Therefore,

Table 16: Summary of Fit Indices for Sales Department Customer Satisfaction and Vehicle Sales One-Year Cross-Lagged Models

	SRMR	CFI	RMSEA	Chi-Square	df	Comparison Model	Δ Chi-Square	Δ df
Stage 2: Evaluate Full Cross-Lagged Model								
1 Full Cross-lag	.07	.94	.15	135.89	45	Model 1a	52.90	8
1a Full Cross-lag With Wave-Skipping Autoregressive Lags	.05	.97	.12	82.99	37	--	--	--
Stage 3: Compare Competing Models								
2 Cross-lagged - Customer Sat. -> Vehicle Sales Only	.10	.97	.11	92.73	42	Model 1a	9.74	5
3 Cross-lagged - Vehicle Sales -> Customer Sat. Only	.05	.97	.11	87.06	42	Model 1a	4.07	5
4 Autoregressive Null (no cross-lags)	.09	.97	.11	96.80	47	Model 1a	13.81	10
Stage 4: Test Consistency of Model Across Time								
5 Equal Autoregressive Lags	.11	.95	.13	150.70	61	Model 4	53.90	14
6 Equal Cross-lags (within construct)	Not Applicable							

NOTE: Chi-square values in bold are significant at $p < .05$. Chi-square values in bold-italics are significant at $p < .01$.

Table 17: Summary of Fit Indices for Sales Department Customer Satisfaction and Vehicle Sales Two-Year Cross-Lagged Models

	SRMR	CFI	RMSEA	Chi-Square	df	Comparison Model	Δ Chi-Square	Δ df
Stage 2: Evaluate Full Cross-Lagged Model								
1 Full Cross-lag	.10	.94	.14	138.01	47	Model 1a	53.03	8
Full Cross-lag With Wave-Skipping Autoregressive	.07	.92	.11	84.98	39	--	--	--
1a Lags								
Stage 3: Compare Competing Models								
2 Cross-lagged - Customer Sat. -> Vehicle Sales Only	.08	.97	.10	86.46	43	Model 1a	1.48	4
3 Cross-lagged - Vehicle Sales -> Customer Sat. Only	.07	.97	.11	95.12	43	Model 1a	10.14	4
4 Autoregressive Null (no cross-lags)	.09	.97	.11	96.80	47	Model 2	10.34	4
Stage 4: Test Consistency of Model Across Time								
5 Equal Autoregressive Lags	.10	.95	.13	141.56	57	Model 2	55.10	14
6 Equal Cross-lags (within construct)	.08	.97	.10	91.27	46	Model 2	4.81	3

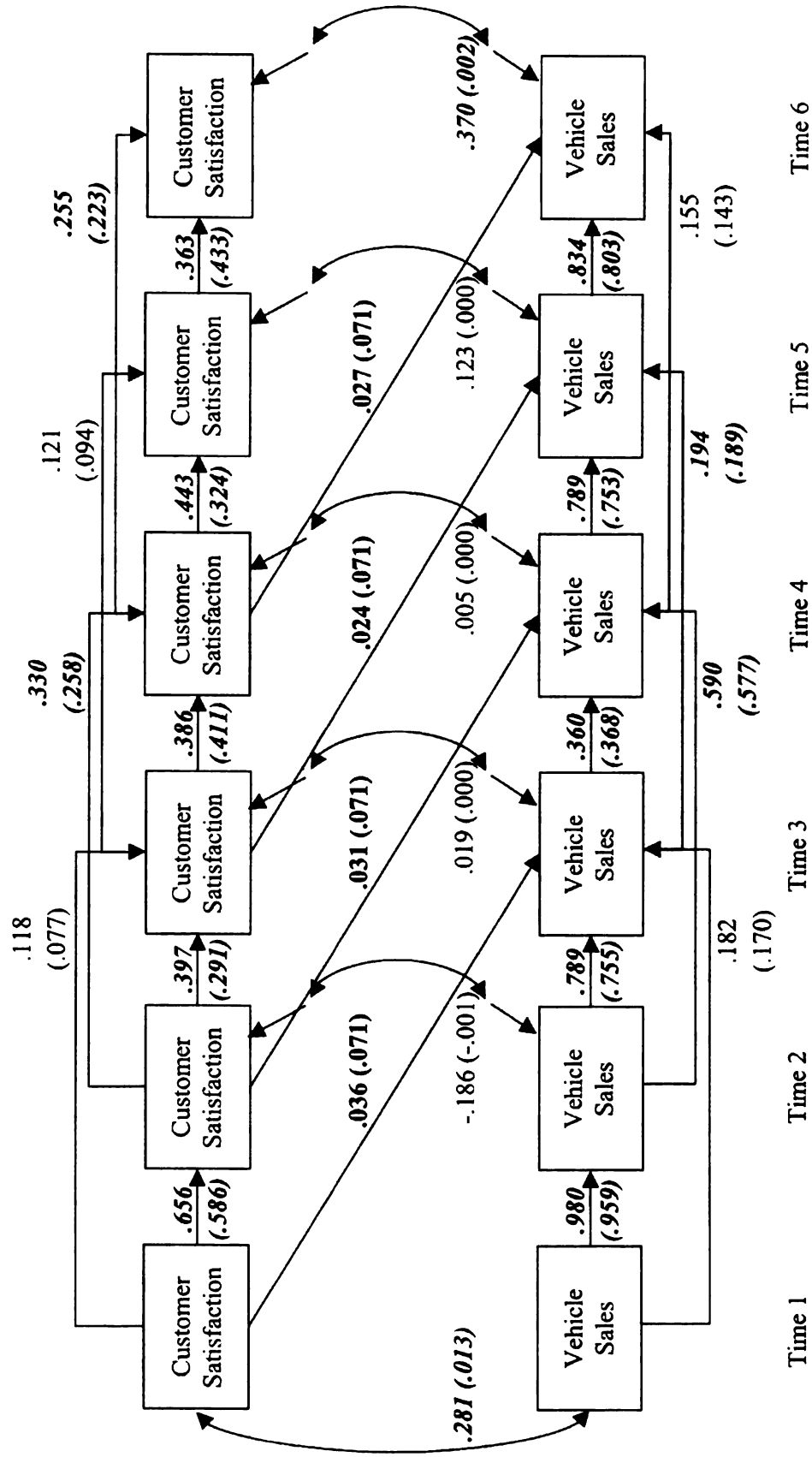
NOTE: Chi-square values in bold are significant at $p < .05$. Chi-square values in bold-italics are significant at $p < .01$.

Table 18: Summary of Fit Indices for Sales Department Customer Satisfaction and Vehicle Sales Three-Year Cross-Lagged Models

	SRMR	CFI	RMSEA	Chi-Square	df	Comparison Model	Δ Chi-Square	Δ df
Stage 2: Evaluate Full Cross-Lagged Model								
1 Full Cross-lag	.10	.95	.14	137.11	49	Model 1a	49.33	8
Full Cross-lag With Wave-Skipping Autoregressive	.07	.97	.11	87.79	41	--	--	--
1a Lags								
Stage 3: Compare Competing Models								
2 Cross-lagged - Customer Sat. -> Vehicle Sales Only	.09	.97	.11	92.52	44	Model 1a	4.73	3
3 Cross-lagged - Vehicle Sales -> Customer Sat. Only	.07	.97	.11	91.89	44	Model 1a	4.10	3
4 Autoregressive Null (no cross-lags)	.09	.97	.11	96.80	47	Model 1a	9.01	6
Stage 4: Test Consistency of Model Across Time								
5 Equal Autoregressive Lags	.11	.95	.13	150.70	61	Model 4	53.90	14
6 Equal Cross-lags (within construct)	Not Applicable							

NOTE: Chi-square values in bold are significant at $p < .05$. Chi-square values in bold-italics are significant at $p < .01$.

Figure 5: Final Model for Sales Department Customer Satisfaction and Vehicle Sales



consistent with the other sales department models, these results indicate that it is unnecessary to examine one- or three-year lag mediation models and it is unnecessary to estimate cross-lagged effects of vehicle sales on customer satisfaction.

The initial partial mediation model (Stage 2) contained two-year cross-lagged effects of climate on customer satisfaction, climate on vehicle sales, and customer satisfaction on vehicle sales. Consistent with all previous models, the inclusion of wave-skipping autoregressive lags (Model 1a) significantly improved model fit (see Table 19 for a summary of fit indices and model comparisons for all mediation models). The full mediation model (Model 2) fit the data well, did not fit the data significantly worse than

Model 1a, $\chi^2_{diff} (3, N = 95) = 6.68, ns$, and fit the data significantly better than the

autoregressive null model (Model 4), $\chi^2_{diff} (7, N = 95) = 19.56, p < .01$. Alternative

Model 3a, which constrained the cross-lagged effects of customer satisfaction on vehicle

sales to zero, fit the data significantly worse than Model 1a, $\chi^2_{diff} (7, N = 95) = 17.14, p$

$< .05$. Likewise, alternative Model 3b, which constrained the cross-lagged effects of

climate on customer satisfaction to zero, also fit the data significantly worse than Model

1a, $\chi^2_{diff} (6, N = 95) = 15.80, p < .05$. As expected on the basis of prior sales

department analyses, constraining corresponding autoregressive lags to be equal (Model

5) resulted in significantly worse model fit, $\chi^2_{diff} (16, N = 95) = 65.65, p < .01$, and

constraining cross-lagged effects to be equal (Model 6) did not, $\chi^2_{diff} (5, N = 95) = 5.47,$

ns. These results indicate that the longitudinal relationship between climate and vehicle sales is fully mediated by customer satisfaction.

The full mediation model with equal cross-lagged effects from climate to customer satisfaction and customer satisfaction to vehicle sales (Model 6) provided the best fit to the data. Final parameter estimates for this model are provided in Figure 6. The cross-lagged paths from climate to customer satisfaction were slightly smaller than those obtained in the bivariate climate-customer satisfaction model—standardized estimates ranged from .12 to .19 (compared to .13 to .20 for the bivariate model). The cross-lagged paths from customer satisfaction to sales were consistent with the results for the bivariate customer satisfaction-vehicle sales model—standardized estimates were approximately .03. The results do not support the partial mediation hypothesis (Hypothesis 3) as customer satisfaction fully mediated the relationship between climate and vehicle sales.

Additional Hypotheses & Research Question 3

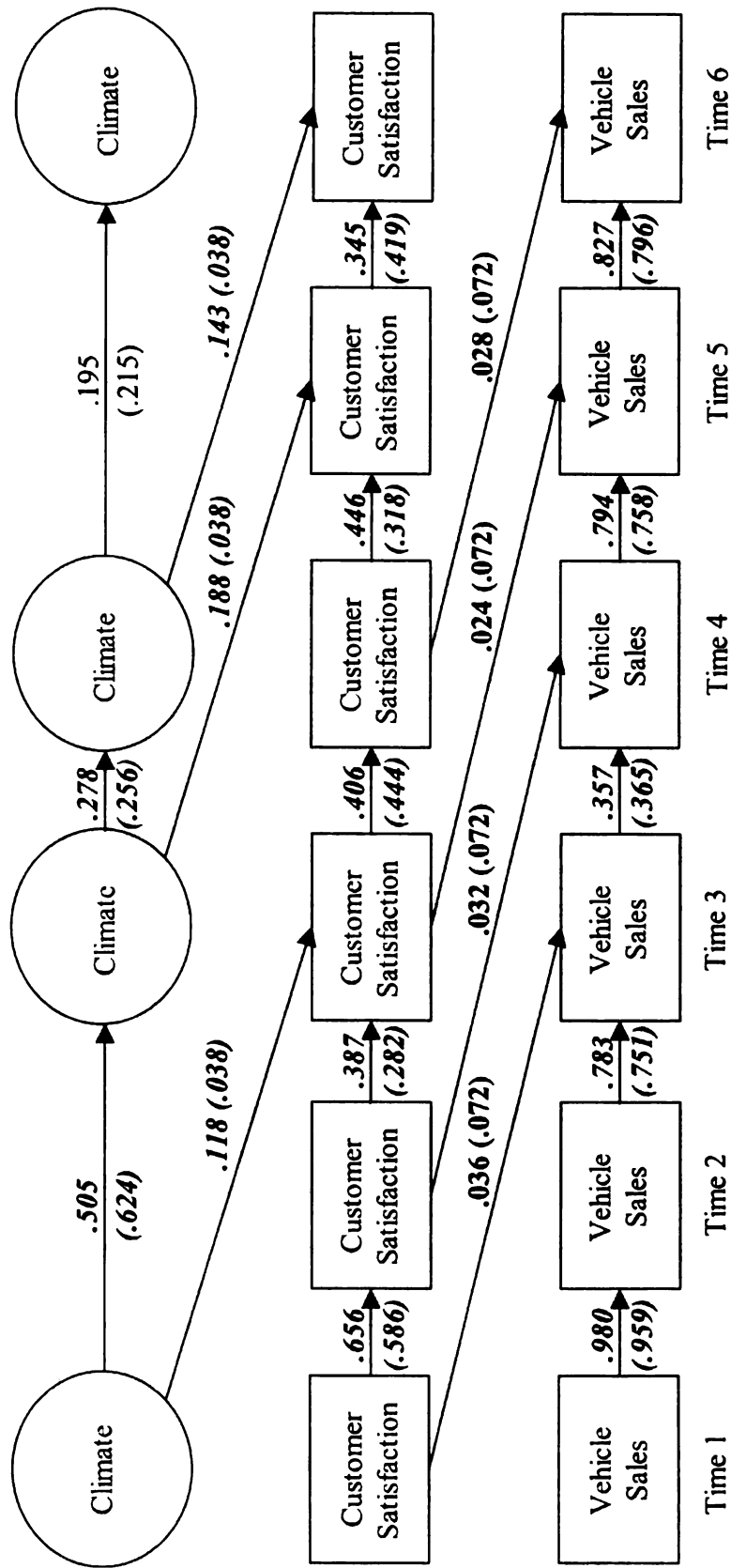
Hypothesis 4 states that climate perceptions will be more positive at the conclusion of the study than at the beginning. Dependent groups t-tests comparing perceptions at Time 1 and Time 6 separately for each department were significant ($t_{\text{Sales}} = -3.45$, $df = 94$, $p < .01$; $t_{\text{Service}} = -3.72$, $df = 94$, $p < .01$). Thus, Hypothesis 4 was supported. This indicates that the survey feedback and action planning process may have contributed to enhanced climate perceptions over time. However, it is important to note that other factors (e.g., concordant changes in staff or policy) may have also led to more positive perceptions over time.

Table 19: Summary of Fit Indices for Sales Department Climate, Customer Satisfaction, and Vehicle Sales Cross-Lagged Models

	SRMR	CFI	RMSEA	Chi-Square	df	Comparison Model	Δ Chi-Square	Δ df
Evaluate Full Cross-Lagged Model								
1 Partial Mediation	.10	.95	.08	536.15	330	Model 1a	71.51	10
1a Partial Mediation With Wave-Skipping Autoregressive Lags	.07	.97	.07	464.65	320	--	--	--
Compare Competing Models								
2 Full Mediation	.07	.97	.07	471.33	323	Model 1a	6.68	3
3a Climate -> Customer Sat. Only	.07	.96	.07	481.79	327	Model 2	10.47	4
3b Customer Sat. -> Vehicle Sales Only	.09	.96	.07	480.45	326	Model 2	9.12	3
4 Autoregressive Null (no cross-lags)	.09	.96	.07	490.89	330	Model 2	19.56	7
Test Consistency of Model Across Time								
5 Equal Autoregressive Lags	.09	.95	.08	536.98	339	Model 2	65.65	16
6 Equal Cross-lags (within construct)	.07	.97	.07	476.79	328	Model 2	5.47	5

NOTE: Chi-square values in bold are significant at $p < .05$. Chi-square values in bold-italics are significant at $p < .01$.

Figure 6: Final Mediation Model for Sales Department Climate, Customer Satisfaction, and Vehicle Sales



NOTE: Standardized path coefficients are shown with unstandardized estimates in parentheses. Values in bold are significant at $p < .05$. Values in bold-italics are significant at $p < .01$. For clarity, measurement model, disturbance, control variable, within-time disturbance covariation, and wave-skipping autoregressive lag parameters have been omitted from the figure.

Hypothesis 5 states that customer satisfaction for departments participating in the survey and accompanying feedback and action planning process would be greater at the conclusion of the study than non-participating departments. This hypothesis was examined using repeated-measures ANOVA with time as a within-subjects factor and participation in the climate survey as a between-subjects factor. Note that there were no significant differences between the participating and non-participating departments in customer satisfaction observed at Time 1 ($t_{\text{Sales}} = -.74$, $df = 137$, ns ; $t_{\text{Service}} = -.81$, $df = 94$, ns). Analyses demonstrated no interaction between participation and time ($F_{\text{Sales}}(1,133) = 1.86$, ns ; $F_{\text{Service}}(5,133) = 1.44$, ns), although the main effect of time was significant for both sets of departments ($F_{\text{Sales}}(1,133) = 15.49$, $p < .01$; $F_{\text{Service}}(5,133) = 15.75$, $p < .01$) indicating that customer satisfaction was increasing for both groups over time. Thus Hypothesis 5 was not supported, suggesting that factors other than participation in the survey process were responsible for increases in customer satisfaction during the study.

Research Question 3 examined the possible influence of local economic conditions (i.e., local unemployment rates) and organizational size on initial levels and changes in department-level climate perceptions over time. Longitudinal growth models were constructed with time nested within departments to examine these relationships separately for both sales and service departments. The results of these analyses are presented in Tables 20 and 21.

Initial null models, containing no predictors, and unconditional linear and quadratic growth trend models were constructed and compared prior to the substantive analyses. Initial null models indicated that 33.1% (sales departments) and 43.0% (service departments) of the total variance in climate perceptions were between departments. The linear trends were significant predictors of within-department changes in climate perceptions for both sales and service departments ($\beta = .063, p < .01$, and $\beta = .045, p < .01$, respectively). Comparison of the linear trends models and the null models indicated that the linear trends accounted for 16% (sales departments) and 12% (service departments) of the Level-1 within-department variance. The quadratic trends were not significant predictors ($\beta = .002, ns$, and $\beta = .000, ns$, for sales and service departments, respectively), and were excluded from subsequent analyses.

The unconditional linear growth models indicated that there was significant between-department variance in initial climate levels (i.e., intercepts) for both departments, but only sales departments had significant between-department variance in changes over time (i.e., slopes). For sales departments, the correlation between initial climate levels and changes over time was $-.571$, indicating that sales departments with lower initial climate levels tend to have greater increases in these perceptions over time than departments with higher initial levels. Conditional linear growth models, including unemployment as a Level-1 predictor, did not account for significant within-department variance for either sales or service departments ($\beta = .003, ns$, and $\beta = -.006, ns$, respectively).

Intercepts-as-outcomes and slopes-as-outcomes models were constructed to examine whether unemployment or department size predicted between-department

Table 20: Summary of Results for Longitudinal Growth Models for Sales Departments

DV: Climate	Sales Departments			
	Estimate	Level-1 Var.	Level-2 Intercept Var.	Level-2 Slope Var.
Null Model		.100	.050	--
<i>ICC(1)</i>	.331			
Unconditional Linear Growth Model		.084	.078	.006
Intercept	3.60			
Linear Trend	.063			
$R^2_{within-group}$		.16		
Unconditional Quadratic Growth Model		.085	.059	.002
Quadratic Trend	.002			
$R^2_{within-group}$		.00		
Conditional Linear Growth Model		.084	.078	.006
Level-1				
Unemployment	.003			
$R^2_{within-group}$		.00		
Intercepts-as-Outcomes Model		.084	.080	.006
Level-2				
Unemployment	.032			
Department Size	-.003			
$R^2_{between-group (intercept)}$			.00	
Slopes-as-Outcomes Model		.084	.082	.006
Level-2 - Slope				
Unemployment	.017			
Department Size	.000			
$R^2_{between-group (slope)}$				.00

NOTE: All R^2 estimates are computed in comparison to immediately preceding step; values in *italics* are marginally significant $p < .10$, values in **bold** are significant at $p < .05$, values in **bold-italics** are significant at $p < .01$.

¹ All Beta estimates are at entry.

² No significant level-2 variance to estimate.

³ No level-2 variance to predict.

Table 21: Summary of Results for Longitudinal Growth Models for Service Departments

DV: Climate	Service Departments			
	Estimate ¹	Level-1 Var.	Level-2 Intercept Var.	Level-2 Slope Var.
Null Model		.051	.038	--
ICC(1)	.430			
Unconditional Linear Growth Model		.045	.028	.001
Intercept	3.36			
Linear Trend	.045			
R^2 within-group		.12		
Unconditional Quadratic Growth Model		.044	.034	.000
Quadratic Trend	.000			
R^2 within-group		.02		
Conditional Linear Growth Model		.048	.039	
Level-1				
Unemployment	-.006			
R^2 within-group		.00		
Intercepts-as-Outcomes Model		.047	.039	-- ²
Level-2				
Unemployment	.044			
Department Size	.002			
R^2 between-group (intercept)			.00	
Slopes-as-Outcomes Model			--	-- ²
Level-2 - Slope				
Unemployment		-- ³		
Department Size		-- ³		
R^2 between-group (slope)				

NOTE: All R^2 estimates are computed in comparison to immediately preceding step; values in *italics* are marginally significant $p < .10$, values in **bold** are significant at $p < .05$, values in **bold-italics** are significant at $p < .01$.

¹ All Beta estimates are at entry.

² No significant level-2 variance to estimate.

³ No level-2 variance to predict.

differences in initial climate levels, for both sales and service departments, and changes in climate perceptions over time, for sales departments only. For both sales and service departments, neither unemployment ($\beta = .032$, *ns*, and $\beta = .044$, *ns*, respectively) nor department size ($\beta = -.003$, *ns*, and $\beta = .002$, *ns*, respectively) significantly predicted between-department differences in initial climate levels. Similarly, neither unemployment ($\beta = .017$, *ns*) nor department size ($\beta = .000$, *ns*) significantly accounted for the between-department differences in changes in climate perceptions over time observed for sales departments. Thus, while the analyses showed some between-department differences in initial climate levels and changes over time, none of these differences were explained by unemployment or department size.

Discussion

Consistent with much of the existing theory (e.g., Bowen & Ostroff, 2004; James & Jones, 1976; Kopelman et al., 1990; Ostroff et al., 2003) and research (e.g., Ryan et al., 1996; Schneider et al., 1993; Schneider et al., 2003), organizational climate and organizational performance, operationalized as customer satisfaction and sales quantity, were significantly related. Furthermore, by utilizing longitudinal data and cross-lagged panel analyses, it was demonstrated that organizational climate had causal priority over both types of performance indicators, and that, for sales departments, customer satisfaction fully-mediated the relationship between climate and sales. However, it should be noted that the size of effect for prediction of sales was quite small making causal claims tentative. The observed causal lag periods differed between the sales and service departments. Specifically, the results indicated that for service departments, organizational climate predicted customer satisfaction one year later, while for sales departments organizational climate predicted customer satisfaction and sales two years later.

Contrary to expectations, no evidence of reciprocal relationships between organizational climate and performance were observed. Additionally, while organizational climate was, on average, more positive at the end of the study than the beginning, there was no evidence that departments participating in the climate survey process had greater customer satisfaction scores at the conclusion of the study than departments that chose not to participate. Exploratory analyses demonstrated that while there were between-department differences in initial climate levels and changes over time, none of these differences were explained by unemployment or department size.

Table 22 summarizes the results of the formal hypothesis tests and the outcomes of the research questions. The remainder of this manuscript will provide an integrated discussion of the **implications** of this research for the study of linkages between climate and organizational performance, how the current results **compare** to the results of similar studies, and possible directions for **future research**, followed by a discussion of potential **limitations** of the current study.

Table 22: Summary of Hypotheses and Research Questions

Hypothesis	Result
<u>Hypothesis 1a</u> : Department-level climate perceptions will predict customer satisfaction over time more strongly than vice-versa.	Supported
<u>Hypothesis 1b</u> : Department-level climate perceptions for sales departments will predict dealership vehicle sales over time more strongly than vice-versa.	Supported
<u>Hypothesis 2</u> : Department-level climate perceptions and customer satisfaction will be reciprocally related over time.	Not Supported
<u>Hypothesis 3</u> : The relationship between sales department climate perceptions and vehicle sales will be partially mediated by customer satisfaction.	Not Supported – Full mediation observed
<u>Hypothesis 4</u> : Climate levels will increase over the period of the study.	Supported
<u>Hypothesis 5</u> : Organizations participating in the climate survey and action-planning process will have greater customer satisfaction at the conclusion of the study than organizations not participating in the climate survey and accompanying action-planning process.	Not Supported
<u>Research Question 1</u> : Over what lag period(s) do relationships between organizational climate and performance emerge?	Service Departments – One-year lag periods only Sales Departments – Two-year lag periods only
<u>Research Question 2</u> : Do differences exist in the causal lag periods between climate and customer satisfaction?	Yes
<u>Research Question 3</u> : Do differences in the initial levels and growth trajectories of organizational climate exist across organizations? If so, do local economic conditions or organizational size account for some of this variability across organizations?	Differences do exist, but were not predicted by economic conditions or organizational size

Organizational researchers from many different perspectives propose models of organizational performance that link human resource practices to organizational performance through the mediating mechanisms of climate, motivation, employee attitudes, and behavior (e.g., Applebaum, Bailey, Berg, & Kalleberg, 2000; Becker, Huselid, Pickus, & Spratt, 1997; James & Jones, 1976; Kopelman et al., 1990; Ostroff et al., 2003). Assumed, explicitly or implicitly, in all of these models is a causal chain whereby human resource practices lead to climate perceptions, which lead to employee motivation and attitudes to behaviors, which aggregate to result in organizational performance. Unfortunately, despite repeated calls for research that would allow for investigation of the causal ordering of these constructs (e.g., Paauwe, 2009; Wright & Haggerty, 2005), the vast majority of prior research examining these links has used cross-sectional or limited longitudinal designs that provide little basis for inferring causation or exploring reciprocal relationships.

Three conditions must exist to make inferences of a causal relationship: the cause must be related to the effect, the cause must precede the effect in time (i.e., causal priority), and plausible alternative causal explanations for the effect must be ruled out. In the context of climate, previous research has demonstrated that organizational climate and performance are related (e.g., Borucki & Burke, 1999; Ostroff, 1992; Schneider et al., 2005), but has been inconclusive on issues of causal priority (e.g., Schneider et al., 1998) and has sometimes failed to rule out spuriousness, or third variable causation, as an alternative explanation of the observed relationships. The current study attempted to fill this gap by utilizing design features and analyses that strengthen causal inferences and allow for investigation of reverse causation and reciprocal relationships.

This study demonstrated that organizational climate has causal priority over two indicators of organizational performance by demonstrating that organizational climate predicts subsequent measures of customer satisfaction and vehicle sales over time. Contrary to some previous research, there was no evidence of reverse causation or reciprocal relationships. The use of a longitudinal panel design, allowing for control of previous levels of organizational climate and organizational performance in estimating the longitudinal relationships, strengthens causal inferences by showing that changes in organizational climate predict subsequent changes in organizational performance thereby demonstrating that organizational climate has causal priority over the indicators of organizational performance examined in this study. The replication of these relationships over multiple time periods also provides stronger evidence of causal relationships than previous studies examining only one longitudinal lag between two time periods. While it was not possible to control for many potential third variables that could account for the relationships observed, the finding of no significant reverse causation or reciprocal influences reduces spuriousness as a plausible explanation (Kenny & Harackiewicz, 1979). Additionally, the use of a sample of independently owned and operated organizations carrying identical products and services and the replication of this finding across two different organizational contexts (i.e., sales and service departments), at least for customer satisfaction, enhances the generalizability of these findings. Thus, this study provides the strongest evidence to date that organizational climate can causally impact organizational performance.

As noted previously, Ostroff and her colleagues (2003), among others (e.g., James & Jones, 1976; Kopelman et al., 1990), propose that organizational climate contributes to

organizational performance by promoting performance of behaviors consistent with the organization's goals. The results of the current study corroborate this theory. However, many of these models also include a reciprocal path whereby organizational performance also influences organizational climate, which is not corroborated by the current results. This reciprocal influence is thought, by some, to be a result of higher performing organizations having greater resources to devote to human resource practices that enhance the well-being of employees (e.g., Wright & Gardner, 2003; Wright et al., 2005). Another explanation, particularly relevant to the outcome of customer satisfaction, is that customers themselves represent a salient feature of the environment for front-line employees and as such climate may include an appraisal of the degree to which an organization's policies, procedures, etc. promote the well-being of customers (Burke, Borucki, & Hurley, 1992; Heskett et al., 1997). As mentioned previously, prior research also provides some evidence of this reciprocal relationship between climate and organizational performance (Schneider et al., 1998). While it is not entirely clear why such a reciprocal relationship was not observed in the current study, there are a number of possible explanations.

Schneider and his colleagues found a reciprocal relationship between organizational climate for service and customer satisfaction in the context of bank branch employees providing face-to-face transactional services to customers. The lack of finding a reciprocal relationship in the current study could be due to the utilization of a molar organizational climate measure, which is potentially less susceptible to the influences of customer satisfaction. Alternatively, differences in the nature of the employee-customer

service encounter may limit employees' opportunity to directly observe customer dissatisfaction, which may reduce the reciprocal influence.

In the context of directly interacting with a customer to provide services, as in the Schneider study, it is likely that there are immediate visual and/or verbal cues of customer satisfaction, especially dissatisfaction, that increase the salience of customer satisfaction as a feature of the work environment. However, in the context of selling someone a car, a dissatisfied *potential* customer may simply not choose to purchase the car from that particular dealership without the sales person even being aware that the customer was dissatisfied with their service. Additionally, as noted previously, cognitive dissonance theory (Festinger, 1957) suggests that someone who just spent thousands of dollars on a new vehicle is unlikely to behave in a way that conveys dissatisfaction in the moment, regardless of whether the customer is ultimately pleased with the service they received. Therefore, in sales departments, the observation of customer satisfaction is likely limited to satisfaction, with dissatisfaction only being communicated later, and indirectly, through the customer feedback survey process. In the service departments examined in the current study, the majority of employees work behind the scenes and have no direct interaction with the customer, which would, likewise, limit their ability to directly observe customer satisfaction or dissatisfaction. However, it should be noted that service employees do get proximal *indirect* feedback of customer dissatisfaction if the customer's problem with the vehicle was not fixed correctly. In both of these contexts, the limited direct observation of customer dissatisfaction may decrease the extent to which customer satisfaction is perceived as a salient feature of the work environment. Additionally, in the absence of direct observation of customer dissatisfaction, it may be

that any reciprocal influences must flow through a longer causal chain before being perceived by employees (e.g., customer satisfaction results are reviewed by management, policies and procedures are revised to address problem areas, which then become a salient part of the environment for new employees) which is likely to limit the size of the effect (Shrout & Bolger, 2002). Similar arguments may be made for why Ryan and her colleagues (1996) observed evidence of a causal relationship between customer satisfaction and employee satisfaction in their examination of customer contact employees in a financial services organization. Future research should explore these alternatives by examining the reciprocal relationship of climate and customer satisfaction longitudinally across multiple types of employee-customer service contexts.

There is also a possible methodological explanation for why no reciprocation was found in the currently study. The overall sample size, while larger than many cross-lagged panel studies conducted at the organizational level of analysis, was smaller than is generally recognized as desirable for conducting structural equation model analyses (e.g., Kline, 1998; Muthén & Muthén, 2002). The major impact of a small sample size is to reduce the power to detect small true effects. Thus, one possible reason that the hypothesized reciprocal effects between organizational performance and climate were not observed is because there was too little power in the analyses to detect small reciprocal effects. Interestingly, the reciprocal effects for both customer satisfaction and sales predicting climate were also highly variable with some lags approaching statistical significance and other lags not, for both departments. Future research with greater sample sizes is necessary to fully explore this possibility.

It was hypothesized that customer satisfaction would only partially mediate the relationship between climate and vehicle sales, but full mediation was found. While this is consistent with theory that suggests that customer satisfaction results in positive word-of-mouth and repeat purchases in the future (e.g., Heskett et al., 1994; Maxham & Netemeyer, 2003), it appears inconsistent with the notion that other behaviors influenced by climate perceptions, but unrelated to customer satisfaction, play a role in determining organizational financial outcomes. For example, a positive climate is expected to promote a number of behaviors that are not directly related to customer satisfaction, such as willingness to negotiate with difficult customers, attending sales technique training, or network building, and these behaviors are expected to promote sales. However, it may be that these behaviors do positively influence organizational financial outcomes, only not by increasing sales but by increasing per vehicle profit. For instance, when a sales person leverages new sales techniques that result in a higher profit for the dealership (e.g., focusing on the monthly payment instead of the overall vehicle price, presenting optional products/services as “included” in the sales price, “bumping” interest rates above bank quotes, etc.). Future research in similar contexts is necessary to examine the generalizability of this finding and test the alternative proposed. Future research investigating this finding in other contexts would also be informative. For example, it is possible that stronger relationships between climate and sales would be observed in contexts where employees are not paid on commission, but are still encouraged to increase sales (e.g., hourly/salaried sales associates at companies like Best Buy or AutoZone).

The effect sizes in the current study, despite being significant, were relatively modest in the case of organizational climate predicting customer satisfaction, and were quite small when predicting sales. However, when considering the size of these effects, it is important to remember that prior levels of the performance indicators, and, hence, the influence of prior climate levels, has already been controlled for. Additionally, the effect sizes must be considered in the context of the distal nature of climate in relation to the performance indicators. Shrout and Bolger (2002) note that as the relationship between variables becomes more distal, the effect size decreases due to the number of links in the causal chain, competing causes, and other random factors. In the case of climate, theory postulates that motivation, attitudes, and behaviors mediate its relationship with indicators of performance. It seems likely that estimates of these theoretically more proximal potential determinants of customer satisfaction and sales would yield stronger effect sizes, although cross-sectional studies examining the relationships of some of these additional variables with customer satisfaction have yielded effect sizes roughly equivalent in magnitude to the cross-sectional correlations observed in the current study (e.g., Brown & Lam, 2008; Harter, Schmidt, & Hayes, 2002). Finally, it is important to point out that even small effects can have large practical implications (Abelson, 1985; Lipsey, 1990; Rosenthal, Rosnow, & Rubin, 2000).

As noted, the effect sizes for prediction of sales were extremely small, even with the more proximal variable of customer satisfaction as the predictor, which showed an average concurrent partial correlation (controlling for department size) of .24. It is difficult to argue that a standardized effect of approximately .03 for predicting sales from organizational climate is practically significant – this effect size translates to, for an

average dealership, an increase in annual vehicle sales of just over five vehicles (about \$7,500 in gross profit, or less than .2% of average annual gross profit²; NADA, 2007). For the larger dealerships (i.e., those selling 400 or more vehicles annually), this would represent an negligible increase, but for smaller dealerships (i.e., those selling approximately 100 vehicles annually) this could represent a practically significant increase in sales. Additionally, it is important to note that prior sales and department size accounted for approximately 90% of the total variance in subsequent sales figures, leaving little variance left to account for. It is possible that other indicators of financial performance, such as per vehicle profit or dealership return on investment, would have shown stronger effects. Although other researchers predicting financial indicators of organizational performance with human resource practices, commitment, and employee satisfaction have also observed large reductions in the size of relationships, generally to the point of non-significance, once controlling for prior financial performance (Guest, Michie, Conway, & Sheehan, 2003; Koys, 2001; Wright et al., 2005). The concurrent and lagged correlations in these studies were of similar size to that observed for customer satisfaction and organizational performance in the current study.

Wright and his colleagues (2005) suggest a number of reasons why relationships between various HR outcomes (i.e., climate, job satisfaction, motivation, etc.) and financial indicators of performance may disappear when controlling for prior financial performance. First, they suggest that such results may be indicative of a reciprocal relationship where firms that perform well financially, invest more heavily in HR practices, and this results in further increased financial performance. Second, they

² These estimates do not, however, account for indirect profits that may accrue in subsequent years due, for example, to vehicle service visits or repeat purchases.

propose these types of findings may indicate that such relationships are spurious, and instead both HR outcomes and financial performance are caused by third variables. While the cross-lagged panel analyses provided no evidence of reciprocity in the current study, the lagged correlations with previous and subsequent sales for both customer satisfaction and climate are quite similar to those found by Wright and his colleagues. Given the similarity of the lagged correlations, the small effect sizes observed for predicting sales in the cross-lagged panel analyses, and the relatively low power for detecting small reciprocal effects in the current study, it is not possible to conclusively rule out these alternative explanations for vehicle sales.

Existing theory linking HR outcomes to organizational performance is relatively silent on issues of time, with the exception of noting that it takes time for changes to unfold and ultimately have a measurable impact on performance (e.g., Ostroff et al., 2003). Previous research using cross-lagged panel designs has generally been limited by the availability of data to examination of only a single causal lag period between two points in time (e.g., Ryan et al., 1996; Schneider et al., 1998). The current research included an investigation of one-, two-, and three-year lag periods between organizational climate and performance, and demonstrated that the causal lag period differed between service departments, where stable relationships only emerged at one-year lag periods, and sales departments, where stable relationships only emerged at two-year lag periods. Cross-lagged panel analyses revealed that models containing no cross-lagged relationships between organizational climate and performance fit the data better for the other lag periods, even though some small cross-lagged relationships were evident in models in which these relationships were estimated. This suggests that the causal

influence either had begun to dissipate, in the case of longer periods, or had not yet had time to fully emerge. In line with the speculation presented previously, this implies that contextual differences may moderate how long it takes for causal relationships between organizational climate and performance to emerge.

In addition to the contextual differences cited previously (i.e., intangibility and proximity of customer feedback), other differences may also impact the length of causal lag periods between organizational climate and different indicators of performance. For example, in the context of customer satisfaction and retail contexts, pay structure (e.g., commission-based vs. hourly or salary) may influence how long it takes for relevant changes in climate to have an impact on customer satisfaction. Regardless of how positive the overall organizational climate and how much the organization promotes customer service, commission-based employees are motivated to make sales which may motivate behaviors that sacrifice customer service, such as using high-pressure sales tactics. The amount of time it takes for climate to influence organizational performance may depend on the indicator of performance examined. For example, consistent with Shrout and Bolger's (2002) notions about effect sizes and proximity between cause and effect, organizational performance outcomes that are theoretically more distal to employee behavior, such as return on investment or profit, may take longer to be impacted by climate than more proximal outcomes such as customer satisfaction or sales. Future theoretical work needs to more fully explore and define the temporal aspects of these relationships in order to promote more focused empirical investigations.

The current study also contributes to the debate over whether the molar conceptualization of climate is too broad to be useful in predicting organizational

outcomes. Some researchers argue for abandoning research on molar conceptions of climate based on the contention that it is too broad and inclusive to predict organizational outcomes, – which the current results dispute – and advocate, instead, that climate should be assessed with a more strategic focus around a criterion of interest, such as innovation or customer service (e.g., Schneider, 1975; Schneider et al., 1980; Schneider, 1990). This is intuitively appealing as it is consistent with an underlying premise of Ajzen and Fishbein's (1975) work on attitudes – that is, the predictor and criterion variables should be operationalized at the same level of specificity. However, defining climate in these more narrow terms may result in ignoring an aspect of many conceptualizations of climate. Some authors contend that climate is not just about simple perceptions of the work environment, but also includes an appraisal of the degree to which the work environment is personally beneficial or detrimental to the organizational well-being of the individual (James & James, 1989; James et al., 2008).

In pursuing the more narrow conceptualizations of climate, it is easy to see, for example, how an organization's policies, procedures, etc. could promote a focus on customer service, and thereby a climate for service, but at the same time fail to include features employees perceive as promoting their own well-being. Consider the cliché that the “customer is always right,” which could reasonably be assumed to be a policy that promotes climate for customer service. If this is coupled with management practices that limit employee involvement and autonomy, then it is likely that despite the climate for service, employees are less likely to perceive the environment as promoting their organizational well-being.

The current results, by demonstrating that organizational performance indicators are predicted by molar organizational climate, suggest the possibility that ignoring the “well-being” aspect of the definition of climate *may* come at a cost in terms of reducing the prediction of organizational outcomes if climate is more narrowly defined. Interestingly, the average concurrent correlations of organizational climate and customer satisfaction observed in the current study (i.e., $\bar{r}_{service} = .22$ and $\bar{r}_{sales} = .21$) are similar to the concurrent correlations with customer satisfaction observed for *service climate* by Borucki & Burke (1999; $\bar{r} = .26$, averaged across two time periods) and are actually *higher* than that reported by Schneider and his colleagues (2005; $r = .15$, n.s.) and Sowinski and his colleagues (2008; $r = .13$, n.s.). This is not to imply that research using the more narrow conception of climate should be abandoned. Rather, it is meant to highlight the need for researchers to investigate *both* conceptions of organizational climate simultaneously, preferably using longitudinal designs. For example, as implied by the discussion above, it could be that molar climate acts as a moderator of the relationship between climate for service and customer satisfaction. Additionally, current definitions of molar climate tend to be amorphous and not very well defined, so future research should continue efforts to define the conceptual space of molar climate more thoroughly.

More broadly, this study contributed to the literature on the linkages between HR outcomes and organizational performance by demonstrating that organizational climate has causal priority over indicators of organizational performance. However, there are many other links in the overall causal chain that were not examined by the current study and have not been adequately examined by prior studies. Future research needs to more

fully examine both the proposed antecedents of climate (e.g., organizational policies, procedures, leadership practices, culture, strategy, etc.), additional outcomes of climate (e.g., motivation, behaviors, job attitudes, other indicators of organizational performance, etc.), and potential moderators at each stage (e.g., contextual factors, climate strength, climate configurations, etc.). While numerous studies have investigated these causal pathways and moderators, many of them have failed to include the design features necessary to truly untangle the causal pathways implied by the various models (Paauwe & Boselie, 2005; Wright & Haggerty, 2005). Research also needs to be conducted that more fully explores the multi-level nature of these relationships by using designs that include assessments of top-down effects of organizational features on individual's climate perceptions, motivation, behaviors, and attitudes and investigates the bottom-up processes whereby these individual-level constructs interact and combine to yield organizational-level performance. By fully explicating these multi-level causal chains, organizational researchers and practitioners can begin to identify the most impactful interventions for increasing organizational performance.

Limitations

As with all research, there exist a number of limitations that should be considered when interpreting the results of the current study. First, the research was conducted with archival data and, therefore, the researcher could not influence the availability of data and the measures used. This limitation manifests itself most obviously in the asymmetry of the time periods over which data were collected. While efforts were made to align the time periods in analyzing the data, it is possible that if the data had been aligned at the outset, the results may have been somewhat different. However, if this was a major

problem, then it is unlikely that the results observed for customer satisfaction would have been so consistent across the two departments. The presence of missing sales data for 2002, and the resulting requirement that the analyses for the affected time periods were composed of only the last and first two quarters of the preceding and following period also may have introduced some degree of error into the analyses involving vehicle sales. However, there were no obvious differences between the correlations for these time periods and the periods for which there was complete data.

A common limitation of organizational-level research is limited sample sizes. As mentioned previously, this is a limitation of the current study as well. The largest problem with smaller sample sizes is low power to detect significant effects, but in the context of structural equation modeling it can also result in over- or under-estimates of standard errors (Muthén & Muthén, 2002). While the lower power for detecting significant effects does not impact the findings regarding causal priority, it is possible that with larger sample sizes reciprocal effects similar to those found by other researchers (e.g., Schneider et al., 1998) would have been observed in this study. Due to the effects of a small sample size on standard errors, an alternative explanation for the prediction of vehicle sales is that the finding of a small significant effect is due to under-estimated standard errors for the sales variable. The replication of the findings for customer satisfaction across both departments and the larger size of this effect suggest that misestimated standard errors are a less plausible explanation for this outcome.

Third, it is important to highlight that the causal claims are based on non-experimental data, which reduces the strength of causal inferences. Although the collection of longitudinal data and the use of cross-lagged panel analyses strengthens

claims of causal priority, other longitudinal designs including, at least, quasi-experimental features should be conducted to corroborate the current findings. The current study included one quasi-experimental design feature, a non-equivalent control group, and hypothesized that this control group would have lower customer satisfaction at the conclusion of the study than the group participating in the climate survey and action planning process. The lack of support for this hypothesis makes it difficult to conclude that the survey and action planning processes were responsible for the increasing climate levels observed for the participating departments, and may be seen as limiting the strength of causal inferences made on the basis of the other analyses. However, since nothing other than customer satisfaction level was known about the control group in this study, it is impossible to know whether self-selection factors (i.e., choosing not to participate in the climate survey) or other unmeasured factors resulted in the observed increases in customer satisfaction, and perhaps unobserved increases in climate levels, over the period of the study. This highlights the need for higher quality quasi-experimental design features (e.g., equivalent control groups, switching replications, etc.) in future studies, especially those investigating the effectiveness of interventions for changing climate.

Conclusion

In summary, this study contributed to research and theory on the causal relationship between organizational climate and performance in several ways. First, although no single study can definitely determine causality, the results of the current investigation provide evidence that organizational climate has causal priority over some indicators of organizational performance (i.e., customer satisfaction and sales). Given the

theoretical placement of organizational climate as a mediator between HR practices and organizational performance, the establishment of this causal link is critical for further demonstrating the value of the HR function in contributing to organizational performance. Second, the results demonstrate the value of continuing to research and assess molar organizational climate, suggesting it is too soon to wholesale reject examinations of molar climate in favor of the more narrow conceptualizations advocated by some researchers (e.g., Schneider, 1975; Schneider, 1990). Finally, by demonstrating that the causal impact of climate emerged, and disappeared, over the examination of different time lags, this study highlights the importance of considering time in future longitudinal investigations of these relationships.

Future research on climate and the other outcomes of the HR function (e.g., selection, training, etc.) needs to continue to make the case that HR is a strategic department with a critical role in the effectiveness of the organization. While platitudes such as “our people are our most important asset” suggest that organizations value HR, only by proving that the outcomes of the HR function have important impacts on organizational performance will HR truly come to be viewed as a strategic partner critical to the success of organizations.

Appendix

Covariance Matrices for Measurement Invariance Analyses

Table 23: Sales Department Covariance Matrix for Measurement Invariance Analyses

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Involvement Time 1	.119	.102	.098	.120	.073	.065	.060	.074	.052	.046	.042	.051	.022	.026	.025	.026
2. Consistency Time 1	.102	.102	.091	.109	.067	.063	.055	.067	.050	.046	.039	.048	.018	.023	.021	.019
3. Adaptability Time 1	.098	.091	.103	.117	.061	.056	.057	.070	.051	.048	.047	.058	.022	.023	.027	.026
4. Mission Time 1	.120	.109	.117	.161	.073	.064	.063	.086	.054	.051	.050	.071	.015	.016	.018	.023
5. Involvement Time 3	.073	.067	.061	.073	.177	.157	.151	.179	.066	.061	.047	.061	.055	.060	.062	.064
6. Consistency Time 3	.065	.063	.056	.064	.157	.157	.141	.170	.059	.059	.041	.054	.062	.068	.065	.067
7. Adaptability Time 3	.060	.055	.057	.063	.151	.141	.150	.168	.057	.053	.046	.055	.060	.062	.065	.068
8. Mission Time 3	.074	.067	.070	.086	.179	.170	.168	.217	.059	.055	.044	.066	.069	.072	.074	.081
9. Involvement Time 4	.052	.050	.051	.054	.066	.059	.057	.059	.138	.130	.129	.141	.045	.044	.043	.042
10. Consistency Time 4	.046	.046	.048	.051	.061	.059	.053	.055	.130	.136	.126	.141	.052	.051	.048	.051
11. Adaptability Time 4	.042	.039	.047	.050	.047	.041	.046	.044	.129	.126	.139	.150	.045	.043	.045	.048
12. Mission Time 4	.051	.048	.058	.071	.061	.054	.055	.066	.141	.141	.150	.183	.051	.049	.047	.056
13. Involvement Time 6	.022	.018	.022	.015	.055	.062	.060	.069	.045	.052	.045	.051	.183	.166	.163	.169
14. Consistency Time 6	.026	.023	.023	.016	.060	.068	.062	.072	.044	.051	.043	.049	.166	.168	.158	.164
15. Adaptability Time 6	.025	.021	.027	.018	.062	.065	.065	.074	.043	.048	.045	.047	.163	.158	.163	.163
16. Mission Time 6	.026	.019	.026	.023	.064	.067	.068	.081	.042	.051	.048	.056	.169	.164	.163	.186

Table 24: Service Department Covariance Matrix for Measurement Invariance Analyses

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Involvement Time 1	.083	.071	.064	.078	.044	.037	.034	.041	.038	.033	.033	.040	.037	.033	.029	.033
2. Consistency Time 1	.071	.065	.058	.069	.038	.034	.032	.035	.036	.032	.032	.038	.036	.033	.030	.034
3. Adaptability Time 1	.064	.058	.059	.067	.038	.033	.033	.037	.031	.028	.029	.035	.035	.031	.031	.035
4. Mission Time 1	.078	.069	.067	.088	.040	.034	.033	.042	.038	.032	.034	.044	.038	.032	.032	.039
5. Involvement Time 3	.044	.038	.038	.040	.091	.080	.077	.089	.045	.041	.039	.045	.052	.050	.046	.054
6. Consistency Time 3	.037	.034	.033	.034	.080	.077	.070	.081	.040	.038	.036	.040	.051	.050	.047	.055
7. Adaptability Time 3	.034	.032	.033	.033	.077	.070	.071	.079	.039	.036	.037	.040	.047	.044	.045	.053
8. Mission Time 3	.041	.035	.037	.042	.089	.081	.079	.103	.043	.039	.040	.050	.048	.045	.044	.057
9. Involvement Time 4	.038	.036	.031	.038	.045	.040	.039	.043	.092	.083	.082	.095	.043	.035	.036	.041
10. Consistency Time 4	.033	.032	.028	.032	.041	.038	.036	.039	.083	.080	.076	.089	.044	.040	.037	.043
11. Adaptability Time 4	.033	.032	.029	.034	.039	.036	.037	.040	.082	.076	.081	.091	.038	.031	.034	.039
12. Mission Time 4	.040	.038	.035	.044	.045	.040	.040	.050	.095	.089	.091	.112	.044	.037	.039	.050
13. Involvement Time 6	.037	.036	.035	.038	.052	.051	.047	.048	.043	.044	.038	.044	.113	.108	.100	.114
14. Consistency Time 6	.033	.033	.031	.032	.050	.050	.044	.045	.035	.040	.031	.037	.108	.111	.099	.113
15. Adaptability Time 6	.029	.030	.031	.032	.046	.047	.045	.044	.036	.037	.034	.039	.100	.099	.098	.111
16. Mission Time 6	.033	.034	.035	.039	.054	.055	.053	.057	.041	.043	.039	.050	.114	.113	.111	.138

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