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The cross-level effects of culture and climate in human service teams

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Summary   This two-level study of child welfare and juvenile justice case management teams addresses construct, measurement, and composition issues that plague multilevel research on organizational culture and climate. Very few empirical studies have examined both culture and climate simultaneously, and none have provided evidence that culture and climate are distinct or similar constructs. Confirmatory factor analysis (CFA), within-group consistency analysis (r_{wg}), between-group differences (ICC and eta-squared), and hierarchical linear models (HLM) analysis provide evidence that climate and culture are separate constructs that vary by organizational unit, and are related to work attitudes, perceptions, and behavior. Findings link team-level culture and climate to individual-level job satisfaction and commitment, perceptions of service quality, and turnover. Copyright © 2002 John Wiley & Sons, Ltd.

Introduction

Organizational culture and climate are widely used terms that receive considerable attention in both the trade and academic press. The concepts have been studied for decades in business and industrial organizations and their importance to understanding organizational functioning is generally accepted. More recently, the culture and climate of government, non-profit, and human service organizations have received attention. As in the business, for-profit sector, culture and climate are thought to be useful in explaining how organizations influence the behavior, attitudes, and well-being of members, why some organizations are more innovative and quicker to adopt new technologies, and why some organizations are more successful than others.

But several interrelated trends in the last decade broadened rather than narrowed existing gaps in our knowledge of culture and climate (Ashkanasy, Wilderom, & Peterson, 2000b). First, the psychological, quantitative, nomothetic approaches used to study climate over the last half-century waned as interest in anthropological, qualitative, and idiographic methods to studying culture increased. Second, the indiscriminate use of the terms, climate and culture, reflected in the trade literature's

inability to distinguish between the two constructs, became increasingly widespread in the academic literature. Third, very little development occurred in the measurement of culture and climate over the last decade. Fourth, theoretical discussions of the two constructs increased in the absence of empirical evidence. Fifth, there were almost no applications of new, multilevel, organizational research methods to the study of culture and climate.

The aim of this paper is to focus attention on climate and culture as distinct constructs, demonstrate the value of quantitative studies of both culture and climate, address critical issues in the multilevel study of culture and climate, and assess relationships that link culture and climate to attitudes, perceptions, and behavior in human service teams.

It is only within the last decade that culture and climate have been discussed simultaneously in the organizational literature (Schneider, 1990). This is important because some writers continue to use the two terms interchangeably (e.g., Schneider, 2000), some writers argue that culture and climate overlap or that one encompasses the other (e.g., Denison, 1996), and others argue they are distinct (e.g., Schein, 2000). More importantly, most of the articles that address both culture and climate offer only theoretical discussions of the concepts or case studies of single organizations and provide no empirical evidence that the concepts are either distinctive or related (Barker, 1994; Hoy, 1990; Michela & Burke, 2000; Payne, 2000; Schneider, Gunnarson, & Niles-Jolly, 1994; Tesluk, Farr, & Klein, 1997; Virtanen, 2000). In rare instances when both constructs have been included in the same empirical study, no empirical evidence has been provided to support the similarity or the distinctiveness of culture and climate (Johnson & McIntye, 1998; Kirsh, 2000).

This study provides: (1) operational definitions that distinguish between culture and climate; (2) empirical evidence that culture and climate are unique factors; (3) evidence that culture and climate are 'shared' within work teams and vary between work teams; and (4) estimates of cross-level relationships that link team-level organizational climate and culture to individual-level work attitudes, service quality, and turnover. We begin with a brief discussion of culture and climate as organizational concepts and the definitions that guide their roles in the present study.

Culture and climate as organizational concepts

The trade literature on organizational culture and climate has a relatively short history but is important because of the widespread interest it generated. Much of the business world's enthusiasm about the value of culture and climate originated with Peters and Waterman's (1982) *In Search of Excellence.* By conducting case studies of some of America's most successful businesses, Peters and Waterman inspired a nationwide infatuation with culture as the key to organizational success. A decade later, Osborne and Gaebler's (1992) *Reinventing Government* extended the work of Peters and Waterman to the public sector by describing the importance of culture to the performance of government agencies. Their recommendations for creating results-oriented, mission-driven organizations were adopted by several federal agencies and a number of state governments. More recently, Schorr's (1997) *Common Purpose* built directly on Osborne and Gaebler's work by explaining the roles that organizational culture and climate can play in revitalizing the nation's public child welfare, family service, and juvenile justice systems. The latter two books focus on the public, non-profit, and human service sectors that are the subject of the present study.

Organizational culture and climate were addressed in the academic literature for a much longer period than in the trade literature. For example, the terms 'organizational climate' and 'leadership climate' were used as far back as the 1950s (e.g., Argyris, 1958; Fleishman, 1953). This predated the first use of the term 'organizational culture' in the academic literature by two decades (Handy, 1976; Pettigrew, 1979). But the concept of organizational culture, if not the specific term, was included

in classic case studies published concurrently with the first climate literature (e.g., Gouldner, 1954; Selznick, 1949). However, the literatures on culture and climate developed independently and almost no empirical research examined both constructs in the same study.

One of the first efforts to merge the work on culture and climate was Schneider's (1990) edited text, *Organizational Climate and Culture*. This effort was stimulated by and fueled epistemological and methodological debates over the differences and similarities between the two constructs. The debates were rooted in a conflict between the psychological origins of the climate construct versus the anthropological origins of the culture construct, the quantitative methods used to study climate versus the qualitative methods used to study culture, the applied orientation of climate research versus the basic orientation of culture research, and the nomothetic designs that dominated climate studies versus the ideographic designs that were used in most culture studies (e.g., Denison, 1996; Glisson, 2000; Pettigrew, 1990; Reichers & Schneider, 1990). These and other issues that divided research on the two constructs explain why limited progress was made in understanding the similarities and differences between culture and climate in the decade following Schneider's edited text (Ashkanasy et al., 2000).

Definitions of culture and climate

A recent, extensive content analysis by Verbeke, Volgering, and Hessels (1998) of the published organizational literature on culture and climate identified 32 different definitions of organizational climate and 54 definitions of organizational culture. The number and nature of the definitions uncovered by the content analysis revealed confusion about the distinction between culture and climate and the broad range of organizational phenomena included under those labels. However, the content analysis also disclosed two core concepts in the literature that highlight the distinctiveness between culture and climate.

The empirically derived core concepts from the literature described 'climate' as the way people perceive their work environment and 'culture' as the way things are done in an organizational unit (Verbeke et al., 1998). Although these core concepts are not fully developed definitions, they make an important distinction. By describing climate as the way people perceive their work environment and culture as the way things are done in an organizational unit, climate is defined as a property of the individual and culture is defined as a property of the organization. This difference has been suggested for at least the last decade and characterizes the definitions of the two constructs as presented below (James, James, & Ashe, 1990).

Climate

Our definition of climate includes the distinction between *psychological* and *organizational* climate developed by Lawrence James and colleagues (James & James, 1989; James & Jones, 1974; James et al., 1990). *Psychological* climate is defined as the individual employee's perception of the psychological impact of the work environment on his or her own well-being (James & James, 1989). When employees in a particular work unit agree on their perceptions of the impact of their work environment, their shared perceptions can be aggregated to describe their *organizational* climate (Jones & James, 1979; Joyce & Slocum, 1984). However, it is important to note that climate remains a property of the individuals regardless of the agreement or disagreement in the individuals' perceptions. If there is agreement among individuals within a work unit, the individual perceptions are shared and can be aggregated to characterize the work unit (and labelled organizational climate), but the perceptions remain a property of the individuals in the unit (James, 1982).

Although the psychological impact of the work environment is measured as multiple dimensions (e.g., emotional exhaustion, depersonalization, role conflict), a single, higher-order, general psychological climate factor (PC_g) is believed to underlie climate. This general PC_g factor represents the

individual's perception of the overall psychological impact of the work environment on the individual in positive or negative terms (James & James, 1989; James et al., 1990). The finding of a general factor has been replicated by other researchers and described as representing the psychological safety and meaningfulness of the work environment for the individual employee (Brown & Leigh, 1996; Glisson & Hemmelgarn, 1998).

Culture

Culture is defined as the normative beliefs and shared behavioral expectations in an organizational unit (Cooke & Szumal, 1993). These beliefs and expectations prescribe the way work is approached and are the basis for socializing coworkers in the way things are done in the organization. Organizational culture has been described as a layered construct, with shared behavioral expectations and norms representing an outer, conscious layer and values and assumptions representing an inner layer that is less conscious to members of an organization (Rousseau, 1990). As stated by Hofstede (1998), behavior is the visible part of culture while values represent the invisible part.

Writers frequently describe culture as a 'deeper' construct than climate because it includes values and assumptions. But Stackman, Pinder and Connor (2000) point out that values and assumptions are held by individuals, and that it is not entirely clear what 'deeper' means in an organization. However, references to 'deeper' aspects of culture parallel the 'inner layer' described by Rousseau (1990) and the 'invisible' part of culture described by Hofstede (1998) that cannot be observed directly and can only be derived indirectly from the behavior and statements of individuals in the organization.

Although this inner layer is important to understanding culture, the 'visible' aspects of culture are critical to an organization's functioning. For example, there is evidence that culture is expressed and transmitted among employees more through shared behavioral expectations and normative beliefs than through 'deeper' values or assumptions (Hofstede, 1998; Hofstede, Neuijen, Ohayv, & Sanders, 1990; Ashkanasy, Broadfoot, & Falcus, 2000a). That is, individuals in an organization can be fully aware of, or compliant with, behavioral expectations without being conscious of, or internalizing, the values and assumptions that lie at the core of those expectations. This is because shared expectations and norms may reflect the values and assumptions of organizational leaders or founders, rather than those of the rank and file. Or, shared practices and norms may be determined by the conditions and realities that workers face on a day to day basis, independent of the values and assumptions of top management (Hemmelgarn, Glisson, & Dukes, 2001). In either case, it is the expectations and norms that are shared, and not necessarily the assumptions and values they reflect. However, the assumptions and values that shape the shared expectations and norms give meaning to the dimensions of culture they compose and explain their influence on the work environment.

In comparison to the research on the dimensions of climate, there has been much less empirical research on the dimensions that compose culture (Ashkanasy, Broadfoot, & Falcus, 2000a). However, principal components analyses of the 12 scales of the well-known Organizational Culture Inventory (OCI) identified multiple dimensions (Cooke & Rousseau, 1988; Cooke & Szumal, 1993; Xenikou & Furnham, 1996). And a factor analysis of another well-known scale, the Organizational Culture Profile (OCP), identified two higher-order factors (Ashkanasy, Broadfoot, & Falcus, 2000a). Unlike the perceptions that comprise a single general climate factor (PC_g), these findings indicated that culture is multidimensional.

Composition models for culture and climate

Composition models specify the functional relationships between constructs that reference the same content but describe qualitatively different phenomena at the individual and work-unit levels (Chan,

1998; Rousseau, 1985). The composition models used to aggregate data play an important role in cross-level inferences that link organizational climate and culture to individual-level outcome variables. The typology of *elemental composition* presented by Chan (1998) provides a useful framework for understanding the similarities and differences in the composition of culture and climate. Elemental composition occurs when a higher-level construct is composed of a collective or aggregate of a lower level measure. It is particularly important to emphasize that organizational culture and organizational climate require *different* models of elemental composition. This distinction has not been noted previously in discussions of multilevel research on culture and climate (Klein, Conn, Smith, & Sorra, 2001).

Climate

The appropriate composition model for climate is the *direct consensus* model (Chan, 1998). This model uses within-group consensus at the lower-level (e.g., among individuals in a work team) as a precondition for operationalizing the higher-level construct (e.g., organizational climate of the work team) as an aggregate of the individual-level measures. In this example, a shared psychological climate at the individual level—represented by a value of 0.70 or above on the r_{wg} index of within-group consensus—is a prerequisite for calculating organizational climate as a work unit mean of the individual responses to a psychological climate measure (James, Demaree, & Wolf, 1984). Whether or not there is within-group consensus, the measure of climate characterizes the individuals in the work unit because psychological climate is a property of the individual. At the same time, when there is consensus and the psychological climate is shared by members of a work unit, the aggregate composes a construct at the work unit level (e.g., organizational climate) although the perceptions remain a property of the individuals in the work unit.

Culture

The appropriate composition model for organizational culture is the *referent-shift consensus model*. Unlike climate, culture is a property of the social system or work unit, not of the individual, and this difference is reflected in the shift in referent from the individual to the collective. The model is less familiar than the direct consensus model because its use is more frequently implicit than explicit (Chan, 1998). As applied to culture, the referent-shift consensus model uses individual responses to measure culture in work units (e.g., work teams, divisions, organizations). Referent-shift consensus composition is similar to direct consensus composition, but there is a shift in the referent prior to consensus assessment (Chan, 1998). In assessing organizational culture using the referent-shift consensus model, the respondent is asked to describe the behavioral expectations and normative beliefs of people in the respondent's organizational work unit. The focus is on what the individual believes are the expectations and norms for the people in the respondent's work unit rather than on what the individual respondent thinks is expected of him or her personally. Within-group consensus is then required to justify the aggregation of the individuals' beliefs about the behavioral expectations and norms within the work unit as a representation of the unit-level construct, i.e., culture. In the absence of within-group consensus, the individual responses cannot be 'composed' to the unit-level construct because a lack of consensus suggests that common expectations and norms have not been identified.

Both the direct consensus (for climate) and referent-shift consensus (for culture) models of composition use within-group consensus as a precondition to composing an individual-level measure to a higher-level construct. But in referent-shift consensus composition, there is a shift in the referent of the lower-level attributes prior to consensus assessment. The referent is moved from the self to the collective. When culture is defined as the normative beliefs and behavioral expectations in the work unit, a shift in referent from the individual to the work unit reflects the collective nature of the construct. There is evidence that the rewording of items to make this shift explicit can contribute to greater

within-group consistency in individuals' descriptions of the way things are done in their work unit but not in their evaluations of the impact of their work environment (Klein et al., 2001).

The models presented here for composing climate and culture underscore important differences between the two constructs that have implications for measurement. The scale items designed to measure climate are expected to focus on the respondent, because climate is the individual's perception of the psychological impact of the respondent's work environment on his or her own well-being. In contrast, the scale items designed to measure culture are expected to focus on the collective because culture describes the behavioral expectations and normative beliefs for those who work in a specific organizational unit. For the present study, measures of climate and culture were developed from well-known instruments, but some items were reworded or dropped to ensure that the distinction between composition models was maintained and the wording was appropriate for child welfare and juvenile justice case management teams (Klein et al., 2001).

The cross-level effects of culture and climate

Theoretical models linking both culture and climate to each other and to associated individual level outcomes are rare and generally untested. But there is some consensus that culture affects other work unit characteristics, including climate, and that individual work attitudes and behavior are an outcome of those characteristics. In the model described by Kopelman, Brief, and Guzzo (1990), culture is described as affecting managerial policies and practices (e.g., structure) which in turn affect climate which affects work attitudes and behavior. Only parts of this model have been tested and there are questions about which of the work environment characteristics have the greatest impact on individual level attitudes and behavior. For example, Cooke and Szumal (2000) argue that a 'culture bypass' occurs when management creates structure independently of culture to maintain control and promote consistency, and as a result reduces commitment and increases turnover among workers.

For several decades studies of a variety of types of organizations, including human services, have linked either structure or climate to work attitudes and behavior (Glisson & Durick, 1988; Hackman & Oldham, 1975; Herman & Hulin, 1972; Herman, Dunham, & Hulin, 1975; Morris & Sherman, 1981). It is well known that work attitudes are a function of *psychological* climate at the individual level, but there are fewer studies of the cross-level relationships between *organizational* climate and work attitudes. And no studies examined the simultaneous effects of culture and climate along with other characteristics such as structure. Moreover, studies that examined the links between work environment characteristics and individual attitudes and behavior tended to examine all variables at the same level by either aggregating individual level variables to the work unit level or disaggregating work unit variables to the individual level (Klein & Kozlowski, 2000a). Here, we focus on the cross-level effects of the work environment on the individual.

Our model depicts work attitudes and behavior at the individual level as a function of culture, climate and structure at the work unit level. Although a series of sequential relationships may link culture to structure to climate in the work environment as described by Kopelman et al. (1990), these relationships are undoubtedly reciprocal, likely contain complex feedback loops, and will require considerable empirical work to untangle. While this work needs to be completed, it is also the case that no studies to date have examined empirically the simultaneous, cross-level effects of work unit culture, climate and structure on individual work attitudes and behavior. As a first step, we focus here on individual attitudes and behavior as a function of the characteristics of the work environment in which the individual is embedded with the objective of describing the unique, cross-level effects of culture and climate.

We specifically focus on the culture and climate of case management teams because they are the context in which staff interactions and decisions take place in child welfare and juvenile justice

systems. There is evidence that work units such as case management teams can develop distinctive cultures and climates, creating multiple cultures and climates within an organization (Hofstede, 1998). Multiple cultures and multiple climates develop as a function of the contexts within which members function on a day-to-day basis (Stackman et al., 2000). Distinct cultures and climates are likely to emerge within work units in an organization when the organization is large and the units work independently under separate supervisors in different geographical locations (Trice & Beyer, 1993). These characteristics apply to the case management teams in this sample and contribute to multiple cultures and climates by defining who interacts with whom in the organization. Interactions within these teams are important to understanding how multiple cultures and climates form because interactions are the basis for the socialization of new members and for the individuals' interpretations of the meaning and impact of their work environment (Rentsch, 1990). While interactions at work are not necessarily defined by formal work units, when the preponderance of organizational interactions take place among the members of the same work unit under a distinct leader, the basis for a work unit culture and climate emerges.

Assessing multilevel relationships

The boundaries that separate culture, climate, structure, and work attitudes are related to the multilevel nature of the relationships and to the composition models that link measures to constructs across levels of analysis (Klein & Kozlowski, 2000a,b). Problems occur when variables such as culture are defined at higher levels (e.g., organizational work unit) and then measured with individual responses to surveys without aggregating the lower-level measures to work unit levels. Problems also occur when the relationships among variables are examined at a single level (e.g., individual) although some variables are work unit-level (e.g., structure) and some are individual-level variables (e.g., work attitudes). And other problems are created when measures of one construct, such as work attitudes, are combined with measures of another, such as climate, with no explicit rationale. All of this underscores the need for greater clarity in specifying the levels at which these variables operate, the explicit models used to create measures of higher-level variables, and the links between lower-level and higher-level variables.

Links between individual-level variables such as work attitudes and work unit-level variables such as organizational culture require statistical models that provide estimates of relationships between variables operationalized at different levels (James & Williams, 2000; Rousseau, 1985). Although cross-level inferences can be made using a variety of approaches, hierarchical linear models analysis (HLM) was designed specifically for cross-level inferences that link the characteristics of individuals to the characteristics of the groups in which they are nested (Bryk & Raudenbush, 1992).

When HLM is applied to organizational research, questions about cross-level relationships in multilevel studies can be formulated as two-level random intercept and random regression slope models (Bryk & Raudenbush, 1992; 84–86). The random intercept model can be applied when key predictors include variables measured at both the individual and work unit levels and the outcome variable is measured at the individual level. If such data are analysed at the individual level only and the clustering of individuals by work unit is ignored, standard errors are underestimated and the risk of type I errors inflated. If such data are aggregated and analysed at the work unit level only (e.g., using unit means as outcomes), individual-level predictors are excluded and inefficient and biased estimates of organizational effects can result (Bryk & Raudenbush, 1992, p. 86). Random intercept models allow these problems to be avoided, and individual outcomes can be assessed as a function of the characteristics of the individual and their work units.

The culture and climate of child welfare and juvenile justice case management teams

Child welfare and juvenile justice systems nationwide are inundated with hundreds of thousands of seriously emotionally disturbed children and families with chronic mental health and behavioral problems (Glisson, 1996; Glisson, Hemmelgarn, & Post, 2002; Martin, Peters, & Glisson, 1998). This study focuses on the culture and climate of child welfare and juvenile justice case management teams in one state-wide system. The case management teams are responsible for providing services to referred children in their respective counties. Children are referred to the case management teams because they have been identified as abused, neglected, status offenders, or delinquents. The children who receive services for abuse or neglect are children whose families provide inadequate supervision, food, or shelter and children who have been physically or sexually abused. The children who receive services because of status offences have violated juvenile law with behavior such as running away or truancy. The children who receive services because of delinquency have committed a variety of criminal offences. The case management teams are responsible for developing case management plans, monitoring the children's well-being, referring the children for needed services, and when necessary, ensuring that the children are placed in the most appropriate residential treatment settings.

These responsibilities, the nature of the problems, and the associated demands of judges, attorneys, advocates, and others, make child welfare and juvenile justice work stressful, indeterminate and complex. In addition, there are huge demands of case managers' time and energy with minimal remuneration. These characteristics of the work explain why a previous study of child welfare and juvenile justice case management teams found that climate indicators such as role conflict, emotional exhaustion, and depersonalization affected both the quality of care and service outcomes (Glisson & Hemmelgarn, 1998). These characteristics also are believed to explain the high turnover rates experienced nationwide among child welfare case managers (Cyphers, 2001).

In some states, child welfare and juvenile justice systems are separate systems and in others, such as the southeastern state in this study, child welfare and juvenile justice services are provided by the same statewide system. There is evidence that many child welfare and juvenile justice systems are inefficient and ineffective (Garbarino, 1999; Lindsey, 1994). A significant portion of this dysfunction has been tied to the cultures and climates of the bureaucracies that provide the services (Glisson, 2000; Glisson & Hemmelgarn, 1998; Schorr, 1997). Many of these public bureaucracies develop passive-defensive cultures that present barriers to innovation and resist new service technologies that could improve the quality and outcomes of services (Glisson, 1996). The cultures require extensive documentation, supervisory approval, and conformity as protection against intense public criticism, administrative sanctions, and frequent litigation. Constructive cultures that emphasize performance, support, and effectiveness are less common and case managers frequently are expected to follow well-worn, organizational paths of behavior that are unrelated to service quality or successful outcomes (Martin et al., 1998). Many of these cultures promote reactivity rather than responsiveness to the behavioral problems of the children, creating expectations that case managers will actually avoid providing service to those children and families most in need (Glisson & James, 1992; Nugent & Glisson, 1999).

As observed in a study of children's emergency health services, expected behaviors and normative beliefs that define cultures in high stress work environments such as child welfare and juvenile justice systems have what Shein (1992) labelled 'survival value,' regardless of their contribution to care (Hemmelgarn et al., 2001). That is, cultural norms support expected behaviors that workers come to depend on in their efforts to survive in a work environment that makes intense demands of their time, energy, and emotional resources. A better understanding of the roles that culture and climate play in public, human service organizations that make these types of demands of workers is necessary to improving the quality and outcomes of the services they provide.

Although preliminary studies suggested that culture and climate play important roles in child welfare and juvenile justice organizations, there is much more to learn. For example, studies to date failed to examine both climate and culture simultaneously and did not assess the unique role of each construct (Hemmelgarn et al., 2001). Moreover, no study measured culture in these organizations with a well-known, established instrument and only one study used a well-known instrument to measure climate in these organizations (Glisson & Hemmelgarn, 1998). We address those deficits in the study reported here.

Objectives of the study and analytic strategy

The objectives of the study are to assess whether: (1) culture and climate are distinct constructs; (2) culture and climate vary by case management team; and (3) team-level culture and climate are related to individual-level work attitudes, service quality, and turnover. The first objective of the study is addressed using confirmatory factor analysis (CFA) to provide evidence that culture, climate, structure, and work attitudes can be assessed as distinct constructs (Bollen, 1989; Byrne, 1998).

The second objective of the study is important because the use of composition models to measure work team characteristics (e.g., culture, climate) requires within-group consistency and significant between-group differences to confirm that the characteristics vary by team (Klein & Kozlowski, 2000a,b). Within-group consistency is assessed with r_{wg} and between-group differences are assessed with ANOVA-based eta-squared and HLM-based ICC (Bliese, 2000).

The third objective is met with three HLM analyses. HLM addresses a number of conceptual and technical difficulties that plague analyses of multilevel data in which individuals are nested or clustered within groups (Bryk & Raudenbush, 1992; Hofmann, Griffin, & Gavin, 2000). These include aggregation bias, misestimated standard errors, and heterogeneity of regression. HLM analyses will be used to estimate cross-level relationships between individual-level variables and team-level variables. The HLM analyses assess the proportions of variance in individual-level work attitudes, perceptions of service quality, and team member turnover explained by team-level organizational climate, culture, and structure, over and above the variance explained by individual-level demographic covariates (e.g., age, education, job tenure, gender, minority status).

Organizational Context

Child Welfare and Juvenile Justice Services
Child welfare and juvenile justice services are separated in many states and in others they are combined under one system. At the time of the study, child welfare and juvenile justice services in this Southeastern state were combined under one agency. The formal mission statement indicated that the statewide system provided 'services for children in state custody and at risk of custody so these children can strive to reach their full potential as productive, competent and healthy adults.' Case management teams carried out this mission across the state's 95 counties under the direction of team leaders who reported to team coordinators who reported to regional directors. Most of the children served by these teams were placed in the care of the state's child welfare and juvenile justice system by juvenile judges elected within each county. In this state, some 60 000 children appeared annually in county juvenile courts because of abuse, neglect, unruly behavior or delinquency.

Case Management Responsibilities

The case management teams in the study were responsible for providing services to children who ranged in age from newborns to 18 years old. The case management teams developed case management plans, monitored the children's progress, referred the children and their families for mental health services, and when necessary, placed children in residential settings that included foster families, group homes and residential treatment facilities. A high proportion of these children and their families had chronic histories of serious behavioral and mental health problems. There was general agreement among case managers that it was extremely difficult to obtain needed mental health services for these children and families and that appropriate residential placements frequently were not available. As a result, case managers described their jobs as stressful, complex and characterized by many failures.

Case Manager Qualifications

Because significant work demands were combined with low remuneration and limited resources, the child welfare and juvenile justice system reported difficulty in attracting and retaining qualified case managers. This has been, and continues to be, a nationwide problem. An increasing number of child welfare and juvenile justice systems required graduate degrees in social work, psychology or related fields until the mid-seventies, when the trend toward higher qualifications reversed. Over the three decades that followed there was a systematic reduction in the educational requirements for these positions nationwide. Most child welfare and juvenile justice systems at the time of this study did not require case managers to have experience or graduate training in social work, psychology or related fields. Bachelor degrees in a wide array of majors were common among the case managers in the study and graduate degrees in social work or related areas were rare. On-the-job training was limited and focused primarily on explaining the extensive paperwork required of case managers.

External Environment

When these data were collected in 2000 and 2001, the statewide system was facing major federal class action lawsuits for inadequate services. Juvenile judges and other community leaders were outspokenly critical of the services provided by the system and there was a general consensus throughout the state that significant improvements were needed. Several highly publicized cases appeared in the media, including cases in which children died while in the system's care. The Commissioner responsible for directing the statewide system resigned within a year after these data were collected.

Methods

Sample

The sample includes 283 case managers from 33 child welfare and juvenile justice case management teams located in 30 counties in one southeastern state. The teams average 10 members each (ranging from 8 to 12 members) and the majority of the members of each team were sampled (86 per cent overall). The counties served by these case management teams include three of the state's four major urban areas and 26 rural counties.

Table 1. Sample characteristics ($n = 283$)

	Nominal variables		Continuous variables	
	Value	Per cent	Mean	SD
Gender	Male = 0	25		
	Female = 1	75		
Minority	No = 0	71		
	Yes = 1	29		
Highest degree	High school = 1	11		
	Bachelors = 2	59		
	Some graduate work = 3	19		
	Masters = 4	10		
Turnover (one-year)	No = 0	48		
	Yes = 1	52		
Age (years)			39.28	11.09
Job tenure (years)			6.15	7.79

Data were collected from case managers with the instruments described below at regularly scheduled case management team meetings. The instruments presented Likert scale response categories on scannable questionnaires that required approximately 45 minutes to complete. Turnover data were collected from team leaders one year after the instruments were administered. Table 1 provides descriptive information about the sample, including age, job tenure, education, gender, turnover, and status as members of a minority group. As shown in Table 1, the sample has an average age of 39 years with six years of job tenure, is 75 per cent female, and 29 per cent minority (almost all minority members were African American). The sample includes case manager aides (no more than one per team) who have high school educations (11 per cent), case managers with bachelors degrees (59 per cent), case managers who have completed some graduate coursework (19 per cent), and case managers with masters degrees (10 per cent). Reflecting the high turnover rates that plague child welfare and juvenile justice systems nationwide, 52 per cent of the case managers quit their jobs in the year following the date these data were collected (Cyphers, 2001).

Measures

Culture

Measures of organizational culture were based on several scales from the Organizational Culture Inventory (OCI) (Cooke & Rousseau, 1988). Some items were changed or eliminated to ensure that the referent-shift consensus model described earlier could be applied and to ensure that the wording was appropriate for the sample and study.

The scales measuring culture were selected from two of the three dimensions—constructive and passive-defensive—assessed by the OCI. The scales were selected on the basis of our preliminary studies and understanding of the cultures of these systems as described previously. *Constructive cultures* promote positive, proactive behavior and encourage interactions that meet higher satisfaction needs (Cooke & Szumal, 2000). Constructive culture was measured by scales that assess *achievement/motivation* norms (e.g., 'take on challenging tasks'), *self-actualizing/individualistic* norms (e.g., 'develop full potential'), and *humanistic/supportive* norms (e.g., 'encourage others'). As shown in Table 2, the alpha reliabilities for these scales were 0.86 (achievement/motivation), 0.86 (self-actualizing/individualistic), and 0.89 (humanistic/supportive) for this sample.

Table 2. CFA measurement model ($n = 283$)

Manifest indicator	Number of items	Alpha reliability	Loadings on latent construct*				
			Psychological climate	Passive–defensive culture	Constructive culture	Structure	Work attitudes
Depersonalization	5	0.69	0.72				
Emotional exhaustion	6	0.92	0.84				
Role conflict	9	0.87	0.82				
Approval/consensus	9	0.85		0.82			
Conventional/conformity	7	0.82		0.91			
Dependent/subservient	4	0.82		0.88			
Achievement/motivation	7	0.84			0.82		
Self-actualizing/individualistic	10	0.86			0.94		
Humanistic/supportive	7	0.87			0.85		
Formalization	8	0.74				0.72	
Centralization	7	0.78				0.62	
Job satisfaction	11	0.85					0.77
Organizational commitment	13	0.88					0.82

*All loadings not shown are constrained to zero by the CFA model.

Passive-defensive cultures promote protective, reactive behavior and encourage interactions that meet lower security needs (Cooke & Szumal, 2000). Passive-defensive culture was measured by scales that assess *approval/consensus* norms (e.g., 'do things for the approval of others'), *conventional/conformity* norms (e.g., 'accept the *status quo*'), and *dependent/subservient* norms (e.g., 'be a good follower'). The alpha reliabilities for these scales (shown in Table 2) were 0.86 (approval/consensus), 0.81 (conventional/conformity), and 0.75 (dependent/subservient).

Climate

Climate was measured with several well-known scales developed from the Psychological Climate Questionnaire assembled by James and Sells (1981). The selected scales were linked in earlier research to the quality and outcomes of services in child welfare and juvenile justice organizations (Glisson & Hemmelgarn, 1998). Positive climates are perceived by case managers as low in *depersonalization* (e.g., 'I worry that this job is hardening me'), *emotional exhaustion* (e.g., 'I feel used up'), and *role conflict* (e.g., 'I do things that are against my better judgment'). Table 2 shows the alpha reliabilities for these dimensions were 0.69 (depersonalization), 0.92 (emotional exhaustion), and 0.87 (role conflict) with this sample.

Structure

Structure was measured with scales developed from Hall's (1963) original work that have been used for over two decades in human service organizations (e.g., Glisson, 1978; Glisson & Martin, 1980; Martin & Glisson, 1989). *Centralization* is the extent to which authority and decision-making is limited and hierarchical within the work unit (e.g., inverse of 'I am my own boss'). *Formalization* is the extent to which formal organizational rules, regulations, and procedural specifications guide the activities in the work unit (e.g., 'we follow strict operating procedures'). The alpha reliabilities (Table 2) for these dimensions of structure were 0.78 (centralization) and 0.74 (formalization) with this sample.

Work attitudes

Work attitudes were measured with scales based on the *organizational commitment* scale (e.g., 'I put in a great deal of effort to help this organization') originally developed by Porter, Steers, Mowday and Boulian (1974) and the *job satisfaction* scale (e.g., 'I am satisfied with the chance to use my abilities'), originally developed by Hackman and Oldham (1980). These scales were used in previous research with similar human service organizations and found to be related to a variety of job and organizational characteristics (Glisson & Durick, 1988). The alpha reliabilities (Table 2) for these dimensions of work attitudes were 0.85 (job satisfaction) and 0.88 (organizational commitment) with this sample.

Service quality

Service quality was measured with eight items developed specifically for child welfare and juvenile justice organizations. The items reflect a model of service provision developed by a group of experts assembled by The University of Tennessee Children's Mental Health Services Research Center that emphasizes service availability, responsiveness and continuity. The eight items were designed to assess such perceptions of case managers as whether or not they are able to 'be available to each child,' 'be responsive to the needs of each child,' 'place the well-being of children first,' and 'act in the best interest of each child.' Each team member in the study responded to these items and the alpha reliability for the measure of service quality was 0.92.

Turnover

Turnover was measured one year after the administration of the instruments described above. After one year, case management team leaders and members of the case management teams were contacted to

identify who among the original sample had quit their job during that one year period. As shown in Table 1, 52 per cent of the sample quit their job during that year. This type of high turnover is endemic to child welfare service systems nationwide (Cyphers, 2001).

Analyses

The following analyses were conducted to test that: (1) culture and climate are distinct constructs; (2) culture and climate vary by case management team; and (3) team-level culture and climate explain individual-level work attitudes, service quality, and turnover. First, a confirmatory factor analysis (CFA) tests whether respondents distinguish among the latent constructs by examining the factor validity of the scales used as indicators of climate, constructive culture, passive-defensive culture, structure, and work attitudes.

Second, a within-group consistency analysis using r_{wg} tests whether members of each of the 33 case management teams agreed within their teams in their responses to the culture, climate, and structure scales. This is a necessary prerequisite for composing the individual-level responses to higher-level (i.e., team) constructs. In addition to within-groups consistency, between-groups analysis using eta-squared via ANOVA and ICC via HLM is conducted to test whether there are also between-group differences among the case management teams on each construct. This is important because within-group consistency can occur without between-group differences when there is a consistency in responses across larger organizational units or an entire sample, as well as within the work units of interest (i.e., case management teams). Within-group consistency and between-group differences indicate that an appropriate work-unit level (e.g., case management team) has been selected for study (Rentsch, 1990).

Three HLM analyses employ a random intercepts model to estimate cross-level relationships between team-level variables and individual-level attitudes, perceptions, and behavior (Bryk & Raudenbush, 1992; Hedeker, Gibbons, & Flay, 1994). Specifically, the first HLM analysis estimates the contribution of team organizational climate, team constructive culture, team passive-defensive culture, and team structure to individual-level work attitudes, over and above the contribution made by the individual-level covariates (i.e., age, education, job tenure, gender, minority status). The second HLM analysis describes the contribution of team constructive culture, team passive-defensive culture, and team structure to service quality. Finally, the third HLM analysis assesses turnover as a function of team culture, climate, and structure.

Results

Confirmatory factor analysis (CFA)

A CFA of the proposed measurement model shown in Figure 1 was conducted with LISREL 8 using maximum likelihood estimation procedures. The measurement model included the scales described above as indicators of five latent constructs: climate, constructive culture, passive-defensive culture, structure and work attitudes. The results of the CFA are shown in Tables 2 and 3. The model specifies that the latent constructs affect only their respective indicators as shown in Table 2. The five latent constructs were allowed to correlate and correlations among the error terms for the indicators were constrained to zero. It is important to note that the CFA was not designed to determine whether items
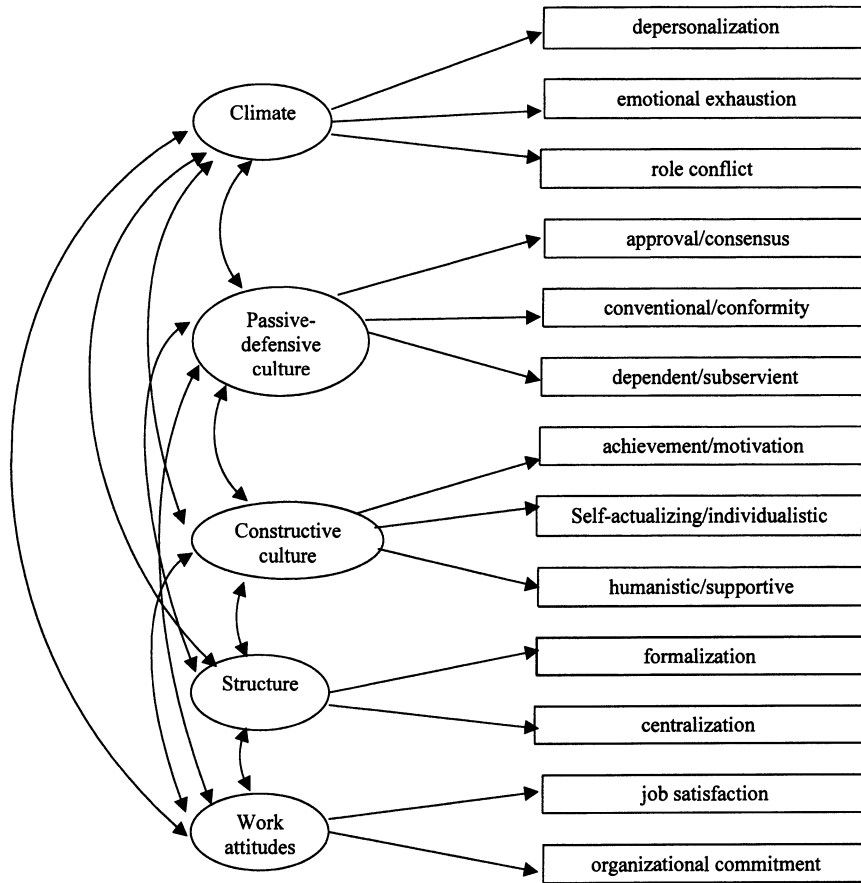
Figure 1. Confirmatory Factor Model

form scales since that had been established previously. Rather, following strategies described by Bollen (1989), Byrne (1998), and others, the intent was to confirm that the latent constructs were measured by the respective scales. It is also important to note that the causal sequence of relationships that link the factors was not tested. Instead, the CFA confirmed that the culture, climate, structure, and work attitude scales measured distinct constructs.

Fit indices in Table 3 include the standardized root mean squared residual (SRMR), root mean square error of approximation (RMSEA), comparative fit index (CFI), and adjusted goodness-of-fit index (AGFI). These indices include absolute indices (AGFI, SRMR, RMSEA) as well as an incremental fit index (CFI) in which the hypothesized model is assessed in comparison to a null model. Because

Table 3. CFA fit indices ($n = 283$)

Index	Value
Root mean square error of approximation (RMSEA)	0.056
Comparative fit index (CFI)	0.97
Standardized root mean squared residual (SRMR)	0.047
Adjusted goodness of fit index (AGFI)	0.91

different indices can provide different information and are sensitive to different aspects of model fit, multiple indices should be examined. For example, SRMR is more sensitive to the specified factor covariance structure, and RMSEA is more sensitive to the specified factor loadings (Hu & Bentler, 1999).

Rules of thumb for evaluating models with fit indices continue to evolve, but the practice of specifying AGFI > 0.90 and CFI > 0.90 for acceptable model fit is widespread in applied social science research (Byrne, 1998). Applied rules of thumb specify acceptable fit for RMSEA < 0.10, moderate fit for RMSEA < 0.08, and close fit for RMSEA < 0.05 (Browne & Cudeck, 1993; MacCallum, Browne, & Sugawara, 1996). Hu & Bentler (1999) recommended a cut-off value for SRMR of 0.08 or less to be used along with either a cut-off value of close to 0.95 for CFI or a cut-off value close to 0.06 for RMSEA. Using these rules of thumb, the fit indices in Table 3 provide strong support for the proposed measurement model that specifies climate, culture, structure, and work attitudes as distinct constructs.

Models were tested that combined culture and climate scales on a single factor and that tested other reduced factor models (e.g., climate and work attitudes combined). The fit indices of these reduced models were not acceptable. Of particular relevance is the confirmation of a single general psychological climate factor and confirmation of two culture factors. A reduced model was tested that combined the constructive and passive-defensive culture indicators on a single culture factor, but the fit indices were not acceptable. Supporting previous independent analyses of each construct, this combined analysis provides evidence that climate and culture are single- and multiple-dimensional constructs, respectively.

Latent construct correlations

The indicators of each construct were summed to form a measure of each latent construct, and the correlation matrix in Table 4 shows the relationships among the five constructs. The matrix also includes simple correlations with the demographic characteristics of the sample and with the outcomes. The matrix is useful for assessing the extent to which common method variance explains relationships among the constructs. The absolute values of the correlations among the five constructs vary between 0.02 and 0.61, with an absolute value average of 0.37. Most importantly, the pattern conforms to theoretical expectations. For example, case managers' responses to constructive culture items are unrelated to their responses to structure items (−0.02), but are related to their work attitudes (0.48).

The highest correlation among the five constructs is between work attitudes and psychological climate (0.61) which replicates findings reported in previous studies. The high correlation consistently found between the two constructs has resulted in some researchers combining measures of climate and measures of work attitudes into a single construct. To test whether psychological climate and work attitudes should be merged into one construct, another CFA was conducted with the indicators of the two factors combined to load on a single latent construct. The fit indices for the reduced model significantly deteriorated, providing evidence that although related, work attitudes and psychological climate represent distinct factors.

Within-group consistency analysis

An index of within-group consistency of responses, r_{wg}, was computed for each of the four constructs that describe characteristics of the case management team (James, Demaree, & Wolf, 1993). The range of indices and their average are reported for each construct in Table 5. The r_{wg} values for each

Table 4. Correlation matrix ($n = 283$)

	Age	Job tenure	Education	Female	Minority	Work attitudes	Service quality	Turnover	Constructive culture	Passive–defensive culture	Climate
Age											
Job tenure	0.53‡										
Education	−0.07	−0.24‡									
Female	−0.08	0.15*	−0.16†								
Minority	0.02	0.00	0.11	−0.07							
Work attitudes	−0.07	−0.13*	−0.09	−0.02	0.09						
Service quality	−0.04	−0.05	0.00	0.00	0.12*	0.41‡					
Turnover	−0.14*	−0.11	0.03	−0.02	−0.07	−0.07	−0.13*				
Constructive culture	0.02	−0.01	0.00	0.02	0.14*	0.48‡	0.76‡	−0.18†			
Passive–defensive culture	−0.14*	0.00	−0.01	0.19‡	−0.30‡	−0.42‡	−0.32‡	0.06	−0.32‡		
Climate	0.00	0.12*	0.13*	0.11	−0.21‡	−0.61‡	−0.26‡	0.04	−0.24‡	0.50‡	
Structure	0.06	0.12*	−0.06	0.09	−0.18†	−0.30‡	−0.04	0.02	−0.02	0.42‡	0.37‡

*$p < 0.05$; †$p < 0.01$; ‡$p < 0.001$.

Table 5. Within–group consistency analysis for 33 teams ($n = 283$)

Construct	r_{wg}		
	Minimum	Maximum	Average
Psychological climate	0.72	0.98	0.89
Passive–defensive culture	0.70	0.97	0.89
Constructive culture	0.81	0.98	0.94
Structure	0.81	0.97	0.91

construct for all teams range between 0.70 and 0.98, with an average between 0.89 and 0.94. These values indicate high within-group consistency of responses. These values, when combined with factor validity and the between-team differences described below, provide justification for aggregating individual-level responses to measure team-level constructs.

Between-groups analysis

Between-group differences were calculated using the intraclass correlation coefficient and eta-squared. In addition to the within-group consistency of responses as shown by r_{wg} values, the coefficients reported in Table 6 provide evidence of between-team differences. The ICC (type 1) computed via a random intercepts model indicates the proportion of total *variance* that is between teams, and eta-squared indicates the proportion of total *variation* that is between teams (see Bliese, 2000: 355; Bryk & Raudenbush, 1992: 63; and Cohen & Cohen, 1983: 197). Type I ICC values are typically less than 0.20 and are usually smaller than eta-squared values (Bliese, 2000). The data in Table 6 indicate that the consistency of responses within each team is not merely a function of response consistency across larger organizational units (that comprise multiple teams) or in the entire sample. That is, high r_{wg}'s could be found within teams if there was a high consistency of responses throughout an entire sample or organizational unit that included multiple teams. So the meaningful composition of responses by team was supported by between-team differences that accompany within-team similarities. These analyses show that a significant proportion of the total variance in responses to each measure is explained by team membership.

The factor validity of the responses, the within-group consistency of responses, and the between-group differences justified composing measures of team climate, team constructive culture, team passive-defensive culture, and team structure for each case management team. These team compositions were included in the following cross-level analyses of relationships between individual-level and team-level variables.

Table 6. Between–groups analysis for 33 teams ($n = 283$)

Construct	Team variance	Residual variance	ICC	MS_{BG}	MS_{WG}	Eta squared
Psychological climate	38.10[†]	185.55	0.17	534.45	185.70	0.27[‡]
Passive–defensive culture	44.78[†]	194.68	0.19	562.50	234.68	0.23[‡]
Constructive culture	34.99*	253.05	0.12	547.08	261.56	0.21[‡]
Structure	12.54[†]	65.30	0.16	177.05	64.52	0.26[‡]

*$p < 0.05$; [†]$p < 0.01$; [‡]$p < 0.001$.

Hierarchical linear models analysis

Three HLM analyses were conducted to test the hypothesized relationships between team-level constructs and the individual-level outcomes of work attitudes, service quality, and turnover (Bryk & Raudenbush, 1992). The analyses were conducted using maximum marginal likelihood estimation for mixed effects regression models via the MIXREG program (Hedeker & Gibbons, 1996; Hedeker et al., 1994). As shown in Tables 7, 8, and 9, each HLM analysis was conducted in a hierarchical fashion that included three stages (Bryk & Raudenbush, 1992; Hofmann et al., 2000). In the first stage, only the team 'random effects' were included (Byrk & Raudenbush, 1992; Hedeker et al., 1994). This provided estimates of the team variance (i.e., variance in the dependent variable attributable to teams) and residual variance without individual-level covariates or team-level constructs in the model. In the second stage, individual-level demographic covariates (i.e., age, job tenure, education, gender, and minority status) were added to control for any team-related differences in these variables.

In the third stage, team-level constructs (team culture, team climate, team structure) were included. The three stage analysis provides: (1) estimates of the incremental proportions of team and residual

Table 7. HLM analysis of work attitudes ($n = 283$)

Model	Variable	Coefficient	SE	Z
Random effects only	Constant	68.911[‡]	1.388	49.654
	Team variance	40.384[†]	15.675	2.576
	Residual variance	186.651[‡]	16.681	11.190
	ICC	0.178		
Individual-level covariates	Constant	77.106[‡]	5.175	14.900
	Age	−0.006	0.093	−0.069
	Job tenure	−0.254	0.132	−1.919
	Education	−1.986*	0.948	−2.096
	Female	−0.624	2.009	−0.310
	Minority	1.777	2.017	0.881
	Team variance	34.112[†]	14.006	2.435
	Residual variance	183.156[‡]	16.366	11.192
	Incremental proportion of team variance explained	0.155		
	Incremental proportion of residual variance explained	0.019		
Individual-level covariates and team-level predictors	Constant	89.941[‡]	19.138	4.700
	Age	−0.053	0.087	−0.603
	Job tenure	−0.209	0.127	−1.645
	Education	−2.334*	0.910	−2.568
	Female	0.067	1.929	0.035
	Minority	−1.312	1.955	−0.671
	Team climate	−0.410[†]	0.153	−2.685
	Team constructive culture	0.361[†]	0.130	2.776
	Team passive–defensive culture	−0.091	0.163	−0.600
	Team structure	−0.232	0.227	−1.024
	Team variance	0.000		
	Residual variance	178.800[‡]	15.031	11.895
	Incremental proportion of team variance explained	0.845		
	Incremental proportion of residual variance explained	0.023		

*$p < 0.05$; [†]$p < 0.01$; [‡]$p < 0.001$.

Table 8. HLM analysis of service quality ($n = 283$)

Model	Variable	Coefficient	SE	Z
Random effects only	Constant	30.084[‡]	0.594	50.608
	Team variance	5.895*	2.880	2.047
	Residual variance	47.039[‡]	4.201	11.197
	ICC	0.111		
Individual-level	Constant	31.064[‡]	2.569	12.092
covariates	Age	−0.015	0.046	−0.322
	Job tenure	0.032	0.066	−0.481
	Education	−0.298	0.476	−0.626
	Female	0.453	1.008	0.449
	Minority	1.427	0.993	1.437
	Team variance	5.119*	2.680	1.910
	Residual variance	46.905[‡]	4.188	11.200
	Incremental proportion of team variance explained	0.132		
	Incremental proportion of residual variance explained	0.003		
Individual-level	Constant	6.860	9.525	0.720
covariates and	Age	−0.027	0.043	−0.613
team-level predictors	Job tenure	−0.015	0.063	−0.241
	Education	−0.280	0.453	−0.617
	Female	0.608	0.960	0.634
	Minority	0.758	0.973	0.779
	Team climate	0.017	0.076	0.229
	Team constructive culture	0.317[‡]	0.065	4.927
	Team passive–defensive culture	−0.119	0.081	−1.457
	Team structure	0.119	0.113	1.057
	Team variance	0.000		
	Residual variance	44.289[‡]	3.723	11.895
	Incremental proportion of team variance explained	0.868		
	Incremental proportion of residual variance explained	0.056		

*$p < 0.05$; [†]$p < 0.01$; [‡]$p < 0.001$.

variance explained first by individual-level demographic covariates and then by team-level characteristics; and (2) estimates of the relationships that link each team-level construct with the individual-level criteria of work attitudes, service quality, and turnover, after controlling for all individual-level covariates (Bryk & Raudenbush, 1992: 88–91; Hofmann et al., 2000). For each outcome variable, preliminary analyses tested the homogeneity of regression slopes for the individual covariates. Fixed effects were confirmed for each covariate.

The intraclass correlation (ICC) and test of team variance for the model that includes only the team random effects (stage one) in Table 7 show that a modest but significant proportion of the variance in work attitudes was explained by team membership (17.8 per cent). In the second stage of the analysis, Table 7 shows that the individual-level demographic characteristics (i.e., age, job tenure, education, gender, and minority status) explained a small proportion of the team-based variance in individual-level work attitudes (15.5 per cent). This was calculated by subtracting the team variance in the current stage from the team variance in the unconditional or first stage with no covariates, and dividing by the random team variance in the first stage (Bryk & Raudenbush, 1992: 90). In a similar fashion, the proportion of residual variance explained by the individual-level covariates was calculated (1.9 per cent). Education is the only variable that was significantly related to work attitudes at the individual-level analysis.

The team-level characteristics in the third stage of the analysis (i.e., team climate, team constructive culture, team passive-defensive culture, and team structure) accounted for all of the remaining

Table 9. HLM analysis of turnover ($n = 283$)

Model	Variable	Coefficient	SE	Z
Random effects only	Constant	0.519[‡]	0.040	13.044
	Team variance	0.025*	0.013	1.933
	Residual variance	0.224[‡]	0.020	11.199
	ICC	0.100		
Individual-level	Constant	0.883[‡]	0.174	5.062
covariates	Age	−0.005	0.003	−1.718
	Job tenure	−0.005	0.004	−1.119
	Education	−0.021	0.032	−0.647
	Female	−0.037	0.068	−0.548
	Minority	−0.079	−0.068	−1.170
	Team variance	0.027*	0.013	2.067
	Residual variance	0.214[‡]	0.019	11.197
	Incremental proportion of team variance explained	0.000		
	Incremental proportion of residual variance explained	0.045		
Individual-level	Constant	3.229[‡]	0.661	4.883
covariates and	Age	−0.005	0.003	−1.619
team-level predictors	Job tenure	−0.006	0.004	−1.290
	Education	−0.020	0.031	−0.629
	Female	−0.060	0.067	−0.895
	Minority	−0.039	0.068	−0.572
	Team climate	−0.007	0.005	−1.402
	Team constructive culture	−0.025[‡]	0.004	−5.526
	Team passive–defensive culture	0.001	0.006	0.083
	Team structure	−0.001	0.008	−0.102
	Team variance	0.000		
	Residual variance	0.213[‡]	0.018	11.895
	Incremental proportion of team variance explained	0.999		
	Incremental proportion of residual variance explained	0.004		

*$p < 0.05$; [†]$p < 0.01$; [‡]$p < 0.001$.

team-based variance in work attitudes (84.5 per cent). This is represented by the team variance being reduced to near zero. Team climate and team constructive culture were each significantly related to work attitudes after controlling for other team-level constructs, the individual-level demographic characteristics of the case managers, and the random team effects. Individual case managers in teams with more positive climates and more constructive cultures reported more positive work attitudes.

Table 8 describes the results of an HLM analysis of individual-level perceptions of service quality as the dependent variable. There were significant between-team differences in the perceptions of service quality. The individual-level demographic characteristics included in stage two explained a lower proportion of team-based variance in service quality (13.2 per cent) and residual variance (0.3 per cent) than they explained in work attitudes. As in the variance in work attitudes, the team-level characteristics (i.e., team climate, team constructive culture, team passive-defensive culture, and team structure) added in the third stage accounted for the remaining team-based variance in service quality (86.8 per cent), and reduced the team variance to near zero. A significant proportion of unique variance in service quality was explained by one team-level variable, constructive culture. Case managers in teams with more constructive cultures described a higher quality of service.

The analysis of turnover was conducted in a similar fashion. Again, there were significant differences in turnover between the teams. The individual-level variables explained no team variance and very little residual variance in turnover. No individual-level variable was significantly related to

turnover. The team variance in turnover was explained in full by the team-level variables added in the third stage of the analysis. Similar to the results for service quality, team constructive culture was the only variable to explain unique variance in turnover over a one-year period and the effect is large ($z = 5.526$; $p < 0.00000$).

Discussion

This study of child welfare and juvenile justice case management teams contributes to knowledge about organizational climate and culture in several areas. First, the core concepts for culture and climate derived from the organizational literature by Verbeke et al. (1998) guided the operational definitions and the models for composing higher-level (i.e., team) measures of each construct from individual-level responses. Second, empirical evidence that culture and climate are distinct constructs was provided by a confirmatory factor analysis (CFA) of scales developed from well-known instruments and used as indicators of the latent constructs. Third, within-team consistency of responses and between-team differences in responses indicated that the constructs could be meaningfully composed by case management team to measure team climate, team constructive culture, and team passive-defensive culture. Fourth, hierarchical linear models (HLM) analyses provided estimates of cross-level relationships that link team organizational climate and team organizational culture to individual attitudes, perceptions, and behavior. More constructive team cultures were associated with more positive work attitudes, higher service quality, and less turnover. In addition, more positive team climates (less depersonalization, emotional exhaustion, and role conflict) were associated with more positive individual work attitudes.

The findings support core concepts that describe climate as the way individuals perceive the personal impact of their work environment and culture as the behavioral expectations and normative beliefs in their organizational work unit (Verbeke et al., 1998). Climate is therefore defined as a property of the individual (that may be shared with other members of a work unit) and culture is defined as a property of the work unit (James et al., 1990). The findings support our argument that these definitions require different models to compose organizational culture and organizational climate from individual-level responses. Organizational climate was composed using a direct consensus model, and organizational culture was composed using a referent shift consensus model.

The meaningful composition of team-level constructs from individual-level responses requires: (1) an appropriate composition model; (2) measures of individual-level responses that distinguish among the constructs; (3) within-team consistency in the individual-level responses to those measures; and (4) between-team differences in the individual-level responses to the measures. While the latter two points were emphasized previously as prerequisites for the meaningful composition of individual-level measures to work-unit measures, the first two points should also be emphasized.

Among the individual-level and team-level characteristics, team constructive culture was the most important predictor of work attitudes, service quality and turnover, and the only variable that predicted all three outcomes. Members of teams with more constructive cultures had more positive work attitudes, perceived the services they provided to be of a higher quality, and were less likely to quit their jobs. Team climate predicted one individual-level outcome, work attitudes, and team passive-defensive culture did not directly predict any of the three outcomes.

Previous studies of child welfare and juvenile justice case management teams examined the effects of climate without including culture and found that climate predicted both work attitudes and service quality (Glisson & Durick, 1988; Glisson & Hemmelgarn, 1998). And, as indicated by the simple

correlation coefficients reported in the present study, climate and culture were each related to both outcomes. However, when both culture and climate were included in the hierarchical analyses, only constructive culture explained unique variance in service quality and turnover. This suggests that previous relationships reported between organizational climate and service quality in studies that excluded culture may have confounded climate and culture. This illustrates and underscores the value of examining the effects of both climate and culture simultaneously and the need for additional multilevel research that focuses on understanding the unique variance that each construct explains in individual-level outcomes.

Although team passive-defensive culture did not predict any of the three outcomes directly, a mediation model that links culture to climate was examined in a *post hoc* analysis (Kopelman et al., 1990). The additional HLM analysis examined psychological climate at the individual level as a function of team constructive culture, team passive-defensive culture, and structure (and the individual-level covariates). The analysis found that passive-defensive culture was the only significant team-level predictor of psychological climate. Members of teams with passive-defensive cultures reported less positive psychological climates. Although team passive-defensive culture had no direct relationship with work attitudes, there is an indirect relationship through psychological climate as suggested by the zero-order correlations. The *post hoc* analysis supports the notion that defensive cultures affect work attitudes by creating negative climates. Again, this indirect effect suggests that the roles of culture and climate can be confounded when either is omitted from an analysis of work environment characteristics.

Limitations

A number of concerns can be raised about the study. Among others, these include problems with common method error variance, the limited number of culture and climate scales included in the study, and the subjective nature of the service quality measure. Regarding the first issue, error variance associated with response bias and other sources is undoubtedly responsible for a portion of the covariance observed among these constructs. Although the confirmatory factor analysis, within-team consensus and between-team differences provide support for our measures of work environment, response bias may explain a portion of the covariance shared with the case managers' work attitudes and perceptions. The methodologies we used were designed in part to control for this threat. First, the simultaneous analysis of multiple predictors such as culture, climate and structure captures the unique variance explained in the outcome by each predictor over and above the others in the model. Since some portion of the response bias and other sources of common method error variance are shared across these measures, the unique variance in work attitudes explained by each predictor is less likely to include that error variance. Second, the HLM analytic approach is designed to control for the aggregation bias and underestimated standard errors in clustered data that inflate the risk of Type I errors. While these methods do not eliminate the problems posed by common method error variance, they reduce the risks of Type I errors created by common method error.

The study included a limited number of culture and climate scales, so the findings cannot be generalized to all indicators. The dimensions of culture and climate selected for the study were based on preliminary studies and decades of work in child welfare and juvenile justice systems. We selected the specific measures of climate for the present study because we had linked them to outcomes in previous studies (Glisson, 2000; Glisson & Durick, 1988; Glisson & Hemmelgarn, 1998). And the measures of culture were selected on the basis of previous studies that identified barriers to service presented by certain behavioral expectations and norms in these systems (Glisson, 2000; Glisson & James, 1992; Martin, Peters, & Glisson, 1998; Nugent & Glisson, 1999). At the same time, it is possible that other scales could provide a different picture of the impact of culture and climate on individual-level

attitudes and behavior. And, it is possible that the indicators of culture and climate identified here may not play the same roles in other types of organizational settings.

Finally, service quality was assessed on the basis of case managers' perceptions of service availability, responsiveness and continuity. The subjectivity of case managers' perceptions is a concern, but research in other types of organizations measured service quality in similar ways. For example, workers' perceptions of service quality correlated with customers' perceptions of service quality in banks, and Schneider and colleagues argued that these perceptions are important to understanding how successful service organizations create climates 'for service' (Schneider, Bowen, Ehrhart, & Holcombe, 2000). Although we believe that service quality is distinguishable from climate, we measured service quality using the perceptions of workers. And the items in our measure were developed by a team of experts who designed the items to capture the most salient dimensions of service quality in child welfare and juvenile justice systems. At the same time, the subjective nature of the measure remains a concern and limitation. While case managers' perceptions provide important information about these service systems, objective measures based upon the direct observation of service could provide different outcomes.

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Author biographies

Charles Glisson (Ph.D., University of Tennessee) is University Distinguished Research Professor and Director of the Children's Mental Health Services Research Center (CMHSRC). He has directed inter-disciplinary, NIMH-funded research continuously since founding the CMHSRC 15 years ago. Dr Glisson won the Outstanding Research Award from the national Society for Social Work and Research for his research linking organizational climate, interorganizational coordination, service quality, and service outcomes. In addition, his organizational research was referenced in two recent NIMH publications, *Translating Behavioral Science into Action* (NIH, 2000–4699) and *Bridging Science and Service* (NIH, 1999–4353), encouraging mental health researchers to give more attention to organizations as the social context for mental health treatment and services. His current research is focused on testing organizational interventions designed to create work environments that contribute to effective services.

Lawrence R. James (Ph.D., University of Tennessee) holds the Pilot Oil Chair of Excellence in Management and is a Professor of Management and Industrial-Organizational Psychology in the College of Business Administration at the University of Tennessee. Dr James is a leading international scholar on organizational research methods. He has developed a number of quantitative research methods, including the widely used r_{wg}. His publications on psychological climate, aggregation bias, inter-rater agreement, and cross-level inference are frequently cited works. In addition, his definitions of organizational and psychological climate are used extensively by organizational researchers who study the effects of work environments. Much of his current research is focused on conditional reasoning, an original implicit measurement system designed to assess aggression and other individual characteristics using inductive reasoning tasks.

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