

Technical Report 1365

Organizational Climate Annotated Bibliography

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**United States Army Research Institute
for the Behavioral and Social Sciences**

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ORGANIZATIONAL CLIMATE ANNOTATED BIBLIOGRAPHY

EXECUTIVE SUMMARY

Research Requirement:

The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) is pursuing programs of research focused on establishing, developing, and maintaining positive organizational climates. To better inform this research, the annotated bibliography was written to identify themes relevant to the programs of research and areas in need of further research.

Procedure:

The researchers conducted a literature review and developed a list of references to examine in depth. The list was subjected to external team feedback and revised before being sent to an organizational climate subject matter expert (SME) for review. The final list consists of 58 references. Researchers then annotated references and produced a literature review synthesis.

Findings:

There were three overarching themes (i.e., concept areas): (1) *Organizational Climate and Culture Differentiated and Integrated*, (2) *Climate Theory and Models*, and (3) *Measuring Organizational Climate*.

Concept Area 1: *Organizational Climate and Culture Differentiated and Integrated* focuses on the history between organizational climate and organizational culture research. The references capture the debate about the conflation and distinction of organizational climate and organizational culture. The more recent references highlight the call for the integration of the concepts to create a more comprehensive picture of social-psychological organizational characteristics and their influence on important human and performance outcomes.

Concept Area 2: *Climate Theory and Models* focuses on the conceptualization of organizational climate, how it manifests itself, and the many contributing factors to climate development and maintenance. To differentiate the type of factors that influence the characteristics of organizational climate (e.g., positive/negative climate, climate strength) sub-sections of this concept area were created. *Molar, Strategic, or Process Climate* focuses on understanding the type of climate that is being measured and what outcomes the climate may influence. *Climate Formation* focuses on what contributes to organizational climate and contains two sub-areas: *Developing and Sustaining Organizational Climate* focuses on the quality of the climate and *Factors Contributing to the Development, and Sustainment, of Organizational Climate* focuses on the antecedents to the climate quality. Leadership is a prominent contributing factor and, therefore, is discussed in its own sub-area, *Leadership as an Antecedent*.

Concept Area 3: *Measuring Organizational Climate* focuses on the challenges associated with measuring organizational climate. The key references focus on determining the level of analysis, wording of measurement items (e.g., the referent), aggregation, and dispersion.

Utilization and Dissemination of Findings:

This document is a summary and synthesis of the body of literature on organizational climate. Internal to the Army, this paper will help inform on-going research on positive organizational climates, which has implications for developing assessment methods and training tools and for providing policy recommendations for the operational and institutional Army. An external audience may also find this document useful as an overview of the organizational climate literature.

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Organizational Climate Annotated Bibliography

Introduction

The needs of the U.S. Army are changing, leading to a call for a more agile, adaptive, and innovative force to meet the demands of functioning in, and addressing uncertain, complex, and ambiguous operational environments (OE) and mission sets (The Army Vision: Strategic Advantage in a Complex World, 2015, The U.S. Army Operating Concept: Win in a Complex World, 2014). Positively shaping organizational climate, allowing Soldiers the latitude to explore options and achieve their full potential, could promote readiness for handling increased complexity and serve as a significant enabler to mission success (ADRP 6-22, 2012). A positive organizational climate leads to improved daily functioning, higher motivation, increased trust, and better team performance (Ehrhart, Schneider, & Macey, 2014; Kuenzi & Schminke, 2009, AB #14¹), which are all important outcomes relevant to Army needs.

Organizational climate is immensely complex and interactive and, thus, a deep understanding of it is necessary to affect change while improving long-term Army readiness. Organizational climate is commonly defined as:

A summary perception derived from a body of interconnected experiences with organizational policies, practices and procedures (e.g., from leadership and HR practices, and so forth) and observations of what is rewarded, supported, and expected in the organization with these summary perceptions becoming meaningful and shared based on the natural interactions of people with each other. (Schneider, González-Romá, Ostroff, & West, 2017, p. 468.)

Within the Army, climate is defined as:

How members feel about the organization and comes from shared perceptions and attitudes about the unit's daily functioning. Climate affects motivation and the trust Soldiers and Army Civilians feel for their team and leaders. Climate is generally a short-term experience, depending upon a network of personalities within the organization that changes as people come and go. (ADRP 6-22, 2012, p. 7-1, para 7-6.)

To evaluate and influence climate, more information is needed regarding the relationship between climate and culture, the complexities of measuring climate, and the application of climate research within a military context. The purpose of this organizational climate annotated bibliography (AB) is to document seminal work, understand research trends and on-going challenges, and identify areas in need of further research. This document is not intended to be an in-depth review of organizational climate literature.

The synthesis below highlights the main topics covered in the organizational climate literature and provides definitions, a brief overview of the trends of research, and potential future research directions. Appendix A contains the annotations of the key references, providing a

¹ When annotated references are cited, AB # (AB = annotated bibliography) follows the in-text citation to indicate the associated annotation in Appendix A.

summary of each. Appendix B is a list of key organizational climate references that provides a quick snapshot of important topics within organizational climate literature. Research on positive organizational climates has implications for developing assessment methods and training tools and for providing policy recommendations for the operational and institutional Army. This annotated bibliography can provide direction for continued research relevant to the U.S. Army.

Method

The steps to develop the annotated bibliography were iterative. The authors guided the search process with desire to better understand (a) the relationship between organizational climate and culture, (b) types of focused climates, and (c) organizational climate measurement, including issues related to data aggregation. The process began with a basic literature review, starting with finding recent review articles and noting the scholarly works that shaped the field of organizational climate and culture. Researchers primarily used Google Scholar, PsychInfo, and PsycArticles to find relevant publications, and used different iterations of the following search terms: organizational climate, organizational culture, work climate, work atmosphere, social climate, social context, social atmosphere, leadership, sense making, and shared meaning. The publications came from referred journals (e.g., *Journal of Applied Psychology*, *Academy of Management Review*, *Journal of Organizational Behavior*) and the goals were to document seminal work, understand trends and on-going challenges, and identify areas in need of further research. Researchers established criteria to determine the quality of the publications to include: (a) relevance (b) impact on the field (c) empirical and landmark theoretical research and (d) frequency of citation.

An initial list of publications under consideration for annotation was developed. Researchers conducted a brief review of the publications and removed references not directly related to organizational climate research, not theoretically and methodologically sound, or poorly written publications from the list. Other scientists working in the area of organizational climate research reviewed the revised list, consisting of more than 100 references. The final publication list (Appendix B) consists of 58 publications, which were all annotated.

During the process of searching for relevant publications researchers developed themes to capture and categorize major points from the literature. Researchers did rudimentary content analysis to identify themes, iterated separately, and then came together to finalize high level themes from the organizational climate literature: (a) *Organizational Climate and Culture Differentiated and Integrated*, (b) *Climate Theory and Models*, and (c) *Measuring Organizational Climate* (see Appendix A for additional information on themes as an organizing structure).

Fifty-eight publications were annotated. During the review of the material researchers compared definitions, methods of measurement, theoretical and conceptual underpinnings, and findings of empirical work. The process to draft and review the annotations consisted of three steps.

- Step 1: Initial annotations were drafted, then reviewed and compared to the original publication by another annotator.

- Step 2: After initial edits were made, a team member not involved in drafting annotations reviewed the annotations to determine:
 - What is the main point of the publication?
 - What information is missing from the annotation that would help create a more complete picture of the purpose of the publication?
 - What information is covered in the annotation that is not necessary and could be removed?
- Step 3: The final internal step of annotation review ensured that organization and voice were consistent; this was conducted by a senior researcher within ARI.

Literature Review Synthesis

What Is Organizational Climate?

Different terms have been used to describe organizational climate: organizational environment, atmosphere, context, character, and social climate (Ashforth, 1985, AB #18; Denison, 1996, AB #2; James & Jones, 1974, AB #10; Schneider & Reichers, 1983, AB #17). Most organizational climate definitions reflect the experience of shared perceptions (distinguishing it as a group-level construct) and shared meaning attached to events, policies, practices, and procedures highlighting the social interactions that happen for sense-making and meaning-making to occur (Ostroff, Kinicki, & Muhammad, 2012, AB #5; Zohar & Hofmann, 2012, AB #4). A current, and commonly used, definition of organizational climate is “the shared meaning organizational members attach to the events, policies, practices, and procedures they experience and the behaviors they see being rewarded, supported, and expected” (Ehrhart et al., 2014, p. 69).

Organizational and psychological climate. The definition of organizational climate has varied throughout time, and still does to some extent. Early research conceptualized organizational climate as a unit-level construct. However, in the 1960s and 1970s, research was conducted that measured climate at the individual level (e.g., Pritchard & Karasick, 1973). This led to criticism and debate over the conceptualization of organizational climate, psychological climate, and how they were distinct from each other and other commonly studied concepts, such as job satisfaction (Guion, 1973, AB #1). Research started by showing psychological climate and job satisfaction were different and then moved on to show the differences between psychological climate and organizational climate.

Schneider and Snyder (1975, AB #12) show that psychological climate and job satisfaction are not highly correlated to each other, supporting the argument that climate is more descriptive and perceptual versus satisfaction which is more affective and evaluative. Measures of psychological climate focus on individual experiences, not affect and evaluation (as does job satisfaction). Psychological climate is defined as “individual descriptions of organizational practices and procedures that relate to organizational influences on individual performance, satisfaction, and motivation” (Baltes, Zhdanova, & Parker, 2009, p. 670, AB #56). It is now generally accepted that psychological climate and organizational climate are two different constructs that are measured differently, at different levels of analysis, and impact different

outcomes (Baltes et al., 2009, AB #56; James & Jones, 1974, AB #10; Johannesson, 1973, AB #9; Schneider, 1975, AB #15). James and Jones (1974) state:

Organizational climate refers to organizational attributes, main effects, or stimuli, while psychological 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. (p. 1110, AB #10)

Although organizational and psychological climate are not dichotomies, Table 1 outlines the basic differences between the two concepts. These differences depend on the focus of the items (individual experiences versus perceptions of the external world) and the level of analysis to which the data are or are not aggregated.

One of the main critiques of the psychological climate construct is that psychological climate is conceptualized at the individual level; therefore, it does not add to the explanation of organizational functioning and effectiveness, the focus of organizational climate (Ehrhart et al., 2014, p. 71–72). Although the distinction between psychological and organizational climate is important, the focus of this annotated bibliography is organizational climate. Therefore, exploration of psychological climate in more depth is outside of the scope of this project.

Table 1

Differences Between Organizational and Psychological Climate Constructs

Differences	Organizational climate	Psychological climate
Level of focus	Unit level	Individual level
Experiences	Observations, descriptions, and shared perceptions	Personal experiences and perceptions
Referent for item wording	Unit level referent (e.g., “the organization”; “In my work unit we have the resources necessary to deliver excellent service”) (Ehrhart et al., 2014, p. 72)	Individual level referent (i.e., “I”) (“I have the resources I need to deliver excellent service”) (Ehrhart et al., 2014, p. 72)
Outcomes	External unit and organizational level outcomes: accident rates, customer satisfaction (Ehrhart et al., 2014, p. 71)	Individual level outcomes: performance, productivity, and affective individual outcomes (e.g., satisfaction) (Ehrhart et al., 2014, p. 71)

Molar and focused climates. Another important distinction that came about during the 1970s was the difference between molar and focused organizational climates (Schneider, 1975, AB #15). Organizational climate research in the 1970s focused on capturing a complete picture of an organization's climate (e.g., Litwin & Stringer, 1968; Schneider & Bartlett, 1968, 1970) (Ehrhart et al., 2014, p. 79). These research efforts were the study of molar climates, also referred to as general, generic, and global climates. The research on molar climates was not good at predicting specific outcomes and led to variable results (Schneider et al., 2013, AB #6). In 1975, Schneider (AB #15) advanced the field with the introduction of focused climates, which linked outcomes of interest (e.g., frequencies of accidents at the group level) to a specific climate that would be most beneficial to target (e.g., climate for safety). Ehrhart et al. (2014) provides an example of the difference between molar and focused climate items:

A molar climate item representing the support dimension might read: "The manager of my unit provides us the support we need to do our work." An item focused on a specific outcome, also representing support, might read: "The manager of my unit provides us with the tools, equipment, and resources we need to provide excellent customer service." So, the item goes from molar generic "support" to focused specific kinds of support. As a result, the response gives more information about how the employees perceive that the organization is addressing specific strategic objectives, rather than how they are being treated in general. (p. 86)

Focused climates, also called facet-specific climates, are "climates for" something; there is a defined focus that identifies where performance needs to be enhanced, and then targeted organizational practice and behavior interventions are designed to lead to desired improvements in the identified areas (Schneider, 1975, AB #15; Schneider et al., 2013, AB #6). This focus allows for a greater level of research specificity improving the ability to measure outcomes and strengthen the validity of research. Focused climate is about communicating a clear message about what is important through the alignment of policies, practices, procedures, and reward systems. (Ehrhart et al., 2014, p. 87)

Focused climate studies fall within two categories: strategic climates (e.g., safety) or process climates (e.g., empowerment).

Strategic climates involve the extent to which the organization's environment emphasizes a specific strategic outcome that can usually be measured by external criteria. Examples include service climate, safety climate, or innovation climate. Process climates, in contrast, are focused instead on internal processes that occur in organizations as a part of daily organizational functioning. Examples include procedural justice climate and ethical climate. (Ehrhart et al., 2014, p. 87)

The two most prevalent, and well researched, examples of strategic climates are climate for customer service and climate for safety; and for process climate, justice climate and increasingly, diversity climate (Schneider et al., 2013, AB #6). For more information on any particular focused climate there are reviews available (e.g., service climate: Hong, Liao, Hu, and Jiang, 2013; safety climate: Beus, Payne, Bergman, & Arthur, 2010; Christian, Bradley, Wallace, & Burke, 2009; justice climate: Whitman, Caleo, Carpenter, Horner & Bernerth, 2012).

Recent research has focused on the possibility that molar climate (e.g., employee well-being) might serve as a foundational climate for focused climates, suggesting that a positive molar climate of concern for employee well-being may provide a foundation on which a strategic focused climate can be built (Ehrhart et al., 2014, p. 85; Schulte, Ostroff, Shmulyian, & Kinicki, 2009). As there are numerous elements that can influence molar climate, it is possible that a configuration of those various facets of molar climate can be created; for example, climate configurations may reflect different “climate profiles” (Schulte et al., 2009). In research conducted by Schulte et al. (2009) across two studies,² three different climate configurations were identified: (a) elevation (i.e., mean scores across dimensions); (b) variability (i.e., the variation across dimensions); and (c) shape (i.e., the pattern of dimensions). These different configurations were found to be differentially related to different outcome variables. For example, there were clear relationships between elevation and collective employee attitudes and service perceptions, and shape to customer satisfaction and financial performance (the relationship of variability to other variables was not as clear). However, there is little research on how such molar climate configurations actually get reflected in or provide a foundation for the more specific strategic climates. The relationship between molar and focused climates is an area for potential exploration.

Summary and research directions. Organizational and psychological climate were at one time conflated but are now different veins of research. Organizational climate research focuses at the unit level to impact organizational effectiveness and efficiency while psychological climate focuses at the individual level to impact individual outcomes such as job satisfaction (Schneider et al., 2017). Additionally, research has moved from molar organizational climate to focused organizational climate, and the work on focused climates, based on the improved validity of climate research, has provided concrete areas for intervention (i.e., specific practices and behaviors) that can lead to enhanced organizational performance (Schneider et al., 2013, p. 367, AB #6). Researchers are now beginning to examine the relationship between molar and focused climates, expanding the understanding of the molar climate foundations perhaps necessary to support focused climates.

Organizational Climate and Culture

The fields of organizational climate and organizational culture have an interwoven history. Early climate research often used terminology and variables that could be defined as culture (Ehrhart et al., 2014). However, as research progressed, the constructs were separated and two different streams of research emerged (Table 2). Organizational culture is defined as:

A pattern of shared basic assumptions learned by a group [an organization] as it solved its problems of external adaptation and internal integration, which has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems. (Schein, 2010, p. 18)

² Study 1 was conducted among 1,120 employees in 120 bank branches and study 2 among 4,317 employees in 86 food distribution stores.

Organizational climate (defined on p. 2) and organizational culture research have highly related efforts that continue to focus on better understanding the social-organizational environment in which people function. However, as outlined in Table 2 and the succeeding section, they have distinct historical backgrounds and have examined somewhat different aspects of such environments.

Table 2

Contrasting Organizational Culture and Organizational Climate Research Perspectives
(Denison, 1996, p. 625, AB #2)

Differences	Culture literature	Climate literature
Epistemology	Contextualized and idiographic	Comparative and nomothetic
Point of view	Emic (native point of view)	Etic (researcher's viewpoint)
Methodology	Qualitative field observation	Quantitative survey data
Level of analysis	Underlying values and assumptions	Surface-level manifestations
Temporal orientation	Historical evolution	Ahistorical snapshot
Theoretical foundations	Social construction; critical theory	Lewinian field theory
Discipline	Sociology and anthropology	Psychology

Brief histories. *Organizational climate.* Organizational climate literature stems from the field of psychology and has traditionally been measured via quantitative survey methods (Denison, 1996, AB #2; Schneider et al., 2013, AB #6). In early research, climate was studied as a unit level emergent concept that was anchored within the group, versus an individual, and defined as shared perception developed through interactions (Schneider et al., 2013, AB #6). The first documented organizational climate study was on social climates conducted in 1939 by Lewin et al. (Schneider et al., 2013, AB #6). The researchers varied three different leadership styles (democratic, autocratic, and laissez-faire) among four groups of five 10-year old boys participating in different activities, such as soap carving and building model airplanes.

Lewin and colleagues focused specifically on the levels of aggression with each club and how the atmosphere in the group that emerged affected the aggressive behaviors that were observed...the research revealed that the boys were more aggressive toward each other under the autocratic condition, cooperated more under the democratic condition, and were less involved in the activities under the laissez-faire leadership. The boys were equally productive in the democratic and autocratic conditions but there was less chatter, less cooperation, and less smiling in the latter condition. (Ehrhart et al., 2014, p. 13)

This early research focused on group interaction and the characteristics of the group as a whole, versus individual behaviors of the boys within the group. It also focused on the social climate to understand how the boys would interact with each other under different circumstances.

In a 2017 review of organizational climate articles in the *Journal of Applied Psychology*, Schneider et al. present the progression of organizational climate research. The authors highlight how research in the 1950s and early 1960s built upon the initial conceptualization of climate as a unit level concept developed through interactions. During the 1970s, some organizational climate research shifted to an individual level of analysis; however, much of the 1970s and 1980s were about providing further boundaries to the construct of organizational climate by defining both what it was and was not. Part of this was the level-of-analysis debate (covered in the Measuring and Analyzing Organizational Climate section below) which led to the distinction of organizational climate from psychological climate. Amidst disagreement and debate, organizational climate research continued to grow, and empirical evidence supported the importance of the concept. The 1990s were focused on understanding how to aggregate data and make meaningful inferences supported by those data (also summarized in the Measuring and Analyzing Organizational Climate section below). More recently, researchers in the field of organizational climate have begun grappling with issues such as multi-level climate research, climate strength, foundational climates, and simultaneous climates (Schneider et al., 2017). It has been recognized that multiple climates may exist at the same time and that these climates may act in competition with each other or potentially be supportive of each other. For example, a climate for safety and a climate for productivity might be in conflict (Ehrhart et al., 2014, p. 116).

Organizational culture. Organizational culture literature stems from the fields of anthropology and sociology and has traditionally been measured via qualitative methods such as case studies (Denison, 1996, AB #2, Schneider et al., 2013, AB #6). Organizational culture research began in the 1940s and had a sharp increase in the 1980s when organizations were in a period of evolution and the research on organizational behavior began to boom. Pettigrew (1979) is credited with introducing the important idea of organizational culture to the field. Another important early model of organizational culture was developed in 1985 by Edgar Schein, one of the most prominent authors in the field of organizational culture. Schein's book added to the field by outlining the importance of management and leadership. During the 1990s, organizational culture was a popular subject and many research studies were conducted. However, by the 2000s research on organizational culture had slowed down; some scholars attribute the slowdown to the large amount of information on organizational culture, which limited new avenues of research from being identified and pursued (Ehrhart et al., 2014). More recent research on organizational culture has focused on sub-cultures within organizations.

The decline in organizational culture research in the 2000s also marks a time when organizational climate research began to pick up again. A review of three highly regarded journals (*Journal of Applied Psychology*, *Academy of Management Journal*, and *Personnel Psychology*) revealed that since 2000 there has been more of a focus on organizational climate than organizational culture research (Schneider et al., 2013, AB #6). However, the authors, and many researchers in the field, call for an integrated approach to organizational climate and culture.

Researchers are calling for an integrated view to create a more comprehensive picture of what influences organizational behavior, effectiveness, and efficiency (Ng & Ng, 2014, AB #7; Schneider et al., 2013, AB #6; Schneider et al., 2017). Theoretical models of integration exist; however, these models have yet to be empirically tested (Ehrhart et al., 2014). One of the first integrated models was developed by Ostroff, Kinicki, and Tamkins (2003) and then updated by Ostroff, et al. (2012, AB #5). This model is a multi-level model of organizational climate and culture (illustrated on p. A-10 of Appendix A), with a focus on shared meaning. A main differentiation in this model from others, and a different conceptual take on organizational climate and culture research, is that the policies, practices, and procedures within an organization are the linking mechanism between culture and climate; they are not specifically associated with climate or culture. Schneider, Ehrhart, and Macey (2011, AB #3) present their own version of an integrated model. Their “climcult model” (illustrated on p. A-4 of Appendix A) highlights the importance of a foundational culture that is focused on employee well-being (i.e., the organization has positive values about people) that aligns well with a foundational climate (i.e., general policies, practices, and procedures align with valuing people). This foundation provides the motivation for employees to engage in behaviors that meet the specified goals of focused climates. Zohar and Hofmann (2012, AB #4) developed a model of organizational climate and culture (illustrated on p. A-6 of Appendix A) that works to explain how perceptions, interactions, and interpretations surround both espoused and enacted values, assumptions, priorities, practices, and procedures. These then guide employee behavior as employees work to understand what is expected and what will be rewarded. More research integrating organizational climate and culture is needed, but these efforts have the potential to inform the design of targeted, high impact interventions.

Summary and research directions. Organizational climate and culture are related, but distinct, constructs whose relationship has evolved over time. In the 1980s, there was a decline in organizational climate research and an increase in organizational culture research. At this time, organizational climate researchers were focused on conceptualizing the construct and levels of analysis/data aggregation issues; organizational culture researchers operated in a fast-changing environment driven by technology and changing societal norms on how businesses function (Schneider et al., 2017). In the 1990s and 2000s, the decline in organizational culture research led to another shift that brought organizational climate research back to the forefront. Most recently, there has been a call for integration of these concepts.

Drivers of Organizational Climate

Organizational climate can be thought of as a system of factors, where the drivers are the antecedent, moderator, and mediator variables that influence climate. In this conceptualization of climate, all the variables are interrelated and have reciprocal relationships, such that organizational climate outcome variables can also act as antecedents, mediators, and moderators to climate formation (Kuenzi & Schminke, 2009, p. 696–699, AB #14; Schneider, White, & Paul, 1998, AB #16; Schneider et al., 2011, p. 387–389, AB #3). To date, there is limited research examining antecedents, mediators, and moderators of organizational climate. Much of organizational climate research has focused on the climate itself and the outcomes that follow. Little research has focused on organizational climate as a dependent variable; thus, more work is

needed to understand what predicts a climate and the conditions and processes that may influence the relationship between antecedents and organizational climate (Ehrhart et al., 2014). In this section, we outline what is known about the drivers of organizational climate.

Antecedents. According to Ehrhart et al., (2014), organizational climate antecedents are generally understudied. In a review of organizational climate literature, Kuenzi and Schminke (2009, AB #14) identified organizational climate antecedents that have been studied. The authors categorized the antecedents as individual (e.g., gender, age, education, position level, tenure), group (e.g., team size, diversity, tenure), and organizational (e.g., simultaneous climates, institutional emphasis on policy and practice-level variables).

Individual-level antecedents have typically been studied as predictors of psychological climate, and there is limited research on their predictive value to climate perception. Group-level antecedents, such as team size and collectivism, have been found to be predictors of procedural justice climate. Organizational-level antecedents, such as financial resources and management support for technology, were predictors of implementation climate (Klein, Conn, Smith, & Sorra, 2001, AB #49). Finally, human resource (HR) practices have been studied as an important antecedent to organizational climate, specifically hiring based on abilities related to specific organizational goals versus an employee's general ability to perform (Hong et al., 2013).

Although antecedents are generally understudied, one of the most researched antecedents of organizational climate is leadership: "Leaders serve as interpretive filters of relevant organizational processes and practices for all group members, thus contributing to common climate perceptions" (Kozlowski & Doherty, 1989, AB #31, as cited by Kuenzi & Schminke, 2009, p. 696, AB #14). The study of leadership as a predictor of organizational climate dates back to early research (e.g., Lewin et al., 1939), and has been determined to be an important antecedent of all types of climates: "Leadership, as suggested by Kozlowski and Doherty (1989, AB #31), has now been clearly established as a major driver of climates of all kinds and is a key focus for climate theory and research" (Schneider et al., 2017, p. 474). Leadership influences have been frequently studied in climates for safety and climates for service literatures. For example, perceptions surrounding the safety behavior of supervisors predicted micro-accidents (Zohar, 2000), and employee interactions with leaders that were specifically focused on safety improved safety outcomes (Zohar & Luria, 2005, AB #52). In service climates, leader support for developing a customer orientation led to higher customer satisfaction (Susskind, Kacmar, & Borchgrevink, 2003).

Moderators. Moderators of organizational climate can be thought of as the boundary conditions of the organizational climate and outcome relationship (Ehrhart et al., 2014). While studies that examine moderators of organizational climate are limited, climate strength is one of the most studied moderators of organizational climate and outcomes. "Climate strength reflects the degree of agreement between unit members with respect to their climate perceptions" (Lindell & Brandt, 2000, AB #21, as cited in Kuenzi & Schminke, 2009, p. 697, AB #14). Empirical evidence demonstrates that climate strength is a moderator in a variety of climate-outcome relationships. For example, the relationship between service climate and customer satisfaction has been shown to be moderated by climate strength (Schneider, Salvaggio, & Subirats, 2002, AB #22), as has the relationship between innovation climate and job satisfaction

and commitment (González-Romá, Peiró, & Tordera, 2002). Other moderators that have been studied, although in less depth, are individual characteristics of employees and leaders (Ambrose, Arnaud & Schminke, 2008; Liao & Rupp, 2005), and environmental characteristics (e.g., priority of safety, Zohar, 2002).

Mediators. Mediators of organizational climate can be thought of as the mechanisms through which organizational climate and outcome relationships happen, explaining why the relationship occurs. In their review, Kuenzi and Schminke (2009, AB #14) characterize the mediators that have been studied as process variables, behaviors, and practices. For example, in a study by Chen and Bliese (2002), team transition processes fully mediated the relationship between resistance to empowerment climate and customer satisfaction, and interpersonal team processes partially mediated the relationship between resistance to empowerment climate and employee satisfaction (Kuenzi & Schminke, 2009, p. 697, AB #14). Behavioral factors (e.g., employee performance, organizational citizenship behaviors) have also been studied as mediators. For example, group helping behaviors were found to mediate the relationship between procedural justice climate and perceived group performance (e.g., productivity, accuracy, dependability; Naumann & Bennett, 2000). Finally, organizational practices (e.g., policies, procedures, priorities of goals, and role clarity) are additional mediators that have been studied (Kuenzi & Schminke, 2009, AB #14). For example, in one study, role clarity fully mediated the cross-level relationship between upper-level leadership climate and self-efficacy (Chen & Bliese, 2002).

Outcomes. Well-defined climates to meet strategic organizational goals can improve organizational effectiveness and functioning (Ehrhart et al., 2014). The existing, and growing, empirical evidence demonstrates that organizational climate is a valid predictor of many different outcomes.

Research on work climates is important because it has implications for individual outcomes including job attitudes (Colquitt, Noe, & Jackson, 2002), organizational citizenship behaviors (OCBs; Ehrhart, 2004), ethics (e.g., Martin & Cullen, 2006), safety (Clarke, 2006), innovation (Anderson & West, 1998, AB #45), and individual performance (McKay, Avery, & Morris, 2008), as well as broader work outcomes such as customer attitudes (Dietz, Pugh, & Wiley, 2004) and team performance (Colquitt et al., 2002). As such, work climates touch nearly every aspect of organizational life. (Kuenzi & Schminke, 2009, p. 635, AB #14)

Much of this knowledge has come from research focused on strategic climates, such as climate for safety and climate for service, but there is a growing interest, and much potential for future research, in process climates such as diversity, procedural justice, and inclusion.

Summary and research directions. Organizational climate research started with a focus on outcomes and then moved to predictors, moderators, and mediators (Schneider et al., 2013, p. 365–366, AB #6). However, because organizational climate can be thought of as a system of factors that influence outcomes of interest, it can be difficult to cleanly separate and label variables of influence. Antecedents in some studies may be examined as moderators in other studies, all depending on the perspective and goal of any particular line of research. However, it

is clear that (a) leadership is a particularly strong driver of organizational climate, (b) climate strength is an increasingly studied moderator, (c) mediating processes need more attention, and (d) organizational climate is a predictor of the accomplishment of strategic organizational goals.

Changing Organizational Climate

Organizational climate has been promoted as being more malleable than organizational culture, which may be true. However, changing organizational climate is difficult, and strong climates are often enduring (Schneider, 2016). When looking to better understand how to change organizational climate, examining how climate is formed is a good place to start.

Climate formation. Research on how organizational climates are formed has been limited. Climate research has primarily focused on the outcomes associated with organizational climate versus the process of climate formation (i.e., how a shared perception is developed; Kuenzi & Schminke, 2009, AB #14). Researchers delving into climate formation focus on a central question, “How is it that individuals who are confronted with a vast array of stimuli in the work environment come to have relatively homogeneous perceptions of those stimuli?” (Schneider & Reichers, 1983, p. 25, AB #17).

The most prominent theories on climate formation are the structuralist approach, attraction-selection-attrition (ASA), and symbolic interaction, as summarized in Table 3 (Kuenzi & Schminke, 2009, AB #14; Schneider & Reichers, 1983, AB #17). The primary distinction between these theoretical approaches is how meaning within an organizational climate is formed and shared. Specifically, the structuralist approach emphasizes that different structures of organizations are the source of shared meaning (e.g., organization size, centrality or decentrality of decision making, levels of hierarchy), the ASA approach emphasizes the types of people within organizations as sources of shared meaning, and the symbolic interaction approach emphasizes the natural interactions between people as underlying the formation of shared meaning (Schneider & Reichers, 1983, AB #17).

Moran and Volkwein (1992, AB #19) provide a framework for understanding perspectives on climate formation to include the general categories of structural, perceptual, and interactive approaches. They provide a critique for each prominent theory and put forth an alternate approach, a cultural approach (Table 4). In a structural approach, climate is regarded as an objective manifestation of the organization’s structure; in a perceptual approach, the basis for the formation of climate is within the individual; and in an interactive approach, the interaction of individuals in responding to their situation brings forth the shared agreement that is the basis of organizational climate. The cultural approach developed by Moran and Volkwein (1992, AB #19) builds on symbolic interactionism. Essentially, the cultural approach to climate formation is an integrated approach that views culture as a central part of the environment in which climate forms. This approach allows for the consideration of the organization’s underlying values and assumptions that set organizational policies and practices and guide employee behavior.

Ultimately, climate formation is understudied and much of the research is decades old. However, culture researchers, in general, have been more active in studying climate formation. For example, culture researchers study socialization and climate researchers have not (Ehrhart et

al., 2014, p. 208). A better understanding of how climate forms will provide a foundation for how climate may be changed and what intervention designs might be most successful.

Table 3

Climate Formation Theories

Theory	Brief Description	Citation
Structuralist	“The structuralist approach places the meaning that individuals attach to events, practices and procedures primarily within the events themselves. According to this view, climates differ from organization to organization as a function of the differences in organizational structures” (Schneider & Reichers, 1983, p. 32, AB #17)	Payne and Pugh (1976)
Attraction-Selection-Attrition (ASA) (NOTE: cited in Schneider and Reichers, 1983 as SAA, selection, attraction, attrition; Schneider, 1987, AB #26 introduced it as ASA)	“In contrast to the structuralists, the selection-attraction-attrition perspective places the meaning that individuals attach to the events primarily within the individual. This view suggests that climates differ across organizations as a function of the different types of people that become members of those organizations” (Schneider & Reichers, 1983, p. 32, AB #17)	Schneider (1983)

Symbolic Interaction	<p>“The symbolic interactionist approach places the locus of meanings that arise within the <i>interaction</i> between people. This view places primary importance on the interactions that occur during the newcomer’s socialization period, and stresses the importance of group membership as a determinant of climates that vary from group to group” (Schneider & Reichers, 1983, p. 32, AB #17; italics in original source)</p>	Schneider and Reichers (1983, AB #17; Reichers, 1987; Schneider, 1987, AB #26)
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Table 4

Summary of Approaches to the Formation of Organizational Climate (Moran & Volkwein, 1992)

Approach	Description	Criticism	Representative researchers and main influences
Structural	Climate is regarded as an objective manifestation of the organization’s structure. It forms because members are exposed to common structural characteristics of an organization. As a result of this exposure, they have similar perceptions. These similar perceptions represent their own organization’s climate.	<p>It cannot account for groups within the same organization forming different climates</p> <p>Organizational structural characteristics are often inconsistent with the climate.</p> <p>Inadequate consideration of subjective response to structural characteristics.</p> <p>Does not consider the interpretive processes of groups in forming climate.</p>	Guion (1973, AB #1); Indik (1965); Inkson et al. (1970), Payne and Pugh (1976)

Perceptual	The basis for the formation of climate is within the individual. Acknowledges that individuals respond to situational variables in a manner that is psychologically meaningful to them. Climate is a psychologically processed description of organizational conditions.	By placing the source of climate entirely within the individual perceiver, it denies the possibility of a “composition theory” or explanation for the formation of climate as an organizational property. Assumes that meaning is something individuals bring to and impose on a situation, rather than create through interactions with others.	James et al. (1978); James and Jones (1974, AB #10); Joyce and Slocum (1982, AB #13, 1984, AB #38); Schneider and Reichers (1983, AB #17)
Interactive	Basic contention is that the interaction of individuals in responding to their situation brings for the shared agreement which is the basis of organizational climate.	Does not consider the broader context, or the extent to which a shared organizational culture influences interactions among group members.	Blumer (1969); Joyce and Slocum (1979); Poole and McPhee (1983); Terborg (1981); (Edmund Husserl and George Herbert Meade)
Cultural	Organizational climate is created by a group of interacting individuals who share a common, abstract frame of reference, i.e., the organization’s culture, as they come to terms with situational contingencies.	Requires continuing clarification of the relationship between organizational culture and climate.	Allaire and Firsirotu (1984); Ashforth (1985, AB #18); Berger and Luckmann (1967); Clark (1972); Geertz (1973); Goodenough (1971); Keesing (1974); McPhee (1985); Selznick (1957)

Climate change. It is difficult to talk about organizational climate change without talking about the reciprocal relationship it has with organizational culture. For sustained change, the organizational climate that is being sought must align with the organizational culture that explains why people engage in behaviors (Ehrhart et al., 2014). Experts in the field suggest that organizational climate is the place to start for change, “...since climate operates at a more accessible level than culture, it is the more malleable and, hence, the more appropriate level at which to target short-term interventions aimed at producing positive organizational change” (Moran & Volkwein, 1992, p. 43, AB #19). However, this must be done within the context of

culture; those endeavoring to change organizational climate would benefit from a deliberate evaluation of the alignment with the underlying culture and how it will enhance or constrain the efforts to achieve the desired climate (Ehrhart et al., 2014; Schein, 2010).

There has been little research on organizational climate interventions. Interventions designed to change organizational climate "... would give organizations very practical tools to help them build the climates necessary to achieve their strategic goals" (Ehrhart et al., 2014, p. 302). Intervention design, implementation, evaluation, and contextual generalization could be large areas of study within the organizational climate field. Additionally, it has been noted that there are some barriers that could inhibit changing climate. For example, social conformity can act as a stabilizer to climate perceptions and may create barriers to change (Ashforth, 1985, AB #18; Nishii, 2013, AB #30). Longitudinal research could help to identify these types of inhibiting factors and better understand their impact on climate. Thus, future climate research should consider utilizing longitudinal design to answer important questions about how climates form and change over time.

Summary and research directions. There is not a lot of research on climate formation, climate development, or climate change. Based on what is known about the antecedents of climate, a good place to start would be studies specifically examining the role of leadership.

With regard to planned change, based on the work on antecedents of climate and culture we have some insights indicating that interventions that seek to change climate and culture must focus on leadership. The fact that leadership emerges as a significant antecedent across a range of climate types indicates it has fundamental rather than simply focused importance. And the fact that what leaders attend to, reward, monitor and talk about focuses their followers' attention and efforts (Schein, 1985) reinforces this notion. (Schneider et al., 2017, p. 477)

Measuring and Analyzing Organizational Climate

Measuring organizational climate. Throughout the development of the organizational climate literature, the issue of climate measurement has been a central topic. Researchers have focused on how to create climate measures using language that conveys the appropriate construct of interest and level of analysis (Chan, 1998, AB #46). Items measuring organizational climate are best phrased using descriptive terminology that summarizes the organization's characteristics at the appropriate level of theory (i.e., group, department, organization) rather than language that reflects an individual's unique experiences and perceptions, as is the case with items measuring psychological climate (see organizational and psychological climate section, p. 2).

Organizational climate should be conceptualized as a shared, descriptive perception of policies, practices, and procedures that is conceptually different from individual experiences and perceptions of the work environment (e.g., job satisfaction; LaFollette & Sims, 1975, AB #11; Glick, 1985, AB #39; Schneider & Snyder, 1975, AB #12). Moreover, using a group (e.g., "we", "our unit", "the team members") versus individual (e.g., "I") referent for items increases within-group agreement and has been found to increase strength of effects in climate research (Klein et al., 2001, AB #49; Whitman et al., 2012). Lastly, like any good measure, items should capture a range of perceptions regarding climate. According to Ehrhart et al. (2014), "climate measures

should be designed as much as possible to eliminate very high and/or very low climate levels because such scores decrease the ability to distinguish the effects of climate level and climate strength due to low variability” (p. 103).

Aggregation issues and best practices for interrater agreement. Perhaps the most prominent issue with organizational climate measurement has been the issue of aggregation. As defined previously, organizational climate is a construct comprised of the shared perceptions about a given organization’s policies, practices, and procedures. Although there have been empirical efforts to measure climate using objective measures (e.g., third-party reviewers, number of levels of authority, ratio of administrative personnel to production personnel, number of formal rules), at the organizational or unit level (Hellriegel & Slocum, 1974, AB #34; Johannesson, 1973, AB #9; Schneider & Reichers, 1983, AB #17), most research has sought to measure climate using perceived assessments of the climate by deriving an aggregate climate indicator from the responses of individual group members (i.e., aggregation reveals reliability of the group context). Thus, an aggregated indicator of individual climate perceptions aims to reflect a ‘sharedness’ or agreement within a given organization surrounding that organization’s climate. However, for a measure to be a valid indicator of a shared experience of the organization’s climate, and to justify aggregation, interrater agreement between individuals within the organization is a necessary prerequisite.

Interrater agreement, which arose from reliability theory, was initially misnamed as such, leading to much confusion surrounding the concept and its intended purpose (Kozlowski & Hattrup, 1992, AB #43). Reliability indexes seek to capture the amount of consistency in rater observations, while agreement indexes focus on the degree to which individual (or rater) responses are equivalent and thus interchangeable. For instance, a researcher can have high reliability with low agreement; if rater A uses only 1, 2, 3 as responses on a 5-point scale while rater B uses 3, 4, 5, then reliability will be high because all responses between raters are proportionally consistent with one another (i.e., with increasing increments of 1 but beginning at a different point on the scale) but agreement would be low because the values are not equivalent (i.e., $1 \neq 3$, $2 \neq 4$, $3 \neq 5$).

Although there are many different indexes of interrater agreement that are highly correlated with one another, the most frequently used index is James, Demaree, and Wolf’s (1984, AB #37) $r_{wg(1)}$ and its multi-item sibling $r_{wg(j)}$ (for a review, see LeBreton & Senter, 2008, AB #54).³ The r_{wg} indices compare observed variance in climate ratings to variance that would be expected if there was complete lack of agreement among individuals within the group. Several null distributions are available to estimate the variance expected if there was complete lack of agreement and researchers should choose the distribution that fits their theoretically-driven expectations (e.g., positive skew due to social desirability). However, in practice, most

³Generally speaking, r_{wg} indices of interrater agreement are often reported along with intraclass correlation (ICC) indices that reflect both aspects of interrater agreement (i.e., absolute consensus) and interrater reliability (i.e., relative rater consistency). For example, using a random effects ANOVA, ICC(1) tests for the proportion of variance that is accounted for by groups (e.g., teams, organizations, units) and the variance accounted for by differences among group member ratings. Higher values of ICC(1) occur when there are more differences in climate ratings between groups than there are within groups. Moreover, ICC(1) assesses the reliability of individual raters, whereas ICC(2) assesses the extent to which a mean aggregate rating sourced from a group of individuals is reliable. Obviously, as the sample size increases so does ICC(2).

researchers use a uniform null distribution that assumes that if there is zero agreement, all points of a given scale should be equally used. Moreover, recent reviews of interrater agreement measurement suggest that some best practices for their use in climate research include (a) using 10 or more individuals per group to be aggregated (using more items to assess climate is also beneficial); (b) adjusting the null distribution for skew or cases of binomial distributions (e.g., sub-climates within an organization); (c) instead of using a strict cutoff of interrater agreement to justify aggregation of individual scores (typically 0.70 or higher; James & Jones, 1974, AB #10), use the agreement index (i.e., climate strength or the relative dispersion of ratings) as a continuous moderating variable that can be included with other variables of interest (e.g., climate level or the relative valence of average ratings).

Summary and research directions. Implementing the appropriate measurement and analytic approach is critical to organizational climate research. Current recommendations within the field suggest that researchers should first consider their research questions and decide which methods would be most appropriate for answering them. Moreover, if the research question is focused on understanding shared or collective perceptions of the organizational environment, then items should be written at the collective level (e.g., team, unit, department) using a collective referent (e.g., ‘we,’ ‘our’). By contrast, if the research question is focused on understanding individual perceptions of the organizational environment, items should be written at the individual level using the appropriate individual referent (e.g., ‘I,’ ‘my’). In terms of analyses, current recommendations suggest that data should (a) be aggregated to the appropriate level of analysis as guided by theory and (b) that intraclass correlation, ICC(1)/ICC(2), and $r_{wg(1)}/r_{wg(j)}$ should be reported indicating levels of reliability and agreement amongst raters. Using reliability and agreement indices as separate factors within measurement models is also suggested as an informative indicator of climate strength.

Current research has only begun to touch on more complicated measurement issues. Recent research has started to explore organizational climate questions using multiple levels of analysis. For instance, Zohar and Luria (2005, AB #52) demonstrated a significant main effect on safety behavior both for organizations and for subunits (groups nested within organizations), and subunit safety climate mediated the effects of organizational safety climate on employee safety behavior. As Zohar and Hofmann (2012, AB #4) note, using multi-level approaches allow researchers to distinguish climate perceptions that occur in subunits (which typically are in higher agreement) from the larger organizational climate focus. Furthermore, other new research methodologies (e.g., network analysis, polynomial regression, multilevel studies, trajectory modeling, and configurational analysis) have only begun to explore climate questions and suggest new lines of organizational climate research.

Conclusion and Future Direction

Conclusion. For this work, criteria were developed for the review of organizational climate literature to document seminal work, understand research trends and on-going challenges, and identify areas in need of further research. Researchers identified three major themes: (a) *Organizational Climate and Culture Differentiated and Integrated*, (b) *Climate Theory and Models*, and (c) *Measuring Organizational Climate* and 58 publications were annotated.

While organizational climate has been studied for more than 70 years, there are many avenues yet to explore in organizational climate research. Understanding the complexity of organizations and simplifying that complexity enough to identify and understand targets of intervention is both an art and a science, with much to be done in both arenas. Continued effort to better understand organizational climate is warranted and can benefit the U.S. Army and other organizations.

The Army has strategic efforts underway to oversee and monitor organizational climates; research in these areas will lead to the identification of potential organizational and unit intervention and training targets. More specifically, as diversity in the Army increases, as many expect it to do, supporting leaders in managing a diverse force and leveraging the strengths of Soldiers is critical for the demands of complex operational environments; it is likely that focused climates, such as climate for inclusion, play a central role setting the conditions for successfully achieving organizational and mission related outcomes. Potential future research questions for the U.S. Army are: (a) How does the Army mission (which has the potential to result in severe injury or death) influence climates? (b) How does Army's diversity influence the type and strength of climates? (c) How do the promotion structures of "up or out" and "grow your own leader" influence climate? (d) How do simultaneous climates influence each other (e.g., safety climate and adaptive climate; compliance climate and climate for innovation)? This type of research may help inform leader efforts to engineer environments that lead to swift trust building, greater ability for teams to adapt, and more innovative teams, all necessary for Soldiers to optimize operations in complex environments.

Future direction. The study of organizational climate started in the 1930s, exploring how leadership affected social interactions in work environments. The field evolved through the 70s to the 90s to more concretely conceptualize the construct of organizational climate and understand how it might best be captured by appropriately designed measures and levels of analysis. A resurgence of interest hit in the 2000s, and the increasing empirical evidence supports organizational climate as an important player in understanding both how organizations function (process climates) and how they perform (strategic climates). More recently, there has been a call from organizational climate researchers to increase focus on the integration of climate and culture, multi-level climate research, climate strength, and the existence of simultaneous climates.

The future direction of organizational climate is really a call to embrace the complexity of dynamic human systems. Part of that complexity is understanding the reciprocal relationship between organizational climate and organizational culture. There are theoretical models of climate and culture integration but none, as yet, have been studied in empirical research. An integrated approach may be especially important to organizations looking to change their climate and associated outcomes (Ehrhart et al., 2014). Specifically, understanding the impact of organizational climate and culture alignment on shared perceptions and, in turn, employee behavior could shed light on how to frame and change persistent problematic behaviors to enhance positive outcomes for people and the organizations in which they function.

Not far removed from the integration of culture and climate is the study of multi-level climate research, which, again, is focused on alignment (or non-alignment) between process and strategic climate goals at different organizational levels. As noted earlier, Zohar and Luria (2005, AB #52) conducted multi-level research in safety climates. By analyzing climates at different levels of the organization, the authors found that cross-level alignment and cross-level mediation can be assessed and that they relate to safety behavior in relatively independent but correlated ways. Cross-level alignment refers to the degree to which policies and procedures, as determined by upper-level management, are enacted by or aligned to the behaviors and actions of lower-level supervisors. Cross-level mediation refers to the degree to which group climate perceptions influence the relationship between organizational climate and individual safety behaviors. More multi-level climate research will help researchers better understand what leads to variability in perceptions of practices, policies, and procedures and, thus, the subsequent validity of measures.

More recently, researchers have been exploring climate strength. Organizational climate is about shared perception, and years of research effort went into establishing statistical agreement and low rates of dispersion. In contrast, climate strength (defined on p. 10) is about examining the variability of climate perceptions. Researchers studying climate strength are working to understand “the relative strength of climate across settings and the impact that differences in climate strength may have” (Schneider et al., 2013, p. 367, AB #6). Some studies exploring organizational climate strength, mostly conceptualized as a moderator, have demonstrated there are some conditions that will lead to high climate strength (e.g., small, cohesive work units with high social interaction; Ehrhart et al., 2014). However, research studying climate strength has yielded inconsistent results and there is more work to be done (Schneider et al., 2013, p. 368, AB #6).

Finally, an issue ripe for study is simultaneous climates or multi-climate models (Kuenzi & Schminke, 2009, AB #14; Zohar & Hofmann, 2012, AB #4). Simultaneous climates can include molar and focused climates or multiple focused climates. As noted earlier, molar climates may serve as a foundation to the functioning of focused climates that help an organization reach strategic goals (Ehrhart et al., 2014). To better understand simultaneous climates, there is a call for an integrative climate and culture approach using mixed methods to help researchers better understand the relationships between simultaneous climates and outcomes.

References⁴

- Allaire, Y., & Firsirotu, M. E. (1984). Theories of organizational culture. *Organization Studies*, 53, 193–196. doi:10.1177/017084068400500301
- Ambrose, M., Arnaud, A., & Schminke, M. (2008). Individual moral development and ethical climate: The influence of person-organization fit on job attitudes. *Journal of Business Ethics*, 77(3), 323–333. doi:10.1007/s10551-007-9352-1
- Berger, L. P., & Luckmann, T. (1967). *The social construction of reality*. New York: Anchor Books. doi:10.1177/009365084011003001 Penguin.
- Beus, J. M., Payne, S. C., Bergman, M. E., & Arthur W., Jr. (2010). Safety climate and injuries: An examination of theoretical and empirical relationships. *Journal of Applied Psychology*, 95(4), 713–727. doi:10.1037/a0019164
- Blumer, H. (1969). *Symbolic interactionism: Perspective and method*. Englewood Cliffs, NJ: Prentice Hall.
- Borucki, C. C., & Burke, M. J. (1999). An examination of service-related antecedents to retail store performance. *Journal of Organizational Behavior*, 20(6), 943–962. doi:10.1002/(SICI)1099-1379(199911)20:6<943::AID-JOB976>3.0.CO;2-9
- Burke, W. W. (2011). *Organizational change: Theory and practice* (3rd ed.). Thousand Oaks, CA: Sage.
- Chen, G., & Bliese, P. (2002). The role of different levels of leadership in predicting self- and collective-efficacy: Evidence for discontinuity. *Journal of Applied Psychology*, 87(3), 549–556. doi:10.1037/0021-9010.87.3.549
- Christian, M. S., Bradley, J. C., Wallace, J. C., & Burke, M. J. (2009). Workplace safety: A meta-analysis of the roles of person and situation factors. *Journal of Applied Psychology*, 94(5), 1103–1127. doi:10.1037/a0016172
- Clark, B. R. (1972). The organizational saga in higher education. *Administrative Science Quarterly*, 17(2), 178–184. doi:10.2307/2393952
- Clarke, S. (2006). The relationship between safety climate and safety performance: A meta-analytic review. *Journal of Occupational Health Psychology*, 11(4), 315–327. doi:10.1037/1076-8998.11.4.315
- Collins, C. J., & Smith, K. G. (2006). Knowledge exchange and combination: The role of human resource practices in the performance of high-technology firms. *Academy of Management Journal*, 49, 544–560. doi:10.5465/AMJ.2006.21794671

⁴ The references listed here include those only cited in the opening text. Additional references are located in the Appendices, which comprise the annotated bibliography.

- Colquitt, J. A., Noe, R. A., & Jackson, C. L. (2002). Justice in teams: Antecedents and consequences of procedural justice climate. *Personnel Psychology*, *55*(1), 83–109. doi:10.1111/j.1744-6570.2002.tb00104.x
- Cullen, J. B., Parboteeah, K. P., & Victor, B. (2003). The effects of ethical climates on organizational commitment: A two-study analysis. *Journal of Business Ethics*, *46*(2), 127–141. doi:10.1023/A:1025089819456
- Darr, W., & Johns, G. (2004). Political decision-making climates: Theoretical processes and multi-level antecedents. *Human Relations*, *57*(2), 169–200. doi:10.1177/0018726704042926
- de Jong, A., de Ruyter, K., & Lemmink, J. (2004). Antecedents and consequences of the service climate in boundary-spanning self-managing service teams. *Journal of Marketing*, *68*(2), 18–35. doi:10.1509/jmkg.68.2.18.27790
- de Jong, A., de Ruyter, K., & Lemmink, J. (2005). Service climate in self-managing teams: Mapping the linkage of team member perceptions and service performance outcomes in a business-to-business setting. *Journal of Management Studies*, *42*(8), 1593–1620. doi:10.1111/j.1467-6486.2005.00558.x
- DeJoy, D. M., Schaffer, B. S., Wilson, M. G., Vandenberg, R. J., & Butts, M. M. (2004). Creating safer workplaces: Assessing the determinants and role of safety climate. *Journal of Safety Research*, *35*(1), 81–90. doi:10.1016/j.jsr.2003.09.018
- Department of the Army. (2012). *Army Doctrine Reference Publication (ADRP) 6-22 Army leadership*. Retrieved from <http://www.apd.army.mil/Search/ePubsSearch/ePubsSearchForm.aspx?x=ADRP>
- Department of the Army. (2015). *ADRP 1 The Army profession*. Retrieved from <http://www.apd.army.mil/Search/ePubsSearch/ePubsSearchForm.aspx?x=ADRP>
- Department of the Army. (2015). *The Army vision: Strategic advantage in a complex world*. Retrieved from https://www.army.mil/e2/rv5_downloads/info/references/the_army_vision.pdf
- Department of the Army. (2014). *The U.S. Army operating concept: Win in a complex world, 2020–2040*. Retrieved from <http://www.tradoc.army.mil/tpubs/pams/TP525-3-1.pdf>
- Dietz, J., Pugh, S. D., & Wiley, J. W. (2004). Service climate effects on customer attitudes: An examination of boundary conditions. *Academy of Management Journal*, *47*(1), 81–92. doi:10.2307/20159561

- Ehrhart, M. G. (2004). Leadership and procedural justice climate as antecedents of unit-level organizational citizenship behavior. *Personnel Psychology*, *57*(1), 61–94. doi:10.1111/j.1744-6570.2004.tb02484.x
- Ehrhart, M. G., Schneider, B., & Macey, W. H. (2014). *Organizational climate and culture: An introduction to theory, research, and practice*. New York, NY: Routledge/Taylor & Francis Group.
- Fleishman, E. A. (1953). Leadership climate, human relations training, and supervisory behavior. *Personnel Psychology*, *6*(2), 205–222. doi:10.1111/j.1744-6570.1953.tb01040.x
- Geertz, C. (1973). *The interpretation of cultures*. New York, NY: Basic Books.
- Gilson, L. L., & Shalley, C. E. (2004). A little creativity goes a long way: An examination of teams' engagement in creative processes. *Journal of Management*, *30*(4), 453–470. doi:10.1016/j.jm.2003.07.001
- González-Romá, V., Peiró, J. M., & Tordera, N. (2002). An examination of the antecedents and moderator influences of climate strength. *Journal of Applied Psychology*, *87*(3), 465–473. doi:10.1037/0021-9010.87.3.465
- Goodenough, W. H. (1971). *Culture, language, and society*. Reading, MA: Addison-Wesley.
- Hong, Y., Liao, H., Hu, J., & Jiang, K. (2013). Missing link in the service profit chain: A meta-analytic review of the antecedents, consequences, and moderators of service climate. *Journal of Applied Psychology*, *98*(2), 237–267. doi:10.1037/a0031666
- Indik, B. P. (1965). Organizational size and member participation: Some empirical tests of alternative explanations. *Human Relations*, *18*(4), 339–350. doi:10.1177/001872676501800403
- Inkson, J. H. K., Pugh, D. S., & Hickson, D. J. (1970). Organization context and structure: An abbreviated replication. *Administrative Science Quarterly*, *15*(3), 318–329. doi:10.2307/2391622
- James, L. R., Hater, J. J., Gent, M. J., & Bruni, J. R. (1978). Psychological climate: Implications from cognitive social learning theory and interactional psychology. *Personnel Psychology*, *31*(4), 783–813. doi:10.1111/j.1744-6570.1978.tb02124.x
- Joyce, W. F., & Slocum, J. W., Jr. (1979). Climates in organizations. In S. Kerr (Ed.), *Organizational behavior* (pp. 317–333). Columbus, OH: Grid.
- Jung, D. I., Chow, C., & Wu, A. (2003). The role of transformational leadership in enhancing organizational innovation: Hypotheses and some preliminary findings. *The Leadership Quarterly*, *14*(4-5), 525–544. doi:10.1016/S1048-9843(03)00050-X

- Keesing, R. M. (1974). Theories of culture. *Annual Review of Anthropology*, 3, 73–97. doi:10.1146/annurev.an.03.100174.000445
- Koene, B., Vogelaar, A., & Soeters, J. (2002). Leadership effects on organizational climate and financial performance: Local leadership effect in chain organizations. *The Leadership Quarterly*, 13(3), 193–215. doi:10.1016/S1048-9843(02)00103-0
- Lewin, K., Lippitt, R., & White, R. K. (1939). Patterns of aggressive behavior in experimentally created “social climates.” *The Journal of Social Psychology*, 10(2), 269–299. doi:10.1080/00224545.1939.9713366
- Liao, H., & Rupp, D. (2005). The impact of justice climate and justice orientation on work outcomes: A cross-level multifoci framework. *Journal of Applied Psychology*, 90(2), 242–256. doi:10.1037/0021-9010.90.2.242
- Litwin, G. H., & Stringer, R. A. (1968). *Motivation and organizational climate*. Cambridge, MA: Harvard University Press.
- Martin, K., & Cullen, J. (2006). Continuities and extensions of ethical climate theory: A meta-analytic review. *Journal of Business Ethics*, 69(2), 175–194. doi:10.1007/s10551-006-9084-7
- Mayer, D., Nishii, L., Schneider, B., & Goldstein, H. (2007). The precursors and products of justice climates: Group leader antecedents and employee attitudinal consequences. *Personnel Psychology*, 60(4), 929–963. doi:10.1111/j.1744-6570.2007.00096.x
- McGregor, D. M. (1960). *The human side of enterprise*. New York, NY: McGraw-Hill.
- McKay, P. F., Avery, D. R., & Morris, M. A. (2008). Mean racial-ethnic differences in employee sales performance: The moderating role of diversity climate. *Personnel Psychology*, 61(2), 349–374. doi:10.1111/j.1744-6570.2008.00116.x
- McPhee, R. D. (1985). Formal structure and organizational communication. In R. D. McPhee & P. K. Tompkins (Eds.), *Organizational communication: Traditional themes and new directions* (pp. 149–177). Beverly Hills, CA: Sage.
- Naumann, S. E., & Bennett, N. (2000). A case for procedural justice climate: Development and test of a multilevel model. *Academy of Management Journal*, 43(5), 881–889. doi:10.2307/1556416
- Neubaum, D., Mitchell, M., & Schminke, M. (2004). Firm newness, entrepreneurial orientation, and ethical climate. *Journal of Business Ethics*, 52(4), 335–347. doi:10.1007/s10551-004-1532-7

- Ostroff, C., Kinicki, A. J., & Tamkins, M. M. (2003). Organizational culture and climate. In W. C. Borman, D. R. Ilgen, & R. J. Klimoski (Eds.), *Handbook of psychology: Vol. 12: Industrial and organizational psychology* (pp. 565–594). New York, NY: Wiley.
- Payne, R. L., & Pugh, D. S. (1976). Organizational structure and climate. In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 1125–1173). Chicago, IL: Rand McNally.
- Poole, M. S., & McPhee, R. D. (1983). A structural analysis of organizational climate. In L. I. Putnam & M. E. Paconowsky (Eds.), *Communication and organizations: An interpretive approach* (pp. 195–220). Beverly Hills, CA: Sage.
- Pritchard, R. D., & Karasick, B. W. (1973). The effects of organizational climate on managerial job performance and job satisfaction. *Organizational Behavior & Human Performance*, 9(1), 126–146. doi:10.1016/0030-5073(73)90042-1
- Reichers, A. E. (1987). An interactionist perspective on newcomer socialization rates. *Academy of Management Review*, 12(2), 278–287. doi:10.5465/AMR.1987.4307838
- Salvaggio, A. N., Schneider, B., Nishii, L. H., Mayer, D. M., Ramesh, A., & Lyon, J. C. (2007). Manager personality, manager service quality orientation, and service climate: Test of a model. *Journal of Applied Psychology*, 92(6), 1741–1750. doi:10.1037/0021-9010.92.6.1741
- Schein, E. H. (1985). *Organizational culture and leadership*. San Francisco, CA: Jossey-Bass.
- Schein, E. H. (2010). *Organizational culture and leadership* (4th ed.). San Francisco, CA: Jossey-Bass.
- Schminke, M., Ambrose, M. L., & Neubaum, D. O. (2005). The effect of leader moral development on ethical climate and employee attitudes. *Organizational Behavior and Human Decision Processes*, 97(2), 135–151. doi:10.1016/j.obhdp.2005.03.006
- Schneider B. (1983). Work climates: An interactionist perspective. In N. R. Feimer, & E. S. Geller (Eds.), *Environmental psychology: Directions and perspectives* (pp. 106–128). New York, NY: Praeger.
- Schneider, B. (2016). *Organizational climate* [PowerPoint slides]. Retrieved from professional development session at US Army Research Institute for the Behavioral and Social Sciences, December 6th.
- Schneider, B., & Bartlett, C. J. (1968). Individual differences and organizational climate: I. The research plan and questionnaire development. *Personnel Psychology*, 21(3), 323–333. doi:10.1111/j.1744-6570.1968.tb02033.x

- Schneider, B., & Bartlett, C. J. (1970). Individual differences and organizational climate II: Measurement of organizational climate by the multi-trait, multi-rater matrix. *Personnel Psychology, 23*(4), 493–512. doi:10.1111/j.1744-6570.1970.tb01368.x
- Schneider, B., González-Romá, V., Ostroff, C., & West, M. A. (2017). Organizational climate and culture: Reflections on the history of the constructs in the Journal of Applied Psychology. *Journal of Applied Psychology, 102*(3), 468–482. doi:10.1037/apl0000090
- Schulte, M., Ostroff, C., Shmulyian, S., & Kinicki, A. (2009). Organizational climate configurations: Relationships to collective attitudes, customer satisfaction, and financial performance. *Journal of Applied Psychology, 94*(3), 618–634. doi:10.1037/a0014365
- Selznick, P. (1957). *Leadership in administration: A sociological interpretation*. Evanston, IL: Row, Peterson.
- Susskind, A. M., Kacmar, K. M., & Borchgrevink, C. P. (2003). Customer service providers' attitudes relating to customer service and customer satisfaction in the customer-server exchange. *Journal of Applied Psychology, 88*(1), 179–187. doi:10.1037/0021-9010.88.1.179
- Terborg, J. (1981). Interactional psychology and research on human behavior in organizations. *Academy of Management Review, 6*(4), 569–576. doi:10.5465/AMR.1981.4285691
- Wallace, J. C., Popp, E., & Mondore, S. (2006). Safety climate as a mediator between foundation climates and occupational accidents: A group-level investigation. *Journal of Applied Psychology, 91*(3), 681–688. doi:10.1037/0021-9010.91.3.681
- Walumbwa, F. O., Wu, C., & Orwa, B. (2008). Contingent reward transactional leadership, work attitudes, and organizational citizenship behavior: The role of procedural justice climate perceptions and strength. *The Leadership Quarterly, 19*(3), 251–265. doi:10.1016/j.leaqua.2008.03.004
- Whitman, D. S., Caleo, S., Carpenter, N. C., Horner, M. T., & Bernerth, J. B. (2012). Fairness at the collective level: A meta-analytic examination of the consequences and boundary conditions of organizational justice climate. *Journal of Applied Psychology, 97*(4), 776–791. doi:10.1037/a0028021
- Yang, J., Mossholder, K. W., & Peng, T. K. (2007). Procedural justice climate and group power distance: An examination of cross-level interaction effects. *Journal of Applied Psychology, 92*(3), 681–692. doi:10.1037/0021-9010.92.3.681
- Zohar, D. (2000). A group-level model of safety climate: Testing the effect of group climate on microaccidents in manufacturing jobs. *Journal of Applied Psychology, 85*(4), 587–596. doi:10.1037/0021-9010.85.4.587

Zohar, D. (2002). Modifying supervisory practices to improve subunit safety: A leadership-based intervention model. *Journal of Applied Psychology, 87*(1), 156–163. doi:10.1037//0021-9010.87.1.156

Zohar, D., & Luria, G. (2004). Climate as a social-cognitive construction of supervisory safety practices: Scripts as proxy of behavior patterns. *Journal of Applied Psychology, 89*(2), 322–334. doi:10.1037/0021-9010.89.2.322

Appendix A: Annotations

ORGANIZATIONAL CLIMATE ANNOTATIONS

Organization of Annotations

Concept areas. The key references were organized into three overarching concept areas, the themes used to organize the large amount of information: (a) *Organizational Climate and Culture Differentiated and Integrated*; (b) *Climate Theory and Models*; and (c) *Measuring Organizational Climate* (see Figure 1).

Concept Area 1: *Organizational Climate and Culture Differentiated and Integrated* focuses on the history of organizational climate and organizational culture research. The references capture the debate about the conflation and distinction between organizational climate and organizational culture. The more recent references highlight the call for the integration of the concepts to create a more comprehensive picture of organizational characteristics and their influence on outcomes.

Concept Area 2: *Climate Theory and Models* focuses on the conceptualization of organizational climate, how it is manifested, and the many contributing factors to climate development and maintenance. To differentiate the type of factors that influence the characteristics of organizational climate (e.g., positive/negative climate, climate strength) sub-areas were created. *Molar, Strategic, or Process Climate* focuses on understanding the type of climate that is being measured and what outcomes the climate may influence. *Climate Formation* focuses on what contributes to organizational climate and contains two sub-areas. *Developing and Sustaining Organizational Climate* focuses on the quality of the climate. *Factors Contributing to the Development and Sustainment of Organizational Climate* focuses on what contributes to the climate quality. Leadership is a prominent contributing factor and, therefore, is discussed in its own sub-area, *Leadership as an Antecedent*.

Concept Area 3: *Measuring Organizational Climate* focuses on the challenges associated with measuring organizational climate. The key references focus on determining the level of analysis, wording of measurement items (e.g., the referent), aggregation, and dispersion.

- | |
|--|
| <ol style="list-style-type: none"> 1. Organizational Climate and Culture Differentiated and Integrated 2. Climate Theory and Models <ol style="list-style-type: none"> a. Molar, Strategic, or Process Climate b. Climate Formation <ol style="list-style-type: none"> i. Developing and Sustaining Organizational Climate ii. Factors Contributing to the Development and Sustainment of Organizational Climate <ol style="list-style-type: none"> 1) Leadership as an Antecedent 3. Measuring Organizational Climate |
|--|

Figure 1. Concept area organization.

The annotations are numbered and organized by concept area from the oldest to the most recent publication dates.⁵

Organizational Climate and Culture Differentiated and Integrated

- 1. Guion, R. M. A. (1973). A note on organizational climate. *Organizational Behavior and Human Performance*, 9(1), 120–125. doi:10.1016/0030-5073(73)90041-X**

The goal of this article is to voice concerns about the lack of clarity surrounding the conceptualization of organizational climate. Analogous to the environments that exist in nature that uphold ecosystems, organizational climates within organizations are important to the psychological well-being of all its members. The conceptual murkiness of organizational climate centers around the confusion as to whether climate refers to attributes of organizations (i.e., an objective assessment of the climate external to the people within the organization) or attributes of people (i.e., subjective perceptions of what people in the organization perceive the climate to be).

For perceived organizational climate, Guion agrees with points made by Pritchard and Karasick (1973) that if perceptions of climate are in reference to the organization, then these perceptions should be evaluated in terms of accuracy. Specifically, external consultants outside the organization should be the criterion for reality to compare to employee perceptions. However, as Guion notes, determining accuracy of employee perceptions is only a worthwhile endeavor if such an objective, external measure of climate can be determined. By contrast, accuracy becomes less important when one is interested in an attribute related to individual perceptions. Moreover, if perceptions of climate are in reference to the individual, then these perceptions may simply boil down to assessments of job satisfaction or employee attitudes (e.g., many items used to assess perceived climate borrow from prior scales assessing job satisfaction). Guion suggests one approach to assess climate whereby employees respond to a list of organizational attributes as being either true or not true of the organization. The resulting

⁵When annotated references are cited, AB # (AB = annotated bibliography) follows the in-text citation to indicate the associated annotation in Appendix A.

frequency of endorsement would indicate which attributes of an organization are descriptive (i.e., attributes closer to 100%).

Annotator’s Comment⁶: It is important to assess organizational climate to understand the well-being of people within an organization. Importantly, this article helps clarify the conceptualization of organizational climate by focusing on different approaches to climate research and the answers that can be gleaned from them.

2. Denison, D. R. (1996). What is the difference between organizational culture and organizational climate? A native's point of view on a decade of paradigm wars. *Academy of Management Review*, 21(3), 619–654. doi:10.5465/AMR.1996.9702100310

This article addresses the early 1990s influx of quantitative survey methods into organizational culture research. The author argues these methods are contradictory to organizational culture epistemology, reflect methods used in early organizational climate research, and further conflate organizational culture and organizational climate. The article dives deep into literature for an understanding of the differences and similarities between organizational culture and organizational climate, as well as the implications for research.

The author proposes an integration of culture and climate research to avoid several consequences of the continued separation of organizational culture and organizational climate literatures. These consequences include (a) a tendency to overplay the implications of climate and culture perspectives, (b) little legitimacy associated with research integrating climate and culture perspectives, and (c) increased distance from the phenomenon of climate and culture that often produces intractable generalizations of the constructs.

The author presents a “controversial thesis”—specifically, the author asserts that even though culture and climate research are clearly different ways to look at organizational environments, it is less clear that they are examining distinct organizational phenomena (i.e., they both examine the link between the organization and member behaviors and the social psychological environment). The author argues that there is a relationship between culture and climate that hinges on complex similarities and differences, which calls for careful and deliberate comparison. Furthermore, an outline is provided of how culture and climate definitions have similar constructs but with different emphases (e.g., both examine collectively defined social contexts, context is thought to be created by interaction but also determines interaction, and multiple levels of analysis are essential for accurate research).

Annotator’s Comment: This article argues that the true difference between organizational culture and climate is one of interpretation, not phenomenon; meaning that culture and climate are intertwined in such a way that culture and climate researchers are looking at differing aspects of the same phenomenon. The author calls for further integration, specifically in the methods of data collection. Contextualized research methods that treat organizational members as experts and involves them in the research process is suggested (e.g., using

⁶ The annotations contain summary material from the article; these are the main points the annotator saw as important. The summary is then followed by annotator’s interpretive comments on the reference.

organizational ‘natural’ language used by workers versus jargon-based research language). Moreover, the primary call of this article to researchers is to stop arguing over whether a phenomenon is climate or culture, but rather consider both in a more integrated, comprehensive manner. Since his call, there have been theoretical models proposed for such integration, but it seems that at a practical level this integration has not happened in research (Kuenzi & Schminke, 2009).

3. **Schneider, B., Ehrhart, M. G., & Macey, W. A. (2011). Perspectives on organizational climate and culture. In S. Zedeck (Ed.), *APA Handbook of Industrial and Organizational Psychology: Vol. 1. Building and Developing the Organization* (pp. 373–414). Washington, DC: American Psychological Association.**

This handbook chapter reviews organizational climate and organizational culture research and emphasizes the strengths of both. Organizational culture is broadly defined as beliefs, ideologies, and values, and the ways these are transmitted through symbols, language, narratives (myths, stories), and practices (rituals and taboos), especially during socialization to the workplace. Organizational climate is broadly defined as the policies, practices, and procedures as well as the behaviors that get rewarded, supported, and expected in a work setting and the meaning those imply for the setting’s members. In addition, the book chapter goes in-depth into the history of both constructs, and methodological issues related to their measurement (e.g., item wording, reliability, and level of analysis) and use (e.g., aggregation).

The authors propose an integrated research paradigm, the “climcult model” (see Figure 12.1 from original source, p. 405), as a tool to provide a more complex and comprehensive way of viewing organizations. Climcult is a term that depicts the need to focus on both organizational climate and culture simultaneously. In the climcult model, a positive culture of well-being, influenced by organizations enacting positive values, is the foundation for focused climates (i.e., outcome or process climate of interest to the organization). Culture is thought to be relevant to goals, such as talent retention, and climate to performance goals that lead to success in a competitive marketplace; both impact organizational effectiveness.

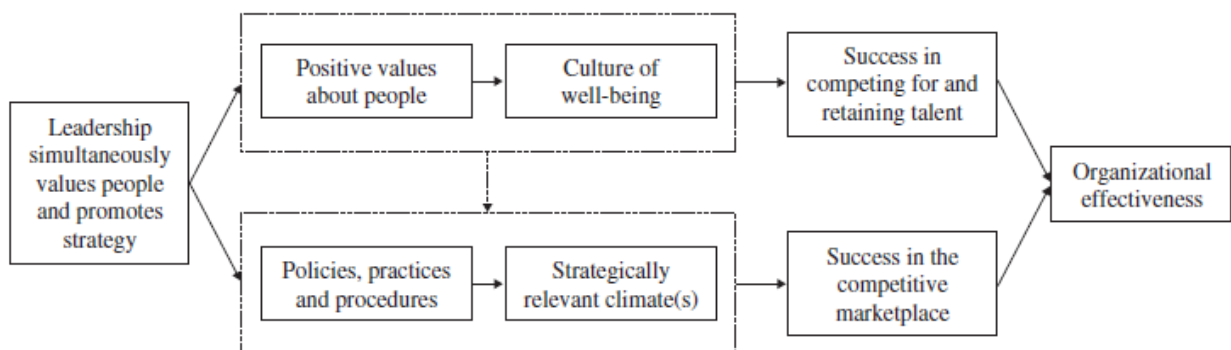


FIGURE 12.1. The “climcult model”: An integrated research paradigm for organizational climate and culture.

Annotator’s Comment: Schneider et al. add to the field of organizational research by theorizing there is a foundational element to strategic climates that has components of both

culture and climate. The foundation has to be based on people feeling valued and cared for (culture) before they can begin to focus on strategically improving organizational effectiveness and outcomes (i.e., people have to come first and then they will work hard to achieve the goals of the organization). After the foundation is established, then more focused climates can be implemented (e.g., climate for safety). However, there need to be concentrated efforts to reflect on how people are brought into the company and then transitioned to more tenured employees, both in terms of the cultural components (e.g., myths and stories as a tool for socialization) and the associated climate components (e.g., policies, practices, and procedures). An additional layer to this is the simultaneous cultures and climates that are often present; according to the authors, having higher level culture that subgroups share, and strategic climates that guide different efforts of different groups of people, are essential. The authors also note that culture on the societal level can provide an explanation for many aspects of organizations and how organizational climates and cultures are structured.

4. Zohar, D., & Hofmann, D. (2012). Organizational culture and climate. In S. Kozlowski (Ed.), *The Oxford Handbook of Organizational Psychology* (pp. 643–666). Oxford, UK: Oxford University Press.

The goal of this handbook chapter is to review the literature on organizational climate and organizational culture. In addition, Zohar and Hofmann seek to clarify the unique conceptualization and interrelations between organizational climate and culture.

A cross-cutting definition in the literature on organizational climate states that climate is a socially shared perception of organizational members regarding key characteristics of their organization. However, this definition is also so broad that it loses its usefulness, becoming indistinct from other perceptions about an organization's characteristics (e.g., team cohesion, deviant organizational behavior, work monotony). The authors describe how shared perceptions of climate can be global (a gestalt of the entire organization and all its attributes) or domain-specific (a strategic focus of organization's procedures, practices, and kinds of behaviors related to one domain; e.g., safety or service). Moreover, the authors suggest that shared perceptions of climate should not only be domain specific, but they should also focus on the configurations, relationships, or relative priorities among several strategically focused domains.

The authors describe the different attributes that can be characteristic of an organizational climate. The pattern-level (i.e., relationships among elements rather than looking at individual elements one at a time) climate attributes such as relative priorities (how competing domains are valued or emphasized; e.g., safety priorities vs. productivity priorities), alignment (alignment or gaps between espoused and enacted priorities), and internal consistency of a climate (i.e., are policies, practices, and procedures all consistent in message and intent?) are also important climate considerations. Differing implementation of policies at different levels of the organization can create perceived inconsistencies in what the climate is emphasizing; for instance, areas of discrepancy for consistency include supervisory discretion (e.g., supervisor directs workers to disregard certain safety procedures whenever production falls behind schedule which creates a gap with company policy and procedures). (See Figure 20.1 from original source, p. 662).

Graphic description of the theoretical model

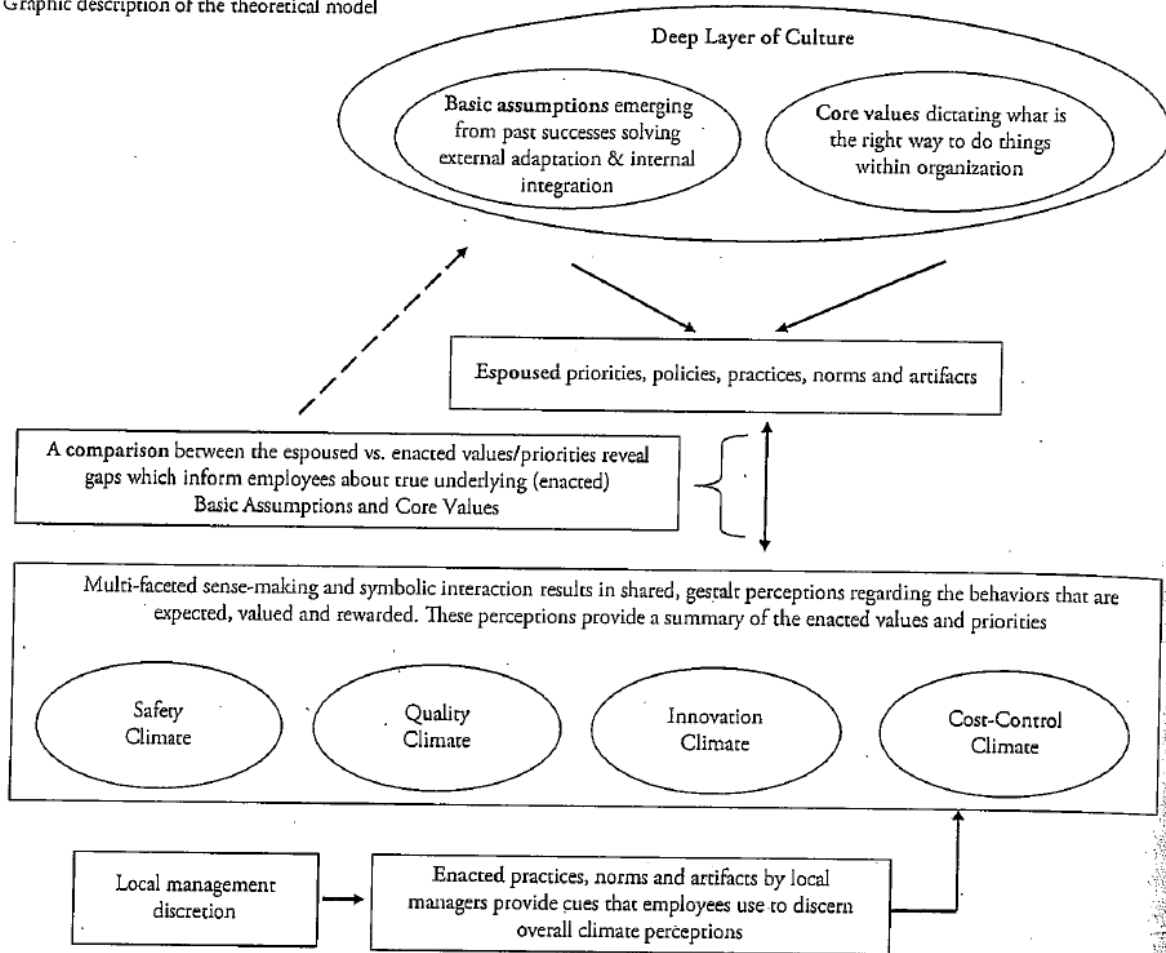


Figure 20.1 Graphic Description of the Theoretical Model

Climate perceptions must be shared among employees for a “climate” to exist. The authors describe several theoretical processes in which individual perceptions might become shared: the structuralist view (organizations are objective environmental features influencing employees’ attitudes and perceptions), the symbolic interactionism view (the interpretation of events is achieved through the interplay of personal perceptions and the perceptions communicated by others), the sense-making view (similar to symbolic interactionism, a process whereby persons attempt to make meaning about complex or ambiguous issues via social exchanges), and the leadership view (leaders create the climate and expectations within it, notably via transformational behaviors). The authors then discuss the possibility of multiple climates within an organization that may be independent (e.g., lead to similar outcomes but do not speak to one another), interactive (coexisting climates influence one another or interact), or causal (extends interactive view on climates to suggest some climates are more fundamental than others; that is, have factors that influence or interact with a variety of specific climates).

Furthermore, the authors describe organizational culture, which has also suffered from conceptual ambiguity. A cross-cutting definition in the literature on organizational culture states that culture consists of a system of shared behavioral norms, beliefs, and values that shape how

members act within an organization. Elements of organizational culture can be hierarchically organized from deep-level elements (e.g., basic assumptions, values, and/or beliefs about the organization that have proven successful in the past and are not taken for granted) to more surface-level elements (e.g., observable artifacts of the underlying, deep-level elements that manifest as myths, stories, policies, and other more easily observable features of the culture). However, deep-level elements can manifest in artifacts in many varying ways, making it sometimes difficult to identify the underlying values that yield them.

The authors discuss the idea that researchers have erroneously used the foundational terms of basic assumptions and core values interchangeably when they are distinct constructs. Specifically, basic assumptions originate from tried-and-true actions in the past that have proven to be successful at solving organizational problems and thus, achieve a “taken for granted” status within the organization. By contrast, core values originate from a shared moral compass that explains why things happen the way they do and what is good behavior or best practices within the organization, which can be driven by modeling a founder’s or leader’s example.

Annotator’s Comment: The authors suggest the integration of organizational climate and culture will create a more comprehensive picture of work environments. They suggest that perhaps organizational climate might be a bottom-up indicator of organizational culture. Moreover, understanding how procedures and policies are enacted and the relative gaps with espoused values can be informative to the underlying values and core assumptions of the organizational culture. Thus, the authors present an organizational culture model that includes organizational climate as an important element with top-down and bottom-up processes related to conceptualization and measurement.

Overall, Zohar and Hoffman (2012) provide an extensive review of the organizational climate and culture literatures. This review provides insight into some of the issues related to the often conceptual murkiness of these constructs and their measurement. However, the authors provide some suggestions on how to successfully distinguish climate and culture as distinct, yet interrelated, constructs that can be integrated into a larger organizational model that can be useful to theory development and measurement for an expanded view of organizations as human systems.

- 5. Ostroff, C., Kinicki, A. J., & Muhammad, R. S. (2012). Organizational culture and climate. In I. B. Weiner, N. W. Schmitt, & S. Highhouse (Eds.), *Handbook of Psychology: Volume 12 Industrial and Organizational Psychology* (2nd ed.) (pp. 643–676). Hoboken, NJ: John Wiley & Sons.**

The goal of this handbook chapter on organizational climate and culture is to (a) review the respective literatures on climate and culture, (b) discuss the relationships between these constructs, and (c) describe the processes that underlie the emergence, strength, and change of climate and culture. Broadly, climate and culture offer a shared meaning and understanding of an organization. Climate and culture are two complementary constructs that offer overlapping, yet distinct, insight into the characteristics of an organization. Moreover, examining these constructs provides a platform for the study of behavior within organizations which can encompass many

individual and group behaviors (e.g., turnover, job satisfaction, job performance, safety, service quality).

The authors first describe the broad characteristics of organizational climate and culture. Climate is a predominantly shared perceptual process (i.e., agreement) in which members describe what the organization is like in terms of policies, practices, procedures, routines, and rewards. Climate is conceptualized as describing *what* happens in an organization; climate is more individual perceptions of actual organizational behaviors, temporal, and more easily manipulated by persons of authority. Culture is characterized in terms of fundamental ideologies, assumptions, and influenced by symbolic interpretations of organizational events and artifacts. Culture is conceptualized as describing *why* things happen in an organization; culture is more stable, collectively defined, and is resistant to manipulation by persons of authority.

The authors discuss the layers, antecedents, and outcomes of organizational culture (see Figure 24.1 from original source, p. 645). The three layers of organizational culture are observable artifacts, espoused values, and basic assumptions. *Artifacts* are described as surface-level manifestations of underlying deep assumptions that can take the form of symbols, language, narratives, and practices. *Espoused values* are values that are endorsed by the organization at large. *Basic assumptions* are described as unobservable and reside at the core of the organizational culture; they may start out as values but eventually become ingrained into the core culture (most difficult to change). External (e.g., industry environments, local communities, competitors) and internal (e.g., founders, leaders) antecedents of culture are discussed. Finally, the authors discuss organizational effectiveness, which has been one of the most studied outcomes of organizational culture; however, qualitative and quantitative reviews differ on whether a relationship exists between culture and effectiveness. Moreover, research suggests that organizational culture might have a more indirect moderating or mediating role in its relationship to organizational effectiveness than other predictors. This means that organizational culture can imply many facets of organizational life that are quite distal from those that get reflected in effectiveness. For example, some organizations value sports and athleticism, and those are difficult to translate into traditional outcome measures of organizational effectiveness.

The authors summarize the attempts at identifying categories of climate and associated dimensions under these headings: molar climate, systems climate, generic climate and strategic climate. The molar climate approach describes a single gestalt or total organizational environment (e.g., well-being) using an additive, compensatory model as a criterion. However, the molar approach fails to account for patterns within an organization that might emphasize different priorities or reveal dimensions or facets of climate that are not in alignment. The systems climate approach describes configurations and patterns that exist across multiple dimensions of climate that are free to vary (e.g., high or low); this approach allows for comparisons between and across dimensions. The generic climate approach describes attempts to define the most important facets or dimensions of organizational climate that are relevant across organizations (e.g., autonomy, structure, leader support). The strategic climate approach describes looking into a specific organizational domain (e.g., climate for safety) that can be linked to a specific strategic outcome. A strength of strategic climate is that greater construct validity is achieved when the climate and its outcomes are specified at the same level of specificity. The authors note that a few researchers have attempted to integrate these different

approaches. For example, Schneider et al. (2011) provide a unified framework for generic dimensions of fairness and participation for the molar climate of well-being.

The authors also describe several antecedents and outcomes of organizational climate. Research has suggested that structure, context, demographics, population size, human resource management, and leadership have all been linked as influential antecedents to organizational climate. Commonly studied outcomes of organizational climate include customer satisfaction, service quality, unit performance, and accident rates.

Lastly, the authors discuss the emergence, strength, and change of organizational climate and culture. Climate and culture are labeled as emergent properties of organizations because they originate from the cognition, affect, and behaviors of the individuals within an organization. Culture in an organization is likely to emerge early during the founding of the organization and then be communicated over time, with leaders having an influential role in this process. Climate in an organization is likely to emerge from the individual perceptions within the organization that require a level of consensus or agreement among the organization's members. Climates and cultures can also be considered in terms of their relative strength. Three types of strength are discussed: agreement-based strength (i.e., the extent to which people interpret and encode the organizational situation in the same way), system-based strength (i.e., the degree to which common expectations are pervasive and all-encompassing throughout all aspects of the organization), and alignment-based strength (i.e., the extent to which there is alignment between culture/climate and actual organizational practices). Attempts at changing climate or culture are typically triggered when the organization is being ineffective or performing poorly. When changing culture or climate, both aspects should be considered simultaneously. Leadership and infusion of outsiders can often help spur change within an organizational culture, while a change in procedures, policies, or practices can change a climate.

Annotator's Comment: This chapter provides an in-depth review of the literature on organizational climate and culture. It is especially beneficial in clarifying the distinctions and relationship between the constructs of climate and culture within organizations.

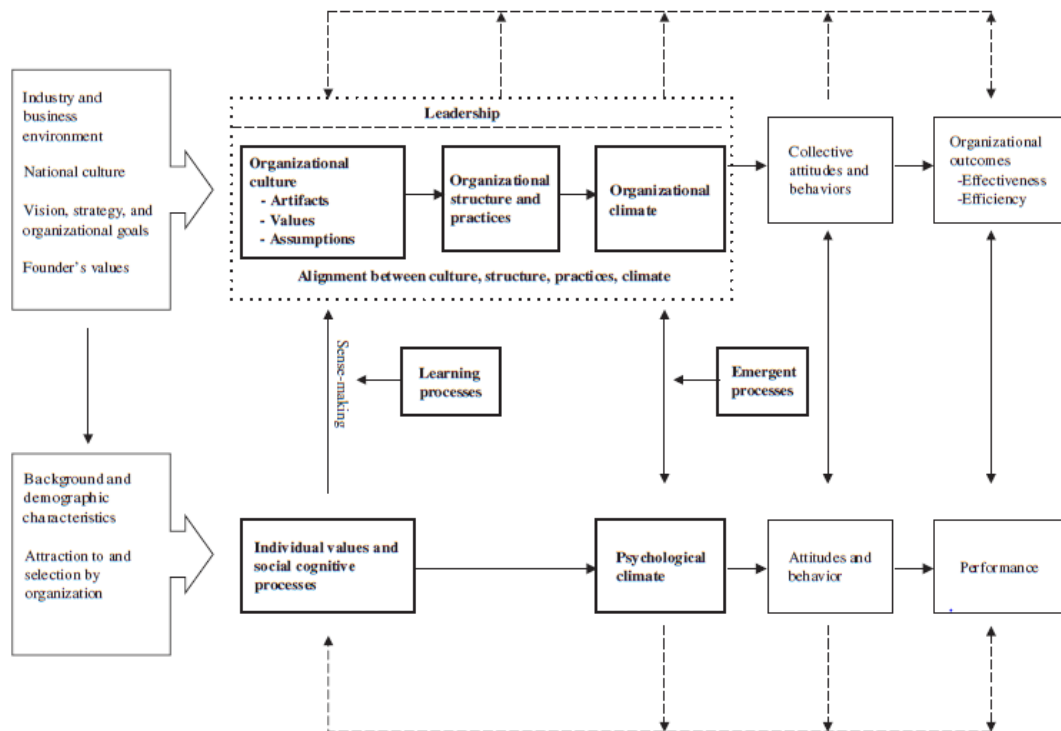


Figure 24.1 Multi-level model of organizational culture and climate

6. Schneider, B., Ehrhart, M. G., & Macey, W. H. (2013). Organizational climate and culture. *Annual Review of Psychology*, 64, 361–388. doi:10.1146/annurev-psych-113011-143809

The purpose of this article is to review the literature on organizational climate and organizational culture theory and research. Organizational climate is defined as “the meanings people attach to interrelated bundles of experiences they have at work.” Organizational culture is defined as “the basic assumptions about the world and the values that guide life in organizations.” Organizational climate and culture are acknowledged as essential for describing and analyzing organizations. The authors provide a brief history of both climate and culture theory and research, discuss methodological and analytical issues in such research (e.g., levels issues, climate strength), present research on the role of leadership and national culture in understanding organizational culture and performance, and describe various approaches to potentially integrate organizational climate and culture in theory development and research.

Of importance, the authors argue an integrated research view is necessary. The Competing Values Framework (CVF) and an organizational change lens are presented as possible frameworks for integrating culture and climate perspectives in research (Quinn & Rohrbaugh, 1983). The CVF framework outlines “(1) the conceptually competing values within organizations, (2) the ways those values are manifest in organizations, and (3) the likelihood of success in different domains of organizational performance” (p. 373). CVF as an integration model would call for climate researchers to embrace the assessment of values and basic

assumptions in addition to policies, practices, and procedures, and moreover, culture researchers would be called to focus more on specific criteria (e.g., strategic issues such as customer satisfaction or process issues such as trust). As an organizational change lens, CVF focuses on understanding what is preventing an organization from achieving its potential and how those things can be addressed to improve organizational effectiveness. The organizational change lens links climate with culture because change entails many moving parts, "... just having the 'right' culture will be unlikely to result in high performance unless management has created a strategic climate that communicates exactly what the goals of the organization are and that organizes the various processes and procedures in the organization around their achievement" (p. 378).

Annotator's Comment: Overall, this article presents a thorough review of the organizational climate and culture literatures, outlining the history and theoretical developments of both constructs. Moreover, in addition to the review of the history of research, this article outlines ways in which organizational climate and culture can be integrated in theory and research.

7. Ng, J. C. Y., & Ng, K. Y. N. (2014). Culture, organisational culture, and organisational climate: An integrative approach. *Indian Journal of Commerce and Management Studies*, 5(2), 18–26.

The purpose of this article is to understand the context in which organizational culture and organizational climate are formed and to present an approach to integrate these concepts. In their synthesis of the literature, the authors (a) define the three concepts of culture, organizational culture, and organizational climate, (b) discuss the history behind the conceptual development of the three concepts, (c) discuss the theoretical and measurement issues that have been debated in the literature, and (d) discuss how the concepts are similar to one another.

Of importance, the authors provide an integrative approach to the study of culture, organizational culture, and organizational climate. Specifically, the authors suggest that (a) data should be collected at different levels of analysis and (b) researchers should deepen the understanding of the complexities involved when studying organizational climate by conducting multi-level analyses while simultaneously studying the three concepts using multi-level modeling (MLM). MLM is presented as a way to guide data collection and analyses for an integrative approach, each level informing the next. Moreover, the authors propose collecting survey data to examine the relationships between culture, organizational culture, and organizational climate variables so that all three concepts can be simultaneously represented as their own level in MLM analyses. The authors suggest that level 1 data should be focused on culture (e.g., employees' native values, beliefs, and norms), level 2 on organizational culture (e.g., organizational values, beliefs, and norms), and level 3 on organizational climate (e.g., employees' perception of formal and informal organizational policies, practices, and procedures).

Annotator's Comment: This article presents a useful approach to conceptually integrating and studying the concepts of culture, organizational culture, and organizational climate that are often not considered simultaneously in research. Moreover, the authors suggest that MLM is a useful tool to study these independent but related concepts at different levels of

analysis. Understanding all three concepts simultaneously allows researchers to develop a clearer and more comprehensive picture of organizational work environments.

Climate Theory and Models

8. Forehand, G. A., & Von Haller, G. (1964). Environmental variation in studies of organisational behaviour. *Psychological Bulletin*, 62(6), 361–382. doi:10.1037/h0045960

The purpose of this very early review article is to discuss how variation in environments may influence organizational behavior. Person by environment analysis has been an influential lens through which researchers approach organizational behavior research. According to the authors, environmental variables cannot explain the full range of organizational behavior, nor can personal characteristics alone account for behavior; behavior depends upon the person and the situation. But research on the situation, they propose, requires attention. That is, organizations are good for studying environmental variation because they are influential to those within the organization; the organization has well-identified boundaries and persons within, and records are easily accessible within the organization that provide data points on the character of the organization. The authors define organizational climate as the set of characteristics that describe an organization, distinguish it from other organizations, endure over time, and influence the behavior of persons in the organization.

The authors delve into how organizational behavior can be studied and measured. First, a *field study approach* offers an in-depth analysis of an organization by a researcher and yields a wealth of information. Two common approaches of field studies include comparative studies that examine how two or more organizations contrast and longitudinal studies that investigate the effects of changing conditions within an organization over time. Limitations of the field study approach include cost requirements, limited sample size (2–3 organizations), required expertise of the observer, and inherent subjectivity of the observer. Second, a *perception of participants approach* places participants as inside observers who may have increased expertise about the organization compared to third-party, outside observers. The perception of participant approach has the advantage of being a more convenient way of studying organizations, but it also may confound the characteristics of the participant and the organization. Third, the *objective indices approach* seeks to study organizations based on objective characteristics (e.g., size, layoff frequency, ratio of management to employees). The objective indices approach has the advantage of greater construct validity and comparisons between organizations but can also lead to variables that are too numerous and too specific to an organization. In addition, the authors also discuss experimental manipulation of climates to test the interactive effect of person and environment in an organization (e.g., manipulating organizations, creating organizations for simulation of behavior).

Lastly, the authors describe several dimensions or facets of organizational variation. The dimensions are a way to describe and measure different characteristics of climate to add to the understanding of what makes up organizational climate. *Size* of an organization (number of employees) can affect the number of person-to-person interactions, satisfaction, and the ease with which goals of the organization are communicated to members. *Structure* of an organization (authority hierarchies and relations of people/groups) can affect coordination of work (e.g.,

vertical hierarchies are better), creativity (e.g., horizontal hierarchies are better), and satisfaction (e.g., upper-level managers are more satisfied in centralized structures). *Systems complexity* of an organization can affect organizations depending on the number of components, as well as the number and nature of the interactions between components. *Leadership style* of leaders can affect how organizational properties are framed and implemented. *Goal directions* of an organization (primary goal or purpose of organization) can affect how organizations approach or respond to problems (e.g., a business with an organizational goal to obtain a profit will make decisions based on the bottom-line). However, although superordinate goals of organizations such as business, government, and philanthropy might differ, the sub-goals given to employees to achieve the superordinate goals may be very similar.

Annotator's Comment: This article articulates the then-emerging field of organizational behavior through the interplay of environmental and personal factors. The authors posit that organizational climate is akin to the personality of an individual. Moreover, if a general atmosphere or personality exists within an organization, then it would be important to (a) identify who is the subject or unit of analysis for comparison within organizations, (b) find homogeneity in the agreement of persons about the climate in the organization, (c) define the stable elements of the climate, and (d) understand what combination of dimensions or properties best describe an organization. The authors suggest that through measurement and studying the interaction between the person and environment the attempts to clarify organizational climate can be achieved.

9. Johannesson, R. E. (1973). Some problems in the measurement of organizational climate. *Organizational Behavior and Human Performance*, 10(1), 118–144. doi:10.1016/0030-5073(73)90008-1

The aim of this article is to examine measurement issues related to differentiating measures of organizational climate from job satisfaction. Organizational climate has been measured two different ways: objectively and perceptually. Authors defining organizational climate objectively measure it by using clearly defined, objective indices, such as number of formal rules or ratio of administrative versus production personnel. The larger group of researchers defines organizational climate perceptually, and measure it using indices that involve the participant's perception of the workplace environment. Researchers that define organizational climate perceptually tend to 'borrow' items from satisfaction surveys to develop climate surveys. This practice could be leading to the strong resemblance and overlap of the factors. Moreover, measures of organizational climate and job satisfaction can become redundant with one another and not provide a meaningful differentiation.

Johannesson conducted a series of cluster analyses on a large dataset to investigate the extent of overlap between satisfaction and climate measures. He used 78 items from the SRA Employee Inventory (a general measure of employee attitudes) and the JDI (job descriptive index) to measure satisfaction, and 90 items from the OC (organizational climate items) to measure perceptual climate. Analyses revealed that climate measures were very similar to traditional satisfaction measures, indicating overlap in the measures (i.e., the measures were not differentiated from one another, suggesting that the same constructs were being measured, not two discrete constructs as intended by previous researchers).

Annotator's Comment: The results of this study indicate a need to differentiate between organizational climate and job satisfaction when collecting and analyzing data. It is important to fully understand and distinctly measure organizational climate from job attitudes. While the article is very detailed about the cluster analysis, it is lacking in its descriptions of the measures and offers a weak solution to the problem at hand. This article is useful in identifying and describing the problem of measuring organizational climate and Johannesson was early in noting the problematic overlap in content between satisfaction and organizational climate (Kuenzi & Schminke, 2009), as the title suggests, but other resources will be necessary to ascertain viable solutions.

10. James, L. R., & Jones, A. P. (1974). Organizational climate: A review of theory and research. *Psychological Bulletin*, 81(12), 1096–1112. doi:10.1037/h0037511

This organizational climate review is credited with differentiating between organizational climate (an organizational level variable) and psychological climate (an individual level variable) and starting the discussion on how to more precisely capture and measure organizational climate. Three approaches to defining and measuring organizational climate were reviewed and critiqued, along with a way forward for organizational climate research.

The three categories of approaches to defining and measuring organizational climate reviewed are multiple measurement-organizational attribute approach, perceptual measurement-organizational attribute approach, and perceptual measurement-individual attribute approach. *Multiple measurement-organizational attribute approach* focuses on objective organizational attributes (e.g., organization size) making up organizational climate. The authors note that this method has been critiqued as being too broad and not accounting for relationships between people (e.g., leadership, conflict, and communication). *Perceptual measurement-organizational attribute approach* focuses on organizational climate as a set of perceptual variables. These variables are still seen as organizational characteristics, but how they are perceived is important (e.g., how is the size of the organization interpreted by members in terms of warmth and support?). This method has been critiqued as conflating the differences between objective organizational characteristics and the individual perception of what those objective characteristics are, positing that this conflation creates both measurement and interpretation challenges. *Perceptual measurement-individual attribute approach* focuses on how the individual perceiver processes organizational attributes and accounts for perceiver characteristics (e.g., values and needs). Individuals are subjectively perceiving (processing input from) objective events and organizational characteristics. This approach is highly criticized by the authors as a way to define and measure organizational climate because it is limited to the individual level and does not include group interactions or characteristics.

James and Jones argue that, in the case of organizational climate, measurement techniques were arbitrarily driving theory. The authors call for focusing first on construct refinement and then measurement and operationalization. They discuss the necessity of measuring the accuracy of perceptions and determining the relationship between subjective perceptual measures and objective organizational measures (e.g., how much consensus exists, and how does that influence behavior?).

Annotator's Comment: This article is influential in shaping the direction of organizational climate research by highlighting the challenges with climate measurement (see Moran & Volkwein, 1992), especially those having to do with differentiating psychological from organizational climate. The main critique of James and Jones is that organizational climate was being operationalized and measured before organizational climate was clearly conceptualized and defined. This is the article that suggests separation between organizational climate and psychological climate. The organizational climate approaches are critiqued and no specific one is endorsed. However, the authors express concern over measuring the “perceived” nature of organizational climate and make a call for using objective measures. They say that it would be best for climate perceptions to be shown to be reflected in more objective indicators (such as size, number of hierarchies) and one must show that perceptions are in agreement.

11. LaFollette, W. R., & Sims, H. P., Jr. (1975). Is satisfaction redundant with organizational climate? *Organizational Behavior and Human Performance*, 13(2), 257–278. doi:10.1016/0030-5073(75)90049-5

The purpose of this article is to provide empirical evidence to support or refute Johannesson's (1973) claim that measuring perceptual climate and job satisfaction is redundant. Many climate researchers would argue to the contrary as organizational climate research is interested in measurable properties in the environment, while job satisfaction focuses on affective responses to situations (Litwin & Stringer, 1968; Smith et al., 1969). According to Johannesson, however, organizational climate cannot be separated from one's feelings about the workplace. LaFollette and Sims seek to provide evidence on this issue and add clarity to the debate.

To understand whether measuring perceptual climate and job satisfaction is redundant in climate research, LaFollette and Sims use already established questionnaires to measure organizational climate (Climate Questionnaire; Litwin & Stringer, 1968), organizational practices (e.g., internal organizational and managerial practices; Organizational Practices Questionnaire; House & Rizzo, 1972), job satisfaction (Job Descriptive Index, JDI; Smith et al., 1969), and job performance (i.e., evaluations from superiors). Participants ($n = 1161$) were selected from a medical complex and included all levels of employees, including (but not limited to) janitorial staff, clerical staff, registered nurses, and therapists.

Following Johannesson's (1973) recommendation, the authors correlated job performance with climate, internal and managerial practices factors, and job satisfaction. Job performance was related to all of the factors, but most strongly correlated with job satisfaction factors. In fact, the significant correlations were found in 33% and 21% of the climate and managerial practice factors, respectively, while job performance correlated with 100% of the job satisfaction factors. If Johannesson's claim was valid, that the two constructs of climate and job satisfaction are redundant, generally equal correlations for all three variables would be expected (i.e., the relationships of climate factors, practice factors, and job satisfaction factors to job performance would be similar). However, there is a great deal of variation. Hence, the results of this study did not support this claim of redundancy. The authors conclude with a brief discussion of the literature supporting the thesis that organizational climate causes job satisfaction, not the other way around, as Johannesson suggested.

Annotator's Comment: The findings by LaFollette and Sims are important to the measurement and conceptualization of organizational climate. One point that arises in this article is that of "item sharing." Organizational climate researchers, the authors note, often use items drawn from job satisfaction measures. Researchers interested in measuring organizational climate need to be aware of the reliability and construct validity of their measures. Organizational climate and job satisfaction are, indeed, conceptually different constructs but are often conflated due to the items chosen to measure them.

12. Schneider, B., & Snyder, R. A. (1975). Some relationships between job satisfaction and organization climate. *Journal of Applied Psychology*, 60(3), 318–328. doi:10.1037/h0076756

The goal of this article is to outline the overlap and distinction between job satisfaction and organizational climate. Schneider and Snyder (1975) differentiate between the organizational climate and job satisfaction constructs. Organizational climate is described as an employee description of policies, practices, and conditions of the work environment, while job satisfaction is the affective response an individual has toward their job and the organization, which is often in the form of affective evaluation. To test this differentiation, they conducted a study across 50 life insurance agencies.

The results indicated that measures of job satisfaction were more related to each other than they were to climate. Moreover, groups of people (e.g., level and position) tended to agree on aspects of climate more than on aspects of satisfaction; that is, people could describe the climate favorably and report being dissatisfied at the same time, and satisfaction was more strongly related to turnover than was climate. The authors concluded that climate and satisfaction "do not behave in the same way" (p. 326), and researchers need to be more deliberate about measurement of climate, including discriminating climate from other related constructs.

Annotator's Comment: Paying close attention to the difference between what the climate perceptions are and how people evaluate them or their job has important implications when determining what outcomes are being measured. This has implications for person-environment fit. For example, when conducting research, it may be crucial to ask questions that help people objectively rate their climate while keeping separate their personal feelings about their satisfaction with their particular job.

13. Joyce, W. F., & Slocum, J. W., Jr. (1982). Climate discrepancy: Refining the concepts of psychological and organizational climate. *Human Relations*, 35(11), 951–971. doi:10.1177/001872678203501102

The primary purpose of this article is to examine the relationships between climate discrepancy and individual job performance and satisfaction. Related to psychological climate (i.e., an individual's perception of the organization) and organizational climate (i.e., the averaged collective or shared perception of the organization), climate discrepancy can be defined as the extent to which an individual's perceptions of the climate differ, or are inconsistent with, the

shared perceptions held by others of the organization. Moreover, the authors hypothesized that climate discrepancy should be related to job performance and satisfaction; aligning with the expectation that the personal fit of perceptions to the organizational climate are important to performing well and being satisfied in that climate.

The authors suggest that sound methodology is key to evaluating relationships between climate discrepancy and job performance. They suggest the use of statistical techniques, such as hierarchical clustering (to identify multiple organizational climates) and calculating Mahalanobis d^2 for determining climate discrepancy (to represent multidimensional discrepancy). In the study the authors conducted, their sample was of 178 first-line foreman (all male, $M_{age} = 40$) from three plants operated by a heavy-duty truck manufacturer. All data were collected using questionnaires with the exception of job performance (the primary dependent measure), which was measured by each foreman's immediate supervisor using a 15-item rating scale. Organizational climates were identified through the clustering of individuals within each plant. Climate discrepancy was identified by comparing measures of organizational climate and psychological climate, calculated using Mahalanobis' d^2 statistic.

Results revealed three important findings. First, climate discrepancy was significantly related to job satisfaction within all three plants (less discrepancy related to more satisfaction). Second, climate discrepancy was significantly related to performance in only one plant (less discrepancy related to improved performance). Third, when organizational climate and climate discrepancy variables were pitted against each other for their predictive value of job satisfaction and performance, organizational climate was a better predictor of job performance, whereas climate discrepancy was a better predictor of job satisfaction.

Annotator's Comment: This paper provides a methodologically sound examination of the effects of climate discrepancy on organizational outcomes. Importantly, this work provides initial evidence that climate discrepancy can predict job satisfaction and job performance; however, the relationship might be more closely tied to job satisfaction than job performance. Thus, the construct of climate discrepancy may be a useful variable to consider when developing research looking at individual affective outcomes.

14. Kuenzi, M., & Schminke, M. (2009). Assembling fragments into a lens: A review, critique, and proposed research agenda for the organizational work climate literature. *Journal of Management*, 35(3), 634–717. doi:10.1177/0149206308330559

This review is for organizational climate researchers and provides an overview of climate research, what those participating in climate research should be aware of, and a way forward for research topics (e.g., climate strength) and processes (e.g., multi-climate). Kuenzi and Schminke argue organizational climate literature has become fragmented because of the shift in focus from global climates to focused climates (e.g., safety climate) leading to consistency problems in how research is conducted and the associated outcomes of interest. This shift has limited generalizability (leading to fragmentation) but has given us more in-depth knowledge about the potential validity of climate research.

The authors organize work climate literature into the various themes that have characterized such work (e.g., type of climate: global or focused; climate referent: individual or collective). They also identify common challenges researchers working in the field will encounter (levels issues, item content issues) and what a potential way forward might look like. The themes identified are used as the organizing framework for sectioning extant literature into four categories: (a) do climates matter?/consequences of climate; (b) where do climates come from?/antecedents of climate; (c) is it really this straightforward?/mediating and moderating effects; and (d) what about the bigger picture?/climate as a moderator or mediator of other organizational relationships. The three major challenges identified are clearing up confusion regarding the climate construct and its measurement, focusing on theory, and identifying potential avenues for future research.

Annotator's Comment: Overall, a major contribution of this article is the call for attention to the conceptualization and measurement of multiple climates and how they might interact (e.g., supporting or conflicting with each other). This review summarizes the field of organizational climate research that helps inform current climate researchers of the common challenges and potential ways to address these challenges in an integrated way.

Molar, Strategic, or Process Climate

15. Schneider, B. (1975). Organizational climates: An essay. *Personnel Psychology*, 28(4), 447–479. doi:10.1111/j.1744-6570.1975.tb01386

Schneider (1975) is a seminal review of the nature, function, operationalization, and effective use of climate perception in organization settings. Importantly, a functional and structural framework of the role of climate perception in behavioral outcomes is explained. Specifically, Schneider describes assumptions of climate researchers derived from Gestalt psychology and functionalism. These assumptions lay a conceptual psychological foundation for more practical discussion of organizational climates later in the review. First, many climate researchers assume that humans apprehend order and create order through cognitive processes (Gestalt psychology). Second, humans create such order in their own environment to facilitate behavioral adaptation to that environment (functionalism). Schneider argues that organizational climate is a function of a bidirectional interaction between consequences-based features of the environment and the perceptions and adaptive behaviors of employees and reviews the existing literature on the operationalization of climate assessments and of various units of analysis.

Prior to detailing the operationalization of climate assessments and of various units of analysis, Schneider defines three key terms. *Structure* is referred to as processes and properties of an organizational system outside of the human component(s) of that system. *Climate*, likely the most broadly conceptualized, refers to the global or summary perception of an organization. *Job satisfaction* refers to an individual's affective state as it relates to his or her work. Climate and job satisfaction are further distinguished by comparing level of abstraction (micro vs. macro), level of affect (description vs. evaluation in perception), and the level at which the analysis is performed (individual vs. organization as the unit). These distinctions are made in part as a response to those asserting that climate research is redundant with satisfaction research. A broader argument is made suggesting that the appropriate unit of analysis and the appropriate

research context in which climate is used (i.e., independent variable, IV; dependent variable, DV; moderator) are dependent upon the research question asked. The assertion is made that each organization contains multiple concurrently operating climates and research demonstrating reliability in descriptive responses across work groups was used as initial evidence for this assertion.

Schneider also expresses the importance of a climate *for* something, rather than the more abstract molar work that characterized research at that time. The importance of a climate *for* is the ability to specify the “kinds of practices and procedures that lead people to think of their organization’s climate in a particular way” (p. 463). Schneider concludes by presenting a conceptualization of climate in six summary statements. First, climate refers to molar perceptions people have of their work environment and such perceptions are psychologically unified whether inferred or experienced. Second, molar perceptions regarding organizational climate naturally occur for individuals as they experience the work environment and are used by them as a frame of reference for their own behavior in the workplace. Third, each organization likely includes multiple climates that can be used to conceptualize positive work outcomes (i.e., an IV), or to think about the climate of a particular unit (i.e., a DV). Fourth, climate perceptions can mediate the relationship between individual differences of employees in work settings and their behavior there. Fifth, employees tend to agree in their perceptions when aggregated across work groups within an organization, but not within a particular work group. Sixth, there is a lack of descriptive research of climates at organizational levels of analysis and more work was recommended to connect organizational procedures and practices to the climates that they produce.

Annotator’s Comment: The ideas presented in this article are influential in the transition from measuring global organizational climate to measuring more focused climate [i.e., from general organizational climate to a climate for something (e.g., safety)]. This shift helped address problems with conceptualization and construct definitions of organizational climate but led to a decrease in the study of global (i.e., “molar”) climates.

16. Schneider, B., White, S. S., & Paul, M. C. (1998). Linking service climate and customer perceptions of service quality: Test of a causal model. *Journal of Applied Psychology*, 83(2), 150–163. doi:10.1037/0021-9010.83.2.150

Broadly, the current article presents theoretical and empirical evidence of organizational factors that underlie customer perceptions of service quality. Several hypotheses are proposed. First, the key terms *service climate* and *foundation issues* are defined. Service climate is the shared perceptions of employees regarding the behaviors and actions related to customer service quality that are rewarded in a particular environment (climate). Foundation issues are twofold in nature: They are defined as the quality of service received from other departments in the organization and the general facilitative conditions that promote removal of barriers to effective work.

Using the above definitions and the existing literature, two conjoint hypotheses are proposed. First, the authors hypothesize that the existence of foundation issues in an organizational setting are a necessary (but not sufficient) antecedent component underlying a

climate for service. Second, practices and policies aimed at improving the quality of service integrate with foundation issues to produce service climate. Lastly, service climate perceptions are in turn linked to service quality perceptions of customers. Notably, each of these underlying factors are hypothesized to be causally related to their respective outcomes (e.g., service climate as causally linked to customer quality perceptions).

Data were collected from employees in 126 bank branches after excluding eight outlier branches. In 1990 and 1992, 2,134 and 2,505 employees provided data. For customers, 3,100, 2,266, and 1,900 participants provided data in 1990, 1992, and 1993, respectively. A number of scales represented the three main constructs of foundation issues, climate for service, and customer perceptions of service quality. Homogenous item-clusters were formed for each of the three constructs. Each cluster was therefore determined to be an a-priori higher order factor or a separate component under the same construct. Specifically, foundation issues were made up of two factors; namely *work facilitation* and *interdepartment service* (conceptually argued to correspond to the aforementioned two types of foundation issues). Climate for service was made up of *Global Service Climate*, *Customer Orientation*, *Managerial Practices*, and *Customer Feedback*. Lastly, customer perception of service quality contained the factors of *Overall Customer Perceptions*, *Efficiency*, *Security*, *Competency*, and *Relationship*. Importantly, data from individual respondents were aggregated to the unit-level (i.e., individual branches). Intraclass correlations and $r_{wg(J)}$ calculations were used to justify the aggregation of individual respondent data to unit levels of analysis.

Structural equation modeling was used to test the hypotheses that foundation issues and customer service quality practices affect service climate, which in turn affect customer service quality perceptions. Due to concerns of low power, only the factors of Work Facilitation and Interdepartment Service (i.e., foundation issues), Global Service Climate (i.e., service climate), and Overall Customer Perceptions of Service Quality (i.e., customer perceptions of service quality) were used in the structural equation model. The results of the structural equation model provided initial confirmation that foundation issues impacted service climate, which in turn affected customer perceptions of service quality. This model was found to fit better than the alternative model, which proposed that customer perceptions of service quality caused foundation issues. Because a number of scales for each of the main factors (e.g., Global Service Climate) were not included in the structural equation modeling due to power issues, all main factors were regressed onto their specific related sub-scales (e.g., Global Service Climate was regressed onto Customer Orientation, Managerial Practices, and Customer Feedback). All sub-scales significantly contributed to their respective greater macro factors. To explore the direction of the causal service climate-customer perceptions relationship, a two-wave, two-variable, cross-lagged panel analysis (CLPA) was performed using Global Service Climate and Overall Customer Perceptions (2 * 2). Employee data were derived from 1990 and 1992, and customer data from 1992 were used to facilitate identical time lags for the CLPA. In short, the results of the CLPA revealed that service climate and customer perceptions of service quality impact each other across time, and that their relationship is bidirectional.

Annotator's Comment: Results from the current study contrast with much of the existing literature and the initial hypothesis of the current study. Specifically, the initial hypothesis and general consensus in the literature suggest that organizational design affects

customer experience in a one-directional fashion. The results of the current study, however, provide strong initial evidence that climate for service and customer perceptions of service quality are both reciprocal and causal. The current paper also supported the idea that foundation issues seem to set the stage for a climate of service to emerge. Further, results provided indirect support that service-oriented policies and practices can augment foundation issues to foster a climate for service. The authors concluded by cautioning interpretations that service climates are only a function of the factors assessed in this study (there are other contributing factors) but maintained that the boundaries between organizations and customers should be reduced to the benefit of all involved.

Climate Formation

17. Schneider, B., & Reichers, A. E. (1983). On the etiology of climates. *Personnel Psychology*, 36(1), 19–39. doi:10.1111/j.1744-6570.1983.tb00500.x

Schneider and Reichers present the symbolic interactionist theory as a way to understand the development of organizational climate. The goal of the article is to examine how people experience a variety of stimuli and come to similar perceptions and how different people attach similar meanings to their experiences in organizations. The symbolic interactionist approach focuses on individuals working to understand the larger organization and their roles and revolves around the actual daily interaction between people. These interactions lead to the evolution of meaning and, thus, the emergence of climate within the organization. This approach brought together the structuralism (objectivist) and attraction-selection-attrition (ASA; subjectivist) approaches and emphasized climate as a system variable (integrating the individual, the group, and the organization; also see Ashforth, 1985, p. 838).

The structuralist approach focuses on objective organizational characteristics (e.g., size, centrality of decision making authority, number of levels in authority hierarchy, type of technology used in production, and the degree to which rules and policies constrain individual behaviors). The influence of people on determining the meaning of organizational characteristics is not ignored in this approach but is considered secondary to the more objective characteristics. However, empirical research results are inconsistent and do not provide strong support for structure/climate relationships. Additionally, this approach is often focused on the organization as a whole rather than more context-specific climates in and between work groups (i.e., organizations can be compared to one another but not within-organization differences). The ASA approach focuses on the processes that create relatively homogenous membership in organizations (organizational processes such as selection and individual processes such as attraction and attrition). The primary problems with the ASA approach are that the source of perceptions is (a) mainly within individuals, (b) subjective, and (c) does not account for differences between groups within an organization.

Annotator's Comment: The proposed symbolic interactionist approach is an integration of structural, individual, and group interactions; accounts for differences between groups; and acknowledges reciprocal relationships between people and their work context. It embraces the notion that climate is dynamic and develops over time as group membership changes. This approach emphasizes the communicative interactions people have with each other that shape

how people define, respond, and interpret particular events, with subgroups resulting from how these interactions and interpretations are made. Climate measurement within the symbolic interactionist approach may focus on identifying and understanding subgroups and how they impact climate. Finally, the symbolic interactionist approach explicitly focuses on the dynamic nature of climate, which is different than the structuralist or ASA approaches where climate is treated as relatively static.

18. Ashforth, B. E. (1985). Climate formation: Issues and extensions. *Academy of Management Review*, 10(4), 837–847. doi:10.2307/258051

Ashforth builds on Schneider and Reichers' (1983) symbolic interactionist perspective, which integrates the initial, objective, structuralist approach (climate based on members' response to structure) with the more subjective attraction-selection-attrition approach (similar climate perceptions based on homogeneity). The interactionism view focuses on newcomer socialization as an important process; specifically, how members develop a "situational identity" (i.e., learn how the organization functions and what their role is), how they are exposed to social influence (e.g., through interaction, observations, and the reactions they receive that change their expectations and help them make sense of their workplace), and how newcomers shape the environment (i.e., climate perceptions are socially constructed).

Ashforth posits that the symbolic interactionist perspective emphasizes climate perceptions as a function of social interaction but does not elaborate on how these interactions are bound within organizations. She believes there needs to be a focus on bound episodes (i.e., discrete interaction with a beginning, a theme, and a conclusion, p. 838) that cause climate based on the perceived meaning of the episode. According to Ashforth, the meaning is inherent in the episode, not the setting or the actors.

Ashforth outlines five specific "roles" of micro and macro level factors that influence the formation of climate. These are a starting point for the additional research needed to understand how climates are formed. First, the *work group* factor is described as interactions that are bounded within work groups that have informational, social, and normative social influence that are driven by social comparison, conformity, and "a common stake in the perpetuation of the group" (p. 839). Second, *affect* factors are described as interactions that are driven by people's desires to belong, which makes newcomers less likely to be critical of climate perceptions and, therefore, less likely to impact the status quo. Third, *corporate culture* factors are where group members develop shared assumptions that influence climate perceptions. Fourth, *symbolic management* factors describe the emergence of climate that can be managed through deliberate intervention, either positive or negative. Finally, the fifth factor of *the physical setting* describes the physical context for social interactions that influence how often people interact, where they interact, and often the type of interactions they have (e.g., arrangement of work stations and offices, the degree of privacy and mobility afforded, the arrangement of furniture and equipment, the noise levels, etc.).

Some of the outlined factors that influence climate formation change slowly. For example, peoples' desire to belong may lead to conformity versus changing perceptions. Ashforth calls for longitudinal work to better understand the impact of these types of factors on

climate formation. Through better understanding the influential factors, potential interventions can be crafted to target the most impactful areas to climate formation.

Annotator's Comment: Ashforth proposes the idea of bound episodes to extend the interactionist perspective for examining climate formation. This paper was important because it developed a theory about the numerous factors that yield climate perceptions in groups. She illuminates the need for climate formation to be further studied, specifically because of the potential to better understand how to intervene to manage organizational climate and culture.

**19. Moran, E. T., & Volkwein, J. F. (1992). The cultural approach to the formation of organizational climate. *Human Relations*, 45(1), 19–47.
doi:10.1177/001872679204500102**

The purpose of this article is to propose the cultural approach to understanding the formation of organizational climate. Moran and Volkwein argue that prior to this work there were three common approaches that detailed the formation of climates. First, the *structural approach* to climate formation is anchored in organizational characteristics and is considered to be more objective (e.g., organization size, number of levels in hierarchy, nature of technology). Second, the *perceptual approach* is anchored in psychological characteristics of individuals (e.g., personality, task structure, and supervisory style). Third, the *interactive approach* examines the way individuals interact with each other to come to a shared perception (combines components of structural and perceptual approaches). Of importance, the authors argue a *cultural approach* is the most comprehensive because it accounts for the inextricable link of climate to culture by focusing on how people as a group work to interpret and respond to their environment. The cultural approach to the formation of organizational climate (a) is not anchored in the individual, but the meaning developed by the group and (b) acknowledges a larger common contextual influence on interaction and interpretation.

The authors use the interpretive paradigm as their basis for the development of the cultural approach to climate formation. The interpretive paradigm “provides a perspective on the manner by which groups of organizations forge a common sense of history, values, intentionality, and purpose through the collective interpretation of members” (p. 33). Using this paradigm allows the authors to shift from a psychological focus (primarily individual) to a sociological one (considering group interactions).

Annotator's Comment: This article is important because it develops a more comprehensive explanation of how climates emerge or form, specifically outlining the bases of and how people develop shared perceptions and meaning. Additionally, it adds to the field of organizational psychology by outlining theory to explain “the intersecting relationship between organizational culture and organizational climate” (p. 22). However, even in more recent research, similar calls for integrated climate/culture research are more theoretical and have limited evidence of practical use and empirical support.

20. Fulmer, C. A., & Ostroff, C. (2016). Convergence and emergence in organizations: An integrative framework and review. *Journal of Organizational Behavior*, 37(S1), 122–145. doi:10.1002/job.1987

The aim of this article is to review the literature on convergence and emergence in organizations. *Emergence* is described as a process in which a higher-level whole is formed from individual parts in a system, and this whole is greater and more complex than the sum of its parts. The authors propose that the emergence process includes the idea that there is some degree of interaction among individual elements within an organization (fostering convergence), interactions allow for a new pattern or form of collective to emerge, and that emergence is a dynamic process that occurs over time. Moreover, the emergence of a higher-level human organizational property is a bottom-up phenomenon that, once established, can exert top-down effects on individuals within organizations. In addition, organizational theorists have debated as to whether emergence is holistic (also referred to as strong emergence, where a higher-level whole cannot be reduced down to its parts due to complex interactions of individual elements) or reductionist (also referred to as weak emergence, where a higher-level whole can be explained by micro-level activities and interactions) or alternatively, somewhere on a continuum between these two extreme theoretical camps. However, the authors note that both perspectives might have their merits, with the reductionist view answering *how* perceptions, attitudes, and feelings create an emergent property at the unit level and the holistic view answering *why* they do.

The authors review factors that influence *convergence* (consensus across individuals that creates a higher-level property transcending individuals) and emergence within organizations. They suggest that higher-level emergence relies on some form of social construction such as sensemaking (i.e., systematic processing of information within an organization to derive meaning), imprinting (i.e., reflecting elements of one's environment), and event cycles (i.e., continued patterns of interactions and behavior). To facilitate these emergent processes, the authors discuss four broad categories of emergent factors: structure and practices (e.g., organizational size, formalization, and hierarchy), leader styles and behaviors (e.g., leader interpretation and implementation of policies), social processes and communication (e.g., social network formation, unit cohesion), and homogeneity of individuals (e.g., the attraction-selection-attrition process).

The authors review convergence and emergence research in the concept areas of cognition and learning (e.g., promoting shared task knowledge), perceptions (e.g., leaders who treat their subordinates consistently leads to shared perceptions of leader charisma), affect (e.g., emergence dependent upon organizational norms about emotion display), attitudes (e.g., transformational leadership positively correlates with convergence of goal importance), and behaviors (e.g., team creativity converges from individual creativity).

Lastly, the authors discuss implications and future direction for research on convergence and emergence. They suggest future research should examine the role of leadership in these processes (e.g., is it the leader, a single expert, a few key group members, or everyone that influences convergence and emergence?), the role of technologically-based structures of organizations (e.g., social media, virtual environments), that emergent factors should match the emergent constructs being studied (e.g., team communication as a factor for emergent constructs

of team efficacy instead of factors such as organizational communication), studying within-person and between-unit convergence/emergence, and understanding when divergence occurs and how it is conceptually distinct from emergence.

Annotator's Comment: This paper provides a concise review of the concepts of convergence and emergence as it pertains to organizations. The authors provide a detailed account of these concepts in terms of their conceptualization, how they have been studied, and their implications for future research. Furthermore, understanding the processes underlying convergence and emergence is important to research that seeks to understand other organizational concepts such as culture and climate; culture and climate are similarly conceptualized as being the result of the convergence and emergence of shared values, beliefs, thoughts, feelings, and the meaning derived from the organization's actions.

Developing and Sustaining Organizational Climate

21. Lindell, M. K. & Brandt, C. J. (2000). Climate quality and climate consensus as mediators of the relationship between organizational antecedents and outcomes. *Journal of Applied Psychology*, 85(3), 331–348. doi:10.1037/0021-9010.85.3.331

This article focuses on the relationship between organizational antecedents and outcomes. The authors seek to understand how the climate dimensions of size (James & James, 1989), staffing, and resources (Lindell & Whitney, 1995) relate to the differing organizational outcomes of productivity (James & Jones, 1974) and turnover (Schneider & Bowen, 1985). Climate quality and climate consensus are differentiated where *climate quality* is described as the average response of the individuals and *climate consensus* is described as the variance in responses. Furthermore, a possible mediational role of climate quality and consensus on the relationship between climate antecedents and organizational outcomes is examined (see Figure 1 from original source, p. 332).

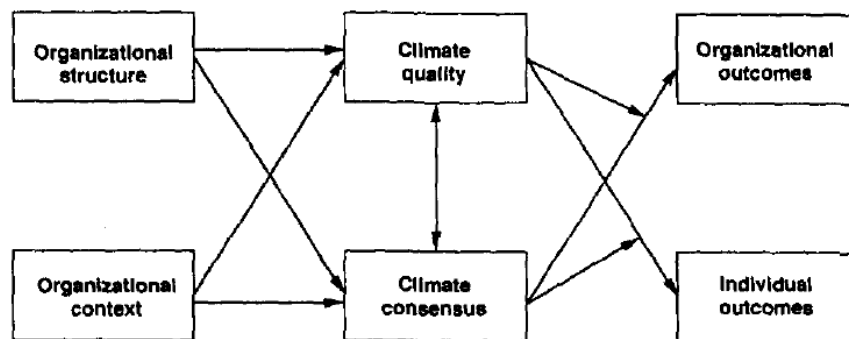


Figure 1. Climate as a mediator of the relationship between organizational antecedents and outcomes.

The authors discuss the debate surrounding the use of climate consensus. They promote the use of James' (1984) r_{wg} for determining consensus. The authors agree with Kozlowski and

Hattrup (1992) that the sensitivity of SE_M to sample size renders it unsuitable for measuring consensus, but that SD_X could be a respectable alternative.

The authors discuss the possibility of non-independence between climate quality and climate consensus. For instance, an r_{wg} value of -1 would indicate high variability in consensus but could either be due to no consensus in the organizational unit or be due to two sub-climates with bi-polar consensus (an even split of all low sub-climate perceptions and all high sub-climate perceptions). The hypothesized effects of the interrelationship between climate quality and climate consensus on organizational outcomes can be found below in Figure 4 (from original source, p. 337).

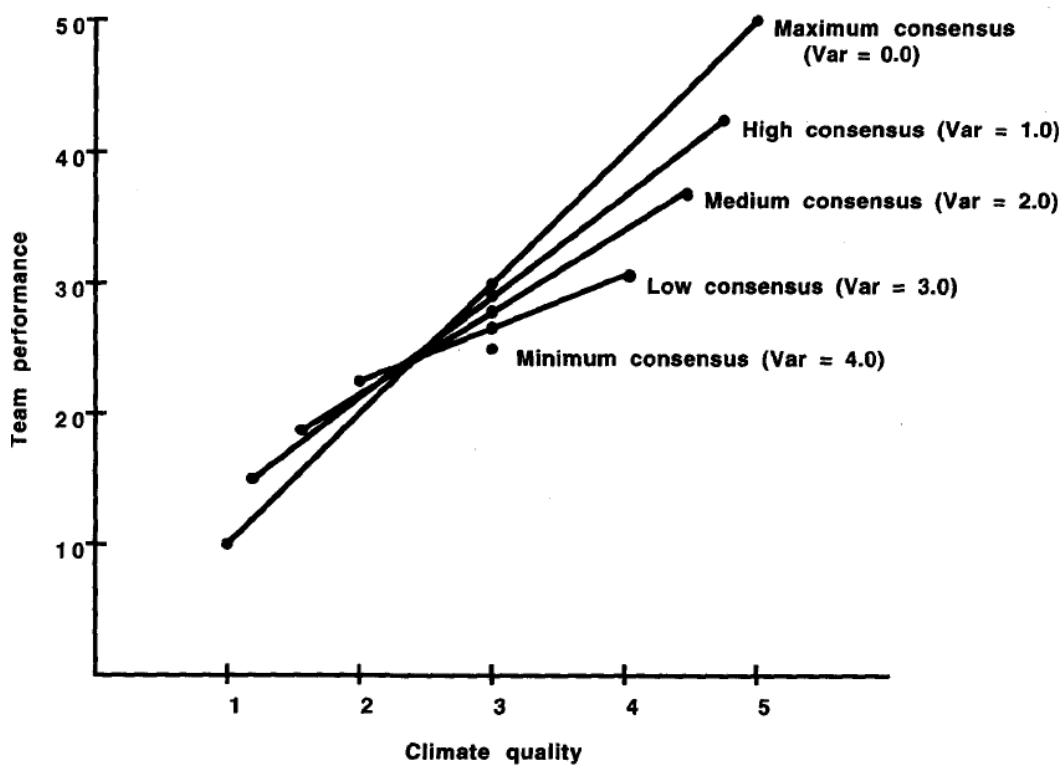


Figure 4. Hypothesized effects of climate quality and climate consensus on team performance. Var = variance.

To examine the relationship between organizational antecedents and outcomes, the authors researched climate in Local Emergency Planning Committees (LEPCs). These organizations have a locally structured, mostly autonomous leadership with overarching federal guidance that lends itself well to the measurement of climate quality and consensus at multiple levels of analysis. A sample of 180 LEPC organizations and 1,196 LEPC members was collected via a survey. The survey contained organizational level antecedent measures (e.g., LEPC size, number of meetings, role formalization, and computer technology) and measures of climate quality (e.g., team cohesion, team pride, leader support, role conflict, task significance) and consensus (as calculated by r_{wg}). Hypotheses were tested to determine the influence of organizational climate on both organizational (e.g., turnover proportions, attendance, State

Emergency Response Commission [SERC] performance) and individual outcomes (e.g., effort, attendance, job satisfaction, citizenship, and turnover intention).

To test hypotheses, analyses were conducted using correlational and regression-based statistical approaches. Results indicated that both quality and consensus were related to organizational level antecedents and individual and organizational level outcomes, though climate quality was more strongly related. In particular, the relationship was stronger for internal structural antecedents (e.g., leader initiating structure) than external contextual antecedents (e.g., community resources). Furthermore, climate quality mediated the relationship between antecedents and outcomes, but climate consensus did not. The authors note that these findings suggest that, at least in the context of LEPCs, “measures of climate quality alone may provide sufficient characterization of organizational climate and its impact on individual and organizational outcomes (p. 345).”

Annotator’s Comment: When collecting data on organizational climate, researchers should be aware of the relationship between antecedents and outcomes, both at the individual and organizational level. Moreover, central to this understanding is the distinction between the average response (climate quality) and the variance of responses (climate consensus). This understanding helps researchers clarify the complex relationship between the organization and its members.

22. Schneider, B., Salvaggio, A. N., & Subirats, M. (2002). Climate strength: A new direction for climate research. *Journal of Applied Psychology*, 87(2), 220–229. doi:10.1037/0021-9010.87.2.220

The purpose of this article is to examine if climate strength might moderate the relationship between service climate and customers’ perception of service quality. Climate strength is defined using two different models: direct consensus model and dispersion model. The authors examine (a) the difference between climate level and climate consensus (strength) and the fact that most studies ignore the consensus and (b) the way climate level and climate consensus interact.

Data were collected from 134 branch banks with 2,134 employees and 5,000 customers. Climate for service was measured using a 22-item climate survey (Schneider, White, & Paul, 1998). The survey consisted of four scales: customer orientation, managerial practices, customer feedback, and global service climate. Customers’ perceptions of service quality were measured using a 30-item survey administered over the phone. The survey included five sections: efficiency, security, competency, relationships, and overall perceptions. Climate strength was defined by the standard deviation of employee perceptions on service climate.

The results show that three of the four scales from the climate for service survey did not support the hypothesis of an interaction between climate level and climate strength, but that climate strength did moderate the relationship between managerial practices and customer perceptions of service quality. Specifically, when the climate strength was weak, managerial practices did not correlate with customer service quality perceptions. By contrast, when climate strength was strong, more positive managerial practices were significantly related to more

positive customer service quality perceptions. The authors suggest that the reason why managerial practices was the only scale to show significance was because managers have a greater and more direct effect on customers than do other facets of service climate.

Annotator's Comment: This research provided several new insights to the organizational climate literature. First, more research needs to be done on climate because this study suggests not all climates can be consistent over time; the climate must be strong to persist. Second, managers can have a strong impact on both employees' perceptions and customers' experiences. Lastly and importantly, climate strength can moderate the relationship between aspects of a given climate and climate outcomes.

23. Dickson, M. W., Resick, C. J., & Hanges, P. J. (2006). When organizational climate is unambiguous, it is also strong. *Journal of Applied Psychology, 91*(2), 351–364. doi:10.1037/0021-9010.91.2.351

The purpose of this article is to identify whether climate strength occurs more under mechanistic or organic climate structures. The authors define a *mechanistic climate* as an organization with clear and specialized roles for employees (i.e., the climate is unambiguous). Employees are given individual and specific responsibilities and their behaviors are based on clear instructions given by the employers. There is a heavy emphasis on chain of command with downward communication focusing on clear detailed instructions and upward communication focusing on feedback. *Organic climate* is defined as an organization where employee roles are less clear and specialized. Responsibilities tend to fall on many employees and behaviors are based less on clear instructions and more on the organization's goals and values. Organic climates have less hierarchy and more authority shared evenly downward, where downward communication focuses on advice and upward communication focuses on decisions and outcomes. Both climates are examined to determine their level of climate strength. *Climate strength* is defined as the level of agreement among employees regarding the organization's practices, norms, ethics, and other characteristics that define a climate.

The researchers propose three hypotheses: (a) mechanistic climates would have a higher climate strength than organic climates; (b) the climate's direction (organic or mechanistic) is related to climate strength when employees share mechanistic values; and (c) climate strength would be stronger in organizations where the climate and the employees' values align and weaker when they do not align. Data were collected from the Global Leadership and Organizational Behavior Effectiveness (GLOBE) study, "a long-term, multiphase project in which collaborators across multiple cultures are investigating the ways in which societal and organizational cultures relate to leaders and organizational practices" (p. 355; for more information, see House, Hanges, Javidan, Dorfman, & Gupta, 2004, *Leadership, culture, and organizations: The GLOBE study of 62 societies*). The 3,783 participants (i.e., middle managers), from 123 organizations in the financial services, food services, and telecommunications industries completed organizational climate measures. Current organizational policies and practices were measured using a 34-item scale asking participants to describe what *currently happens* in their organization. Organizational values was measured using a 41-item scale asking participants to describe the way they believe things *should be* in their organization. An independent panel of 11 trained industrial/organizational psychologists reviewed items from both

scales and rated the degree to which they believed the items were representative of mechanistic or organic climates. From these ratings, a 6-item climate scale was used to look at mechanistic-organic climates and an 8-item scale was used to measure mechanistic-organic values.

A hierarchical regression shows that there is greater agreement (greater climate strength) within the organization concerning climate perceptions in organizations that have climates reflecting a more mechanistic organizational structure, which supports the first hypothesis. The second hypothesis is also supported with results showing a significant negative correlation between climate direction and climate strength. This result suggests that high climate strength coincides with the mechanistic items in the climate measures. The final hypothesis was partially supported; organic climates and employees that have clear organic values have higher climate strength than unambiguous climates and employees, however, this did not occur with mechanistic climates. Specifically, when mechanistic climates have clear mechanistic values and their employees share the same mechanistic values, they do not have a higher climate strength. A post hoc analysis was run to examine effect sizes of climate level and shared values. The results indicate that climate strength was found in the two extremes of each climate, whereas when an organization was more ambiguous or a mix of the two types of climate, they had a weaker climate.

Annotator's Comment: This article shed light on some potential antecedents to the strength of climates. Moreover, the findings from this research suggest that certain types of climates may be more likely to cultivate greater levels of shared perceptions of the work environment, and alignment between climate and employee values impacts these levels particularly where there is an organic organizational climate.

24. Luria, G. (2008). Climate strength—How leaders form consensus. *The Leadership Quarterly*, 19(1), 42–53. doi:10.1016/j.leafqua.2007.12.004

This article aims to examine climate strength and its relationship to leadership style. Climate strength is defined as the level of agreement among employees regarding the organization's practices, norms, ethics, and other characteristics that define a climate. The way that leadership results in consensus is explored using different theories of leadership. *Vertical dyad linkage theory* (VDL; Kozlowski & Doherty, 1989) states that leader-employee relationships come from dyadic interactions, sometimes called the 'role-making processes.' The main variable in the VDL theory is negotiating latitude (NL), which is a variable that identifies the type of relationship and quality of the relationship that is developed through leader-subordinate mutual interactions. However, VDL theory falls short of an explanation of why a strong climate may be developed because the primary focus is on dyadic relationships (i.e., the leader and each group member) that makes it difficult to explain group level constructs (e.g., climate strength). Another theory that offers more explanatory power is the *full-range leadership model* (Bass, 1990; Bass & Avolio, 1997) that states that leadership behaviors are on a continuum that shows the quality of the leader-employee interactions and their communication. At one end of this continuum is transformational leadership (TL), which is based on high quality individual interactions between leaders and employees, while on the other end, passive leadership (PL) is low quality or no individual interactions between leaders and employees. It follows that high-quality leadership is hypothesized to yield higher climate strength.

In addition to the focus on leadership, the article explores cohesion, a connection that develops among co-workers or peers that share tasks and activities, that is also proposed as an integral part of climate strength. Therefore, Luria examines the relationship between climate strength, leadership, and cohesion and tests four hypotheses: (a) passive leadership will be negatively correlated with climate strength, (b) group cohesion will be positively correlated with group climate strength, (c) group cohesion will moderate the TL-climate strength relationship (when group cohesion is low, vs. high, TL will be associated with more pronounced weak climate strength), and (d) group cohesion will moderate the PL-climate strength relationship; when group cohesion is low, there will be weaker climate strength in high (vs. low) PL, with no difference between high/low PL under high cohesion.

The participants, 2,389 infantry and armored brigade Soldiers, ranged from 18 to 21 years old. The 25-item safety climate strength questionnaire (Zohar & Luria, 2004) was used to measure safety climate strength, the 12-item Multifactor Leadership Questionnaire (MLQ-5X-Revised: Bass & Avolio, 1997) to measure transformational and passive leadership, and a 4-item Army scale was used to measure group cohesion (Yagil, 1990).

All four hypotheses were supported in this study. Climate strength was negatively correlated with PL while also having a strong positive correlation with TL and cohesion. Results also found that PL and group cohesion were negatively correlated while group cohesion was positively correlated with TL. When cohesion was low, TL was strongly associated with climate strength, but had less of an association with higher cohesion. Group cohesion did in fact moderate the relationship between PL and climate strength: When group cohesion was high, it appeared that climate strength was high regardless if PL was either high or low. However, when group cohesion was low and PL was high, then climate strength was low, but was not as low as when PL was low.

Annotator's Comment: Overall, this article helps develop the understanding of climate strength in organizations. Moreover, the findings suggest that aspects of the organizational environment, such as leadership style and group social interaction (cohesion), can be influential on whether consensus or within-group agreement are strong.

25. Feldman, D. C., & O'Neill, O. A. (2014). The role of socialization, orientation, and training program in transmitting culture and climate and enhancing performance. In B. Schneider & K. M. Barbera (Eds.), *The Oxford Handbook of Organizational Climate and Culture* (pp. 44–64). New York, NY: Oxford University Press.

The aim of this handbook chapter is to examine how organizational socialization, orientation, and training (SOT) programs expose employees to the nature of the organizational climate and culture. First, the authors define organizational culture (i.e., understanding patterns of meaning and behavior within an organization), organizational climate (i.e., the gestalt perceptions of employees regarding what the organization is like in terms of practices, policies, procedures, routines, and awards), and the different aspects of SOT programs including socialization (i.e., the process by which newcomers go from 'outsiders' to 'insiders'), training (i.e., the process whereby employees acquire work-related knowledge to perform their job), and

orientation (i.e., the process through which employees learn organizational rules, policies, and procedures). Second, the authors discuss the impact of organizational culture and climate on SOT programs. For example, climates and cultures within an organization are often influenced by the type of personnel that are attracted to the given culture and the way in which managers select and remove personnel that are in alignment or misalignment with the organizational climate and/or culture (e.g., attraction-selection-attrition model; see Schneider, 1987). Third, the chapter also discusses the influence of SOT programs on individual-, unit-, and organizational-level performance, as well as how organizational-level performance can feed back into the organization's climate and culture. Generally, the authors suggest that culture mediates the relationship between SOT practices and performance with climate moderating the relationship.

Lastly, the authors discuss topics of future research and their implications for organizational theory development. As a recent trend, many new employees do not envision staying with their company for their entire career and may be less motivated to incorporate organizational climate and culture into their self-concept. Thus, instead of focusing on the climate and culture of the organization, SOT programs might be more useful by focusing on training and orientation of new hires versus working to have employees buy into the climate and culture. Questions also arise about the effectiveness of diversity and inclusion awareness in SOT programs. On the one hand, specialized emphasis on increasing diversity and being more inclusive to minority viewpoints is related to job success for minorities. On the other hand, these programs can often create subcultures within the organization defined by majority/minority status that can emphasize rather than ameliorate differences. The authors note that more research needs to be focused on this topic of diversity vis-a-vis SOT. In addition, the authors note that it may be more difficult to convey organizational norms and culture via online SOT programs (versus on-site interactional programs) but that conveying organizational rules and procedures on-line may be more feasible.

Annotator's Comment: This chapter summarizes the multifaceted relationships between SOT programs and organizational climate and culture. For new members, these programs are often the first exposure to the nature of the organization's climate and culture. SOT programs thus serve an important function within the organization as a means for new members to derive meaning and understanding of the organization—this early experience can often have long-lasting impacts on employee integration within the organization, interactions with other employees, and importantly, on the employee's future performance within the organization.

*Factors Contributing to the Development, and Sustainment,
of Organizational Climate*

26. Schneider, B. (1987). The people make the place. *Personnel Psychology*, 40(3), 437–453. doi:10.1111/j.1744-6570.1987.tb00609.x

The aim of this article is to introduce the attraction-selection-attrition (ASA) model for organizational personnel. Prior to this research, most researchers believed that situations caused behavior. Industrial/organizational (I/O) psychology supported this theory with years of research, but Schneider believed that research was looking at organizations the wrong way. Using multiple

theories from I/O psychology, personality theory, and vocational psychology, this article introduces a new way of looking at organizations and what creates them.

Interactional psychology is considered a subfield of personality psychology and can be segmented into two perspectives: the situationists and the individualists. Situationists believe that environments cause behavior, while individualists believe that the individual person and his/her attributes cause behavior. Schneider covers previous research that argues some of the deficiencies of the situationist theory: the first being that most studies conducted by situationists were done in a lab setting. This allowed researchers to adjust the treatment conditions in different ways until they had their desired effects, while suppressing the expression of individual differences. Another problem with the situationist theory is that researchers used random assignment to the experimental treatments, which goes against the way humans behave. That is, in practice people choose to be in a certain environment or not. The final note on the situationist theory is that at the very least, people cause environments as much as environments cause people. That is, research has often mistakenly supported the situationist belief that the environment makes the people in large part because research is conducted on organizations that have settled into their behaviors, making it hard to identify where behaviors originated. However, the ASA model would suggest that organizations become settled in their behaviors when people have been attracted to the organization, selected by the organization, and then have remained if they continued to believe they fit the organization.

The ASA model is segmented into three phases, all of which hypothetically contribute to a restrictive range of the members of an organization. The first phase of the ASA cycle is *attraction*. The article reviews previous research to support the first phase by showing that people who choose an organization tend to be similar to those in the organization. The second phase is *selection*, which looks at who is chosen to be part of the organization. This phase proposes that, of the people who are attracted to an organization, a select few are brought into the organization because the organization finds similarities between the person and itself. The third and final phase is *attrition*. This part of the model states that those who do not fit well with the organization will either leave or will be removed, to keep the homogeneity of the organization consistent. Taken together, the three phases of the ASA model can all be linked to goals as an underlying feature of an organization. Organizational goals are what attracts people to an organization. Once in the organization, it is the goals that cause people to interact, and if the way the organization goes about reaching its goals do not match the person's personality, then they will leave.

The article goes over the main organizational implications of the ASA model. First, as an organization attracts, selects, and retains increasingly homogenous groups of individuals, it will likely face difficulty adapting to dynamic environments, ultimately leading to its demise. Second, personality measures can be used to conduct research across organizations and to inform organizations about ideal structure and processes given the individual differences of its members. Third, the ASA framework provides a clear distinction between the often-confused constructs of culture and climate. Within the ASA framework, climate focuses on *how* the organization functions (e.g., what behavior is rewarded, supported, and expected) whereas culture refers to the assumptions and values attributed to *why* certain behaviors are rewarded, supported, or expected. Lastly, Schneider argues that organizations need to pay close attention to leadership (e.g.,

different traits or attributes will be predictive of leadership effectiveness depending upon the kinds of people being led) and recruiting efforts (e.g., proactively recruiting people who would increase the range of person types) to ensure heterogeneity in the types of people attracted to the organization.

Annotator's Comment: This article argues for a more individualist approach to understanding people in organizations and their effect on the climate and culture within. Moreover, Schneider posits that organizations are created by the members and their behaviors, not the structural environment of the organization. This proposition is clearly explained using the ASA model where potential members of an organization are attracted to the goals of an organization, selected based on similarity with organizational goals and others there, and then, through attrition, let go if members become misaligned with organizational goals. In sum, the ASA model provides a different lens for understanding the formation and maintenance of organizational culture and climate.

27. George, J. M. (1990). Personality, affect, and behavior in groups. *Journal of Applied Psychology*, 75(2), 107–116. doi:10.1037/0021-9010.75.2.107

The aim of this paper is to explore whether relationships between personality and affect exist at the group level of analysis, building on work examining the individual level of analysis. Drawing support from Schneider's (1987) attraction-selection-attrition (ASA) framework, George predicts that characteristic levels of personality traits—such as positive affectivity and negative affectivity within groups—generally influence the respective positive and negative affective tones of groups. Furthermore, these group affective tones were predicted to be related to the groups' prosocial/citizenship behavior and absenteeism.

Personality orientations or characteristics are considered using two independent constructs: positive and negative affectivity. Individuals with positive affectivity generally have an overall sense of well-being and view themselves as engaged, while individuals with negative affectivity generally have a negative view of themselves and their environment. Affective tones are defined as *consistent or homogenous* affective tones within a group. A workgroup whose members consistently experience positive affective states at work (i.e., enthusiastic, productive, active) is said to have a positive affective tone, while a workgroup whose members consistently experience negative affective states at work (i.e., sluggish, wasteful, depressed) is said to have a negative affective tone.

The sample for the study was collected from 26 groups comprising of 254 salespeople working for a large department store in the northeastern United States. Positive and negative affectivity were measured using the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982). Individual affect was measured using the Job Affect Scale (JAS; Brief et al., 1988). To determine group affective tone, aggregation of individual affectivity was used. To justify the aggregation, the r_{wg} index of James et al. (1984) was used to measure agreement within the group. As Schneider and Reichers (1983) suggested, groups tended to be more similar than dissimilar, so aggregation was justified, and workgroups did have a consistent affective tone. Prosocial behavior was measured by asking participants their responses to customer service-related behaviors that salespeople in their group engage in (e.g., caring, helpful, rude,

unfriendly; see Motowidlo, Brief, George, & Ashworth, 1988). Absenteeism was measured by averaging scores on the Frequency Index (Chadwick-Jones, Brown, Nicholson, & Sheppard, 1971) within groups, which is operationalized as a count of the total number of times an individual is absent regardless of duration.

To test hypotheses, a series of correlations and regressions was conducted on the variables of interest. Results reveal that individual personality traits of positive and negative affectivity positively related to a positive or negative affective tone of the work group, respectively. In addition, only negative affective tone had a significant (negative) relationship to prosocial behavior in a workgroup. Similarly, when considering absenteeism, positive affective tone of the group had a significant negative relationship with absence and negative affective tone had a significant positive relationship with absence. An analysis of variance and a within-and-between analysis (WABA; Dansereau et al, 1984) further corroborated the finding that affective tone was a group property.

Annotator's Comment: In organizational climate research, it is important to understand the relationships both within and between group levels. Knowing that individual affective states can influence group affective tones can inform data collection and interpretation when assessing organizational climate. This article demonstrates the connections between the individuals and the work groups they comprise. Furthermore, understanding the relationship between individuals and their workgroups is important for building positive climates. Integrating a new group member into a workgroup with a negative affective tone can lead to more negative behaviors, such as absenteeism, while decreasing that negative affective tone can lead to more prosocial behaviors (George, 1990).

28. Schneider, B., Smith, D. B., Taylor, S., & Fleenor, J. (1998). Personality and organizations: A test of the homogeneity of personality hypothesis. *Journal of Applied Psychology*, 83(3), 462–470. doi:10.1037/0021-9010.83.3.462

The aim of this article is to examine the fundamental assumption of the attraction-selection-attrition (ASA) model that organizations are homogeneous when it comes to personality types (Schneider, 1987). The ASA model proposes that “people in any organization are unique in that they are the ones attracted to, chosen by, and who choose to remain with an organization.” A key factor that contributes to this process is the degree to which a person’s personality fits with the modal personality of the organization, which often originates with the personality and culture emerging from the organization’s founder. Moreover, modal personalities are predicted to vary from organization to organization. Similarly, the socialization process in organizations also predicts a homogeneity of personalities within an organization; as newcomers come into an organization, they are likely to take on the values and mores of the organization and those who do not become socialized are not likely to stay. Thus, the ASA model and socialization process might mutually reinforce one another leading to the same prediction that organizations can be characterized as possessing a homogeneous set of personalities.

The sample of the study was collected from the archives of the Center for Creative Leadership using 12,739 managers across 142 organizations. The Myers-Briggs Type Indicator (MBTI) was used to measure the participants’ personality type. The MBTI assesses four

dimensions of personality: extroversion-introversion (EI), sensing-intuition (SN), thinking-feeling (TF) and judging-perceiving (JP). Each participant is typically assigned 1 out of 16 possible personality types after taking the assessment, but in this study the authors used continuous scores for each of the four facets of personality.

Analyses were conducted using a multivariate analysis of variance (MANOVA). Results show that organizations do differ in personality characteristics when it comes to their employees and suggests that personalities within organizations are relatively homogeneous.

Annotator's Comment: This study is a foundational one that provides support for the fundamental assumption of the ASA and socialization perspectives that predict a homogeneity in personality types within an organization. However, the research described in this article leaves open the question as to whether the ASA or socialization perspectives uniquely account for the homogeneity of personalities within organizations versus both mutually reinforcing one another to a similar outcome. Moreover, this article helps clarify our understanding of how personality can be characterized within and between organizations.

29. Herman, H. M., Dasborough, M. T., & Ashkanasy, N. M. (2008). A multi-level analysis of team climate and interpersonal exchange relationships at work. *The Leadership Quarterly*, 19(2), 195–211. doi:10.1016/j.leafqua.2008.01.005

The purpose of this article is to examine a multi-level model of leader-member exchange (LMX), workplace friendship, team-member exchange (TMX), and affective climate. Although prior work has studied LMX, research had yet to understand whether LMX might affect TMX within teams. LMX is defined as the relationship quality between the leader and his or her individual subordinates, whereas TMX is defined as the relationship quality between an individual and his or her team members. Workplace friendship is defined as a degree of mutual concern and interest team partners have for one another in a relationship of voluntary interdependence. In addition, affective climate is defined as the degree to which perceptions and interpretations of meaning and significance within the work environment are shared.

The authors had four predictions for their multi-level model (see Figure 1 from original source, p. 197). First, they predicted that positive LMX would lead to positive work place friendships because LMX relationships would “influence how team members approach, interpret, and establish friendships in the workplace.” Second, the authors predicted that workplace friendships would be positively related to TMX; workplace friendships may facilitate or underlie the social ties within a unit that contribute to how team members relate to one another. Third, workplace friendships were predicted to mediate the relationship between LMX and TMX. Lastly, affective climate was predicted to moderate the relationship between LMX and workplace friendship.

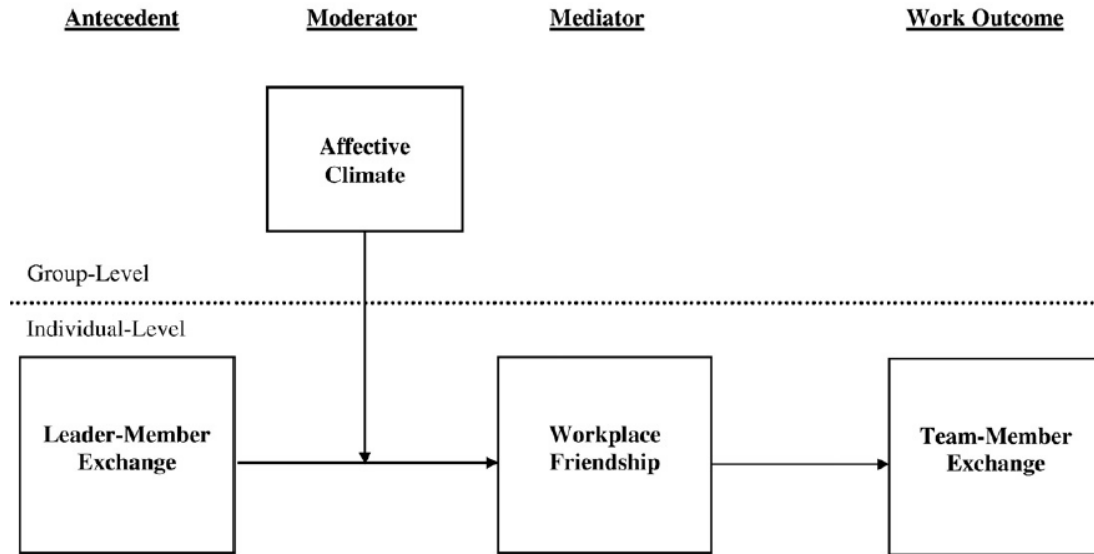


Fig. 1. A multi-level model of interpersonal exchange relationships at work.

Data were collected from employees and their immediate managers working for a large Australian bank. Specifically, 215 manager-employee dyads from 36 bank branches were used in the analyzed sample. All measures were collected in survey format. LMX was measured using the LMX-7 scale (e.g., “To what extent do you understand work problems and needs of the employee?”; Graen & Uhl-Bien, 1995). Workplace friendship was measured using six items related to friendship in the workplace (e.g., “I have formed strong friendships at work”; Nielsen, Jex, & Adams, 2000). TMX was measured using a ten-item TMX scale (e.g., “In busy situations, other team members often volunteer to help me out”; Seers, Petty, & Cashman, 1995). Lastly, affective climate was measured using a five-item positive group perception scale (e.g., “In general, how enthusiastic do you think your branch is?”; Choi, Price, & Vinokur, 2003).

Statistical analyses were conducted on the three individual-level variables (i.e., LMX, TMX, workplace friendship) and the single group-level variable (i.e., affective climate) using hierarchical linear modeling (HLM). Results of HLM analyses revealed that on an individual level, workplace friendship mediates the relationship between LMX and TMX. That is, individuals experiencing positive LMX will be more likely to have higher levels of workplace friendships, which the data reveal will subsequently lead to more positive TMX. Additionally, the affective climate of the group moderates the effect of LMX on workplace friendship; LMX is more likely to increase workplace friendship when the affective climate is more positive/affective than less positive/affective.

Annotator’s Comment: The findings in this research are important to the understanding of workplace relationships. The mediating effects of workplace friendship and moderating effects of affective climate are a major advancement for LMX and group climate research. Moreover, the findings suggest a social system in the workplace created by friendships that leads to differing climate perceptions (i.e., the reciprocal exchange relationship between team members). Organizations can use this information about workplace friendships and affective

climate to create more positive work climates. Furthermore, the relationships described in this research are important to our understanding of how positive affective organizational climates develop: That is, the data suggest that if supervisors pay close attention to the perceptions of their subordinates, particularly in workplace friendships, they may be able to improve the perceived affective climate of the team.

30. Nishii, L. H. (2013). The benefits of climate for inclusion for gender-diverse groups. *Academy of Management Journal*, 56(6), 1754–1774. doi:10.5465/amj.2009.0823

The goal of this research is to validate a climate for inclusion measure. Prior to this work, research on inclusion had only used a qualitative (vs. quantitative) methodology and inclusion climate had not been precisely operationalized. An inclusive climate is defined as one in which “individuals of all backgrounds—not just members of historically powerful identity groups—are fairly treated, valued for who they are, and included in core decision making” (p. 1754). In addition, Nishii suggests three main dimensions for climates for inclusion that include (a) fairly implemented employment practices that eliminate bias, (b) a means for an integration of differences, and (c) inclusion of diverse members in decision-making. Furthermore, Nishii hypothesizes that a unit’s climate for inclusion would moderate the relationship between gender diversity and relationship and task conflict; that is, that relationship and task conflict are more likely to be reduced in gender diverse groups when groups have strong climates for inclusion.

Data were collected for cross-validation of a climate for inclusion scale and for the examination of the relationships among interpersonal bias, gender, level of conflict, and unit-level satisfaction within different levels of climates for inclusion. Participants consisted of 1,324 employees working in 100 departments of a large biomedical company. The climate for inclusion measure included three dimensions: (a) equitable employment practices (e.g., “This unit has a fair promotion process”), (b) integration of differences (e.g., “In this unit, people often share and learn about one another as people”), and (c) inclusion in decision-making (e.g., “In this unit, employee input is actively sought”). Gender diversity was calculated using Blau’s (1997) index. Relationship and task conflict were measured using a previously developed scale (e.g., “How often do people get angry while working in your work unit?”; Jehn & Mannix, 2001). In addition, unit satisfaction (e.g., “How satisfied are you with your job?”; Wanous, Reichers, & Hudy, 1997) and turnover (i.e., number of people who voluntarily left an organization 6 months after survey administration) were measured. A confirmatory factor analysis (CFA) was used for substantiation of the climate for inclusion scale and a series of structural equation models (SEM) using bootstrapping were used to test predictions.

Results show relationship and task conflict were reduced in gender diverse groups when groups had strong climates for inclusion; and when climate for inclusion was high, the negative association between relationship conflict and gender diversity disappeared. Previous research had not consistently identified significant moderators that lessen negative consequences of relationship conflict in work environments.

Annotator’s Comment: This research contributes to the larger body of research on inclusion and provides support for the benefit of inclusive climates in several ways. First, this research operationalized and developed a measure of inclusive climates. Second, this research

provides evidence for moderators of the relationship between diversity and group process. Third, findings suggest that the social context created by an organization (i.e., unit climate) can act as a moderator, instead of the more commonly studied moderators of task or group structure characteristics or personal preferences. Lastly, the findings provide support for the idea that inclusive climates are good for business by linking group diversity and conflict with group-level turnover.

Leadership as an Antecedent

31. Kozlowski, S. W., & Doherty, M. L. (1989). Integration of climate and leadership: Examination of a neglected issue. *Journal of Applied Psychology*, 74(4), 546–553. doi:10.1037/0021-9010.74.4.546

In the organizational literature, a bidirectional relationship is commonly acknowledged between the domains of leadership and climate. Kozlowski and Doherty (1989), however, argue that there is limited empirical or theoretical research elucidating the fundamental relationship between leadership and climate. The authors propose integrating two prominent theories in climate and leadership research, respectively, to explicate the underlying relationship between leadership and climate. Specifically, the authors propose integrating *interactionist* accounts of climate with the leadership model *vertical dyad linkage* (VDL). Further, they aim to empirically test three suppositions (i.e., hypotheses) derived from their theoretical account of the interaction of leadership and climate. Prior to detailing the utility of integrating interactionist accounts of climate with VDL, the authors define fundamental terminology in the climate and leadership domains.

The authors define *climate* as sets of perception-based descriptions of pertinent organizational events, processes, and characteristics (James & Jones, 1974; Jones & James, 1979). At the level of the individual, cognitive representations of organizational events are discussed as *psychological climate* (James & Jones, 1974). At the level of the group, climate perceptions are those that arise from individuals' interaction with other individuals and organizational processes (Schneider, 1983). Climate perceptions are further said to mediate the relationship between individual behavior and organizational context, thus defining the *interactionist* account of climate.

The authors hold that the quality of subordinates' relationships with supervisors may be a key mediator in subordinate interpretations of the organizational context in which climate perceptions are derived. *Vertical dyad linkage* (VDL), a leadership model that states that leader-subordinate relations emerge from a series of dyadic exchanges called *role-making processes*, is proposed to provide multiple explanations of how dyadic leadership processes can interact with climate perceptions and climate. Per the authors, the most notable process variable in VDL is *negotiating latitude* (NL). NL represents the quality of relationships and role-making processes that develop through repeated and reciprocal interactions between leader and subordinate. Three suppositions regarding the relationship between NL and climate are presented as empirical hypotheses: that NL will be positively linked to climate perceptions, that high-NL subordinates will show greater consensus on climate perceptions, and that high-NL subordinates will show greater consensus on perceptions of their relationships with their supervisors.

The authors conclude that the empirical support they found for their three hypotheses provides initial support for their theoretical model integrating an interactionist approach with the VDL model in understanding both individuals' climate experiences and climate itself. Future directions discussed included assessing bidirectional relations between VDL processes and development of climate perceptions. In addition, the authors encouraged examining additional levels of management instead of evaluating only immediate supervisors and their subordinates.

Annotator's Comment: In this seminal article, Kozlowski and Doherty outline the importance of the influence of leadership on climate. This was their call to action to have more theoretical and empirical research that examines the role of leadership in shaping climate.

32. Ehrhart, M. G. (2004). Leadership and procedural justice climate as antecedents of unit-level organizational citizenship behavior. *Personnel Psychology*, 57(1), 61–94. doi:10.1111/j.1744-6570.2004

This paper seeks to accomplish three specific goals: first, to evaluate how fairness perceptions and leadership relate to *organizational citizenship behavior* (OCB); second, to provide the first published evidence of how individual employee ratings of OCB aggregated to the unit level relate to unit supervisors' overall OCB ratings of the unit (not aggregates of individuals but an overall unit OCB rating; aggregate individual employee ratings of OCB were obviously also studied); and third, to evaluate potential antecedents of unit-level OCB. Although not universally agreed upon, OCB is broadly defined by the author as any behaviors that develop and maintain social and psychological factors that promote task performance.

For the study, two dimensions of OCB were conceptualized; *OCB-Individuals* (OCB-I) and *OCB-Organization* (OCB-O). OCB-I relates to citizenship behaviors that are directed toward helping other individual employees (e.g., helping other employees with large workloads), whereas OCB-O are behaviors directed at helping the organization as a whole (e.g., saving organizational resources). Importantly, *leadership* in the study is conceptualized at the unit level of analysis and defined as unit-level cognition regarding how unit members perceive they are treated by supervisors. The author also prioritizes evaluating how *servant leadership* may relate to OCB. Servant leadership is defined as the propensity of the leader to act such that he or she is aware of their moral responsibility to the success of the organization, to their subordinates, and to the customers of the organization. The author hypothesizes a link between OCB and servant leadership for three reasons. First, the leader models appropriate social behavior to subordinates. Second, the leader creates quality relationships with subordinates such that prosocial OCB behavior of individual members is modeled for other members, and prosocial OCB behavior of the members will help the leader achieve his or her objectives. Third, the author presents *procedural justice* as the unit level shared perception of how well a group is treated and presents the hypothesis that procedural justice climate should be positively related to unit level OCB.

The author presents four overarching hypotheses. First, servant-leadership will be positively related to procedural justice climate. Second, procedural justice climate will be positively linked to both the helping and conscientiousness dimensions of OCB at the unit level. Third, servant-leadership will be related in a positive direction to both helping (example of OCB-

I) and conscientiousness (example of OCB-O) dimensions of the unit level OCB. Fourth, procedural justice climate will mediate the relation between servant-leadership and unit level OCB.

Participants were recruited from a grocery store chain in the northeast United States. Departments within each store were the primary unit of analysis. Departments with five or more individuals were included. Data were collected from 3,914 employees from 792 departments, resulting in 249 departments in which 5 or more surveys were returned; however, only 120 of those departments could be matched with their manager OCB ratings, so that was the sample size to be analyzed. In addition, 254 university employees were used to validate a novel servant-leadership scale developed by Ehrhart (1998) and their participation was separate from the employees of the grocery chain. Measures used included a servant-leadership scale from Ehrhart (1998), a measure of transformational leadership from Bass and Avolio (1996), a procedural justice climate scale from Colquitt (2001), and OCB measures for conscientiousness and helping derived from Podsakoff et al. (1990). All measures, however, were altered to reflect a department level approach as the unit of analysis.

Hypotheses were tested using Structural Equation Modeling (SEM). Six models were used in total with Models 1–3 using the aggregated employee ratings of unit-level OCB and models 4–6 using the manager ratings of unit-level OCB. Within each type of SEM (i.e., aggregated employees' OCB rating vs. manager rating of unit-level OCB), three versions of the model were run. Model 1 incorporated all data and controlled no other variables. Model 2 controlled for department type. The Model 3 that was used incorporated a common method variance factor. Models 4–6 were identical to Models 1–3, except that unit-level OCB as rated by the manager was used instead of aggregated individual employee ratings.

Hypothesis 1 was fully supported because servant-leadership was significantly related to procedural justice in all three employee-based SEM models (i.e., Models 1–3). Hypothesis 2 was partially supported because only three of the six path coefficients from procedural justice climates to helping (OCB-I) and conscientiousness (OCB-O) were significant even using a $p < .10$ cutoff. Hypothesis 3 was also partially supported because servant-leadership was indirectly related to unit-level OCB (i.e., servant-leadership was related to both aggregated individual OCB types and justice climate, but not directly related to unit-level OCB) in Model 4. There were no direct or indirect effects observed for Model 5 (i.e., controlling for department type). There were, however, significant direct and indirect relations between servant-leadership and unit-level OCB for Model 6 (inclusion of/controlling for a common method variance factor). Lastly, Hypothesis 4 (i.e., procedural justice climate will mediate the relation between servant-leadership and unit-level OCB) was also partially supported because the partially mediated model fit best for Model 6 and the fully mediated model fit best for Models 4 and 5. The author concluded that between-unit differences in levels of procedural justice climate were strongly linked to servant-leadership and moderately linked to unit-level OCB.

Annotator's Comment: The link between unit-level OCB and procedural justice climate provides evidence that higher levels of helping and conscientiousness behaviors occur in units where members feel collectively that they are treated justly. These relations were more robust and more likely to be significant when individual employee OCB ratings, compared to manager

ratings of unit OCBs, were studied. Interestingly, manager-rated unit-level OCB was not significantly related to servant-leadership. The author surmised that the source of OCB data (i.e., aggregate employee or manager) affected the results of the study; that is, the employees are aware of what the manager does vis-a-vis servant leadership and they know the level of OCBs better than does a manager.

33. Mayer, D., Nishii, L., Schneider, B., & Goldstein, H. (2007). The precursors and products of justice climates: Group leader antecedents and employee attitudinal consequences. *Personnel Psychology*, 60(4), 929–963. doi:10.1111/j.1744-6570.2007.00096.x

Mayer, Nishii, Schneider, and Goldstein (2007) attempt to theoretically and empirically explore antecedents of justice climates. If organizations are to intentionally create the conditions that support justice climates, the authors presume, then they must first understand the antecedents of such climates. Further, although there is evidence that leaders influence general climate perceptions, there is little known about the characteristics of leaders that result in the production of justice climates. The authors draw on existing theory and research on organizational justice, leadership, and personality to develop three hypotheses regarding the relationship between justice climates and leader personality. In addition, the authors discuss how individual justice perceptions might mediate or moderate the relationship between justice climate and outcomes such as job satisfaction, commitment, and organizational citizenship behavior (OCB).

In the introduction, the authors present several key definitions of note. *Organizational justice theory* is broadly defined as the idea that individuals in an organization use certain rules that aid in their determination of whether they are treated fairly. The degree to which those rules are satisfied determines individual perceptions of justice or injustice. Three unique but not exhaustive dimensions of justice were proposed: *procedural justice* is the perceived fairness of the procedures used to make decisions, *interpersonal justice* relates to the respect individuals feel based on how they are treated, and *informational justice* is the perceived degree to which explanations for decisions are judged as sufficient and truthful. *Justice climate* is a group cognition or shared perception that represents the degree to which group members are treated fairly and tends to be measured by aggregating individual perceptions of justice from each of the group members. Each dimension of justice, therefore, can represent a specific type of justice climate that is the shared perception of fairness in relation to the dimension-specific fairness rules (e.g., informational vs. interpersonal). Data on each factor in the Five-Factor Model (FFM) were also collected from managers in order to facilitate testing the hypotheses (see below) that integrate the personality factors in the FFM with the three types of justice experienced by their subordinates (see Costa and McCrae [1992] for detailed information on the FFM). The authors also draw broadly from social comparison theory by holding that group members are jointly influenced by their own and their groups' justice perceptions. This in turn is used to support the notion that higher justice climates strengthen the link between justice perceptions and individual outcomes (job satisfaction and organizational commitment).

Based on the aforementioned definitions, the authors present five hypotheses: first, that a positive relation would be found between informational justice climates and leader agreeableness; second, that leader conscientiousness will positively relate to both procedural and information justice climates; third, that there will be a negative relation between all three justice climates and leader neuroticism; fourth, that there will be a positive relation between procedural justice climate and leader extraversion; and fifth, that the positive relationship between each type of individual-level justice perception with job satisfaction and commitment will be moderated by justice climates, in that higher justice climates will strengthen the positive relation between individual job outcomes and individual justice perceptions. In other words, if the groups' justice perceptions are high, the link between individual perceptions of justice and individual satisfaction and commitment is strengthened.

In the study, 3,445 employees in 383 departments in stores in a grocery store chain participated. A total of 194 managers of the departments from which the employees' data were derived also participated. Survey items were presented related to the three types of justice perceptions in addition to questions targeting job satisfaction and commitment. The surveys were sent by the organization to employees and could be completed during the workday. Justice data from individual employees was aggregated to the level of the department for analysis for 194 departments because only departments with four or more employees were used to improve the likelihood of reliable justice climate measures. Managers were in turn matched to those grocery department participants they supervised. Hypotheses 1–4 were addressed using these aggregated data across 194 departments. For Hypothesis 5, an individual-level database was created that included individual justice perceptions, job satisfaction, job commitment, and department justice climates matched to each individual for a total of 383 departments.

The FFM personality attributes were studied via Goldberg's (1999) procedure. Colquitt's (2001) measure of organizational justice (with minor adjustments) was used to assess the three types of organizational justice. A confirmatory factor analysis found that a three-factor solution was indeed correct for the assessment of justice climates. An adapted version of the gender-neutral-single-item Faces Scale (Kunin, 1955) was used to assess job satisfaction. Organizational commitment was assessed using a four-item measure created by Meyer and Allen (1991). Hypotheses 1–4 were all examined using hierarchical regression models. Hierarchical Linear Modeling (HLM) was used to test Hypothesis 5 because individual participants were nested in groups and HLM allows for separating within- from between-group variance in the dependent variable.

Results of the research fully confirmed Hypothesis 1. Specifically, higher levels of leader agreeableness were related to interpersonal justice climate and informational justice climate. Hypothesis 2 was partially supported. Specifically, leader conscientiousness was positively related to procedural justice climate but not to informational justice climate. Hypothesis 3 was fully supported because leader neuroticism was negatively related to all three types of justice climates. Hypothesis 4 was not supported because leader extraversion was not positively related to procedural justice climate. Hypothesis 5 was partially supported because HLM revealed that positive relationships between individuals' justice perceptions and individuals' outcomes (job satisfaction and organizational commitment) were moderated by interpersonal and informational justice, but not procedural justice.

In conclusion, the authors present their findings as helping link theory on leadership to followers' justice experiences. Further, they hold that the current study helps link theory on both leadership and justice to justice climates, the integration of organizational justice, and social comparison theories. Specifically, the authors present their findings as the first that evaluates the effects of leader personality on subordinate justice perception. Further, agreeable supervisors tended to oversee departments whose employees had a high shared sense of informational and interpersonal justice. Conscientious leaders more frequently led departments with high perceived procedural and informational justice, but not interpersonal justice. Neurotic leaders led departments with poor justice climates across all three dimensions. Multivariate tests indicated that neurotic personality characteristics may be the most relevant indicator of a leader's ability to (not) treat employees justly. The finding that the relationship between individual justice perceptions and individual outcomes was moderated by justice climates helps support the multi-level integration of leader personality, social comparison theories, and organizational justice.

Future directions were proposed. First, researchers should prioritize understanding on which dimensions or facets of justice leaders are perceived to be fair. Relatedly, mediators between personality and justice climates (i.e., leader behaviors) should be explored. In addition, researchers are encouraged to explore the group processes that result in fair treatment and consensus about that treatment. Lastly, the authors encourage exploration of how leader personality might relate to justice climates in the context of strong vs. weak organizational climates.

Annotator's Comment: The authors present practical applications of the study. Specifically, they argue that it may be relevant to prioritize the selection of leaders who have the personality to implement fair climates. Moreover, such leaders must promote justice climates that allow for subordinates to perceive their treatment as fair. Such leader behaviors are pivotal because such climates may be mediating tools that improve performance outcomes such as job satisfaction and commitment. The authors argue that personality measurement may be preferable to measuring workplace behaviors, because it is often not possible to measure workplace behaviors prior to offering potential leaders employment. In addition, the authors argue that managers can receive justice training so that they are able to more fairly and consistently uphold justice rules in order to improve justice climates (and thus individuals' outcomes).

Measuring Climate

34. Hellriegel, D., & Slocum, J. W. (1974). Organizational climate: Measures, research and contingencies. *Academy of Management Journal*, 17(2), 255–280. doi:10.2307/254979

The purpose of this paper is to clarify assumptions in the literature about conceptualizing, measuring, and using the organizational climate construct through a contingency and systems-thinking lens. The authors highlight theories and findings from their analysis of studies that use organizational climate as the key variable of interest. In their analytical framework of the organizational climate literature, the authors examined four facets of such research through analysis of: (a) measures (e.g., objective vs. perceptual, climate focus, type of scale, scale reliability and validity); (b) research methods (e.g., author(s), measure of climate, sample

population used, use of organizational climate variable: independent, dependent, moderator, mediator); (c) research rigor (1–13 point system pertaining to the rigor of the research—e.g., case study received 2 points; controlled field experimentation received 13 points), and (d) contingencies in the research (e.g., type of technology, type of subsystem, type of environment).

The authors analyze 31 organizational climate studies using the four dimensions of their analytical framework. This analysis enabled them to describe the current state of research evidence when considering the different approaches researchers have taken to study organizational climate. For instance, when climate is used as an independent variable, research has shown that employee-centered climate does not always lead to higher performance levels (Kaczka & Kirk, 1968). When climate is an intervening variable, leadership that creates an achieving climate increases productivity the most, while a democratic-friendly climate results in the highest worker satisfaction (vs. authoritarian-oriented leadership climate; Litwin & Stringer, 1968). When climate is a dependent variable, research shows that perceptions of climate vary among employees at different levels in the managerial hierarchy (Schneider & Hall, 1972) and that organizational climate improves when workers are given more input into decision-making (Litwin & Stringer, 1968).

The authors conclude that a parsimonious way to understand the complexity of organizational climate is to determine the degree of congruency between climate perceptions, major organizational dimensions (i.e., “congruency between individuals within a given subsystem,” p. 276), and the appropriateness of these to the environment (i.e., “are these perceptions congruent with the environment?” p. 276). Researchers are also cautioned about making comparisons between organizations unless they are similar across all contextual contingencies. Part of the inconsistency of patterns currently reported in the literature could be a result of ignoring these important contingency factors.

Annotator’s Comment: This early review of climate research brought to light the difficulties involved with researching a construct conceptualized at the organizational level when it was being empirically studied at an individual level.

35. Jones, A. P., & James, L. R. (1979). Psychological climate: Dimensions and relationships of individual and aggregated work environment perceptions. *Organizational Behavior and Human Performance*, 23(2), 201–250. doi:10.1016/0030-5073(79)90056-4

The purpose of this article is to assess a comprehensive measure of psychological climate and determine the appropriateness of aggregation of individual perceptions. The authors first describe prior work that provided basic assumptions regarding the measurement of climate and when individual perceptions of climate should be aggregated to be used as an organizational-level variable. For instance, perceptual measures of climate typically assume that (a) they measure cognitively-based descriptions of an organizational setting, (b) they capture more general, abstract perceptions of an organization rather than specific perceptions, (c) they measure a setting or climate that is proximal or directly observable by the worker, and (d) that climates are multidimensional with dimensions that can be applicable across contexts within an organization (though specific dimensions may be more appropriate for specific situations; e.g.,

climates of creativity with innovation outcomes). In addition, for psychological climate aggregation, researchers have assumed that (a) climate scores describe perceived situations, (b) individuals who are exposed to the same climate setting will describe that setting in a similar way, and (c) aggregation will amplify perceptual similarities and minimize individual differences.

The authors sampled from three different organizational populations. The primary sample consisted of 4,315 U.S. Navy enlisted men (E-1 to E-9) from 20 different ships. In addition, a sample of 398 fireman (below the rank of district chief in two fire departments) and 504 exempt employees of a private health care program served as two comparison organizations. Across the three organizations sampled, data were collected using surveys. Psychological climate was measured using the 145-item psychological climate questionnaire consisting of items that described specific aspects of the work situation. These 145 items were intended to represent 35 a priori composites that covered aspects of the work situation (e.g., role ambiguity, job importance, leader support, workgroup cooperation, openness of expression). In addition, other measures were collected pertaining to individual difference (e.g., age, education, position level) and organizational/subunit structure (e.g., centralization of decision-making, formalization of communication, standardization of procedures).

Based on a principal components analysis, results indicated that from a sample of Navy men, six underlying dimensions of climate perceptions emerged: (a) conflict and ambiguity; (b) job challenge, importance, and variety; (c) leader facilitation and support; (d) workgroup cooperation, friendliness, and warmth; (e) professional and organizational esprit; and (f) job standards. All of these components generalized across the three samples, except job standards. Job standards appeared to load a bit differently for the other two samples. That is, for health professionals, job standards loaded as an extension of the job challenge, importance, and variety component, while for firemen, job standards emerged as a combination of confidence and trust in subordinates and leaders (additional measures collected outside of the six underlying climate dimensions).

Using the six dimensions, individual aggregation was found to be appropriate only for describing subunit conditions (the division in the Navy), because homogeneity did not exist ship-wide. At the division level, aggregated scores could be used to describe context, structure, and personnel composition and could also be used to predict performance. In addition, a multiple discriminant analysis of the division aggregate scores (calculated binary cluster membership in each of the seven clusters [each division received a set of seven binary codes to define cluster membership] so a correlation between criterion scores and unit-weighted climate composite scores could be calculated) calculated as a total of the indicated seven clusters to describe the workgroup climates: (a) cooperative and friendly, (b) conflicting and ambiguous, (c) alienating and constrictive, (d) uncooperative and unfriendly, (e) monotonous, cold, and unsupportive, (f) enriched and warm work environment/organizationally uninvolving, and (g) organizationally involving. The authors also found that the aggregate scores within divisions reflected division context and structure better than did individual scores. In particular, the aggregate means showed basic differences between divisions in subunit function and paralleled differences in technology, resources, structural characteristics, and personnel composition. The individual and aggregate

clusters generally correspond with other components reported in the literature, which increases external validity.

Annotator's Comment: The research presented in this article provides evidence that certain dimensions of psychological climate can be found across different organizations, but further research is needed to test the generalizability of the results to other types of organizations and examine where the appropriate level of aggregation may reside when attempting to use measures of psychological climate at the aggregate level of analysis.

36. James, L. R. (1982). Aggregation bias in estimates of perceptual agreement. *Journal of Applied Psychology*, 67(2), 219–229. doi:10.1037/0021-9010.67.2.219

James investigates the effects of aggregating individual responses to describe organizational climate. The author begins with a brief discussion about appropriate levels for operationally defining a construct (unit of theory) and the relationship between differing levels of analysis when measuring climate (composition rules). He suggests that, with enough perceptual agreement (reliability) among raters, the individual can be the unit of theory for measuring organizational climate. Intra-class correlations (ICCs) are a descriptive statistic used to measure the reliability and consistency of responses; therefore, they can help determine the amount of agreement when working to detect aggregation bias. Two different types of intra-class correlations are discussed: *ICC(1)*, interrater reliability based on the mean squares from an analysis of variance and *ICC(2)*, reliability of the means based on *ICC(1)*. Because *ICC(2)* is a reliability measure for the mean, it tends to be more stable for larger sample sizes; hence, it can show stability even when *ICC(1)* is not particularly high. The author posits a reliable *ICC(1)*, demonstrating agreement among individuals in the organization, is essential before aggregating to obtain *ICC(2)* when measuring cognitive factors, such as job satisfaction and involvement, self-esteem, and cognitive complexity. Additionally, one cannot simply attribute low *ICC(1)* to randomness or error; instead one should use this lack of agreement to further investigate individual perceptions of the organizational climate. Aggregation across groups is a common analytical technique and is often used even when individuals are not similar. Ensuring a reliable *ICC(1)* will reveal that the individuals' perceptions are similar enough to be aggregated.

The author goes on to strengthen his argument by demonstrating how a canonical result from Drexler (1977, "Organizational climate: Its homogeneity within organizations") fell prey to aggregation bias, as defined in this context as a 'fallacy of the wrong level.' In other words, conclusions from the study found at a higher level (i.e., organizational, or aggregate agreement) are used to imply agreement at a lower level (i.e., individual agreement). The author uses simple algebra to show that unless the variability in individuals is completely explained by differences in the workgroups, Drexler's estimation of individual agreement will be necessarily inflated. Similarly, he shows that inflated estimates are found when aggregating groups of individuals for comparison with a single individual (i.e., a mean subordinate score compared to a single supervisor's score) or groups of individuals (i.e., mean customer scores compared with mean employee scores).

Annotator's Comment: Aggregating individual responses to describe organizational climate can be a beneficial lens to better understand how people will respond to environments;

and give us a view of the “typical, average, usual way people in a setting describe it” (Schneider, Note 1, p. 4–5, as cited in James, 1982, p. 221). However, there is potential for aggregation bias, and to lessen this bias, it is essential to understand how group agreement is defined, measured, and interpreted. Perceptual agreement must be demonstrated before climate scores are aggregated (James, 1982, p. 221): meaning a researcher may aggregate to get at shared meaning, but some demonstration of the degree of “sharedness” is necessary before aggregation. If a researcher can show that in general people agree that a climate is a certain way via ICC scores before aggregating the scores, then there is statically powerful support to interpret how people may react in an environment with similar characteristics.

37. James, L. R., Demaree, R. G., & Wolf, G. (1984). Estimating within-group interrater reliability with and without response bias. *Journal of Applied Psychology*, 69(1), 85–98. doi:10.1037/0021-9010.69.1.85

The purpose of this article is to introduce a statistical-based procedure for estimating interrater reliability for judgments of a single target by a single group of individuals. (The term reliability is used here to mean agreement between raters, not reliability in the classical sense of measurement). Researchers are often interested in inferring patterns based on responses from a group of ‘judges,’ or raters, which requires estimates of interrater reliability to determine the strength of agreement for raters’ judgments on an item or set of items. Interrater reliability (IRR) is defined as the degree to which judges are interchangeable or to the extent that they agree on a set of judgments. Before calculating an estimate of IRR, the authors present two assumptions for both single and multiple item variables. First, the items being judged for IRR should be shown to have acceptable psychometric properties (e.g., construct validity, inter-item reliability). Second, the response scale should be an interval scale with equally spaced item response choices (e.g., Likert-style scales with 7 ± 2 response options).

IRR is calculated in terms of a proportion; systematic variance in a set of judgments is contrasted with the total variance in the judgments. Total variance is divided into two parts: random measurement-error variance and systematic variance. Random measurement-error variance is derived from measurement error and extraneous ‘noise’ in the response (e.g., brief mood fluctuations, environmental noises, illness, chance). By contrast, systematic variance is made up of true variance and variance due to systematic error (e.g., response bias, such as social desirability). Response bias (i.e., patterns in participant responses not due to the target being measured) creates an issue in reporting interrater reliability because it inflates the systematic variance, leading one to believe there is true agreement between raters when, in fact, response bias is actually being measured.

The authors discuss their IRR measure for judgments derived from single item measures (see Equation 1) or multiple measures (see Equation 2 from original source, p. 88). To calculate IRR, the null distribution for variance is assumed to be rectangular and uniform. An IRR estimate for a single item measure is obtained by taking the true variance and dividing it by the summation of true variance plus the error variance (see Equation 1 from original source, p. 88). For an IRR estimate of a multiple item measure, see Equation 2. Generally, $r_{wg(J)}$ will be larger than $r_{wg(1)}$ because averaging over a series of items that measure the same latent variable will reduce the influence of measurement error.

$$r_{WG(I)} = 1 - (s_{x_j}^2 / \sigma_{EU}^2) \quad (1)$$

$$r_{WG(J)} = \frac{J[1 - (\overline{s_{x_j}^2} / \sigma_{EU}^2)]}{J[1 - (\overline{s_{x_j}^2} / \sigma_{EU}^2)] + (\overline{s_{x_j}^2} / \sigma_{EU}^2)} \quad (2)$$

Lastly, the authors discuss their measure of IRR in relation to prior methods of rater agreement and then discuss potential issues of systematic measurement error and procedures to correct for these issues. Specifically, the authors note that although their IRR measure is not in direct competition with other measures of rater agreement (e.g., intraclass correlation, mean percentage of agreement, average intercorrelation among judges), these prior methods of assessing agreement can suffer when the values in the data are range restricted, which may underestimate levels of agreement. In addition, response biases such as social desirability (e.g., subordinates exhibiting a positive judgment of their superior) or central tendency (e.g., responses all falling at the neutral midpoint of the scale) might unduly influence the measure of IRR. To correct for potential response biases, the authors offer a three-step procedure. Step 1: Determine what the null distribution would look like as a result of response bias if there is indeed no systematic variance (e.g., for social desirability bias, a negatively skewed distribution might be expected). Step 2: Determine what the expected variance would be when all systematic variance is due to response bias (e.g., for negative skew of a 5-point scale, 1 = .05, 2 = .15, 3 = .20, 4 = .35, 5 = .25). Step 3: Replace σ_{EU}^2 in Equations 1 or 2 with the expected variance value for the proposed null distribution and then interpret the measure of IRR as an estimate of within-group IRR. However, the authors acknowledge that sometimes the null distribution can confound the true scores with systematic errors making it difficult to correct for.

Annotator's Comment: This article provides a very useful procedure for calculating agreement between raters and methods to adjust the null distribution to account for response biases. A measure of interrater agreement is especially useful in organizational research where aggregate measures of climate require some indication that perceptions are in absolute agreement across the organization by individual members.

38. Joyce, W. F., & Slocum, J. W., Jr. (1984). Collective climate: Agreement as a basis for defining aggregate climates in organizations. *Academy of Management Journal*, 27(4), 721–742. doi:10.2307/255875

The purpose of this article is to examine rater agreement and its relationship to aggregate measures of organizational climate. The authors discuss different types of aggregate climates and highlight the question of reliability when climate perceptions are aggregated based on prior groupings, such as work group membership. They propose that three conditions should be met before considering aggregate climates: (a) there are mean perception differences between identifiable climates, (b) there are predictable relationships to organizational or individual outcomes, and (c) there is internal agreement in perceptions of an aggregate climate. Relying on only one of the three conditions may lead to aggregation bias and can lead to confounding of the error term and a decreasing ability to detect significant differences between climates. As a solution, this article describes the *collective climate*, which is an aggregate climate based on perceptual climate agreement. When individuals are grouped according to similar psychological

climate perceptions, the aggregate measurement will, by definition, reflect the individuals in the aggregate. Collective climates do not rely on work group membership or any other prior grouping and allow for members within a defined work group to perceive the climate differently.

This article studied 220 foremen in three heavy duty truck manufacturing plants to determine the relationship between collective climates and job satisfaction. In particular, the authors hypothesized that membership in collective climates will relate to individual job performance and job satisfaction. Results found multiple collective climates within each plant, which is consistent with previous literature. In two of the three plants, collective climate was significantly related to individual job satisfaction, which suggests that climate is different from satisfaction (cf. Guion, 1973; Johannesson, 1973). Individual job performance was associated with collective climate in all plants, though more strongly associated in two of the three. Even when collective climates with similar outcome means (e.g., high satisfaction, low performance, etc.) within an organization (plant, in this case), the patterns of where agreement exists in the plant can be drastically different.

Annotator's Comment: It is important to understand the differences between collective climates and not rush to aggregate according to established and formal prior groupings. When collecting data and interpreting results, ignoring these differences can cause distorted conclusions; identifying workgroups as being more similar and homogenous than they actually are can lead to missed effects and incorrect assessments of the climate.

39. Glick, W. H. (1985). Conceptualizing and measuring organizational and psychological climate: Pitfalls in multilevel research. *Academy of Management Review*, 10(3), 601–616. doi:10.5465/AMR.1985.4279045

The purpose of this article is to clarify the issues associated with conceptualizing and assessing organizational climates. This article deals with five major issues concerning the construct of organizational climate and its measurement. The first issue is about deciding the appropriate level for operationally defining the construct and the difficulties in conceptualizing organizational climate. The author acknowledges multiple levels of theory (e.g., individual, group, organization) when conducting climate research is paramount to obtaining informative datasets and drawing the most accurate conclusions, as using an inappropriate level for analysis will inflate variability and obscure actual patterns in the data (e.g., when measuring organizational climate, questions should be framed in a way that elicits descriptions of organization-level characteristics, not unique individual experiences). The second issue discussed in this article, determinants of climate, attempts to clarify the crucial climate-setting constructs. The author suggests longitudinal studies, newcomer socialization studies, and network analyses to further research on determinants of climate. The next issue involves the ways in which constructs are combined to define organizational climate, which complicates its operational definition and conception. The fourth issue, perceptual agreement, deals with how individuals perceive and report organizational climate (i.e., level of interchangeability amongst members describing the climate of an organization). The difficulty of measuring an individual's actual experience of the climate and his or her perception of that climate creates additional confusion when conceptualizing organizational climate. The author argues that disagreement among individual responses often reflects an individual bias and random error, not organizational

differences per se. Such bias may increase the noise (confounding variables; e.g., the individual's position or status in the organization) in the data and oftentimes masks the organizational climate. The fifth issue discussed in this article is dimensionality of climate, which refers to specifying the appropriate dimensions of organizational or psychological climate. To deal with difficulties associated with this issue, the author suggests using variables that are more likely to be associated with the criteria of interest (i.e., safety climate, climate for innovation, etc.).

Annotator's Comment: This article investigates methodological efforts available to address validity and reliability in regard to the abovementioned issues. One simple way to improve validity is to ensure that samples being observed are representative of the organization/unit of analysis, to avoid what James (1982) refers to as the fallacy of the wrong level: where observations are made on a different level than the conclusions drawn from them (e.g., researchers are observing individuals but drawing conclusions about organizations), leading to systematic reductions in the variance between organizations/units. Additionally, diversity in methodologies (e.g., the conjunction of using quantitative survey ratings of an organizational climate and more qualitative focus group impressions of climate) can increase convergent validity on the nature of the climate. A third method for improving validity is using focused questions that are more descriptive than affective. For example, a question could be worded as "This organization encourages employees to try new work methods" as opposed to "I am encouraged to try new work methods" (p. 608) to more objectively assess organizational support for innovation that might be usefully aggregated. That is, purposeful wording of items is essential to measuring organizational climate because job satisfaction is the individual experience (i.e., affective) that can be different, although often highly correlated, from what a person perceives is the environment (e.g., someone can rate facets of the organizational climate positively but still not be experiencing high levels of job satisfaction). Lastly, to maintain validity, potential sources of bias (i.e., perceptual differences) need to be identified and controlled for in each organizational climate measure; and to address reliability it is important to consider reliability indices at all levels of observation (i.e., individual, group, and organization).

40. Jackofsky, E. F., & Slocum, J. W., Jr. (1988). A longitudinal study of climates. *Journal of Organizational Behavior*, 9(4), 319–334. doi:10.1002/job.4030090404

The purpose of this article is to examine how individuals form descriptions of their work environments and assess the stability of these descriptions. The authors define climate as descriptive judgments that arise out of events, processes, and contingencies that exist within settings. From a symbolic interaction perspective, climates arise as individuals seek meaning about their organizational environment through their interaction with other individuals as framed by the structure of the organization. Furthermore, individual descriptions of climates are believed to be relatively stable over time; low perceptual agreement with others causes tension and is aversive, motivating people to develop shared perceptions or select themselves into an environment that enables shared perceptions of climate.

The authors have three specific hypotheses. First, they hypothesize that favorable perceptions of climate would be related to higher job satisfaction, job performance, leader favorability, lower intentions to quit, and less actual turnover. Second, they hypothesize that employee descriptions of climate would remain stable over time. Third, job satisfaction,

performance, leader behavior descriptions, intentions to quit, and turnover associated with being in a *collective climate* (climates defined on the basis of individuals' shared perceptual agreement) would remain stable over time.

A sample of 63 non-managerial employees from a newly established hotel location is used. This sample is unique because employees starting work at the new hotel had no prior experience working in the environment or with the other employees; this allowed the researchers to observe employees in an emerging climate that was not colored by a previously established climate. A time series design is used with two time points—at 45 days and 150 days after the hotel had opened. Climate is measured using the multidimensional climate instrument (Newman, 1977) that consists of seven basic climate dimensions: supervisory style, task characteristics, co-workers, work motivation, employee competence, decision-making, and performance-rewards. Job satisfaction is measured using the short form of the Minnesota Satisfaction Questionnaire (Weiss, Dawis, England, & Lofquist, 1969), which assesses individuals' affective responses to both intrinsic and extrinsic aspects of an individuals' job. Job performance is measured using ratings by direct supervisors. Leader reward behavior is measured using an instrument developed by Sims and Szilagyi (1975) that assesses the degree to which subordinates report that positive and negative rewards are associated with positive and negative job performance. Intention to quit is measured through items that assess the degree to which individuals intend to leave their job in the near future (e.g., "I will quit my job soon"). Lastly, turnover is assessed at a 6-month time point to determine whether a given employee was still currently working at the hotel.

Several different statistical procedures are used to analyze the data and test predictions. First, hierarchical and non-hierarchical clustering techniques reveal that four collective climates emerged at both time 1 and time 2 (i.e., sustained participative, increasingly apathetic, transient, and sustained supportive). Second, perceptual agreement is assessed with intraclass correlations [$ICC(1)$] which are found to be relatively high with a median $ICC(1)$ coefficient of 0.80 and 0.86 at time 1 and time 2, respectively [NOTE: These may actually represent $ICC(2)$ values; the authors in the original article state that these values index "reliability" ($ICC(2)$ indexes reliability) and $ICC(2)$ values typically reach those levels and not $ICC(1)$ values]. A Multivariate Analysis of Variance (MANOVA) provides support that perceptual agreement on the climate dimensions is significantly related to job satisfaction, description of leaders, and intentions to quit (but not individual performance). Chi-square analyses show 60% of people are able to be classified at time 2 based on their perceptual agreement of climate at time 1. However, cluster 3 (transient climate) is not stable, with only 25% of people able to be classified, showing that climate perceptions are not always stable, which is consistent with the idea of a transient climate. Lastly, t-tests reveal that climate clusters that are more stable (e.g., sustained participative and increasingly apathetic) had fewer changes in work outcomes, while the climate cluster that was the least stable (i.e., transient) shows that job satisfaction significantly changed over time.

Annotator's Comment: This article provides a useful longitudinal examination of climate perceptions and their stability over time. The research presented in this article used a unique sample of employees that had no prior interactions with one another. Moreover, this research provides support for the idea that people at a newly established workplace can have a collective climate (four climate clusters: sustained participative, increasingly apathetic, transient,

and sustained supportive) that can vary in their stability over time and affect job-related outcomes such as satisfaction, leader perceptions, and intentions to leave the workplace.

41. James, L. A., & James, L. R. (1989). Integrating work environment perceptions: Explorations into the measurement of meaning. *Journal of Applied Psychology*, 74(5), 739–751. doi:10.1037/0021-9010.74.5.739

This article seeks to move beyond describing work environments and explain the *value* of the environmental attributes to the individual. The authors describe the importance of the emotional appraisal of the attributes in the environment (e.g., not only the pay raise schedule, but the equity of receiving a pay raise). A confirmatory factor analysis indicates four separate components of psychological climate: (a) role stress and lack of harmony, (b) job challenge and autonomy, (c) leadership facilitation and support, and (d) workgroup cooperation, friendliness, and warmth (see Figure 1 from original source, p. 741). This article posits an underlying general factor relating these psychological climate components. To test the plausibility of this hierarchical model, the authors sampled nonsupervisory military and civilian personnel, including aircraft maintenance ($N = 422$), systems analysts and programmers ($N = 128$), front-line firefighters ($N = 288$), and production-line workers ($N = 208$). The four-factor model was supported and the underlying general factor was labeled as a construct pertaining to “personal benefit versus personal detriment to organizational well-being” (i.e., PC_g). Each of the four components measured a somewhat different aspect of this general affective climate and this fact resulted in somewhat differential correlations between the general factor and the four psychological components. In fact, the article concludes with two alternative explanations for these relationships, the situational process (i.e., situational and contextual aspects of the work environment affect psychological climate variables), and the job satisfaction process (i.e., psychological climate variables are also measuring job satisfaction).

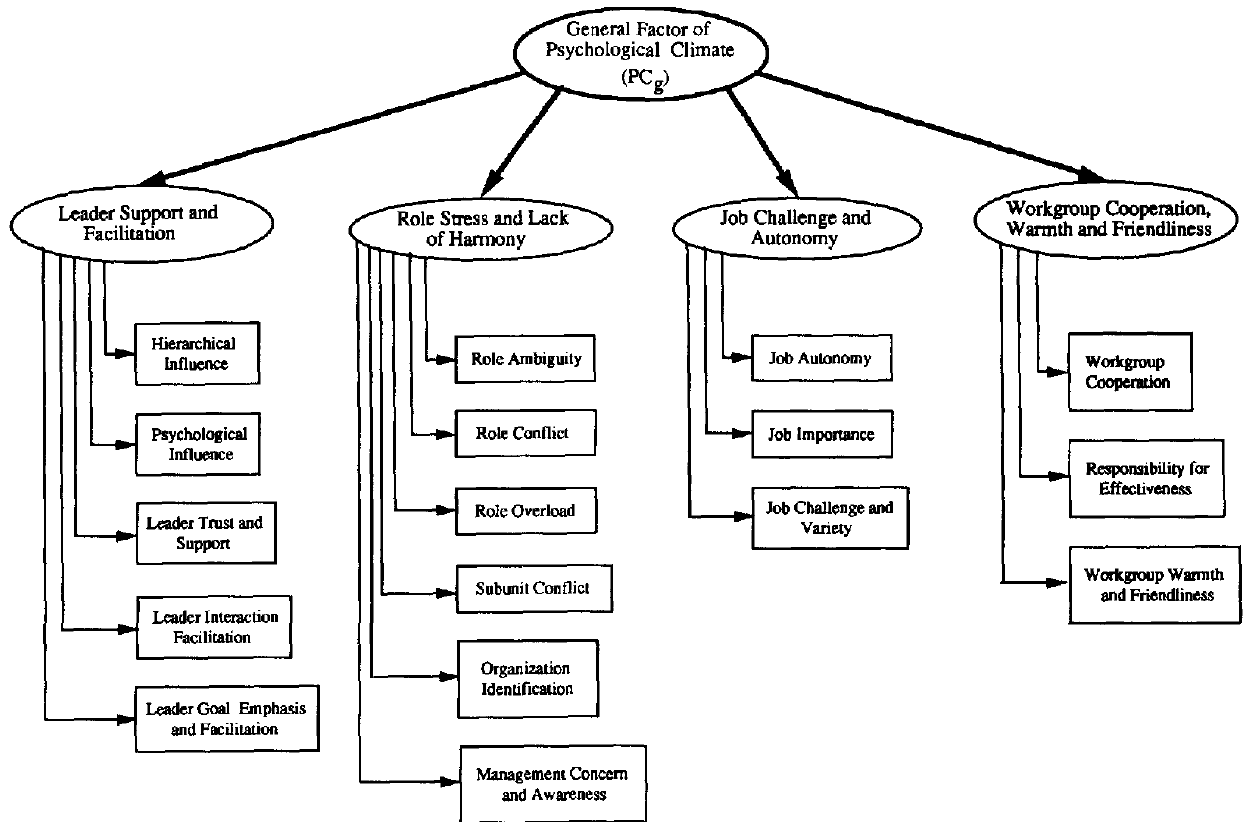


Figure 1. A hierarchical model of meaning.

Annotator's Comment: When assessing and describing psychological climates, it is important to understand the specific value of each environmental attribute within the organization. Much research has been conducted to determine and describe different attributes within an environment, but this article assesses the value each attribute has for the individual. Furthermore, this article provides evidence of a unifying psychological climate construct that integrates diverse measures of meaning within the organizational environment.

42. Rentsch, J. R. (1990). Climate and culture: Interaction and qualitative differences in organizational meanings. *Journal of Applied Psychology*, 75(6), 668–681. doi:10.1037/0021-9010.75.6.668

The aim of this research is to provide empirical support for the long-theorized, but untested, hypothesis among climate and culture researchers that (a) interaction groups are the appropriate level of aggregation and (b) there are qualitative differences in the way events are ascribed meaning by different groups. Meaning in an organizational context is defined as “the use of stored mental representations or schemas (i.e., beliefs that are products of learning and experience) to interpret (i.e., to make sense of) stimuli; in this case, work environment attributes (e.g., events, objects, processes, structures” (p. 669, as cited in James & James, 1989). Social interactions are considered one process through which meaning converges among people but, at the time of this study, had not been systematically researched. Interaction groups can be thought

of as the people most likely to regularly interact in a way that allows them to process “events” as a group (e.g., another employee being fired or a new office building).

Before this study, the meaning members of organizations attached to events was not typically measured using mixed methods. Climate researchers typically used questionnaires, which lacked room for members’ interpretations of events, whereas culture researchers typically used stories and other qualitative methods of data collection, which lacked objectivity and comparability.

Participants included 64 members of an accounting firm. Interview data were initially collected and analyzed to inform questionnaire development. The questionnaire captured 15 events (e.g., “What happens around here?”) and 9 adjectives most frequently used to describe the meaning of the events from the interviews. Participants also reported, via checking off a list of names, those whom they (a) considered to be close friends, (b) interacted with to complete work assignments, (c) talked to when gathering information about *what* was happening in the organization, and (d) talked to when gathering information about *why* things were happening in the organization.

Results from multidimensional scaling and network analysis provided empirical support for the hypotheses that events are interpreted similarly within groups (non-managers) but differently between groups (managers versus non-managers). Additionally, the analyses supported the ideas that meaning may need to be managed; there is a need to contextualize interactions for groups when working to change or maintain the meanings of events. Also, results revealed that there are detectable interaction patterns in organizations that shape meaning.

Annotator’s Comment: This study was methodologically innovative because it provided both qualitative and quantitative methods for better understanding meaning in terms of data collection and data analysis.

43. Kozlowski, S. W., & Hattrup, K. (1992). A disagreement about within-group agreement: Disentangling issues of consistency versus consensus. *Journal of Applied Psychology*, 77(2), 161–167. doi:10.1037/0021-9010.77.2.161

The purpose of this article is to identify the issues surrounding the use of $r_{wg(J)}$ as a measure of interrater agreement. In particular, the authors provide a response to Schmidt and Hunter’s (1989, “Interrater reliability coefficients cannot be computed when only one stimulus is rated”) critique of the $r_{wg(J)}$ index in which they assert that the index lacks a logical foundation, making it uninterruptable and, therefore, not useful; alternatively, Schmidt and Hunter (1989) advocate for the use of the SD_X or SE_M to measure interrater reliability. The authors contend that at the heart of controversy surrounding the use of the $r_{wg(J)}$ index is the confusion between interrater reliability and interrater agreement. Although $r_{wg(J)}$ was initially conceptualized and used as a measure of interrater agreement, the use of the term ‘interrater reliability’ to describe the index in early work was an unfortunate mislabeling of the measure.

Reliability indexes capture the amount of consistency in rater observations, while agreement indexes the degree to which rater observations are interchangeable; that is, they are

the same. Reliability focuses on proportional consistency of responses but does not address whether the responses are shared among responders. Thus, this confusion over use of the terms “reliability” and “agreement” can allow for cases in which there can be high interrater reliability but little actual agreement and vice versa. Of importance to climate research, when assessing organizational climate, interrater agreement is required instead of interrater reliability. One would expect a significant amount of agreement among raters in order to draw conclusions about a shared climate.

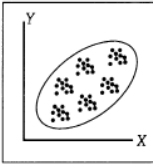
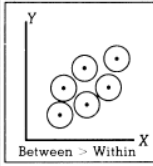
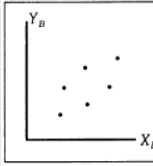
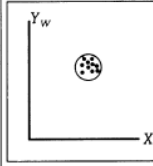
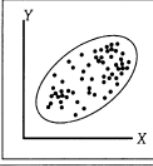
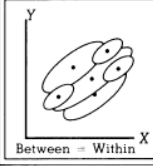
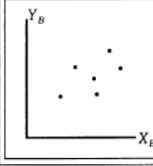
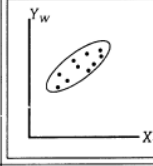
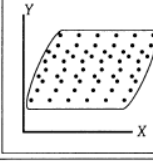
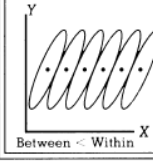
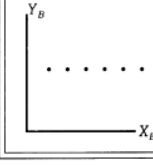
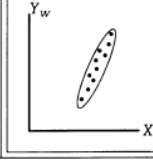
The authors address several limitations and misconceptions of Schmidt and Hunter’s (1989) critique. First, the authors note that Schmidt and Hunter (1989) fail to consider the theoretical context in which the $r_{wg(J)}$ index was designed to be used; the $r_{wg(J)}$ index was conceptualized and intended to be used as a measure of interrater agreement rather than a classical measure of reliability. Second, and relatedly, Schmidt and Hunter (1989) fail to recognize the theoretical distinction between interrater consensus (i.e., agreement) and interrater consistency (i.e., reliability). Third, Schmidt and Hunter (1989) propose SD_X or SE_M as alternative measures of interrater agreement, which does not adequately address the problem of assessing interrater agreement. Specifically, SD_X or SE_M cannot be used to compare scales using different metrics; they do not account for chance or response biases, their use of confidence intervals that compare the individual to the group do not assess within-group agreement, and the values derived from these measures are sensitive to the number of raters making judgments. Finally, the authors end with an illustration of both indices using hypothetical data.

Annotator’s Comment: The authors demonstrate that the James et al. (1984) index of agreement is suitable, and they discredit Schmidt and Hunter’s (1989) critique. Moreover, the authors help clear up a major point of misconception surrounding the $r_{wg(J)}$ index by emphasizing it as a measure of interrater agreement rather than interrater reliability.

44. Klein, K. J., Dansereau, F., & Hall, R. J. (1994). Levels issues in theory development, data collection, and analysis. *Academy of Management Review*, 19(2), 195–229. doi:10.5465/AMR.1994.9410210745

The purpose of this article is to clarify levels issues within the organizational research literature. The authors propose a framework with four key components. First, rather than focus only on traditional statistical approaches, a theory-driven approach is proposed to address conceptual levels issues in research. Second, the authors propose three alternative assumptions that underlie the specification of levels (i.e., homogeneity of subunits within higher level units, independence of subunits from higher level units, and heterogeneity of subunits within units). Third, the authors provide a pictorial representation of potential fallacies of data interpretation when data do not match the level of theory (see Figure 1 from original source, p. 214). Lastly, the authors discuss the importance of levels issues across a range of topics within organizational research.

FIGURE 1
Conformity of Data to the Level of the Theory

	1. Unaggregated Correlation	2. Within-Group & Between-Group Variability	3. Correlation of the Group Means	4. Correlation in One Group Only
1. Homogeneity				
2. Independence				
3. Heterogeneity				

Level of theory is defined as the target that a researcher intends to depict or explain (e.g., individual, group, organization). The authors posit that assumptions of the target can vary in three ways depending on the level of theory. First, if the level of theory is targeting the group level, then one is making the assumption that individuals that comprise that group are relatively homogeneous or similar on the variable of interest and, further, in order to be justified in characterizing individuals within a group as a whole, it must be shown that climate perceptions of individuals within a group are shared and then aggregated to compare with the perceptions of other groups. Second, if the level of theory is targeting the individual level, then one is making the assumption that individuals are independent or dissimilar from one another as indicated by not being influenced by the context or group in which s/he exists (e.g., leader behavior is independent from the job area or plant location or even those with whom s/he works). Third, if the level of theory is targeting individuals within groups, then one is making the assumption that individuals might show heterogeneous responses or evaluations depending on the context they are in (e.g., a person that is 6 feet tall might be tall working in a sports office but be comparatively short when working as a basketball player). The authors suggest these theoretical distinctions should provide a basis for better specificity, clarity, creativity, comprehensiveness and depth for scholarly work, such that comparisons across research efforts will be facilitated by use of common levels constructs (e.g., by providing frameworks to define focus and measure and analyses at the agreed-upon conceptualizations of the targeted levels of analysis).

Level of measurement is defined as the source from which the data are collected and how those data are then used. The authors suggest that researchers should employ data collection methods that conform to the specified level of theory (individually-focused survey items versus group-level focused survey items for studies of individuals versus studies of groups). That is, for researchers interested in within-group homogeneity, research measures should focus on the unit as a whole and try to maximize between-group differences. In contrast, for researchers interested

in individual independence, research measures should focus on individuals' unique characteristics or experiences that will maximize between-individual differences. Lastly, for researchers interested in within-group heterogeneity, research measures should focus on highlighting the position of the individual relative to the group to maximize within-group differences.

Level of statistical analysis is defined as the way in which data are treated using statistical procedures (e.g., if the level is the group, individual self-report data are aggregated to form a group-level variable). The authors suggest that researchers should employ statistical procedures that conform to the specified level of theory. For researchers interested in within-group homogeneity, statistical analyses should use group-level variables (e.g., group size) or aggregates of individual-level responses that are indicated to have high levels of shared agreement (e.g., in self-reported climate measures, there should be significant agreement across group members). For researchers interested in individual independence, statistical analyses should use disaggregated, individual scores to test theory (e.g., self-reported job satisfaction). Third, for researchers interested in within-group heterogeneity, statistical analyses should use deviation scores to test theory (e.g., work performance difference from the group mean). Of importance, however, the authors caution that researchers should ensure that the data conform to the predicted level of theory to avoid drawing erroneous conclusions (see Figure 1). The authors also discuss four different types of multiple-level models and their respective variability assumptions (cross-level models, mixed-effect models, mixed-determinant models, and multilevel models).

Annotator's Comment: In organizational research, measurements are often taken at different levels—from the individual all the way to the organizational level. Each level within an organization (i.e., department, work group, team) comes with its own level of variability. Importantly, the framework presented in this article helps provide organizational researchers more clarity, specificity, and depth in the way they conceptualize theory, develop methodology, and analyze data using statistical procedures.

45. Anderson, N. R., & West, M. A. (1998). Measuring climate for work group innovation: Development and validation of the team climate inventory. *Journal of Organizational Behavior*, 19(3), 235–258. doi:10.1002/(SICI)1099-1379(199805)19:3<235::AID-JOB837>3.0.CO;2-C

The purpose of this article is to develop a focused climate measure of innovation climate at the “proximal work group” level of organizations. The authors define proximal work group as “either the permanent or semi-permanent team to which individuals are assigned, whom they identify with, and whom they interact with regularly in order to perform work-related tasks” (p. 236). Moreover, for shared perceptions of a work climate to emerge, the authors suggest three necessary (but not sufficient) conditions be met. First, individuals must interact with one another at work, at a minimum on an infrequent basis. Second, individuals must share a common goal that brings individuals in a work group together toward collective action. Third, work tasks must elicit a degree of interdependence within the work group. Therefore, the authors argue that the proximal work group is the appropriate level for measures of organizational climate because shared perceptions are most likely to develop and be sustained amongst individuals who work

closely within the same environment. Additionally, climate perception is focused, meaning that it is best measured in regard to specific outcomes (e.g., climate for safety, climate for innovation, climate for inclusion, etc.).

The authors describe a four-factor model of work group innovation as a foundation for their development of a proximal work group measure of innovation climate (see West, 1990). This model defines innovation as the introduction of ideas, processes, products, or procedures that are designed to benefit the group, the organization, or broader society. In addition, the innovation model suggests that innovativeness in the work place is predicted by four major factors: vision, participative safety, task orientation, and support for innovation. *Vision* refers to a motivating force that drives goal attainment at work. *Participative safety* refers to the extent to which individuals are involved in decision-making, creating an interpersonally non-threatening, cooperative work environment. *Task orientation* is the shared goal of excellence in quality of task performance among group members. It describes the shared commitment to excellence and the supportiveness of the climate to reach that excellence goal. Lastly, *support for innovation* is the “expectation, approval, and practical support” for introducing original and improved methods for performance in the workplace.

The authors’ primary goal was to develop a Team Climate Inventory (TCI) based upon West’s (1990) four-factor theory of innovation in the workplace. The wide-ranging longitudinal study on climate for innovation and the innovativeness of management teams was done within the British National Health Service. The initial survey sample consisted of 155 managers from 27 hospital management teams in the U.K. The initial TCI consisted of 61 items with four subscales that mapped onto the four major factors of workplace innovation: vision (e.g., “How worthwhile do you think these objectives are to you?”), participative safety (e.g., “People feel understood and accepted by each other”), task orientation (e.g., “Does the team continually monitor its own performance in order to achieve the highest standards?”), and support for innovation (e.g., “People in this team are always searching for fresh, new ways of looking at problems”).

The TCI underwent several different analytic tests to establish construct validity, reliability, factor structure, and predictive ability. First, an exploratory and confirmatory factor analysis indicated five factors; the four major factors identified in the four-factor model and an additional factor, labeled *interaction frequency*. This additional factor refers to the frequency of formal and informal interactions between team members (e.g., “We keep in regular contact with each other”). Second, across the five factors, it was determined that the individual factors were reliable with good internal homogeneity (alpha coefficients ranging from 0.84 to 0.94). Third, 6 months after administering the initial TCI, independent judges and experts rated the overall innovativeness of the work groups and these judgments were then correlated with the five factors of the TCI. From these analyses, only support for innovation emerged as a significant predictor of overall innovation while participative safety predicted the number of innovations a team made and task orientation predicted administrative effectiveness. Third, a confirmatory factor analysis (CFA) was used to test the robustness of the five-factor solution for the TCI which was administered on an independent sample of 971 participants from 121 teams across different industries (e.g., oil company teams, health care teams, psychiatric care teams). Results of the CFA indicated that the five-factor solution was indeed the most robust solution, followed by the

four-factor solution that was initially conceptualized. Lastly, tests of agreement using the r_{wg} , intraclass correlation (James et al., 1984) and one-way ANOVAs indicated that the TCI was consistently agreed upon by individuals within work groups and that it was reliable.

Annotator's Comment: This article demonstrates again the possible utility of a focused climate measure for proximal work groups (e.g., as with safety and service). Moreover, this research suggests that work climates can be studied at the level of the proximal work group to garner shared perceptions of climate that will significantly predict work group innovation-related outcomes.

46. Chan, D. (1998). Functional relations among constructs in the same content domain at different levels of analysis: A typology of composition models. *Journal of Applied Psychology*, 83(2), 234–246. doi:10.1037/0021-9010.83.2.234

The purpose of this article is to propose a typology of composition models with the aim of providing an organizational framework to improve multilevel research. *Composition models* are defined as models that “specify the functional relationships among phenomena or constructs at different levels of analysis (e.g., individual level, team level, organizational level) that reference essentially the same content but that are qualitatively different at different levels” (p. 234). Specifically, the author focuses on elemental composition in which elements of a lower-level construct (e.g., the individual) are used to represent a collective, higher-level construct (e.g., group, team, organization).

In his typology of composition models, the author presents five basic forms of composition models: (a) additive, (b) direct consensus, (c) referent-shift consensus, (d) dispersion, and (e) process composition. *Additive composition models* define a functional relationship between constructs such that the higher-level construct is a sum (or average) of the lower level units, regardless of variability within the lower-level units (e.g., objective measures like summing number of individuals to form a group size, group-level variable). *Direct consensus models* are similar to an additive model in that higher-level constructs are sums (or averages) of lower level units. However, direct consensus models require a threshold of homogeneity in the lower level units before composing the lower level to the higher level (e.g., subjective measures like averaging an individual psychological climate measure to form an organizational climate measure of shared perceptions given a certain threshold of interrater agreement— r_{wg}). *Referent-shift consensus composition* follows the same process as direct consensus, except the individual refers to the external world (e.g., others in the organization) in order to describe the organizational climate. In this case also, the higher-level construct is still composed of lower level constructs that demonstrate homogeneity, but the data have a different referent (e.g., individual perceptions of how other people in one's group behave aggregated up to the group-level to form a collective climate measure). *Dispersion composition* differs from consensus models in that the construct of interest is the within-group variance (e.g., using measures of interrater agreement as indicators of climate strength to be used as a predictor, moderating, or control variable). Lastly, *process composition* defines the process or mechanism involved in composing a lower-level construct with an analogous higher-level construct (e.g., researchers describing the process of how a group with low interrater climate agreement emerges into one in which there is high interrater agreement to form an organizational climate).

Annotator's Comment: The article presents a typology of compositional models that provides an organizing framework that both facilitates communication about theoretically related constructs and aides in the development and validation of new constructs and theories in multilevel research. As knowledge of individuals within organizations grows, it is important to have an underlying framework from which to communicate multi-level and all climate research. When composition models are identified and understood, researchers can more thoroughly assess and describe relationships within and between organizations using a common language.

47. Burke, M. J., Finkelstein, L. M., & Dusig, M. S. (1999). On average deviation indices for estimating interrater agreement. *Organizational Research Methods*, 2(1), 49–68. doi:10.1177/109442819921004

The purpose of this article is to introduce a new procedure for assessing interrater agreement based on average deviation ($AD_{m(j)}$) and test this index of agreement against other indices of interrater agreement. The current article focuses on interrater agreement, not interrater reliability, and limits the focus to only situations where raters are rating a single target (i.e., an organization). Given the relative drawbacks of using James et al.'s (1984) r_{wg} (e.g., difficulty specifying the null distribution), the authors propose a new index of interrater agreement that does not require modeling a null response distribution. Specifically, the authors state that computing an average deviation index for an item involves “determining the extent to which each item rating differs from the mean or median item rating, summing the absolute values of these deviations, and dividing by the number of deviations” (p. 53). The authors propose to compare their average deviation index of interrater agreement against other indices of agreement (e.g., r_{wg} , r_{wg-ns} , ADM , $ADMd$, SEM) using data collected across different organizational climate measures (e.g., Organizational Service Orientation, Management Support, Goals Emphasis) using various Likert-scale formats (e.g., 5-point, 6-point, 7-point, 11-point).

To perform their comparisons of interrater agreement indices, the authors analyzed two independent data sets across two studies (Study 1: 6,549 sales personnel from 119 retail stores; Study 2: 4,158 sales personnel from 109 retail stores). Across studies, results revealed strong correlations between the two r_{wg} indices and the two average deviation indices, across climate scales and Likert formats. Outcomes assessing whether similar agreement thresholds between the various indices had been met indicated that the r_{wg} indices were similar to the average deviation indices. In addition, the authors recommended that the r_{wg} index should be used over the r_{wg-ns} index correcting for skewness in the null distribution due to lower percentage of agreement found with the r_{wg-ns} index compared to the r_{wg} index that used a uniform null distribution without correction for skew.

Annotator's Comment: This article helps provide a useful empirical comparison of the different indices of interrater agreement across different measures of organizational climate and Likert-scale formats. Moreover, because of the strong correlations and the simplicity of the average deviation indices (i.e., no a priori null distribution needs to be specified), the authors recommend using average deviations over James et al.'s (1984) r_{wg} indices when measuring interrater agreement.

48. Bliese, P. D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (pp. 349–381). San Francisco, CA: Jossey-Bass.

The purpose of this article is to differentiate between commonly used indices of interrater agreement, reliability, and non-independence and to discuss the use of these indices in testing substantive models for detecting emergent phenomena.

Within-group agreement is defined as “the degree to which ratings from individuals are interchangeable; that is, agreement reflects the degree to which raters provide essentially the same rating.” Within-group agreement indices are often important when aggregating lower-level data (e.g., individual self-reports of organizational climate) to higher levels (e.g., creating aggregate organizational climate indicators for a group). James et al.’s (1984) r_{wg} index is the most commonly used measure of interrater agreement. This index relies on correctly identifying the underlying null (uniform) distribution (the distribution if raters responded randomly), since it is a ratio of the observed variability and the underlying random variability. This is often a difficult task (e.g., response bias can skew the assumption of what a null distribution would look like), so the author suggests using resampling methods. In particular, he describes random group resampling (RGR) which simulates random pseudo-group distributions to compare with those from the actual sample. The variances from these pseudo-groups can also be used in the calculations of r_{wg} to help account for some of the natural biases experienced in real data.

Reliability is defined as an index assessing “the relative consistency of responses among raters” (p. 354). Given that reliability and agreement are independent indices, indices of reliability can allow for cases where reliability is high but there is low agreement. For instance, if rater A can use only 1, 2, 3 as response on a 5-point scale while rater B uses 3, 4, 5, then reliability will be high because all responses between raters are proportionally consistent with one another (increasing increments of 1), but agreement would be low because the values are not equivalent (i.e., $1 \neq 3$, $2 \neq 4$, $3 \neq 5$). The author discusses the two common measures of interrater reliability— $ICC(1)$ and $ICC(2)$ —and the formulas and logic behind their calculation.

Non-independence is defined as “the degree to which responses from individuals in the same group are influenced by, depend on, or cluster by group” (p. 357). The author discusses non-independence as a concept of interest to organizational research because of the importance of accounting for higher-level influences on individual-level data. Non-independence is most commonly assessed using $ICC(1)$, where a non-zero value indicates that group membership affects the lower-level (e.g., individual) measurement. Furthermore, given that the $ICC(1)$ index is used to indicate reliability and non-independence, the author notes that $ICC(1)$ can be framed as an indicator of non-independence when the variable of interest is the outcome variable (e.g., “Is my outcome variable affected by group membership?”) and an indicator of reliability when the variable of interest is the predictor variable (e.g., “Can I aggregate this variable and analyze it as a group mean?”). In addition, the author discusses η^2 as an index of reliability and notes that it is highly sensitive to sample size; the potential of bias for estimates of group effects is high when sample sizes are small within groups (e.g., $N < 10$).

The author also discusses top-down and bottom-up effects. Top-down refers to the effect that higher organizational levels have on the lower levels and individuals. Even if a researcher is strictly interested in the individual-level relationships (e.g., association between individual motivation and individual productivity), ignoring the effect of the group/unit (e.g., work group, team, organization, etc.) to which that individual belongs can conservatively bias the standard error, leading to the discovery of non-existent differences between the groups. Compilation and composition processes are discussed as bottom-up effects. *Compilation* processes model similarities within groups at higher levels while maintaining individual differences at lower levels (e.g., indicators of group diversity taken from individual-level demographic variables); agreement is not necessary for compilation models because similarity is not a prerequisite for aggregation. Conversely, *composition* models assume similarity of the individuals as a requirement for measuring higher-level constructs (e.g., organizational climate indicator at group level from individual measures of psychological climate); in this case, agreement is essential. In reality, it is uncommon to encounter complete agreement, so most data are a combination of some agreement between the individual and aggregate measures while maintaining distinctions across levels. The author calls this the fuzzy composition process models. These models combine compilation and combination process models. Aggregate levels are related, but not direct reflections of their lower-level counterparts. Reliability and independence are essential for fuzzy composition models "...the aggregation of lower-level constructs into higher-level variables is likely to create an aggregate-level variable that is simultaneously related to and different from its low-level counterpart" (Firebaugh, 1978, as cited in Bliese, 2000, p. 369). When analyzing organizational climate data, it is important to keep in mind that assuming complete agreement for aggregation often leads to biased estimates and inflated errors. One particular strength of fuzzy composition process models is that these models allow for detection of emergent aggregate-level relationships that might not be apparent at lower levels of analysis.

Annotator's Comment: This article sheds considerable light on clarifying the distinctions between interrater agreement, reliability, and non-independence in organizational research. The author defines these concepts and demonstrates what issues can arise in the use and interpretation of these various data analysis indices surrounding the appropriateness of aggregation.

49. Klein, K. J., Conn, A. B., Smith, D. B., & Sorra, J. S. (2001). Is everyone in agreement? An exploration of within-group agreement in employee perceptions of the work environment. *Journal of Applied Psychology*, 86(1), 3–16. doi:10.1037//0021-9010.86.1.3

The purpose of this article is to examine the impact of using different methods of assessing work climate on within-group agreement. The authors discuss that within-group agreement is often critical to the justification of aggregating individual data to higher levels to form unit/organizational-level constructs in composition models. The authors make several predictions related to aspects of the work environment and wording of organizational survey measures that could influence within-group agreement. First, the authors predict that greater demographic diversity (e.g., age, education, gender) within a group would create greater variability in perceptions of the work environment (i.e., less agreement). Second, it is predicted that greater amounts of social interaction and work interdependence in a work environment would lead to less variability in perceptions of the work environment (i.e., more agreement).

Third, it is predicted that survey items using an individual referent (e.g., “I” or “my”) regarding individual experiences within a group would lead to greater levels of variability in work perceptions than items worded using common experiences of the group using a collective referent (e.g., “we”). Fourth, it is predicted that items requiring an evaluation of characteristics (i.e., evaluative and not descriptive survey items) of the work environment would lead to greater variability in perceptions of the work environment than more descriptive characteristics.

To test predictions, the authors used a sample of 419 managers or implementation team members across 42 manufacturing plants from 35 different companies. Demographic heterogeneity was assessed using coefficients of variation ($SD/mean$; e.g., age, education) and Blau’s (1977) index of heterogeneity (used for categorical variables; e.g., gender, race). Social interaction was measured using a 9-item Social Interaction scale that asked participants how often they interacted with others (e.g., “How often do managers and supervisors get together with other managers and supervisors outside of work?”). Work interdependence was measured using a 6-item Work Interdependence scale that asked workers the extent to which they coordinated with and depended upon each other to accomplish tasks (e.g., “How much must managers and supervisors coordinate their work activities with other managers and supervisors to get their jobs done?”). To assess within-group variability, the dependent variable, a calculation of the average within-group standard deviation for each item of the three work environment survey scales was performed: Plant Innovativeness (9-item scale; e.g., “This plant can be described as flexible and adaptable to change”); Financial Resource Availability-General (5-item scale; e.g., “This plant is under intense budget pressure to cut costs”); and Financial Resource Availability-MRP (manufacturing resource planning; 7-item scale; e.g., “In this plant, money has been readily available to support activities related to the implementation of MRP”).

Correlations and regressions were conducted to analyze the data. Results revealed several major findings: (a) within-group heterogeneity did not lessen within-group agreement; (b) greater reported social interaction among group members led to greater within-group agreement; (c) greater work interdependence among group members led to greater within-group agreement; (d) within-group agreement was higher when items are evaluative versus descriptive; (e) within-group agreement for descriptive items was higher when items used a group referent, and within-group agreement for evaluative items was higher when items used an individual referent (all effects hold when controlling for social desirability); (f) the greater an item’s social desirability, the less within-group agreement was observed; (g) items with a group referent led to greater between-group variability (vs. individual referent); (h) descriptive items led to greater between-group variability (vs. evaluative items); and (i) descriptive items with a group (vs. individual) referent led to greater between-group variability (less of a difference between individual and group for evaluative items).

Annotator’s Comment: This article helped to provide empirical insight into various methodological approaches to climate measurement. The results of this research provided evidence that (a) basic demographic diversity within groups (e.g., gender, age) does not necessarily reduce agreement amongst members, (b) the way in which people interact with one another can affect agreement within groups; greater levels of social interaction and interdependence reduced variability in perceptions of the work environment, and (c) the wording used to assess aspects of the work environment can affect within-group agreement; agreement is

higher for evaluative-framed items (vs. descriptive items) and agreement is higher for descriptive items when the referent is the group (vs. individual). Thus, the findings of this article are useful to climate researchers who are seeking a resource to determine the language they would like to use in the measurement of work climates.

50. Brown, R. D., & Hauenstein, N. M. A. (2005). Interrater agreement reconsidered: An alternative to the r_{wg} indices. *Organizational Research Methods*, 8(2), 165–184. doi:10.1177/1094428105275376

The purpose of this article is to discuss the shortcomings of the r_{wg} index of interrater agreement and propose a new index, a_{wg} . The authors argue that the r_{wg} index of interrater agreement suffers from three limitations. First, r_{wg} is sensitive to the type of scale being used (e.g., different values will be observed for a 5-point vs. 11-point scale). Second, r_{wg} is sensitive to sample size (e.g., the same r_{wg} value can be obtained on two different patterns of ratings that differ in agreement due to different sample sizes). Third, bias can be observed in the r_{wg} index when a null uniform distribution is erroneously assumed.

To combat the uniform null distribution assumption, the authors suggest another interrater agreement index, a_{wg} , which uses the ratio of the observed agreement to the maximum amount of disagreement. This eliminates the difficulty of determining the correct null distribution. The index $a_{wg(l)}$ is calculated by using an altered formula for the mean where “ H is the maximum possible value of scale, L is the minimum possible value of scale, b is the number of H ratings ($k - b$ is the number of L ratings), and k is the number of raters” (see Equations 2 and 3 from original source, p. 172). Next, calculating the maximum possible variance for a given mean (see Equation 5 from original source, p. 173) will yield the denominator random variance estimate, which can be applied to the final formula to calculate $a_{wg(l)}$. To calculate this index for multiple ratings [akin to $r_{wg(J)}$], one simply sums the $a_{wg(l)}$ values and divides by the J number of ratings (see Equation 9 from original source, p. 178).

$$M = \frac{[b(H) + (k - b)L]}{k}, \quad (2)$$

$$b = \frac{k(M - L)}{(H - L)}. \quad (3)$$

$$s_{mpv/m}^2 = [(H + L)M - (M^2) - (H * L)] * [k / (k - 1)]. \quad (5)$$

$$a_{wg(l)} = 1 - \frac{2 * s_x^2}{[(H + L)M - (M^2) - (H * L)] * [k / (k - 1)]}. \quad (6)$$

$$a_{wg(J)} = \frac{\sum a_{wg(l)}}{J}. \quad (9)$$

Furthermore, although the proposed index requires a minimum sample size (e.g., 8 raters for a 5-point Likert scale), the authors argue this is a small price to pay to avoid the scale, sample size, and observed mean dependencies. This may pose a challenge when collecting data, as acquiring a minimum sample size may be too costly or unfeasible, especially when collecting data from populations where schedules limit the number of accessible participants and when the unit of measurement is groups.

Annotator's Comment: The a_{wg} index of interrater agreement helps build upon past procedures for assessing interrater agreement by developing an index that is not susceptible to the shortcomings of other measures of interrater agreement that can often bias the interpretation of results.

51. Patterson, M. G., West, M. A., Shackleton, V. J., Dawson, J. F., Lawthom, R., Maitlis, S., ... & Wallace, A. M. (2005). Validating the organizational climate measures: Links to managerial practices, productivity and innovation. *Journal of Organizational Behavior*, 26(4), 379–408. doi:10.1002/job.312

The purpose of this article is to develop a global multidimensional measure of organizational climate grounded in theory and empirically validated. Moreover, the authors aim to develop an organizational climate measure that was accessible to individuals across levels of the organizational hierarchy (e.g., managerial and lower-level employees) using items that reflected a targeted level of the organization (i.e., the organizational level). The authors define organizational climate as the amalgamation of employee perceptions of organizational policies, practices, procedures, and subsequent interpersonal interactions and behaviors that support various focuses of the organization (e.g., innovation, safety).

The authors developed a measure of organizational climate grounded in the Competing Values Model (Quinn & Rohrbaugh, 1983). This model theorizes that organizational culture can be described along an internal versus external orientation dimension and a flexibility versus control dimension. Exhaustively combining the dichotomous dimensions produces four approaches for organizational climate: (a) *human relations approach* (internal focus and flexibility), which emphasizes well-being, growth, and commitment of employees; (b) *internal process approach* (internal focus and tight control), which emphasizes formalization and internal control of the system to ensure resources are used efficiently; (c) *open systems approach* (external focus and flexibility), which emphasizes the interaction and adaptation of the organization to its environment; and (d) the *rational goal approach* (external focus and tight control), which emphasizes productivity and goal attainment. The research described in this article developed survey items by which each approach can be measured. The authors suggest that organizations will not wholly or predominantly identify with a single approach but will emphasize and assign differentially weighted values to each of them.

A sample of 6,869 employees across 55 organizations in the U.K. was collected to pilot, validate, and test predictions of the Organizational Climate Measure (OCM). Initially, the OCM was constructed using 95 items that were intended to tap 19 dimensions of the four competing values models (e.g., Human Relations Model: employee welfare, autonomy, participation; Internal Process Model: formalization, tradition; Open Systems Model: flexibility, innovation;

Rational Goal Model: effort, efficiency, quality). Using a confirmatory factor analysis (CFA), results revealed that 17 dimensions was a better solution for the factor structure. Moreover, tests of internal homogeneity indicated that the 17 scales had good reliability (alphas > 0.70) and interrater agreement within organizations was high as well (e.g., $r_{wgs} > 0.70$). In addition, model fit indices were also adequate, especially when looking at the four value models individually (RMSRs $< .05$ (root mean square [standardized] residual); NFIs (Bentler-Bonnett normal fit index), NNFI (the non-normal fit index), and CFI (comparative fit index) > 0.90). Lastly, results indicated that the OCM was a good predictor of organizational outcomes (in the area of organizational innovation as related to products, production technology, and work organization) even a year after being administered to employees (e.g., the integration scale positively correlated with use of problem solving and cross-functional teams).

Annotator's Comment: The OCM is comprehensive in that it can be used in its entirety or can be used to address specific climates and outcomes of interest using subsets of the 17 sub-dimensions. Moreover, the OCM is theoretically grounded and empirically validated as a measure that can be useful across a wide variety of organizations and personnel within organizations.

52. Zohar, D. & Luria, G. (2005). A multilevel model of safety climate: Cross-level relationships between organization and group-level climates. *Journal of Applied Psychology, 90*(4), 616–628. doi:10.1037/0021-9010.90.4.616

The purpose of this article is to investigate cross-level relationships between safety climates at the organizational and group levels. The authors define climate as the shared perceptions of policies, practices, and procedures within an organization. Furthermore, the authors define policies as being related to the strategic goals of the organization, procedures as the tactical guidelines for actions related to strategic goals, and practices as the implementation of policies and procedures at the subunit-level. Thus, policies and procedures indicate the importance of organizational-level behaviors (as determined by upper-level management), while practices indicate the importance of those behaviors at the group-level (as implemented by lower-level supervisors). By analyzing climates at different levels of the organization, the authors suggest that cross-level alignment (e.g., degree to which policies/procedures are enacted or aligned to the behaviors and actions of lower-level supervisors) and cross-level mediation can be assessed (e.g., degree to which group climate perceptions influence the relationship between organizational climate and individual safety behaviors).

Based on prior theory, the authors made seven primary predictions. (a) The relationship between organization-level climate and individual safety behaviors will be mediated by group-level climate (see Figure 1 from original source, p. 618). (b) Routinization-formalization (RF; the level of variation in the problems encounter within a job) will moderate the relationship between organization climate levels and group climate levels (i.e., positive relationship with high RF (see Figure 1). The RF model dictates that if a job is more routine (i.e., predictable and easy) the policies and procedures will be more formalized. The formalization of the policies and procedures leaves less room for supervisor interpretation, thereby creating more homogenous practices. (c) Organizational climate strength will be positively related to group climate strength. (d) RF will moderate the relationship between organizational climate strength and group climate

strength (i.e., positive relationship under high RF). (e-f) Organization-level climate strength and organization-level RF will be negatively related to climate variability. (g) Organization climate strength and RF will interactively predict climate variability.

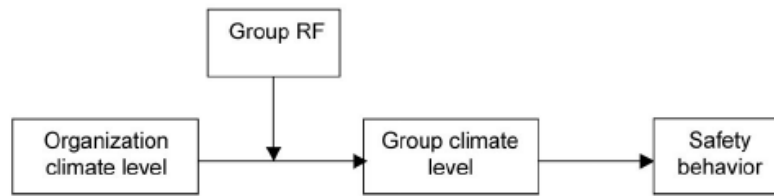


Figure 1. Hypothesized climate-level relationships (see Hypotheses 1 and 2). RF: routinization formalization.

To test predictions, a sample of 3,952 employees from 401 work groups in 36 manufacturing plants was collected. Organization-level safety climate was measured using 16 items from the Multilevel Safety Climate (MSC) Scale (e.g., “Top management in this plant provides workers with a lot of information on safety issues”). Group-level safety climate was measured using 16 items from a previously published group climate scale (e.g., “My direct superior frequently tells us about the hazards of work”; Zohar, 2000). Climate strength was assessed using the standard deviation of employee climate safety perceptions. Climate variability was assessed as the standard deviation of group climate levels in each plant. RF was measured using five items (e.g., “My work must be done according to very detailed procedures”). Outcome measures of actual safety behavior were assessed by an independent safety inspector who visited and observed employees at the plant over a 3-month period after the climate survey had been administered. Analyses of the survey data were through factor analyses and correlational methods. Broadly, results revealed that all seven hypotheses were supported as predicted by the authors.

Annotator’s Comment: This article provides a unique examination of the cross-level influence of climates at the organization-level and group-level that can be characterized in terms of direct effects and moderation and mediation, as well as a function of the cross-levels issues being explored.

53. James, L. R., Choi, C. C., Ko, C. H. E., McNeil, P. K., Minton, M. K., Wright, M. A., & Kim, K. I. (2008). Organizational and psychological climate: A review of theory and research. *European Journal of Work, and Organizational Psychology, 17*(1), 5–32. doi:10.1080/13594320701662550

The purpose of this article is to provide a review of the organizational and psychological climate literatures. The authors provide a review of the historical conceptual issues that have surrounded the theoretical development of organizational and psychological climate. Moreover, the authors review research on psychological climate, organizational climate, and discuss how these constructs compare and contrast to organizational culture. First, a review of the psychological climate literature defines psychological climate (i.e., perceptions that assess the

significance and meaning of work environments to individuals), describes early work on environment perception, the fundamental factors that underlie psychological work climates (e.g., James & James, 1989), general climates that support organizational well-being (i.e., psychological climate-general or PC_g), and how psychological climate has been linked to affective outcomes such as job satisfaction (e.g., psychological climate appears to mediate the relationship between the work environment and affective reactions to that environment). Second, a review of the organizational climate literature defines organizational climate (i.e., the overall meaning derived from the aggregation of individual perceptions of a work environment), discusses the necessity for shared meaning to be demonstrated to justify aggregation for organizational climate indicators (e.g., mean psychological climate scores), discusses the use of within-unit variability of climate perceptions, or climate strength, as a variable of interest (although noting that there is not much evidence for its use as a moderating variable), and discusses how climate remains a property of the individual, regardless of whether there is agreement or not.

Best practices for measurement of climate and culture are put forward. The authors note that climate and culture are separate conceptual constructs that vary by organization. Furthermore, unlike climate, which can be comprised of a general climate factor, findings indicate that culture is much more multidimensional (see Glisson & James, 2002). In terms of measurement, the authors suggest that the appropriate composition model for climate (following Chan's 1998 guidelines) is a direct consensus model that "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" (p. 22). By contrast, the authors suggest that the appropriate composition model for culture is the referent-shift consensus model because "culture is a property of the system, not of the individual, and this difference is reflected in the shift in referent from the individual to the collective."

Annotator's Comment: This article provides a thorough, up-to-date review of the climate literature. The authors describe the history of developing the constructs of organizational climate, psychological climate, organizational culture, and detail how these constructs are similar and different in their conceptualizations and measurement. Furthermore, the authors provide useful best practices for how these constructs should be used in theory, research methodology, and data analysis.

54. LeBreton, J. M., & Senter, J. L. (2008). Answers to 20 questions about interrater reliability and interrater agreement. *Organizational Research Methods, 11*(4), 815–852. doi:10.1177/1094428106296642

The purpose of this article is to provide a consolidated resource for readers interested in interrater reliability (IRR) and interrater agreement (IRA). IRR refers to the relative consistency of ratings, while IRA refers to the degree to which ratings are interchangeable. Because IRR is not necessary for aggregation, the authors claim it is not commonly used in multilevel modeling. In contrast, in multilevel research, IRA is a prerequisite for researchers who want to aggregate subjective lower-level measures (e.g., individual climate perceptions) to higher-level indicators of a construct (e.g., group-level climate perceptions). As such, the article focuses more on IRA

indices. The first, r_{wg} , is the most common IRA index and relies on the ratio of variance among raters and the possible variance assuming no agreement (i.e., the null distribution). This index has been criticized for its disconnection from reliability theory and other authors have suggested using the standard deviation of the ratings (SD_X) and standard error of the mean (SE_M) as indices of IRR. However, this suggestion has been criticized for its sample size dependence, because SE_M is largely influenced by the number of raters. Because of this dependence, standard deviation measures are better indices of dispersion rather than agreement. Lastly, other authors have offered average deviation indices as a measure of IRA for multiple raters rating a single target on a single item (e.g., AD_m). The authors also discuss the intra-class correlations, ICC(1) and ICC(2). It is widely accepted that the ICCs give information about IRR, but this article shows that for multilevel modeling, they give information about IRR+IRA:

...few researchers have acknowledged that many of the ICCs used in multilevel modeling actually furnish information about IRR + IRA (LeBreton et al., 2003). Specifically, the one-way random effects ICCs and two-way random effects or mixed effects ICCs measuring “absolute consensus” are technically a function of both absolute rater consensus (i.e., IRA) and relative rater consistency (i.e., IRR; LeBreton et al., 2003; McGraw & Wong, 1996). In general, ICCs may be interpreted as the proportion of observed variance in ratings that is due to systematic between-target differences compared to the total variance in ratings. Within the context of multilevel modeling, the ICC based on the one-way random effects ANOVA is the most common estimate of IRR + IRA. In this case, the targets (e.g., organizations, departments, teams, supervisors) are treated as the random effect. This ICC is estimated when one is interested in understanding the IRR + IRA among multiple targets (e.g., organizations) rated by a different set of judges (e.g., different employees in each organization) on an interval measurement scale (e.g., Likert-type scale). This index has been differently labeled by different researchers. (p. 822)

While the many types of IRA indices may leave researchers wondering which one is the best for their specific project, this article posits that it is a matter of personal preference. The authors explain that all of the indices are highly correlated with one another and will produce similar results (although SD indices are best used for dispersion measurement). In fact, the authors suggest using multiple IRA indices to show consistency or inconsistency within the data.

The authors also discuss the different r_{wg} indices and best practices for their use. They suggest at least 10 judges as a minimum sample size for using any r_{wg} index because small sample sizes can lead to low indices of RWA; but they also found similar results by increasing the number of items (i.e., more items yield high RWAs). As such, the ideal sample size depends on a combination of the number of judges and the number of items. The authors discuss how to select an appropriate null distribution, level of aggregation, and even how to report the r_{wg} indices.

Annotator’s Comment: This article does not offer recommendations for using one index over another and argues that personal preference is an appropriate determinant for selecting between the various indices. Moreover, this article provides a concise, comprehensive, and importantly, accessible discussion of IRR and IRA in multilevel research. The article ultimately

answers 20 questions a researcher may have when using IRR and IRA indices. In addition, the authors provide sample data sets and statistical software syntax for computing the various IRA and IRR indices.

55. Zohar, D., & Tenne-Gazit, O. (2008). Transformational leadership and group interaction as climate antecedents: A social network analysis. *Journal of Applied Psychology, 93*(4), 744–757. doi:10.1037/0021-9010.93.4.744

The purpose of this article is to assess the mediated and non-mediated effects of transformational leadership and social networks on the strength of an organizational safety climate. Organizational climate is defined as “the shared perceptions of employees regarding an organization’s policies, procedures, and practices, as well as the types of behavior that are rewarded and supported in work settings” (p. 744). Moreover, organizational climate can be described in terms of its level and strength. Level refers to a unit’s perceived priority of an organizational goal, and strength refers to the amount of agreement among individual perceptions. This article is concerned with measuring climate strength, in particular, as a result of transformational leadership and different levels of social interactions among group members. A transformational leader, they hypothesized, fosters closer relationships with subordinates and demonstrates more consistency in leadership practices across different situations. This type of leadership is hypothesized to have a positive effect on climate strength. Specifically, the authors put forth four primary hypotheses (see Figure 1 from original source, p. 746): (a) transformational group leadership was predicted to be positively related to the strength of a unit’s climate; (b) the density of a unit’s communication network was predicted to be positively related to its safety climate strength, and this density was predicted to partially mediate the relationship between transformational leadership and the safety climate strength; (c) the density of a unit’s friendship network was predicted to be positively related to safety climate strength, and this density was predicted to partially mediate the relationship between transformational leadership and the safety climate strength; and (d) centralization of a unit’s communication and friendship networks was predicted to exert incremental effects on safety climate strength over transformational leadership.

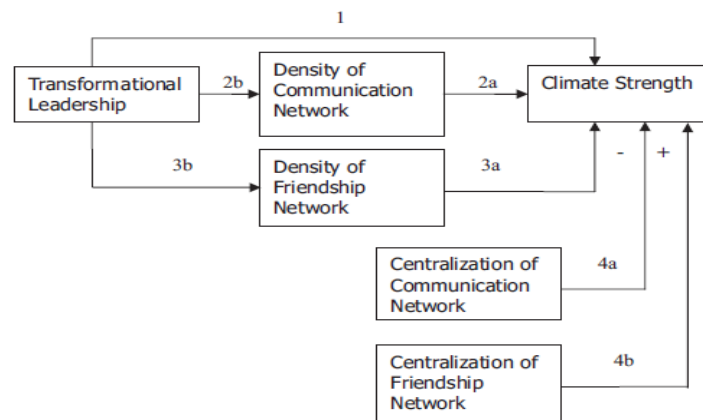


Figure 1. A summary of the theoretical model. Numbers refer to the respective hypotheses.

To test predictions, a sample of 1,108 Israeli Soldiers from 21 companies and 45 platoons undergoing advanced training in five military boot camps was used. Surveys were administered in group sessions while Soldiers were on duty. Social networks were measured in two ways: (a) communication network was measured by asking “How much do you talk with each of your platoon members on subjects that are activity and/or mission related?”; and (b) friendship network was measured by asking “With which of your platoon members do you consult, or get help from about personal issues?” Across both questions, Soldiers were asked to indicate the level they interact with fellow Soldiers using a 5-point Likert scale (1 = *very little*; 5 = *a great deal*). Social network density was calculated by dichotomizing the two social network questions to either indicate no tie or a tie between individual pairs of Soldiers and then computed using a density coefficient. Social network centralization was calculated with Freeman’s (1979) centralization index. Safety climate was measured using a six-item scale related to procedural safety implementation and adapted for the military context (Zohar & Luria, 2004; e.g., “My commander will not allow Soldiers to leave base without a full safety briefing even if it delays going home”). Climate strength was assessed using the standard deviation of climate scores and the r_{wg} agreement index. Lastly, transformational leadership was measured with a 10-item scale taken from the Multifactor Leadership Questionnaire (Bass & Avolio, 1997).

Analyses were primarily conducted using linear regression models. Results indicated that the measures loaded properly on single factors (e.g., transformational leadership scale) and that organizational climate showed strong agreement ($r_{wg} > 0.70$). Furthermore, the results indicated that all predictions (see above) were supported except hypothesis 3b (i.e., density of a unit’s friendship network would partially mediate the relationship between transformational leadership and the safety climate strength).

Annotator’s Comment: The results indicate the importance of distinguishing individual versus group leadership effects; that is, transformational leadership has main effects and also affects climate strength. The article highlights the importance of the roles of social ties and daily exchanges in developing effective group climates. In a military setting, transformational leadership encourages unit cohesion and a positive climate. Leadership is at the heart of the military environment and, therefore, studying organizational climate in the military requires investigation of leaders and leadership roles. In short, understanding the effects of transformational leadership will support the efforts in assessing and understanding the organizational climates within the military.

56. Baltes, B. B., Zhdanova, L. S., & Parker, C. P. (2009). Psychological climate: A comparison of organizational and individual level referents. *Human Relations*, 62(5), 669–700. doi:10.1177/0018726709103454

The purpose of this article is to examine how different referents in items assessing psychological climate might independently correlate with individual outcomes. The authors define psychological climate as “individual descriptions of organizational practices and procedures that relate to organizational influences on individual performance, satisfaction, and motivation” (p. 670). The authors note that psychological climate has often been measured using either an organizational referent (PCo) or an individual referent (PCi). PCo is referred to as

employee perceptions regarding the general aspects of the organizational environment as perceived by the collective ('we,' 'employees here'). By contrast, PCi is referred to as the employee perceptions of their own experience within the organization ('I,' 'my'). The authors note that although the referent may change in measures of psychological climate, psychological climate is examined at the individual level and is not aggregated to higher levels; when psychological climate is aggregated to higher (organizational) levels, this represents a distinct shared construct (e.g., organizational climate) from psychological climate. Furthermore, past research (e.g., Altmann et al., 1998) has found that PCi measures of climate are more predictive of individual outcomes (e.g. job motivation, job involvement, and job satisfaction), whereas PCo dimensions are more predictive of organizational level outcomes (e.g. organizational commitment, intention to quit, and organizational citizenship behaviors). The authors put forth three main hypotheses: (a) the means of PCi and PCo would be significantly different from one another, (b) PCi and PCo would have independent and unique relationships with the outcome variable of job satisfaction, and (c) the discrepancy, or magnitude of difference, between PCo and PCi measures of climate would be related to job satisfaction.

To test predictions, 639 employees across 28 locations of a fitness and community service organization participated in a survey. Psychological climate was measured using Altmann and colleagues' (1998) measure of psychological climate, which covered four dimensions of work environment perceptions (role, job, leader, and work group). The measure of psychological climate included both items that measured how the work environment directly affected him or her (i.e., PCi; e.g., "My job requires a wide range of skills") and items that measured how others in the work environment were affected (i.e., PCo; e.g., "Jobs in this organization require a wide range of skills"). Job satisfaction was measured using a five-item scale from the Job Diagnostic Survey (Hackman & Oldham, 1980). Results of paired *t*-tests and hierarchical regressions revealed that (a) employees are more likely to have a more positive outlook ($Y = \text{job satisfaction}$) when assessing their work environment from individual perspective (PCi) than from the collective perspective (PCo), (b) both PCi and PCo uniquely predicted job satisfaction, and (c) employees were most satisfied when their perception was favorable with respect to both referents and they were less satisfied if their perceptions of both referents were unfavorable. In addition, job satisfaction was lower when there was a difference between the two psychological climate referents: Individuals were more negative when they were under-benefited ($PCi < PCo$) while only slightly negative when they were over-benefited ($PCi > PCo$).

Annotator's Comment: This article provides a novel look at the comparisons between measuring psychological climate using individual and organizational referents. Of importance, this paper highlights that discrepancies between how one perceives the collective organizational climate and how one perceives one's own; personal consequences of the climate can differentially influence job satisfaction. Understanding the multifaceted interplay of collective climate perceptions and individual climate perceptions is an important consideration when assessing an employee's place within a work environment.

57. Cooil, B., Aksoy, L., Keiningham, T. L., Maryott, K. M. (2009). The relationship of employee perceptions of organizational climate to business-unit outcomes: An MPLS approach. *Journal of Service Research*, 11(3), 277–294. doi:10.1177/1094670508328984

The purpose of this article is to examine the relationship between perceptions of organizational climate and unit-level outcomes using a new methodological approach in a service domain. The authors define organizational climate as “perceptions attributed to the work environment.” Moreover, this article focuses on the multidimensionality of the perceptions of organizational climate. The authors use Quinn and Rohrbaugh’s (1983) Competing Values model as a basis for deriving an organizational climate measure. This model theorizes organizational culture can be described along an internal versus external orientation dimension and a flexibility versus control dimension. Exhaustively combining the dichotomous dimensions produces four approaches to the study of organizational climate dimensions: (a) *human relations approach* (internal focus and flexibility), which emphasizes well-being, growth, and commitment of employees; (b) *internal process approach* (internal focus and tight control), which emphasizes formalization and internal control of the system to ensure resources are used efficiently; (c) *open systems approach* (external focus and flexibility), which emphasizes the interaction and adaptation of the organization to its environment; and (d) the *rational goal approach* (external focus and tight control), which emphasizes productivity and goal approach. From these four approaches, the authors investigate the ability of organizational climate to predict three sets of outcomes along a service profit chain (SPC): (1) employee-specific outcomes (i.e., employee retention, productivity), (2) customer satisfaction outcomes, and (3) financial performance outcomes. Across outcomes, the authors predicted a positive relationship with organizational climate.

To test predictions, a sample of 107 superstore locations (about 360 employees per store) in Western Europe was collected. A questionnaire was used to assess perceptions of organizational climate using the competing values model as a guide (e.g., autonomy, integration, supervisor support). Unit-level outcomes (employee retention rates, customer satisfaction, and financial performance) were provided to the authors for each location by the retailer. Data were analyzed using a multivariate partial least squares (MPLS) approach in a linear regression analysis (in which every variable is considered), maximum likelihood estimation (MLE), and a principal components (PC) analysis (where a few variables are retained as useful for discriminating along a single dimension). Using MPLS, results revealed three latent factors in the organizational climate responses: overall organizational climate, self-efficacy versus leader’s efficacy, and personal empowerment versus management facilitation. Moreover, the authors found that organizational climate was positively associated with employee-specific outcomes and customer satisfaction, but not financial performance at the unit-level. Although financial performance was not directly related to employee perceptions, it was strongly and negatively related to employee perceptions through the latent factor of personal empowerment versus management facilitation.

The nuances in the findings demonstrate one of the major advantages of the MPLS approach: that complex relationships among employee, customer, and financial attributes can be simultaneously explored across samples such as the superstores studied here. While MPLS provides superior and more objective models than other common factor analyses, namely

maximum likelihood estimate (MLE) and principal components analysis (PC), it may be advantageous to use one of these other techniques when the interest lies not in model development but in identifying specific variables and their relationships with each other. The authors discovered that both the PC and MLE (with the exception of the varimax rotation) analyses explained more variability in the initial factor (i.e., overall organizational climate) than MPLS.

Annotator's Comment: This article offers a novel methodological approach to analyzing organizational climate data. Having an approach that is sensitive to the interrelationships of related outcomes can be important to studying organizational climates that can often be quite multifaceted and complex.

58. Ostroff, C., & Schulte, M. (2014). A configural approach to the study of organizational culture and climate. In B. Schneider & K. M. Barbera (Eds.), *The Oxford Handbook of Organizational Climate and Culture* (pp. 532–552). New York, NY: Oxford University Press. doi: 10.1093/oxfordhb/9780199860715.013.0027

The primary purpose of this handbook chapter is to introduce a configural approach to the study of organizational climate and culture. The authors first define climate and culture. Culture is defined as a stable construct that reflects an organization's deep-level, shared meaning regarding core values, symbols, beliefs, ideologies, and assumptions. Climate is defined as the derivative of individual perceptions related to organizational policies, practices, procedures, and routines. Furthermore, when these perceptions are similar and shared across employees, a higher-level organizational climate is believed to emerge (i.e., via employee consensus and agreement). Generally speaking, climate describes what happens in an organization, while culture describes why it happens.

The authors describe the characteristics of a configural approach and how such an approach can be useful in the study of climate and culture and review the different approaches to the study of climate and culture. A configural approach is described as a process for identifying climate patterns or profiles of organizations/units that can then be grouped into a configuration in which organizations/units are similar on a given set of traits or variables (e.g., workgroup membership, job type, commitment). These configurations are the result of mapping across different climate or culture dimensions (e.g., structure, warmth, cooperation, communication) to produce the different resultant configurations (see Figure 27.1 from original source, p. 3). The authors note that this approach has had long-standing use in personality research whereby individuals are classified into different personality types depending on their profile across various dimensions of personality. Furthermore, the configural approach for organizational theory carries two important assumptions: (a) organizational effectiveness will be highest when the profile of the characteristics of the organization is closest to the ideal type of profile (as specified by theory) and (b) multiple configurations of organizational attributes can result in equal levels of organizational effectiveness (i.e., equifinality). These assumptions acknowledge that multiple facets of climates can exist simultaneously in an organization and different levels of these climates can have different impacts on organizational outcomes (e.g., being high on one climate dimension and low on another may be good for accident rates while not good for productivity efficiency; being high on all climate dimensions may not yield superior

effectiveness to being high on one vital climate dimension and medium on the rest). Moreover, the configural approach allows for organizational researchers to consider both the holistic perspective of an organization's climates and the individual parts of climate that can be specialized.

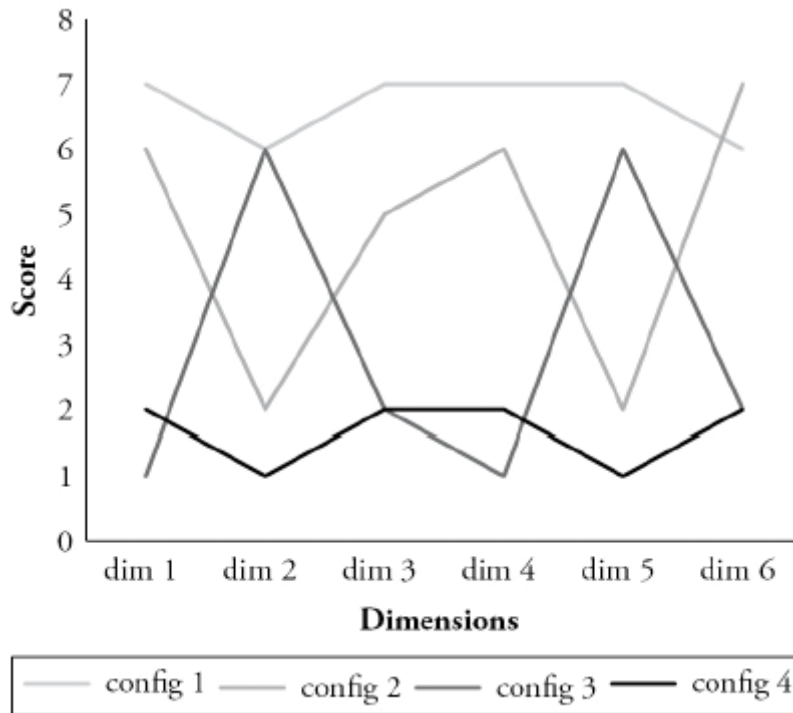


Figure 27.1 Hypothetical configural analysis.

Lastly, the authors make a case for the use of the configural approach in organizational research. Shortcomings of other approaches are discussed; the latent model approach (wrongly assumes all components will be correlated beneath a latent construct of climate), single-aggregate approach (a summation of climate components into a single value has little theoretical utility and does not represent a single construct), and the multiple regression approach (can show relative importance of different climate dimensions but assumes an additive relationship). By contrast, the configural approach uses a multidimensional approach to consider both the holistic and unique aspects of climates. Furthermore, the authors suggest two approaches to the formation of configurations. In the inductive approach, data-driven cluster analyses (e.g., first with Ward's hierarchical clustering followed by an iterative *k*-means clustering) or latent class analyses are used to determine which aspects of a unit or organization are classified into a given configuration. In the deductive approach, the configurations are assigned based on theoretical groupings. The authors suggest that the deductive approach at present is not yet feasible due to little theoretical work on configuration classification in the organizational climate and culture literatures. Therefore, an indicative approach is advocated for by the authors with the latent class method of configuration classification being the most statistically defensible.

Annotator's Comment: This chapter describes a potentially useful approach to understanding organizational climate and culture. The configural approach allows researchers to consider both holistic and individual components of organizational climate and/or culture. Moreover, this approach allows researchers to identify areas in which certain components might be more or less helpful to achieving organizational outcomes and, for practitioners, climate areas in which resources might be better served to be allocated for meeting organizational goals.

Appendix B: Organizational Climate Key References List

Organizational Climate and Culture Differentiated and Integrated

1. Guion, R. M. A. (1973). A note on organizational climate. *Organizational Behavior and Human Performance*, 9(1), 120–125. doi:10.1016/0030-5073(73)90041-X
2. Denison, D. R. (1996). What is the difference between organizational culture and organizational climate? A native's point of view on a decade of paradigm wars. *Academy of Management Review*, 21(3), 619–654. doi:10.5465/AMR.1996.9702100310
3. Schneider, B., Ehrhart, M. G., & Macey, W. H. (2011). Perspectives on organizational climate and culture. In S. Zedeck (Ed.), *APA Handbook of Industrial and Organizational Psychology: Vol. 1. Building and Developing the Organization* (pp. 373–414). Washington, DC: American Psychological Association.
4. Zohar, D., & Hofmann, D. (2012). Organizational culture and climate. In S. Kozlowski (Ed.), *The Oxford Handbook of Organizational Psychology*. Oxford, UK: Oxford University Press.
5. Ostroff, C., Kinicki, A. J., & Muhammad, R. S. (2012). Organizational culture and climate. In I. B. Weiner, N. W. Schmitt, & S. Highhouse (Eds.), *Handbook of Psychology: Volume 12 Industrial and Organizational Psychology* (pp. 643–676) (2nd ed.). Hoboken, NJ: John Wiley & Sons.
6. Schneider, B., Ehrhart, M. G., & Macey, W. H. (2013). Organizational climate and culture. *Annual Review of Psychology*, 64, 361–388. doi:10.1146/annurev-psych-113011-143809
7. Ng, J. C. Y., & Ng, K. Y. N. (2014). Culture, organisational culture and organisational climate: An integrative approach. *Indian Journal of Commerce and Management Studies*, 5(2), 18–26.

Climate Theory and Models

8. Forehand, G. A., & Von Haller, G. (1964). Environmental variations in studies of organisational behaviour. *Psychological Bulletin*, 62, 361–382. doi:10.1037/h0045960
9. Johannesson, R. E. (1973). Some problems in the measurement of organizational climate. *Organizational Behavior and Human Performance*, 10(1), 118–144. doi.org/10.1016/0030-5073(73)90008-1
10. James, L. R., & Jones, A. P. (1974). Organizational climate: A review of theory and research. *Psychological Bulletin*, 81(12), 1096–1112. doi:10.1037/h0037511
11. LaFollette, W. R., & Sims, H. P., Jr. (1975). Is satisfaction redundant with organizational climate? *Organizational Behavior and Human Performance*, 13, 257–278. doi:10.1016/0030-5073(75)90049-5
12. Schneider, B., & Snyder, R. A. (1975). Some relationships between job satisfaction and organization climate. *Journal of Applied Psychology*, 60(3), 318–328. doi:10.1037/h0076756
13. Joyce, W. F., & Slocum, J. W., Jr. (1982). Climate discrepancy: Refining the concepts of psychological and organizational climate. *Human Relations*, 35(11), 951–971. doi:10.1177/001872678203501102

14. Kuenzi, M., & Schminke, M. (2009). Assembling fragments into a lens: A review, critique, and proposed research agenda for the organizational work climate literature. *Journal of Management*, 35(3), 634–717. doi:10.1177/0149206308330559

Molar, Strategic, or Process Climate

15. Schneider, B. (1975). Organizational climates: An essay. *Personnel Psychology*, 28(4), 447–479. doi:10.1111/j.1744-6570.1975.tb01386
16. Schneider, B., White, S. S., & Paul, M. C. (1998). Linking service climate and customer perceptions of service quality: Test of a causal model. *Journal of Applied Psychology*, 83(2), 150–163. doi:10.1037/0021-9010.83.2.150

Climate Formation

17. Schneider, B., & Reichers, A. E. (1983). On the etiology of climates. *Personnel Psychology*, 36(1), 19–39. doi:10.1111/j.1744-6570.1983.tb00500.x
18. Ashforth, B. E. (1985). Climate formation: Issues and extensions. *Academy of Management Review*, 10(4), 837–847. doi:10.5465/amr.1985.4279106
19. Moran, E. T., & Volkwein, J. F. (1992). The cultural approach to the formation of organizational climate. *Human Relations*, 45(1), 19–47. doi:10.1177/001872679204500102
20. Fulmer, C. A., & Ostroff, C. (2016). Convergence and emergence in organizations: An integrative framework and review. *Journal of Organizational Behavior*, 37(S1). doi:10.1002/job.1987

Developing and Sustaining Organizational Climates

21. Lindell, M. K., & Brandt, C. J. (2000). Climate quality and climate consensus as mediators of the relationship between organizational antecedents and outcomes. *Journal of Applied Psychology*, 85(3), 331–348. doi:10.1037/0021-9010.85.3.331
22. Schneider, B., Salvaggio, A. N., & Subirats, M. (2002). Climate strength: A new direction for climate research. *Journal of Applied Psychology*, 87(2), 220–229. doi:10.1037/0021-9010.87.2.220
23. Dickson, M. W., Resick, C. J., & Hanges, P. J. (2006). When organizational climate is unambiguous, it is also strong. *Journal of Applied Psychology*, 91(2), 351–364. doi:10.1037/0021-9010.91.2.351
24. Luria, G. (2008). Climate strength—How leaders form consensus. *The Leadership Quarterly*, 19(1), 42–53. doi:10.1016/j.leaqua.2007.12.004
25. Feldman, D. C., & O’Neill, O. A. (2014). The role of socialization, orientation, and training program in transmitting culture and climate and enhancing performance. In B. Schneider & K. M. Barbera (Eds.), *The Oxford Handbook of Organizational Climate and Culture* (pp. 44–64). New York, NY: Oxford University Press.

Factors Contributing to the Development of, and Sustaining, an Organizational Climate

26. Schneider, B. (1987). The people make the place. *Personnel Psychology*, 40(3), 437–453. doi:10.1111/j.1744-6570.1987.tb00609.x
27. George, J. M. (1990). Personality, affect, and behavior in groups. *Journal of Applied Psychology*, 75(2), 107–116. doi:10.1037/0021-9010.75.2.107
28. Schneider, B., Smith, D. B., Taylor, S., & Fleenor, J. (1998). Personality and organizations: A test of the homogeneity of personality hypothesis. *Journal of Applied Psychology*, 83(3), 462–470. doi:10.1037/0021-9010.83.3.462
29. Tse, H. H. M., Dasborough, M. T., & Ashkanasy, N. M. (2008). A multi-level analysis of team climate and interpersonal exchange relationships at work. *The Leadership Quarterly*, 19(2), 195–211. doi:10.1016/j.leaqua.2008.01.005
30. Nishii, L. H. (2013). The benefits of climate for inclusion for gender-diverse groups. *Academy of Management Journal*, 56(6), 1754–1774. doi:10.5465/amj.2009.0823

Leadership as an Antecedent

31. Kozlowski, S. W., & Doherty, M. L. (1989). Integration of climate and leadership: Examination of a neglected issue. *Journal of Applied Psychology*, 74(4), 546–553. doi:10.1037/0021-9010.74.4.546
32. Ehrhart, M. G. (2004). Leadership and procedural justice climate as antecedents of unit-level organizational citizenship behavior. *Personnel Psychology*, 57(1), 61–94. doi:doi.org/10.1111/j.1744-6570.2004.tb02484.x
33. Mayer, D., Nishii, L., Schneider, B., & Goldstein, H. (2007). The precursors and products of justice climates: Group leader antecedents and employee attitudinal consequences. *Personnel Psychology*, 60(4), 929–963. doi.org/10.1111/j.1744-6570.2007.00096.x

Measuring Organizational Climate

34. Hellriegel, D., & Slocum, J. W., Jr. (1974). Organizational climate: Measures, research and contingencies. *Academy of Management Journal*, 17(2), 255–280. doi:10.2307/254979
35. Jones, A. P., & James, L. R. (1979). Psychological climate: Dimensions and relationships of individual and aggregated work environment perceptions. *Organizational Behavior and Human Performance*, 23(2), 201–250. doi:10.1016/0030-5073(79)90056-4
36. James, L. R. (1982). Aggregation bias in estimates of perceptual agreement. *Journal of Applied Psychology*, 67(2), 219–229. doi:10.1037/0021-9010.67.2.219
37. James, L. R., Demaree, R. G., & Wolf, G. (1984). Estimating within group interrater reliability with and without response bias. *Journal of Applied Psychology*, 69(1), 85–98. doi:10.1037/0021-9010.69.1.85
38. Joyce, W. F., & Slocum, J. W., Jr. (1984). Collective climate: Agreement as a basis for defining aggregate climates in organizations. *Academy of Management Journal*, 27(4), 721–742. doi:10.2307/255875
39. Glick, W. H. (1985). Conceptualizing and measuring organizational and psychological climate: Pitfalls in multilevel research. *Academy of Management Review*, 10(3), 601–616. doi:10.5465/AMR.1985.4279045

40. Jackofsky, E. F., & Slocum, J. W., Jr. (1988). A longitudinal study of climates. *Journal of Organizational Behavior*, 9(4), 319–334. doi:10.1002/job.4030090404
41. James, L. A., & James, L. R. (1989). Integrating work environment perceptions: Explorations into the measurement of meaning. *Journal of Applied Psychology*, 74(5), 739–751. doi:10.1037/0021-9010.74.5.739
42. Rentsch, J. R. (1990). Climate and culture: Interaction and qualitative differences in organizational meanings. *Journal of Applied Psychology*, 75(6), 668–681. doi:10.1037/0021-9010.75.6.668
43. Kozlowski, S. W., & Hatrup, K. (1992). A disagreement about within-group agreement: Disentangling issues of consistency versus consensus. *Journal of Applied Psychology*, 77(2), 161–167. doi:10.1037/0021-9010.77.2.161
44. Klein, K. J., Dansereau, F., & Hall, R. J. (1994). Levels issues in theory development, data collection, and analysis. *Academy of Management Review*, 19(2), 195–229. doi:10.5465/AMR.1994.9410210745
45. Anderson, N. R., & West, M. A. (1998). Measuring climate for work group innovation: Development and validation of the team climate inventory. *Journal of Organizational Behavior*, 19(3), 235–258. doi:10.1002/(SICI)1099-1379(199805)19:3<235::AID-JOB837>3.0.CO;2-C
46. Chan, D. (1998). Functional relations among constructs in the same content domain at different levels of analysis: A typology of composition models. *Journal of Applied Psychology*, 83(2), 234–246. doi:10.1037/0021-9010.83.2.234
47. Burke, M. J., Finkelstein, L. M., & Dusig, M. S. (1999). On average deviation indices for estimating interrater agreement. *Organizational Research Methods*, 2(1), 49–68. doi:10.1177/109442819921004
48. Bliese, P. D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (pp. 349–381). San Francisco, CA: Jossey-Bass.
49. Klein, K. J., Conn, A. B., Smith, D. B., & Sorra, J. S. (2001). Is everyone in agreement? An exploration of within-group agreement in employee perceptions of the work environment. *Journal of Applied Psychology*, 86(1), 3–16. doi:10.1037//0021-9010.86.1.3
50. Brown, R. D., & Hauenstein, N. M. A. (2005). Interrater agreement reconsidered: An alternative to the rwg indices. *Organizational Research Methods*, 8(2), 165–184. doi:10.1177/1094428105275376
51. Patterson, M. G., West, M. A., Shackleton, V. J., Dawson, J. F., Lawthom, R., Maitlis, S., ... & Wallace, A. M. (2005). Validating the organizational climate measures: Links to managerial practices, productivity and innovation. *Journal of Organizational Behavior*, 26(4), 379–408. doi:10.1002/job.312
52. Zohar, D., & Luria, G. (2005). A multilevel model of safety climate: Cross-level relationships between organization and group-level climates. *Journal of Applied Psychology*, 90(4), 616–628. doi:10.1037/0021-9010.90.4.616
53. James, L. R., Choi, C. C., Ko, C. H. E., McNeil, P. K., Minton, M. K., Wright, M. A., & Kim, K. I. (2008). Organizational and psychological climate: A review of theory and research. *European Journal of Work and Organizational Psychology*, 17(1), 5–32. doi:10.1080/13594320701662550

54. LeBreton, J. M., & Senter, J. L. (2008). Answers to 20 questions about interrater reliability and interrater agreement. *Organizational Research Methods, 11*(4), 815–852. doi:10.1177/1094428106296642
55. Zohar, D., & Tenne-Gazit, O. (2008). Transformational leadership and group interaction as climate antecedents: A social network analysis. *Journal of Applied Psychology, 93*(4), 744–757. doi:10.1037/0021-9010.93.4.744
56. Baltes, B. B., Zhdanova, L. S., & Parker, C. P. (2009). Psychological climate: A comparison of organizational and individual level referents. *Human Relations, 62*(5), 669–700. doi:10.1177/0018726709103454
57. Cooil, B., Aksoy, L., Keiningham, T. L., & Maryott, K. M. (2009). The relationship of employee perceptions of organizational climate to business-unit outcomes: An MPLS approach. *Journal of Service Research, 11*(3), 277–294. doi:10.1177/1094670508328984
58. Ostroff, C., & Schulte, M. (2014). A configural approach to the study of organizational culture and climate. In B. Schneider & K. M. Barbera (Eds.), *The Oxford Handbook of Organizational Climate and Culture* (pp. 532–552). New York, NY: Oxford University Press.