

Running Head: ORGANIZATIONAL CLIMATE & CULTURE

Organizational Climate and Culture:

Reflections on the History of the Constructs in *JAP*

Benjamin Schneider

CEB's Talent Management Labs

Vicente González-Romá

University of Valencia

Cheri Ostroff

University of South Australia

Michael West

Lancaster University

In Press, Journal of Applied Psychology

Author Note

Benjamin Schneider, CEB's Talent Management Labs; Vicente González-Romá, Idocal, University of Valencia; Cheri Ostroff, School of Management, University of South Australia; Michael West, Management School, Lancaster University.

We thank two anonymous reviewers and the editors of this special issue for their encouraging, supportive and very helpful comments as we developed this article.

Correspondence concerning this article should be addressed to Benjamin Schneider, 1001 Genter St., Suite 2C, La Jolla, CA 92037. E-mail: benj262@outlook.com

Abstract

We review the literature on organizational climate and culture paying specific attention to articles published in the *Journal of Applied Psychology (JAP)* since its first volume in 1917. The article traces the history of the two constructs though JAP has been far more important for climate than culture research. We distinguish four main periods: the pre-1971 era, with pioneering work on exploring conceptualization and operationalizations of the climate construct; the 1971 – 1985 era, with foundational work on aggregation issues, outcome-focused climates (on safety and service) and early writings on culture; the 1986 – 1999 era, characterized by solidification of a focused climate approach to understanding organizational processes (justice, discrimination) and outcomes (safety, service) and the beginnings of survey approaches to culture; and the 2000 – 2014 era, characterized by multi-level work on climate, climate strength, demonstrated validity for a climate approach to outcomes and processes, and the relationship between leadership and climate and culture. We summarize and comment on the major theory and research achievements in each period, showing trends observed in the literature and how *JAP* has contributed greatly to moving research on these constructs, especially climate, forward. We also recommend directions for future research given the current state of knowledge.

Keywords: organizational climate, organizational culture, focused climates, process climates, leadership, levels of analysis

Organizational Climate and Culture:

Reflections on the History of the Constructs in *JAP*

The study of climate and culture has its historical roots in Gestalt psychology, social anthropology and organizational theory—climate and culture are thus multi-parented constructs. Only recently have there been significant attempts to formally integrate the theory and research on climate and culture (Ehrhart, Schneider & Macey, 2014; Kuenzi & Schminke, 2009; Kummerow & Kirby, 2014; Schneider, Ehrhart & Macey, 2011) perhaps because scholars from these different heritages have both different conceptual and methodological approaches. We focus on the Gestalt psychology heritage of organizational climate, the one primarily associated with publications in *JAP*. The Gestalt tradition emphasized that climate is a composite of many perceptions and experiences; literally a Gestalt (a whole) is formed out of many observations and experiences. While there have been some differences in definitions around the edges, organizational climate research has implicitly or explicitly adhered to the notion that it is a summary perception derived from a body of inter-connected 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 (See Table 3.1, p. 64 in Ehrhart et al., 2014; Denison, 1996; James & Jones, 1974; Jones & James, 1979). Organizational climate research, emerging mostly from scholars trained in psychological methods has almost entirely used employee survey methods, with those surveys focusing explicitly on observable experiences that people have in work settings.

Culture is a relative latecomer in *JAP*. Culture has had numerous definitions but an integrated version of these definitions would be as follows: Culture is defined as the shared values and basic assumptions that explain why organizations do what they do and focus on what they focus on; it exists at a fundamental, perhaps preconscious, level of awareness, is grounded in history and tradition and is a source of collective identity and commitment (See Table 4.3, p. 131, in Ehrhart et al., 2014; Martin 1992; Pettigrew, 1979; Schein, 1985). Emerging from more sociological and anthropological origins, the methods employed by early culture researchers were qualitative in nature, emphasizing the importance of immersion in the setting to be studied and seeking the explicit and implicit ways in which culture is transmitted to members and the collective effects of the culture on the shared attitudes and behaviors of those there.

The goal of the present article is to review the literature on organizational climate and culture, paying special attention to articles published in *JAP*. In order to identify these articles, first we conducted an electronic search in the Social Science Citation Index covering the time period between 1917 and 2014 focused on articles in *JAP*. In this search, we used broad keywords (such as “climate” and “culture”) and more specific ones (e.g., “organizational culture”, “work-unit culture”, “department culture”, “work-team culture”, “work culture”, and “organizational climate”, “work-unit climate”, “work-team climate”, “psychological climate”, “aggregate climate”, “climate perceptions”). Second, we complemented our electronic search with a visual inspection of *JAP*’s lists of content and additional Google Scholar searches on terms such as “work environment” and “social context.” Third, we examined the abstracts and content of the articles we found to choose those that really investigated our two focal topics. Finally, based on our own knowledge of the field we included citations from sources other than

JAP which we thought important in history of the development of the study of organizational climate and culture.

Although the frequency of publications on culture in *JAP* is still rare, we strive to integrate the organizational culture perspective into the review in an attempt to be historically meaningful and relatively comprehensive and to set the stage for the potential integration of the constructs and research in the future. The article unfolds with an historical bent, dealing in our first era with pioneering work on the social context in organizations up to 1971 as reviewed comprehensively by Campbell, Dunnette, Lawler, and Weick (1970). The second era (1971 – 1985) forms the modern foundation for much contemporary work. This period included climate issues having to do with levels of analysis and data aggregation, the relationship between climate and job satisfaction, and a series of papers on what we will call “focused climates” (e.g., climate for service, climate for safety) that broke from the tradition of generic or molar approaches which broadly addressed employee well-being. During this period, no articles published in *JAP* explicitly focused on organizational culture, but a major event in this period was the publication in *ASQ* by Pettigrew (1979) explicating the social anthropological perspective of culture for the study of work organizations. The term organizational culture was not new (Katz & Kahn, 1966, had used it) but it had not been presented in detail or with the case study methods so central to it.

Our third era covers the period 1986 – 1999 when climate researchers expended much effort on clarifying the meaning of the aggregation of survey data and when the emphasis on focused climates notably increased. In addition, systematic work began on the antecedents of climate, especially regarding the role of leadership. In the world of practice, the term culture became dominant, as it is to this day, perhaps due to early writings about such exciting analogies as tribes, rites and rituals (e.g., Deal & Kennedy, 1982) that captured the imagination of

management. The literature on culture in this era was very well covered in books by Trice and Beyer (1993) and Martin (1992) and researchers continued to grapple with the scope and definition of culture. Publications in *JAP* with a primary focus on organizational culture were infrequent.

The final era covers the period 2000 – 2014. These were heady days for climate research in *JAP* with about half of the approximately 100 total articles in *JAP* on climate having been published there in the last fifteen years. Climate researchers finally achieved some consensus on levels and aggregation issues with the publication of the Klein and Kozlowski (2000) edited volume. Multilevel climate research began with considerable vigor and developed rapidly. Climate strength research also began in this period, highlighting the importance of the extent of agreement across employees (Lindell & Brandt, 2000). In addition, the focused climate perspective moved from a concern only for organizational strategic outcomes (safety, service) to a concern for organizational processes (justice, innovation) and there were articles linking leadership as an antecedent or moderator of climate – outcome relationships as well as multi-level studies. In the realm of culture, researchers continued to debate conceptualizations and measurement of culture and articles appearing in *JAP*, though still relatively rare, focused predominately on cultural values.

In Table S1 (provided as online supplemental material), we present the major foci of climate research in *JAP* with the citations organized by the four eras just mentioned. Table S1 will serve as a useful supplement to the text and as the article unfolds readers can see the ways in which the topics studied have matured and how they have been integrated (for example, with various foci, in relation to the role of leadership and in multi-level studies). As evident in Table S2 (also provided as online supplemental material), *JAP* has not been a major outlet for research on

organizational culture. Tables S1 and S2 present citations to essentially all publications related to organizational climate and culture that have appeared in *JAP*.

Most, but not all of these citations are also mentioned and cited in the text.

While there has been an increasing trend of *cross-cultural* studies in *JAP*, only those that specifically involved *organizational* culture were included in Table S2. We speculate that the paucity of research in *JAP* on organizational culture stems from (a) *JAP* being seen as an outlet for psychologically based research, (b) *JAP*'s clear focus on quantitative research and (c) *JAP*'s focus on tangible outcomes. In contrast, culture research was being done not by people trained in psychology, was clearly qualitative in orientation, and was more concerned with how culture is transmitted, subcultures, and the degree to which an organization *is* a culture or *has* a culture (Martin, 2002). Thus, we identify major publications on culture published outside of *JAP* because we conclude with thoughts on how research on both of these broad holistic ways of conceptualizing human organizations and behavior in them need to be integrated.

In what follows, citations with an asterisk are shown for the twelve articles that we collectively believe have been and are the most important articles published in *JAP* over the years. In the reference section each citation with an asterisk includes a one-sentence description of the contents of the article.

The Pre-1971 Period: Pioneering Work on the Social Context in Organizations

Climate. Our search found one article in *JAP* prior to 1970 that specifically referenced climate in which aggregated climate dimensions (termed psychological climate at the time) were related to departmental accidents (Keenan, Kerr, Sherman, 1951). Other terms besides climate for similar work included “situational characteristics” (Katzell, Barret, & Parker, 1961), “attributes of work” (Rosen, 1961), both *JAP* articles, and “environmental variation” (Forehand

& Gilmer (1964). Outside of JAP, Lewin and his colleagues (e.g., Lewin, Lippitt, & White, 1939) first used the term “social climate” to describe the atmosphere in the group created by leaders of young campers and McGregor (1960), one of his students, referred to “managerial climate” to describe the relationship between leaders and their followers at work. Fleishman (1953) invoked climate when describing the potential for the situation to determine the extent to which training was transferred back to the job while Pace & Stern (1958) studied climate in university settings. Early organizational psychologists like Argyris (1957), Schein (1965), Katz and Kahn (1966--who used the terms climate and culture interchangeably) and Likert (1967), all important commentators on this new focus on the situation through a psychological lens, implicitly or explicitly referred to climate. This early psychological lens is quite important and is retained today as climate is deemed to reside within the perceptions of individuals (Kozlowski & Klein, 2000). And it is instructive to note also that the rise of climate research in the late 1960s and early 1970s occurred simultaneously with development of the fields of organizational psychology and organizational behavior and their focus on more macro issues relevant for human behavior in the workplace (Schneider, Ehrhart & Macey, 2011).

In the world of more micro conceptual and measurement-based research, Litwin (1968) integrated the effects of the situation and motivation theory to develop a multi-dimensional measure of climate, one still used today (Burke, 2011). In addition, the Litwin and Stringer (1968) book provided chapters on both conceptual and empirical insights into what climate is, how it can be studied, and its future potential for understanding and influencing organizations to enhance their effectiveness. Schneider and Bartlett (1968) also published a measure of climate they had developed for assessing life insurance agency climate which contained similar dimensions to those of the Litwin work. An extensive review of what existed at the time by

(Campbell et al., 1970) was presented in a chapter titled “Environmental Variation and Managerial Effectiveness” and concluded that “...not much research has been forthcoming but there is considerable promise for the future” (p. 414).

In summary, the construct of climate was implicitly or explicitly invoked in some of the most important early writings in organizational psychology as an alternative to the exclusive focus on individual differences that had characterized Industrial Psychology to that time (Schein, 1965). This early thinking about and research on the social context provided an eclectic foundation for what later came to be defined as generic or employee well-being climate dimensions concentrating simultaneously on a broad variety of then-existing themes such as autonomy, support, supervisor relations, collaboration, and participation in decision-making. As Schein (1965, p. 3) put it: “...the organization is a complex social system which must be studied as a total system if individual behavior within it is to be truly understood.” It was this notion of the total organization, the Gestalt, rather than taking one issue at a time which seems to have stimulated subsequent research.

Culture. Organizational culture was not referenced in any *JAP* articles prior to 1970, although a handful of studies were conducted to examine the relevance of societal cultures (e.g., Lahiri & Srivasta, 1967). Organizational culture was not much addressed in the organizational science literature either, although recognition of the importance of the social system of the organization was evident in the Hawthorne studies during the 1930s, and in other seminal treatises (e.g., Parsons, 1951). Elements of what are now considered part of culture were beginning to be investigated such as ceremonials (Trice, Belasco & Alluto, 1969), setting the stage for extended research on organizational culture, in the following eras—though not much published in *JAP*.

The 1971 – 1985 Era: Foundations of Construct Definition and Measurement

Climate. Another term for this era might be “feeling the elephant.” That is, there were a variety of attempts to figure out how to measure climate and to what it might be related and no two articles used the same constructs or measures! In *JAP*, Schneider (1973), for example, published papers using different measures on: customer views of their bank branch’s “warm and friendly” climate, the climate experienced by Roman Catholic diocesan priests (Schneider & Hall, 1972), on Black-White differences in perceptions of university climate (Pfeifer & Schneider, 1974), and relationships between job satisfaction and organizational climate (Schneider & Snyder, 1975). Using the Schneider and Hall perspective, Cook and his colleagues (Cook, Walizer & Mace, 1976) examined the role of military unit climate on soldiers’ illicit drug use. Gavin (1975) addressed the interactional issue, exploring climate as a function of personal and situational characteristics. Friedlander and Greenberg (1971) also did some exploratory climate research, looking at the performance of the hard-core unemployed as a function of the climate in which they were eventually placed and Bowen and Kilmann (1975) designed a measure of climate in business schools. As the reader can see, researchers were exploring various parts of the elephant, the elephant being the whole thing—with all of this early research being done at the individual level of analysis.

These articles on climate thus generated interest in the levels of analysis issue for climate research. While the early organizational psychologists previously mentioned (such as Schein, Argyris, and Likert) had conceptualized the impact of climate on *organizational* performance, the early empirical journal articles on climate were invariably conducted at the individual level of analysis, probably because they were done by Industrial Psychologists imbued with the individual differences approach to research. The issue was as follows: If climate is an attribute of

the setting but it is perceived by the individuals in the setting, how can research at the setting level of analysis be conducted? From a purely methodological standpoint the issue basically was a question of the reliability of the aggregate of individual perceptions of the situation to form a setting-level index of climate. James and Jones (1974) clarified the issue conceptually by calling individual level climate studies “psychological climate” and studies at the unit (organizational) level of analysis, “organizational climate.” The distinction was important because it gave climate researchers a shared terminology to clarify at what level of analysis a specific study was done. Often forgotten is that James and Jones expressed caution about aggregating individual level perceptions to form organizational climate indices unless they were shown to be related to “objective measures.” They (James & Jones, 1974, pp. 1108-1109) put their cautions this way: “Therefore, it is recommended that considerable attention be directed to the development of objective measures of organizational climate variables. If perceived measures are to be used as organizational attributes, then it is strongly suggested that the accuracy of perceptions of organizational climate be ascertained by determining their relationships to objective measures.” Of course, James and colleagues subsequently did very important work on data aggregation statistics (see their *JAP* paper: James, Demaree & Wolf, *1984), and later work on organizational climate (Jones & James, 1979) always emphasizing the ideas that climate is a perception that resides within an individual, and only when perceptions are shared can there be a higher-level climate.

Schneider (1975) suggested that items in climate surveys should be written to describe the level of analysis to which data would be aggregated (my organization, management of this organization, policies of this place)—and in personal perception terms (my supervisor; my pay; I feel) for studies of individual level climate experiences. Publications in *JAP* were early

contributors to this “levels of analysis” issue. For example, Drexler (1977) was early in his study of within-organization homogeneity of climate perceptions and James (1982) and his colleagues (James, Demaree, & Wolf, *1984) provided one answer to the question of agreement measurement by developing a direct index of within-unit agreement which they called r_{WG} ; this became a necessary index to report in subsequent climate research (Bliese, 2000).

Schneider (1975) argued that climate studies should be studies of a climate *for something*; a climate for service or a climate for safety. In essence, he argued that climate measures were too unfocused in the nature of the situational variables they addressed and that the bandwidth of the measures was too broad to capture the narrower band-width of the criteria to be predicted. His emphasis on a climate *for something* (a focused climate measure) yielded such research with convincing validity evidence.

For example, Zohar (*1980) described the development of a focused safety climate measure including employee perceptions of management attitudes towards safety, effects of safety behavior on promotion and status within the organization, and so forth and it was significantly related to safety inspectors’ rankings of organizations’ safety practices and accident prevention programs. This article provided the basis for a continuing stream of research on safety climate in *JAP* by Zohar and others to be reviewed later. Schneider and colleagues (Schneider & Bowen, 1985; Schneider, Parkington & Buxton, 1980) revealed validity for employee perceptions of service climate against customer experiences in branch banks and Abbey and Dickson (1983) observed similar validity for a climate for innovation in semi-conductors. An early study of leadership and climate in *JAP* related the situational favorableness dimension of Fiedler’s contingency model to the Burns and Stalker mechanistic-organic dimension of organizational climate (Csoka & Louis 1975) and showed that high-LPC (least preferred co-

worker) leaders performed most effectively in organic situations, and low LPC leaders most effectively in mechanistic situations.

In summary and as seen in Table S1 for articles published in *JAP*, the 1971 – 1985 era for climate was early-on characterized by attempts to understand the climate elephant by approaching it from several vantage points with a beginning of studies at different levels of analysis. Articles about methods issues regarding levels of analysis and the need to do research at the organizational level of analysis appeared as did concern for the validity of climate measures for specific organizational outcomes (see the chapter by Payne & Pugh, 1976).

Culture. Studies published in *JAP* (see Table S2) during this era focused on cross-cultural or societal differences rather than on organizational culture. Nevertheless, there was rhetoric on absence culture and changes in organizational culture (Nicholson, Brown & Chadwick-Jones, 1977) and the importance of a supportive culture for transfer of training (Hand & Slocum, 1972).

Pettigrew's 1979 article published in *ASQ* influenced many subsequent articles, books, and practitioner-oriented pieces. For example, special issues of *Organizational Dynamics* and *Administrative Science Quarterly* were devoted to organizational culture in 1983, the first edition of Schein's (1985) book on organizational culture and leadership appeared (now in its fourth edition); and an edited volume summarized papers from a conference held on organizational culture (Frost, Moore, Louis, Lundberg & Martin, 1985). Books more directed to managers were also prominent with Deal and Kennedy's (1982) drawing close parallels between tribal life and corporate life. Peters and Waterman's (1982) book, perhaps more than other popular books of the time, probably because it was based on their descriptions of how successful companies operated, had considerable influence on companies being interested in this culture idea.

Culture researchers were also trying to understand the elephant, tackling it from different perspectives and using different methods. What researchers in neither culture nor climate realized was that culture and climate are features of the same elephant – together they represent the higher-order social-psychological fabric of the organization. Climate researchers were becoming increasingly focused on narrow (focused) features of the elephant with their quantitative measurement often missing the “whole” elephant while culture researchers were grappling qualitatively with what the whole elephant means as an entity and what it represents but doing so in a piecemeal fashion. Quinn and Rohrbaugh (1983) published their competing values framework suggesting that for some organizational outcomes some culture patterns were more effective than for other outcomes, and a variety of other foci occupied culture researchers. For example, some focused on the larger gestalt of culture (e.g. Schein, 1985), others on the meaning making process or specific elements such as symbols, rites, and rituals (e.g., Smircich, 1983; Trice & Beyer, 1984), and others took a functional perspective in relationships to performance indicators (e.g., Wilkins & Ouchi, 1983). Interestingly some began to overtly question whether there was a unifying single organizational culture (Martin & Siehl, 1983); none of these articles appeared in *JAP*.

Culture researchers, emerging from the social anthropology tradition, were not concerned with levels of analysis issues. Organizations metaphorically were known to be tribes, societies, and literally cultures and were unambiguously appropriate units of analysis for research.

In summary, although there was a scarcity of articles focused on organizational culture in *JAP* in this period, a number of very important articles (Pettigrew, 1979) and books (Schein, 1985) appeared that paved the way for the development of culture research in the next era.

The 1986 – 1999 Era: Focused Climates and the Culture-Climate Divide

Climate. During this era, as shown in Table S1, there was less than one article per year on climate in *JAP*. With greater consensus about the measurement and levels issues, we believe researchers took a step back to consolidate accomplishments and consider the next big avenues for climate research; it was not until the most recent era, as we will see later, that climate witnessed an explosion of research in *JAP*. Though relatively infrequent, the research in *JAP* continued to expand its foci beyond further understanding of the generic or molar climate construct (e.g., Burke, Borucki, & Hurley, 1992) to articles on more focused climates.

Leadership as an antecedent of climate was identified by Kozlowski and Doherty (*1989) as a serious omission in climate research and in this era other researchers were just starting to get that message. For example, Hofmann & Morgeson (1999) focused on safety climate in relationships between LMX and OCB and West and Anderson (*1996) reported on a longitudinal study of hospital top management teams with team climate predicting the overall level of hospital innovation. These studies anticipated the expansion of research on the role of leaders as we will show in the next era and as is obvious in Table S1.

There was also research focused on outcomes like the climate for service. Schneider, Wheeler and Cox (1992) presented a content analysis of focus group sessions with employees that revealed the dimensions of what they called service climate “passion.” That project yielded the service climate measure used in Schneider, White and Paul (*1998) where, in a panel study, it was shown that service climate (a) was built on a foundation of organizational support to do service well, (b) was in turn related to customer satisfaction, and (c) which, in turn was related to service climate. This latter finding—bi-directional causality—has not received much attention in *JAP* or elsewhere with most studies being limited to cross-sectional designs. And there began research on what have been called process climates (Schneider et al., 2011) in *JAP*. For example,

the research on the climate of harassment and the role of leadership as one of its antecedents (Fitzgerald, Drasgow, Hulin, Gelfand & Kingsley, 1997).

A clarifying debate about the meaning and interpretation of $r_{WG(J)}$ also took place (Kozlowski & Hattrup, 1992; Schmidt & Hunter, 1989) with confirmation that r_{WG} was developed as a measure of within-group agreement and not interrater reliability (James, Demaree & Wolf, 1993). Chan (*1998) outlined different composition models defining the relationships between the focus of survey items and aggregation using climate as the example, expanding thinking in both climate and levels of analysis issues more generally. This work provided key methodological and conceptual tools that contributed to the development of multilevel research in the next era.

In summary, research on organizational climate in *JAP* slowed during this period. In addition to clarification about the meaning of agreement for aggregation, importantly the research in this era set the stage for later articles examining the role of leadership and focused climates. The topics were just beginning to become even more focused with studies of climate antecedents and consequences.

Culture. The world of organizational culture research during this era (1986 – 1999) existed on parallel tracks to the world of climate with rare overlaps (Denison, 1996; Reichers & Schneider, 1990) and rare appearances in *JAP*. For the most part, during the first part of this era, the culture research being published was still more qualitative than quantitative. Several reviews and theories began to appear in *AMR* explicating the sensemaking process of cultural elements (e.g., Hatch, 1993) and delving further into the concept of culture strength and relationships to performance (e.g., Saffold, 1998). Culture researchers continued to struggle with definitions, (Verbeke, Volgering, & Hessels, 1998 identified 54), paradigms, scope, content, and types.

Schneider (1990) edited one of the first books to try to integrate climate and culture with authors from both domains represented and Pettigrew's (1990) summary chapter is a delightful presentation of the differences in approaches to these two constructs.

Breaking from the anthropological tradition of qualitative case studies, researchers began to apply survey methods to study culture. A number of now popular measures were developed including the Organizational Culture Inventory (Cooke & Szumal, 1993), Denison's Organizational Culture Survey (Denison & Mishra, 1985) based on Quinn & Rohrbaugh's (1983) Competing Values Framework, the Work Practices Survey (Hofstede, Neuijen, Ohayv & Sanders, 1990) and the Organization Culture Profile (O'Reilly, Chatman & Caldwell, 1991). This shift to quantitative survey methods allowed for more comparable studies of culture but at the same time began to blur the distinction between culture and climate, particularly in assessments that include perceptions of practices and routines (cf., Hofstede, et al. 1990; Denison & Mishra, 1985), the stuff of climate. For example, Schriber and Gutek (1987) developed a scale to assess practices in companies that promote a time-pressure culture, like demands for punctuality, deadlines, and schedules—that has received little follow-up (see Onken, 1999 for a review of this literature).

Two *JAP* studies explicitly included both culture and climate in this era. Rentsch (*1990) studied the ways in which the meaning attached to organizational policies (climate) may differ across subgroups (subcultures) in organizations. Climate researchers rarely dealt (or deal) with sub-climates in organizations and the meaning attached to the perceptions people have of their settings while in the world of culture this was and is a prominent issue (e.g., Martin, 1992; 2002). Tracey, Tannenbaum and Kavanagh (1995) integrated climate and culture when conceptualizing transfer of training. They found that the learning culture of a company mattered—the values,

norms, and expectations attached to learning—in addition to the transfer of training climate. Two studies (Morrison, 1993; Chao, O’Leary, Wolf & Klein, 1994) addressed another infrequent target of climate researchers, newcomer socialization, demonstrating that early understanding of organizational culture is important for newcomers’ later adjustment.

In summary, if we looked only at articles explicitly on culture published in *JAP* during this period, we might think that culture was infrequently addressed; we would be wrong as other journal outlets and books were the more usual outlets.

The 2000 – 2014 Era: Multilevel Research and Culture-Climate Integration

Both climate and culture research expanded substantially during this era. We believe for climate research this was largely prompted by the clarification of the aggregation and “levels of analysis” issues in the previous era, the development of multilevel theory and methods in organizations (Kozlowski & Klein, 2000), coupled with an increased attention by psychologically trained researchers to the importance of context in understanding employee behavior at work (e.g., Johns, 2006; Rousseau & Fried, 2001). During this era, research in *JAP* on focused climates expanded beyond what Ehrhart et al. (2014) called outcome or strategic climates (like service and safety) to what they called process climates. What they meant by process climates were issues such as justice and discrimination and harassment—processes surrounding the doing of everyday work. It is important to note that validity against both process and strategic criteria was revealed for focused climate measures in this period suggesting that a focused climate approach had merit. Cross-level and multilevel studies of climate became the norm. Empirical work on climate strength began (e.g., Lindell & Brandt, 2000; Schneider, Salvaggio & Subirats, *2002). And studies increasingly examined leadership as an antecedent of climate.

Importantly, in this era, there was the beginning of a rapprochement between climate and culture researchers (Ehrhart et al., 2014; Ostroff, Kinicki & Muhammad, 2013; Zohar & Hofmann, 2012). The Ashkanasy, Wilderom and Peterson (2000) handbook did more perhaps than any other publication to show how the two topics might be integrated for further progress and it deserves much credit for stimulating the explosion of work that followed. Two important handbooks followed that have advanced understanding and potential integration of climate and culture, and which also reflect the depth of theory and research for these topics (Ashkanasy, Wilderom, & Peterson, 2011; Schneider & Barbera, 2014). In addition, in their integrative book Ehrhart et al. (2014) specifically note ways the constructs and approaches from each could be mutually beneficial. Even Schein (2011) began to use both constructs in his writings, indicating that both are useful, especially when they are carefully defined rather than used as vague abstractions. Researchers were finally beginning to see the “whole” elephant with culture and climate representing various facets of, and ways of feeling, the social fabric of organizational life. More than half of all culture research ever published in *JAP* emerged in this period and the same was true for climate research.

Climate. The publications in this period cover all of the foci described earlier across both process (e.g., justice) and outcome climates (e.g., safety). The main new development was the frequent appearance of multi-level studies beginning in 2000 with Zohar’s (2000) paper (the multi-level studies are bolded in Table S1). The most frequent climate issues in *JAP* in this era were: (1) safety climate, (2) service climate, (3) justice climate, (4) leadership and other antecedents of climate, (5) climate strength, (6) methods and multi-level issues with regard to these and other foci, and of course, (7) other topics studied.

Safety climate. Safety climate and leadership became a key focus with Zohar's study (2000) which showed that perceptions of supervisory safety behavior significantly predicted subsequent 'microaccidents.' Barling, Loughlin, and Kelloway (2002) successfully examined role overload and transformational leadership as predictors of safety behavior mediated by safety climate. Hofmann, Morgeson, & Geras (2003) showed that safety climate moderated the relationship between LMX and safety OCB, and Zohar and Luria (*2005) found that when leaders focused on safety in interactions with employees, safety climate and later safety outcomes were improved. More complex models began to appear in 2006, incorporating mediators of relationships between safety climate and accidents such as safety motivation (Neal & Griffin, 2006). This research demonstrated that safety climate mediated relationships between leader behavioral integrity and errors (medical errors in Leroy et al. 2012) and, in a lagged design, between generic climates of employee support and accidents (Wallace, Popp & Mondore, 2006). An unusual study by Probst, Brubaker, and Barsotti (2008) revealed that safety climate predicted the gap between reported and actual injuries; and in a rare field experiment, targeted interventions through weekly feedback by supervisors were shown to change safety climate and safety outcomes (Zohar & Polachek, 2014).

Two meta-analyses of safety climate were published in *JAP* during this period. Christian et al. (2009) concluded that safety climate and safety performance were positively related to both individual safety knowledge and safety motivation. Beuse et al.'s (2010) meta-analysis suggested injuries were slightly more predictive of organizational safety climates than the reverse and these relationships were stronger for organizational than psychological safety climates. This was another indicant, as in Schneider et al. (*1998), of the potential importance of outcomes as

predictors of climate. These meta-analyses convincingly demonstrated validity for the climate approach to safety/accidents.

Service climate. Expanding on prior work on service climate, Susskind, Kacmar, and Borchgrevink (2003) showed the importance of support for developing a customer orientation which yielded customer satisfaction. There were several multi-level studies of service climate during this timeframe highlighting the role of leadership in fostering service climate (Liao & Chuang, 2007; Salvaggio, Schneider, Nishii, Mayer, Ramesh & Lyon, 2007). Studies also began exploring service climate as a mediator between customer orientation and customer-focused behavior (Grizzle, Zablah, Brown, Mowen, and Lee, 2009), between positive emotional displays and exhaustion (Lam, Huang, & Jansenn, 2010), and between engagement and customer satisfaction (Salanova, Agut and Peiró (2005). Ehrhart, Witt, Schneider and Perry (2011) revealed that the internal service quality that units receive from corporate functions (Human Resources, IT) moderates the relationship between unit service climate and customer satisfaction. Hong, Liao, Hu, and Jiang's (2013) meta-analysis of the service climate literature revealed consistent validity, as with safety climate, this time against customer satisfaction for several different measures of service climate, numerous antecedents of service climate (including leadership), and several individual level effects.

Justice climate. Like service climate, the trend in justice climate research began to include more complex models with moderators and mediators and at different levels of analysis. Individual level perceptions of justice (distributive, procedural, interpersonal, and informational) were studied (e.g., Colquitt, Colon, Wesson, Porter & Ng, 2001; Masterson, 2001) including the development and validation of a justice climate measure (Colquitt, 2001). These studies provided a foundation for examining justice climate at higher levels of analysis.

Simons and Roberson (2003) were one of the first to formally study justice climate at the department- and organization-level revealing justice climates yielded increased organizational commitment, lower turnover rates and higher customer satisfaction. Colquitt (*2004) took an interesting cross-level approach by demonstrating that the positive relationship between individual procedural justice perceptions and role performance was moderated by the justice experienced by other team members. Liao and Rupp (2005) expanded on this work and showed that procedural and informational justice climates experienced at the work group level had cross-level influences over and above individuals' justice perceptions on employees' commitment, satisfaction and citizenship behavior. Ambrose and Cropanzano (2003) did a longitudinal study on the justice reactions of employees to tenure and promotion decisions with, again, findings indicating that the fairness of decisions affected subsequent organizational attitudes.

In terms of mediation and moderation, justice climate was found to moderate the relationship between LMX differentiation and withdrawal behavior (Erdogan & Bauer, 2010), commitment to supervisor and OCB (Walumbwa, Hartnell & Oke, 2010), proactive personality and OCB (Li, Liang & Crant, 2010), and reactions to victim's wrongdoing (Aquino, Tripp & Bies, 2006). Justice climate was also shown to mediate relationships between leadership attributes and individual level or team outcomes (e.g., Cole, Carter & Zhang, 2013; Stoverink, Umphress, Gardner, & Miller; 2014; Walumbwa, et al., 2010). In a moderator study, Yang, Mossholder and Peng (2007) found that unit-level procedural justice climate interacted with unit-level power distance in explaining individual employees' organizational commitment and OCB after controlling for individual-level perceptions.

More novel studies on the role of leadership in justice were those pertaining to trickle-down effects of justice perceptions from leaders to employees (e.g., Ambrose, Schminke and

Mayer, 2013; Masterson, 2001). Further, this latest era also produced studies examining predictors and outcomes of justice perception trajectories over time (Holtz and Harold, 2009; Hausknecht, Sturman, & Roberson, 2011; Yang & Diefendorff, 2009). Meta-analyses of individual level justice perceptions (Colquitt, et al. 2013) and group level justice climate (Whitman, Caleo, Carpenter, Horner & Bernerth, 2012) supported this growth in research and the importance of justice climate for individual and group outcomes, again revealing the validity of a focused climate approach, this time for a process climate.

Leadership. Following the initial work on leadership as an antecedent of climate in the prior era, a number of studies already reviewed examined the role of leaders in safety climate (Barling, et al., 2002; Hofmann et al., 2003; Zohar, 2000; Zohar & Luria, *2005), service climate (Liao &Chuang, 2007; Salvaggio et al., 2007) and justice (Ambrose, et al., 2013; Erdogan & Bauer, 2010). Chen and Bliese (2002) reported a study in military combat units and showed that individual level role clarity and psychological strain were stronger predictors of individual self-efficacy than was leadership “climate” but that leadership “climate” was a stronger predictor of group level efficacy. However, the researchers in this latter study referred to ‘leadership climates’ – a confusing term we recommend avoiding since leadership is an antecedent generally of climate or culture not a type of climate or culture (see also Zohar & Luria, *2005, for another example where leadership is said to be climate).

Over and above the impressive work on leadership as an antecedent of climate, cited earlier by topical focus (e.g., on safety climate, service climate and justice climate), the first *JAP* papers appeared examining leader influences on climate for innovation (Eisenbeiss, van Knippenberg, & Boerner, 2008), managers’ goal orientation for their units (Dragoni & Kuenzi, 2012) and manager-team member disagreements about climate (Bashsur, Hernández, &

González-Romá, 2011). Leadership, as suggested by Kozlowski and Doherty (*1989), has now been clearly established as a major driver of climates of all kinds and is a key focus for climate theory and research.

Climate strength and agreement. Another component of the levels issue emerged in *JAP* during this period having to do with climate strength (extent of agreement within units on climate perceptions). Several studies showed that climate strength enhanced the relationship between unit climate and different attitudinal and behavioral unit-level outcomes (González-Romá, Peiró, & Tordera, 2002; Schneider et al., *2002). Other studies examined the antecedents of climate strength, showing that social interaction among unit members, transformational leadership, leader's informing behavior, homogeneity and simplicity of supervisory action patterns, organizational structure, and social network characteristics were all related to climate strength (Dickson, Resick & Hanges, 2006; González-Romá et al., 2002; Klein, Conn, Smith & Sorra, 2001; Zohar & Luria, *2005; Zohar & Tenne-Gazit, 2008). Interestingly, Zohar and Luria (*2005) revealed that climate strength at the organization and work group levels tend to be aligned, similar to Schneider et al. (*2002) who showed climate strength alignment between employee perceptions and customer satisfaction in bank branches. Further, a distinct climate concept referred to within-unit climate dispersion, called climate uniformity or the pattern of agreement on climate perceptions, was proposed and its relationship with team processes and performance investigated (González-Romá & Hernández, 2014). The meta-analysis of the justice climate research by Whitman et al. (2012) revealed that high climate strength enhanced the justice climate-unit effectiveness relationship as predicted. Finally, Bashur and colleagues' (2011) findings, in a unique twist on strength research, indicated that team outcomes will be highest when *both* manager and employees' perceptions of climate are high and in agreement.

Methods. In addition to multilevel studies and strength, there were other methodological contributions published in *JAP* during this period. For example, Ostroff, Kinicki and Clark (2002) demonstrated that response bias between climate and other variables is more pronounced in correlations between aggregates and could be mitigated by splitting the sample in half for each unit. Their recommended procedure is now a universal requirement in organizational climate research when the data to be linked emerge from the same sample.

The interest in investigating methods affecting within-group agreement led Klein, Conn Smith and Sorra (2001) to examine the influence of item wording. They found that the use of a group (e.g., “We”, “Our work team”, “The team members”) versus individual (e.g., “I”) referent in descriptive items (the type of items used in climate surveys) increased within-group agreement. Extending the results reported by Klein and colleagues (2001), Whitman et al.’s (2012) meta-analysis on work unit justice climate showed that the climate-effectiveness relationship was stronger when the referent of climate items was the work unit rather than the individual. Finally, statistical significance tables for r_{WG} and the average deviation index (AD) were developed (Dunlapp, Burke & Smith-Crowe, 2003; Smith-Crowe, Burke, Cohen & Doveh, 2014). After this impressive work, climate (and other “higher-levels”) researchers could hardly base their decisions about within-unit agreement on popular rules-of-thumb.

Schulte, Ostroff, Shmulyian, and Kinicki (*2009) proposed that climate should be studied as a gestalt system, as opposed to independent dimensions and demonstrated the utility of considering configurations or classifying units based on their pattern of high and low scores across all unit-level climate dimensions, as opposed to the traditional approach of using independent dimensions in a regression, for understanding organizational outcomes.

Other topics receiving attention. Several studies supported direct, mediating, or moderating roles for team climate measures such as support for innovation and climate for excellence in studies of team innovation (Chen, Farh, Campbell-Bush, Wu & Wu, 2013; Eisenbeiss, van Knippenberg, & Boerner, 2008; Hulshager, Anderson, & Salgado, 2009). Other climate foci in this era included the climate for implementation in companies where Klein, Conn and Sorra (2001) identified the resources required to effectively implement new technology and Dragoni (2005) showed that leaders have multi-level effects on the climate for goal orientation experienced by individuals and work groups.

Work on discrimination and diversity climate appeared more often in *JAP* including sexual harassment (Offerman & Malamut, 2002). An important experimental study of racist attitudes and climate for racial bias was reported by Ziegert and Hanges (2005) who showed how implicit racist attitudes interacted with a climate for equality or for racial bias to predict discrimination attitudes, suggesting the importance of not relying on explicit measurement techniques to assess socially censured attitudes and climate perceptions. In addition, there were several studies again revealing the importance of discrimination and diversity climate variables for outcomes such as attitudes, turnover and performance (Chen, Liu, & Portnoy, 2012; Homan, Van Kippenberg, Van Kleef, & De Dreu, 2007; Miner-Rubino & Cortina, 2007; Pugh, Dietz, Brief, & Wiley, 2008).

In summary, research on organizational climate in *JAP* during this last period reveals the breadth of the climate construct and the increased theoretical and methodological complexity researchers brought to its study. Studies identified new mediators and moderators in the antecedents-climate-outcomes sequence, uncovering some of the mechanisms (like leadership, like climate strength) involved. The different research methodologies used (e.g., network

analysis, polynomial regression, multilevel studies, trajectory modeling, and configurational analysis) contributed to answering new questions and suggesting new research lines. Moreover, the different meta-analyses on focused climates (safety, justice, discrimination and service) provided sound empirical evidence about the importance of a climate approach for understanding organizational processes and outcomes.

Culture. Early in this period, culture researchers focused on symbolism and artifacts in organizations as well as acculturation and socialization, but coverage of these topics did not appear in *JAP* (but see Alvesson, 2002, and Martin, 2002, for reviews of culture research in this era). In a comprehensive review published in the *Academy of Management Annals* five prominent conceptualizations of culture were demarcated: culture as values, culture as stories, culture as frames, culture as toolkits, and culture as categories (Giorgi, Lockwood & Glynn, 2015). No mention of climate was made in this review. Schein (2015) recently criticized culture research for focusing on isolated specific elements such as norms or stories, because culture is all of them and a more complex, holistic gestalt phenomenon.

But there was an increase in publications on organizational culture in *JAP* in this era (see Table S2) asking questions not typical of the emphases of climate scholars. For example, Aquino and Lamertz, (2004) presented a conceptual piece on victimization at work as being a product of both dyadic role relationships and the larger culture of the organization. Also taking a culture perspective—this time regarding error management—Van Dyck, Frese, Baer and Sonnentag (2005) showed that the norms and practices of an error management culture can influence firm performance. In a project targeted on the joint effects of HR practices and culture, Toh, Morgeson and Campion (2008) demonstrated that company cultural values and HR practices are conceptually and empirically distinct, but related, suggesting that different bundles of HR

practices are likely to exist in different organizational cultures. There was also research on the issue of alignment between sub-cultures that might exist at different organization levels. Ostroff, Kinicki, and Tamkins' (2003) chapter introduced the concept of alignment strength and Bezrukova, Thatcher, Jehn, and Spell (2012) showed that cultural alignment between work-team and department-level culture moderated the negative relationship between informational faultlines and group performance. In a similar vein, this time connecting leadership to cultures, Gelfand, Leslie, Keller and DeDrue (2012) demonstrated that leaders' conflict management behaviors (avoidant, collaborative, dominating) were correlated with a commensurate unit level conflict culture and the conflict cultures were differentially related to unit outcomes. Note that these research papers all approached culture using survey methods while grounding the efforts in culture theory and concepts.

Consistent with the traditional emphasis on quantitative studies in *JAP*, perhaps the most notable culture piece published in this era in *JAP* is the meta-analysis by Hartnell, Ou, and Kinicki (*2011) examining relationships between culture and firm effectiveness using the Competing Values Framework (Quinn & Rohrbaugh, 1983) as a conceptual foundation. They revealed that (a) the values do not always compete but are correlated and (b) they all relate positively to various outcome criteria. Interestingly, the large majority of the studies included in the meta-analysis were conducted prior to 2005, highlighting a recent decline in culture research in the literature in general (Ehrhart et al., 2014). And, of course, because this was a meta-analysis the studies that were included used quantitative measures of culture, suggesting the potential for rapprochement between culture and climate.

Conclusions and Thoughts About Future Directions for Research

The climate and culture research endeavors of the last 50 years represent a major success story. The humble beginnings in climate research, simultaneously investigating a potpourri of social-organizational variables (support, conflict, work characteristics, autonomy) in the 1960s progressed to the dynamism associated with culture in the late 1970s and 1980s. The last 15 years of persuasive climate research (especially in *JAP*), has advanced our understanding of how the collective perceptions and interpretations of people in relation to their shared work environment translate into a range of important team and organizational outcomes. Overall, research has produced considerable conceptual and empirical progress with important practical applications.

From the work on climate, we know now that the aggregated perceptions of people and their descriptions of the foci of policies, practices and behavior, both within and across levels, are valid for understanding team and organizational outcomes. Thus, these perceptions of what happens in settings have important empirical potency for a range of outcomes that matter – safety, justice, discrimination, innovation and (in health care) even patient mortality (West, Topakas, & Dawson, 2014). Further, these findings have important useful practical applications because they identify the policies, practices and behaviors that make up the climate that has been shown to be valid for important outcomes. From the work on culture, though not published much in *JAP*, we have learned that symbols matter for the values they connote; that subcultures in organizations have consequences; that qualitative methods can be useful in identifying the history and traditions that influence current experiences; and that leaders are a potent source of the culture of an organization. In summary, we have made considerable progress in understanding the culture and climate elephant by designing a variety of ways to explore it and

these explorations have yielded tangible foci for ways to help climates and cultures to emerge and evolve in organizations.

Of considerable significance is the fact that the important theoretical and methodological articles in *JAP* on data aggregation, survey item writing and climate strength have been extended to other emergent constructs (e.g., Klein & Kozlowski, 2000; Ostroff & Fulmer, 2014). Indeed, climate research has been described as a crucible for multi-level theory (Kozlowski & Klein, 2000). The concept of climate strength is a further and widely accepted innovation in our understanding. Similarly, an important finding from several multi-level studies (e.g., Dragoni & Kuenzi, 2012; Liao & Rupp, 2005) was that higher level aggregate variables explained additional variance in individual outcomes beyond that explained by analogous individual-level counterparts. This indicated further that the social context of climate does have a gestalt or emergent group effect as originally, at least implicitly, hypothesized (Kozlowski & Klein, 2000).

We have also made major progress in understanding the broad range of social-organizational issues that seem to determine climate and culture. For example, we know that socialization processes, team processes and leadership together play central roles in shaping climate and culture. Both climate and culture research now document the significant role of leadership in the development of cultures or climates of interest. Following Schneider's (1975) call for focused strategic climates, researchers began examining more focused, perhaps narrower, facets of climate (service safety, justice) demonstrating the multiplicity of climate facets that exist. Culture researchers (e.g., Trice & Beyer, 1993) followed suit either focusing on a subset of culture elements including myths and symbols, leadership, and subcultures or theorizing about culture types and dimensions such as conflict culture and error culture. These focused culture and climate approaches have been useful for understanding narrow effectiveness criteria. But, it

is not time to be sanguine; there is now a need to investigate climates with multiple referents and multiple climates within organizations just as culture scholars have grappled with the concept of sub-cultures in organizations. And there is a need to understand better how climate and culture naturally change over time and how to change them when such change is deemed necessary.

In fact, with all of our progress we still have scant knowledge about how organizational climate and culture change over time within a firm's life cycle (Ehrhart et al., 2014). Are there any patterns of change? For example, how do they become stronger—become shared from unshared—over time and through what mechanisms? Are there boundary conditions on which kinds of climate and culture emerge—by industry, by market segment and so forth? Schein (1985, and subsequent volumes) has written about this issue vis a vis culture and Aldrich (1999) has done so for organizational life-cycles in general but the issue of such change has not been emphasized in either camp and future research needs to address this if we want to understand how climate and culture develop over time.

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 facet-specific 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. The field experiment by Zohar and Polachek (2014) on leader attention to safety issues offers an excellent example of such applied work. It may be time to focus leadership training and development on the implementation of policies and practices that will build the traditions, symbols, socialization experiences and everyday behaviors to achieve both the processes and subsequent outcomes desired. The need for

future research to assess the relative effectiveness of interventions to change culture/climate, including their subcultures and their perhaps simultaneous competing foci, is important not only for practitioners who face this challenge, but for advancing our theoretical knowledge about organizations.

Perhaps the greatest research challenge is to address the long-standing artificial divide between culture and climate theory and research. Climate and culture are metaphors we use to describe the complex social systems that are organizations. There are no clearly demarcated components called climate and culture. Rather they are perspectives on the same entity – the complex system that is an organization - the whole elephant. Perhaps it is time to return to the total gestalt by examining the system of multiple climates and sub-culture aspects simultaneously (see Ostroff & Schulte, 2014 for a configural method for doing so, Rentsch, 1990 for a mixed method approach, and Schneider, et al. (1998) for a survey-based approach) which would be important for broader effectiveness criteria such as overall performance or productivity.

Recent proposals to integrate culture and climate in studies such as through Schneider et al.'s (2011) "climcult model" deserve attention in future research to re-explore the impact of the total social context, the original stimulus for such approaches to understanding organizational behavior. In doing so, we predict that *JAP* will be the journal of choice for such integrative approaches to culture and climate though of course the challenge will be to develop integrative theories and methodologies rather than to compete over who is more right. Our view, based on our reading of the research to date, is that we should be attempting an integration, a symbiosis or rapprochement of conceptual differences. This is a big and exciting challenge.

References

- Abbey, A. & Dickson, J. W. (1983). R&D work climate and innovation in semiconductors. *Academy of Management Journal*, 26, 362-368.
- Aldrich, H. (1999). *Organizations evolving*. Thousand Oaks, CA: Sage.
- Alvesson M. (2002). *Understanding organizational culture*. London: Sage.
- Alvesson, M. (2011). Organizational Culture: Meaning, Discourse, and Identity. In N. Ashkanasy, C. P. M. Wilderom & M. F. Peterson (Eds.), *Handbook of Organizational Culture and Climate* (pp 11-28). Sage.
- Ambrose, M. L., & Cropanzano, R. (2003). A longitudinal analysis of organizational fairness: An examination of reactions to tenure and promotion decisions. *Journal of Applied Psychology*, 88, 266-275.
- Ambrose, M. L., Schminke, M., & Mayer, D. M. (2013). Trickle-down effects of supervisor perceptions of interactional justice: A moderated mediation approach. *Journal of Applied Psychology*, 98, 679-689.
- Aquino, K., & Lamertz, K. (2004). A relational model of workplace victimization: social roles and patterns of victimization in dyadic relationships. *Journal of Applied Psychology*, 89(6), 1023-1034.
- Aquino, K., Tripp, T. M., & Bies, R. J. (2006). Getting even or moving on? Power, procedural justice, and types of offense as predictors of revenge, forgiveness, reconciliation, and avoidance in organizations. *Journal of Applied Psychology*, 91, 653-658.
- Argyris, C. (1957). *Personality and organization*. New York: Harper & Bros.
- Ashkanasy, N. M., Wilderom, C. P. M., & Peterson, M. F. (Eds.) (2000), *Handbook of organizational culture and climate*. Thousand Oaks, CA: Sage.
- Barling, J., Loughlin, C., & Kelloway, E. K. (2002). Development and test of a model linking safety-specific transformational leadership and occupational safety. *Journal of Applied Psychology*, 87, 488-496. doi:10.1037/0021-9010.87.3.488
- Bashshur, M. R., Hernández, A., & González-Romá, V. (2011). When managers and their teams disagree: a longitudinal look at the consequences of differences in perceptions of organizational support. *Journal of Applied Psychology*, 96, 558-573.
- Beus, J. M., Payne, S. C., Bergman, M. E., & Arthur Jr, W. (2010). Safety climate and injuries: an examination of theoretical and empirical relationships. *Journal of Applied Psychology*, 95, 713-727.

- Bezrukova, K., Thatcher, S., Jehn, K. A., & Spell, C. S. (2012). The effects of alignments: Examining group faultlines, organizational cultures, and performance. *Journal of Applied Psychology, 97*, 77-92.
- Bowen, D. D., & Kilmann, R. H. (1975). Developing a comparative measure of the learning climate in professional schools. *Journal of Applied Psychology, 60*, 71-79.
- Burke, W. W. (2011). *Organization change: Theory and practice, 3rd ed.* Thousand Oaks, CA: Sage.
- Burke, M. J., Borucki, C., & Hurley, A. (1992). Reconceptualizing psychological climate in a retail service environment: A multiple stakeholder perspective. *Journal of Applied Psychology, 77*, 717-729.
- Campbell, J. P., Dunnette, M. D., Lawler, E. E., III, & Weick, K. E. (1970). *Managerial behavior, performance, and effectiveness.* New York: McGraw-Hill.
- Carr, J. Z., Schmidt, A. M., Ford, J. K., & DeShon, R. P. (2003). Climate perceptions matter: A meta-analytic path analysis relating molar climate, cognitive and affective states and individual level work outcomes. *Journal of Applied Psychology, 88*, 605-619.
- *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*, 234-246.
Defined different composition/aggregation models and referents with climate surveys as the focus
- Chao, G. T., O'Leary-Kelly, A. M., Wolf, S., Klein, H. J., & Gardner, P. D. (1994). Organizational socialization: Its content and consequences. *Journal of Applied Psychology, 79*, 730-743.
- Chen, G., & Bliese, P. D. (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.
- Chen, G., Farh, J., Campbell-Bush, E. M., Wu, Z., & Wu, X. (2013). Teams as innovative systems: Multilevel motivational antecedents of innovation in R&D teams. *Journal of Applied Psychology, 98*, 1018-1027. doi:10.1037/a0032663
- Chen, X., Liu, D., & Portnoy, R. (2012). A multilevel investigation of motivational cultural intelligence, organizational diversity climate, and cultural sales: Evidence from U.S. real estate firms. *Journal of Applied Psychology, 97*, 93-106. doi:10.1037/a0024697
- 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
Cooke, R. A., & Szumal, J. L. (1993). Measuring normative beliefs and shared behavioral expectations in organizations:

- The reliability and validity of the Organizational Culture Inventory. *Psychological Reports*, 72(3c), 1299-1330.
- Cole, M. S., Carter, M. Z., & Zhang, Z. (2013). Leader–team congruence in power distance values and team effectiveness: The mediating role of procedural justice climate. *Journal of Applied Psychology*, 98, 962-973.
- Colquitt, J. A. (2001). On the dimensionality of organizational justice: a construct validation of a measure. *Journal of Applied psychology*, 86, 386-400.
- *Colquitt, J. A. (2004). Does the justice of the one interact with the justice of the many? Reactions to procedural justice in teams. *Journal of Applied Psychology*, 89, 633-646. Important foundation for unit-level justice climate research
- Colquitt, J. A., Conlon, D. E., Wesson, M. J., Porter, C. O., & Ng, K. Y. (2001). Justice at the millennium: a meta-analytic review of 25 years of organizational justice research. *Journal of Applied psychology*, 86, 425-445.
- Colquitt, J. A., Scott, B. A., Rodell, J. B., Long, D. M., Zapata, C. P., Conlon, D. E., & Wesson, M. J. (2013). Justice at the millennium, a decade later: A meta-analytic test of social exchange and affect-based perspectives. *Journal of Applied Psychology*, 98, 199-236.
- Cook, R., Walizer, D., & Mace, D. (1976). Illicit drug use in the army: A social-organizational analysis. *Journal of Applied Psychology*, 61, 267-272.
- Csoka, Louis S. 1975. Relationship between organizational climate and the situational favorableness dimension of Fiedler's contingency model. *Journal of Applied Psychology* 60, 273-277.
- Deal, T. E., & Kennedy, A. A. (1982). *Corporate cultures*. Reading, MA: Addison-Wesley.
- 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.
- Denison, D. R., & Mishra, A. K. (1995). Toward a theory of organizational culture and effectiveness. *Organization Science*, 6(2), 204-223.
- Dickson, M. W., Resick, C. J., & Hanges, P. J. (2006). When organizational climate is unambiguous, it is also strong. *Journal of Applied Psychology*, 91, 351-364
- Dragoni, L. (2005). Understanding the emergence of state goal orientation in organizational work groups: The role of leadership and multi-level climate perceptions. *Journal of Applied Psychology*, 90, 1084-1095.
- Dragoni, L., & Kuenzi, M. (2012). Better understanding work unit goal orientation: Its emergence and impact under different types of work unit structure. *Journal of Applied Psychology*, 97, 1032-1048. doi:10.1037/a0028405

- Drexler, J. A., Jr. (1977). Organizational climate: Its homogeneity within organizations. *Journal of Applied Psychology, 62*, 38-42.
- Dunlap, W. P., Burke, M. J., & Smith-Crowe, K. (2003). Accurate tests of statistical significance for r WG and average deviation interrater agreement indexes. *Journal of Applied Psychology, 88*, 356-362.
- Ehrhart, K. H., Witt, L. A., Schneider, B., & Perry, S. J. (2011). Service employees give as they get: Internal service as a moderator of the service climate – service outcome relationship. *Journal of Applied Psychology, 96*, 423-431.
- Ehrhart, M. G., Schneider, B., & Macey, W. H. (2014). *Organizational climate and culture: An introduction to theory, research, and practice*. New York: Routledge.
- Eisenbeiss, S. A., van Knippenberg, D., & Boerner, S. (2008). Transformational leadership and team innovation: Integrating team climate principles. *Journal of Applied Psychology, 93*, 1438-1446. doi:10.1037/a0012716
- Erdogan, B., & Bauer, T. N. (2010). Differentiated leader–member exchanges: The buffering role of justice climate. *Journal of Applied Psychology, 95*, 1104-1120.
- Fitzgerald, L. F., Drasgow, F., Hulin, C. L., Gelfand, M. J., & Magley, V. J. (1997). Antecedents and consequences of sexual harassment in organizations: A test of an integrated model. *Journal of Applied Psychology, 82*(4), 578-589.
- Fleishman, E. A. (1953). Leadership climate, human relations training and supervisory behavior. *Personnel Psychology, 6*, 205-222
- Forehand, G. A., & Gilmer, B. v. H. (1964). Environmental variation in studies of organizational behavior. *Psychological Bulletin, 62*, 361-382.
- Friedlander, F., & Greenberg, S. (1971). Effect of job attitudes, training, and organizational climate on performance of the hardcore unemployed. *Journal of Applied Psychology, 55*, 287-295.
- Frost, P. J., Moore, L. F., Louis, M. R., Lundberg, C. C., & Martin, J. (Eds.). (1985). *Organizational culture*. Beverly Hills, CA: Sage.
- Gelfand, M. J., Leslie, L. M., Keller, K., & de Dreu, C. (2012). Conflict cultures in organizations: How leaders shape conflict cultures and their organizational-level consequences. *Journal of Applied Psychology, 97*(6), 1131-1244.
- Giberson, T. R., Resick, C. J., & Dickson, M. W. (2005). Embedding leader characteristics: an examination of homogeneity of personality and values in organizations. *Journal of Applied Psychology, 90*(5), 1002-1010.

- Giorgi, S., Lockwood, C., & Glynn, M. A. (2015). The Many Faces of Culture: Making Sense of 30 Years of Research on Culture in Organization Studies. *The Academy of Management Annals*, 1-78.
- Glisson, C., & James, L. R. (2002). The cross-level effects of culture and climate in human service teams. *Journal of Organizational Behavior*, 23(6), 767-794.
- González-Romá, V., & Hernández, A. (2014). Climate uniformity: Its influence on team communication quality, task conflict, and team performance. *Journal of Applied Psychology*, 99, 1042-1058.
- 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, 465-473.
- Grizzle, J. W., Zablah, A. R., Brown, T. J., Mowen, J. C., & Lee, J. M. (2009). Employee customer orientation in context: How the environment moderates the influence of customer orientation on performance outcomes. *Journal of Applied Psychology*, 94, 1227-1242.
- *Hartnell, C. A., Ou, A. Y., & Kinicki, A. (2011). Organizational culture and organizational effectiveness: a meta-analytic investigation of the competing values framework's theoretical suppositions. *Journal of Applied Psychology*, 96(4), 677-694.
Meta-analysis of survey research on a model of organizational culture
- Hausknecht, J. P., Sturman, M. C., & Roberson, Q. M. (2011). Justice as a dynamic construct: effects of individual trajectories on distal work outcomes. *Journal of Applied Psychology*, 96, 872-880.
- Hofstede, G., Neuijen, B., Ohayv, D. D., & Sanders, G. (1990). Measuring organizational cultures: A qualitative and quantitative study across twenty cases. *Administrative Science Quarterly*, 286-316.
- Hofmann, D. A., & Morgeson, F. P. (1999). Safety-related behavior as a social exchange: The role of perceived organizational support and leader-member exchange. *Journal of Applied Psychology*, 84, 286-296. doi:10.1037/0021-9010.84.2.286
- Hofmann, D., Morgeson, F., & Gerras, S. (2003). Climate as a moderator of the relationship between leader-member exchange and content specific citizenship: Safety climate as an exemplar. *Journal of Applied Psychology*, 88, 170-178.
- Holtz, B. C., & Harold, C. M. (2009). Fair today, fair tomorrow? A longitudinal investigation of overall justice perceptions. *Journal of Applied Psychology*, 94, 1185-1199.
- Homan, A. C., Van Knippenberg, D., Van Kleef, G. A., & De Dreu, C. K. (2007). Bridging faultlines by valuing diversity: diversity beliefs, information elaboration, and performance in diverse work groups. *Journal of Applied Psychology*, 92(5), 1189-1199.

- 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*, 237-267.
- Hülsheger, U. R., Anderson, N., & Salgado, J. F. (2009). Team-level predictors of innovation at work: A comprehensive meta-analysis spanning three decades of research. *Journal of Applied Psychology, 94*, 1128-1145.
- James, L. R. (1982). Aggregation bias in estimates of perceptual agreement. *Journal of Applied Psychology, 67*, 219-229.
- *James, L. R., Demaree, R. G., & Wolf, G. (1984). Estimating within-group interrater reliability with and without response bias. *Journal of Applied Psychology, 69*, 85-98.
- Developed r_{wg} to examine within-group agreement on climate perceptions
- James, L. R., Demaree, R. G., & Wolf, G. (1993). r_{wg} : An assessment of within-group interrater agreement. *Journal of Applied Psychology, 78*, 306-309.
- James, L. R., & Jones, A. P. (1974). Organizational climate: A review of theory and research. *Psychological Bulletin, 81*, 1096-1112.
- Johns, G. (2006). The essential impact of context on organizational behavior. *Academy of Management Review, 3*, 386-408.
- 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*, 201-250.
- Katz, D., & Kahn, R. L. (1966). *The social psychology of organizations*. New York: Wiley.
- Katzell, R. A., Barrett, R. S., & Parker, T. C. (1961). Job satisfaction, job performance, and situational characteristics. *Journal of Applied Psychology, 45*, 65-72.
- Keenan, V., Kerr, W., & Sherman, W. (1951). Psychological climate and accidents in an automotive plant. *Journal of Applied Psychology, 35*(2), 108-111.
- 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*, 3-16.
- Klein, K. J., Conn, A. B., & Sorra, J. S. (2001). Implementing computerized technology: An organizational analysis. *Journal of Applied Psychology, 86*, 811-824.
- Klein, K. J., & Kozlowski, S. W. J. (Eds.). (2000). *Multilevel theory, research and methods in organizations: Foundations, extensions, and new directions*. San Francisco: Jossey-Bass.

- *Kozlowski, S. W. J., & Doherty, M. L. (1989). The integration of climate and leadership – examination of a neglected issue. *Journal of Applied Psychology, 74*, 546-553.
An early focus on the leadership and climate relationship
- Kozlowski, S. W. J., & Hattrup, K. (1992). A disagreement about within-group agreement: Disentangling issues of consistency versus consensus. *Journal of Applied Psychology, 77*, 161-167.
- Kozlowski, S. W. J., & Klein, K. J. (2000). A multilevel approach to theory and research in organizations. Contextual, temporal, and emergent processes. In K. J. Klein & S. W. J. Kozlowski (eds.), *Multilevel theory, research, and methods in organizations*, (pp. 3-90). San Francisco: Jossey-Bass
- 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*, 634-717.
- Kummerow, E., & Kirby, N. (2014). *Organisational culture: Concept, context, and measurement*. New York: World Scientific Press.
- Lahiri, D. K., & Srivastava, S. (1967). Determinants of satisfaction in middle-management personnel. *Journal of Applied Psychology, 51*(3), 254-265.
- Lam, C. K., Huang, X., & Janssen, O. (2010). Contextualizing emotional exhaustion and emotional display: The signaling effects of supervisors' emotional exhaustion and service climate. [*Journal of Applied Psychology, 95*](#), 368-376.
- Leroy, H., Dierynck, B., Anseel, F., Simons, T., Halbesleben, J. B., McCaughey, D., & Sels, L. (2012). Behavioral integrity for safety, priority of safety, psychological safety, and patient safety: A team-level study. *Journal of Applied Psychology, 97*, 1273-1281.
doi:10.1037/a0030076
- Lewin, K., Lippitt, R., & White, R. K. (1939). Patterns of aggressive behavior in experimentally created "social climates." *Journal of Social Psychology, 10*, 271-299.
- Li, N., Liang, J., & Crant, J. M. (2010). The role of proactive personality in job satisfaction and organizational citizenship behavior: a relational perspective. *Journal of Applied psychology, 95*, 395-404.
- Liao, H., & Chuang, A. (2007). Transforming service employees and climate: A multi-level multi-source examination of transformational leadership in building long-term service relationships. *Journal of Applied Psychology, 92*, 1006-1019.
- Liao, H., & Rupp, D. E. (2005). The impact of justice climate and justice orientation on work outcomes: A cross-level multifoci framework. *Journal of Applied Psychology, 90*, 242-256.
- Likert, R. (1967). *The human organization*. New York: McGraw-Hill.

- 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*, 331-345.
- Litwin, G. H., & Stringer, R. A. (1968). *Motivation and organizational climate*. Cambridge, MA: Harvard Business School, Division of Research.
- Martin, J. (1992). *Cultures in organizations: Three perspectives*. New York: Oxford University Press.
- Martin, J. (2002). *Organizational culture: Mapping the terrain*. Thousand Oaks, CA: Sage.
- Masterson, S. S. (2001). A trickle-down model of organizational justice: relating employees' and customers' perceptions of and reactions to fairness. *Journal of Applied Psychology, 86*, 594-604.
- McGregor, D. M. (1960). *The human side of enterprise*. New York: McGraw-Hill.
- Meglino, B. M., Ravlin, E. C., & Adkins, C. L. (1989). A work values approach to corporate culture: A field test of the value congruence process and its relationship to individual outcomes. *Journal of Applied Psychology, 74*, 424-432.
- Miner-Rubino, K., & Cortina, L. M. (2007). Beyond targets: Consequences of vicarious exposure to misogyny at work. *Journal of Applied Psychology, 92*, 1254-1269. doi:10.1037/0021-9010.92.5.1254
- Morrison, E. W. (1993). Longitudinal study of the effects of information seeking on newcomer socialization. *Journal of Applied Psychology, 78*(2), 173-183.
- Neal, A., & Griffin, M. A. (2006). A study of the lagged relationships among safety climate, safety motivation, safety behavior, and accidents at the individual and group levels. *Journal of Applied Psychology, 91*, 946-953. doi:10.1037/0021-9010.91.4.946
- Nicholson, N., Brown, C. A., & Chadwick-Jones, J. K. (1977). Absence from work and personal characteristics. *Journal of Applied Psychology, 62*(3), 319-327.
- Offermann, L. R., & Malamut, A. B. (2002). When leaders harass: The impact of target perceptions of organizational leadership and climate on harassment reporting and outcomes. *Journal of Applied Psychology, 87*, 885-893. doi:10.1037/0021-9010.87.5.885
- Onken, M. H. (1999). Temporal elements of organizational culture and impact on firm performance. *Journal of Managerial Psychology, 14*, 231-244.
- Ostroff, C. & Fulmer, A. (2014). Variance as a construct: Understanding variability beyond the mean. In J.K. Ford, J.R. Hollenbeck & A.M. Ryan, A.M. (Eds.), *The Nature of Work: Advances in Psychological Theory, Methods, and Practice* (pp 185-210). APA Books.

- Ostroff, C., Kinicki, A. J., & Clark, M. A. (2002). Substantive and operational issues of response bias across levels of analysis: an example of climate-satisfaction relationships. *Journal of Applied Psychology, 87*, 355-368.
- 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, Volume 12: I/O Psychology*. (pp 565-594). Wiley & Sons.
- Ostroff, C., & Schulte, M. (2014). A configural approach to the study of organizational climate and culture. In B. Schneider and K. M. Barbera (Eds.), *The Oxford handbook of organizational climate and culture* (pp. 532-552). New York: Oxford University Press.
- Pace, C. R., & Stern, G. G. (1958). An approach to the measurement of psychological characteristics of college environments. *Journal of Educational Psychology, 49*, 269-277.
- Parsons, T. (1951). *The social system*. NY: Free Press.
- 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: Rand-McNally.
- Peters, T., & Waterman, R. H. (1982). *In search of excellence*. New York: Harper & Row.
- Pettigrew, A. M. (1979). On studying organizational cultures. *Administrative Science Quarterly, 24*, 570-581.
- Pettigrew, A. M. (1990). Organizational climate and culture: Two constructs in search of a role. In B. Schneider (Ed.), *Organizational climate and culture* (pp. 413-434). San Francisco: Jossey-Bass.
- Pfeifer, C. M., & Schneider, B. (1974). University climate perceptions by black and white students. *Journal of Applied Psychology, 59*, 660-662. doi:10.1037/h0037300
- Probst, T. M., Brubaker, T. L., & Barsotti, A. (2008). Organizational injury rate underreporting: The moderating effect of organizational safety climate. *Journal of Applied Psychology, 93*, 1147-1154. doi:10.1037/0021-9010.93.5.1147
- Pugh, S. D., Dietz, J., Brief, A. P., & Wiley, J. W. (2008). Looking inside and out: The impact of employee and community demographic composition on organizational diversity climate. *Journal of Applied Psychology, 93*, 1422-1428. doi:10.1037/a0012696
- Quinn, R. E., & Rohrbaugh, J. (1983). A spatial model of effectiveness criteria: Towards a competing values approach to organizational analysis. *Management Science, 29*(3), 363-377.
- Reichers, A. E., & Schneider, B. (1990). Climate and culture: An evolution of constructs. In B. Schneider (Ed.), *Organizational climate and culture* (pp. 5-39). San Francisco: Jossey-Bass.

- *Rentsch, J. R. (1990). Climate and culture: Interaction and qualitative differences in organizational meanings. *Journal of Applied Psychology, 75*, 668-681.
One of the first to study climate and culture simultaneously and used mixed methods
- Rosen, H. (1961). Desirable attributes of work: Four levels of management describe their job environments. *Journal of applied psychology, 45*(3), 156-160.
- Rousseau, D. M., & Fried, Y. (2001). Location, location, location: contextualizing organizational research. *Journal of organizational behavior, 22*(1), 1-13.
- Saffold, G. S. (1988). Culture traits, strength, and organizational performance: Moving beyond “strong” culture. *Academy of Management Review, 13*(4), 546-558.
- Salanova, M., Agut, S., & Peiró, J. M. (2005). Linking organizational resources and work engagement to employee performance and customer loyalty: The mediation of service climate. *Journal of Applied Psychology, 90*, 1217-1227.
- Salvaggio, A. N., Schneider, B., Nishii, L. H., Mayer, D. M., Ramesh, A., & Lyon, J. S. (2007). Manager personality, manager service quality orientation, and service climate: Test of a model. *Journal of Applied Psychology, 92*, 1741-1750.
- Schaubroeck, J., Ganster, D. C., & Jones, J. R. (1998). Organization and occupation influences in the attraction–selection–attrition process. *Journal of Applied Psychology, 83*(6), 869-891.
- Schein, E. H. (1965). *Organizational psychology*. Englewood Cliffs, NJ: Prentice-Hall.
- Schein, E. H. (1985). *Organizational culture and leadership*. San Francisco: Jossey-Bass.
- Schein, E. H. (2011). Preface. In N. M. Ashkanasy, C. P. M. Wilderom, & M. F. Peterson, (Eds.), *Handbook of organizational culture and climate* (2nd ed., pp. xi-xiii). Thousand Oaks, CA: Sage.
- Schein, E.H. (2015). Some discussion points about culture research. Presented in Symposium: Alternative Solutions to Measurement Challenges of Culture and Climate. Annual Conference of the Society for Industrial and Organizational Psychology, Philadelphia, April.
- Schmidt, F. L., & Hunter, J. E. (1989). Interrater reliability coefficients cannot be computed when only one stimulus is rated. *Journal of Applied Psychology, 74*, 368-370.
- Schneider, B. (1973). The perception of organizational climate: The customer’s view. *Journal of Applied Psychology, 57*, 248-256.
- Schneider, B. (1975). Organizational climates: An essay. *Personnel Psychology, 28*, 447-479.
- Schneider, B. (1987). The people make the place. *Personnel Psychology, 40*, 437-453.
- Schneider, B. (Ed.) (1990). *Organizational climate and culture*. San Francisco: Jossey-Bass.

- Schneider, B., & Barbera, K. M. (2014). (Eds.). *The Oxford handbook of organizational climate and culture*. Oxford: Oxford University Press.
- Schneider, B., & Bartlett, C. J. (1968). Individual differences and organizational climate, I: The research plan and questionnaire development. *Personnel Psychology, 21*, 323-333.
- Schneider, B., & Bowen, D. E. (1985). Employee and customer perceptions of service in banks: Replication and extension. *Journal of Applied Psychology, 70*, 423-433.
- 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* (pp. 373-414). Washington, DC: American Psychological Association.
- Schneider, B., & Hall, D. T. (1972). Towards specifying the concept of work climate: A study of Roman Catholic Diocesan priests. *Journal of Applied Psychology, 56*, 447-455.
- Schneider, B., Parkington, J.P., & Buxton, V.M. (1980). Employee and customer perceptions of service in banks. *Administrative Science Quarterly, 25*, 252-267.
- *Schneider, B., Salvaggio, A. N., & Subirats, M. (2002). Climate strength: A new direction for climate research. *Journal of Applied Psychology, 87*, 220-229.
Developed climate strength concept as moderator of climate level-outcome relationships
- Schneider, B., & Snyder, R. A. (1975). Some relationships between job satisfaction and organizational climate. *Journal of Applied Psychology, 60*, 318-328.
- Schneider, B., Wheeler, J. K., & Cox, J. F. (1992). A passion for service: Using content analysis to explicate service climate themes. *Journal of Applied Psychology, 77*, 705-716.
- *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*, 150-163.
Service climate measure studied over time in reciprocal mode with customer satisfaction
- Schriber, J. B., & Gutek, B. A. (1987). Some time dimensions of work: Measurement of an underlying aspect of organization culture. *Journal of Applied Psychology, 72*(4), 642-650.
- *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*, 618-634.
Introduced configural scoring to climate research to capture many facets of climate
- Simons, T., & Roberson, Q. (2003). Why managers should care about fairness: The effects of aggregate justice perceptions on organizational outcomes. *Journal of Applied Psychology, 88*, 432-443.

- Smircich, L. (1983). Concepts of culture and organizational analysis. *Administrative Science Quarterly*, 339-358.
- Smith-Crowe, K., Burke, M. J., Cohen, A., & Doveh, E. (2014). Statistical significance criteria for the Rwg and average deviation interrater agreement indices. *Journal of Applied Psychology*, 99, 239-261.
- Stoverink, A. C., Umphress, E. E., Gardner, R. G., & Miner, K. N. (2014). Misery loves company: Team dissonance and the influence of supervisor-focused interpersonal justice climate on team cohesiveness. *Journal of Applied Psychology*, 99, 1059-1073.
- 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, 179-187.
- Tesluk, P. E., Farr, J. L., & Klein, S. R. (1997). Influences of organizational culture and climate on individual creativity. *The Journal of Creative Behavior*, 31(1), 27-41.
- Tracey, J. B., Tannenbaum, S. I., & Kavanaugh, M. J. (1995). Applying trained skills on the job: The importance of the work environment. *Journal of Applied Psychology*, 80, 239-252.
- Trice, H. M., Belasco, J., & Alutto, J. A. (1969). Role of ceremonials in organizational behavior. *Industrial & Labor Relations Review*, 23, 40-51.
- Trice, H. M., & Beyer, J. M. (1993). *The cultures of work organizations*. Englewood Cliffs, NJ: Prentice-Hall.
- Van Dyck, C., Frese, M., Baer, M., & Sonnentag, S. (2005). Organizational error management culture and its impact on performance: a two-study replication. *Journal of Applied Psychology*, 90(6), 1228-1240.
- Verbeke, W., Volgering, M., & Hessels, M. (1998). Exploring the conceptual expansion within the field of organizational behaviour: Organizational climate and organizational culture. *Journal of Management Studies*, 35(3), 303-329.
- 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, 681-688.
- Walumbwa, F. O., Hartnell, C. A., & Oke, A. (2010). Servant leadership, procedural justice climate, service climate, employee attitudes, and organizational citizenship behavior: a cross-level investigation. *Journal of Applied Psychology*, 95, 517-529.
- *West, M. A., & Anderson, N. R. (1996). Innovation in top management teams. *Journal of Applied Psychology*, 81, 680-693. doi:10.1037/0021-9010.81.6.680
Studied climate for innovation in a longitudinal study of hospital top management teams

- West, M. A., Topakas, A., & Dawson, J. F. (2014). Climate and culture for health care performance. In B. Schneider & K. M. Barbera (Eds.). *The Oxford handbook of organizational climate and culture* (pp. 335-359). Oxford: Oxford University Press.
- 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*, 776-791.
- Wilkins, A. L., & Ouchi, W. G. (1983). Efficient cultures: Exploring the relationship between culture and organizational performance. *Administrative Science Quarterly, 28*, 468-481.
- Yang J., & Diefendorff, J. (2009), Four-factor justice and job satisfaction: A Multilevel Investigation. *Journal of Applied Psychology, 94*, 770-781.
- 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*, 681-692.
- Ziegert, J. C., & Hanges, P. J. (2005). Employment Discrimination: The Role of Implicit Attitudes, Motivation, and a Climate for Racial Bias. *Journal of Applied Psychology, 90*, 553-562. doi:10.1037/0021-9010.90.3.553
- *Zohar, D. (1980). Safety climate in industrial organizations: Theoretical and applied implications. *Journal of Applied Psychology, 65*, 96-102.
First in a fruitful series of robust studies on the validity of safety climate
- 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*, 587-596.
- Zohar, D., & Hofmann, D. A. (2012). Organizational culture and climate. In S. W. J. Kozlowski (Ed.), *Oxford handbook of industrial and organizational psychology, 1*, 643-666. Oxford: Oxford University Press.
- *Zohar, D., & Luria, G. (2005). A multi-level model of safety climate: Cross-level relationships between organization and group-level climates. *Journal of Applied Psychology, 90*, 616-628.
Studied climate at multiple levels and showed that climate strength at the organization and work group levels tend to be aligned
- Zohar, D., & Polachek, T. (2014). Discourse-based intervention for modifying supervisory communication as leverage for safety climate and performance improvement: A randomized field study. *Journal of applied psychology, 99*, 113.
- Zohar, D., & Tenne-Gazit, O. (2008). Transformational leadership and group interaction as climate antecedents: A social network analysis. *Journal of Applied Psychology, 93*, 744-757.

1992									
Brown & Leigh, 1996									
Schmitt et al., 1999									
2000-2015 Era: Multilevel Research and Culture-Climate Integration									
Carr et al., 2003	Zohar, 2000	Klein et al., 2001	Zohar, 2002	Salanova et al., 2005	Offerman & Malamut, 2002	Lindell & Brandt, 2000	Colquitt et al., 2000	Colquitt, 2001	Klein et al., 2001
Kish-Gephardt et al., 2010	Zohar, 2002	Eisenbeiss et al., 2008	Chen & Bliese, 2002	Liao & Chuang, 2007	Ziegert & Hayes, 2005	Klein et al., 2001	Smith et al., 2001	<i>Colquitt et al., 2001</i>	Ostroff et al., 2002
Morrison et al., 2011	Barling, et al., 2002	<i>Halshberger et al., 2009</i>	Barling, et al., 2002	Salvaggio et al., 2007	Miner-Rubino, 2007	*Schneider et al., 2002	Katz-Navon et al., 2009	Masterson, 2001	Dunlapp et al., 2003
Wallace et al., 2011	Hofmann et al., 2003	Chen et al., 2013	Offerman & Malamut, 2002	Grizzle et al., 2009	Homan et al., 2007	González-Romá et al., 2002	Dragoni & Kuenzi, 2012	Simons & Roberson, 2003	Schulte et al., 2009
Liu & Fiu, 2011	*Zohar & Luria, 2005		Hofmann et al., 2003	Lam et al., 2010	Pugh et al., 2008	*Zohar & Luria, 2005		Ambrose & Cropanzano, 2003	<i>Whitman et al., 2011</i>
Bradley et al., 2012	Zucharatis, et al., 2005		Zohar & Luria, 2004	Walumbwa et al., 2010	Chen et al., 2012	Dickson et al., 2006		*Colquitt, 2004	Smith-Crowe et al., 2014
	Wallace et al., 2006		Dragoni, 2005	Ehrhart et al., 2011		Zohar & Tenne-Gazit, 2008		Judge & Colquitt, 2004	
	Neal & Griffin, 2006		Chen et al., 2007	Arye et al., 2012		Bashshur et al., 2011		Liao & Rupp, 2005	
	Zohar & Tenne-Gazit, 2008		Liao & Chuang, 2007	Rau & Liao, 2012		<i>Whitman et al., 2011</i>		Aquino et al., 2006	
	Probst et al., 2008		Salvaggio et al., 2007	<i>Hong et al., 2013</i>		González-Romá & Hernández, 2014		Yang et al., 2007	
	Katz-Navon et al., 2009		Zohar & Tenne-Gazit, 2008					Choi, 2008	

<i>Christian et al., 2009</i>	Eisenbeis et al., 2008	DeDreu & Nanta, 2009
<i>Beus, et al., 2009</i>	Wallace et al., 2009	Holtz & Harold, 2009
Leroy et al., 2012	Beus et al., 2010	Loi et al., 2009)
Zohar & Polachek, 2014	Erdogan & Bauer, 2010	Erdogan & Bauer, 2010
	Bashshur et al., 2010	Li et al., 2010
	Dragoni & Kuenzi, 2012	Walumbwa et al., 2010
	Cole et al., 2013	Hausknecht et al., 2011
		<i>Whitman et al., 2012</i>
		Ambrose et al., 2013
		Bobocel, 2013
		Cole et al., 2013
		<i>Colquitt et al., 2013</i>
		Stoverink et al., 2014

NOTES: See the article's reference section for complete references. If the same citation appears in different columns, then the article had more than one focus (e.g., Hoffmann & Morgeson (1999) is both safety climate and the role of leadership). Citations in italics indicate meta-analysis. Citations in bold are multi-level studies. Citations preceded by an asterisk indicate one of 12 most important *JAP* articles on climate and culture.

Table S 2: *JAP* Organizational Culture Articles Sorted by Date of Publication and Focus of the Article*

Antecedents	Culture Type or Content	Culture & Outcomes	Cultural Values as Moderator	Socialization content
1986-1999 Era: Focused Climates and Culture-Climate Divide				
*Rentsch, 1990	Schriber & Gutek, 1987	Schriber & Gutek, 1987		Chao et al., 1994
	Tracey et al., 1995	Tracey, Tannenbaum & Kavanagh, 1995		Morrison, 1993
2000-2015 Era: Multilevel Research and Culture-Climate Integration				
Gelfand et al., 2012	Ragins & Cornwell, 2001	Aquino & Lamertz, 2004	Schaubroeck et al., 2007	
	Aquino & Lamertz, 2004	Toh et al., 2008		
	Van Dyck et al., 2005	* <i>Hartnel et al., 2011</i>		
	* <i>Hartnell et al., 2011</i>	Gelfand et al., 2012		
	Bezrukova et al., 2012			
	Gelfand et al., 2012			

* NOTES: See the article’s reference section for complete references. If the same citation appears in different columns, then the article had more than one focus. Citations in italics indicate a meta-analysis. Citation preceded by an asterisk indicates one of 12 most important *JAP* articles on climate and culture.