Development of a Molar Command Climate Survey

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Studies examining our Military Forces' leadership state command climates form the foundation for the Army's culture. A climate should be measured and the results tied to outcomes. This study responds to Carr et al., (2003) and Ostroff et al., (2002) call for assessments that are more comprehensive and molar than measures currently used. As a test of the molar concept, this paper developed a new climate assessment and extends previous research by proposing a hybrid model linking antecedents of climate to three facets (or states) as moderators which have differential impacts upon a number of molar outcomes.

INTRODUCTION

General Edward C. Meyer, former Army Chief of Staff, (FM 22-100, 1999) wanted to ensure that the Army was prepared to go to war and to create a personally fulfilling climate. He added "Only by attaining the second could we assure ourselves of the first." A positive command climate is a prerequisite for leader and unit development (Ruvolo, Petersen, & LeBoeuf, 2004), and forms the foundation for the Army's culture (FM 22-100, 1999). Unfortunately, most climate measures are segmented and incomplete. Several examples include: conceptualization of culture or climate (AFSO21 - Continuous Process Improvement culture - AFMCI 90-104, 2007); situational leadership on performance, (Burke & Day, 1986); narrow versus broad bandwidths (Cronbach & Gleser, 1965, Ones & Viswesvaran, 1996), and culture is a complex, multilevel concept, (Rentsch, 1990).

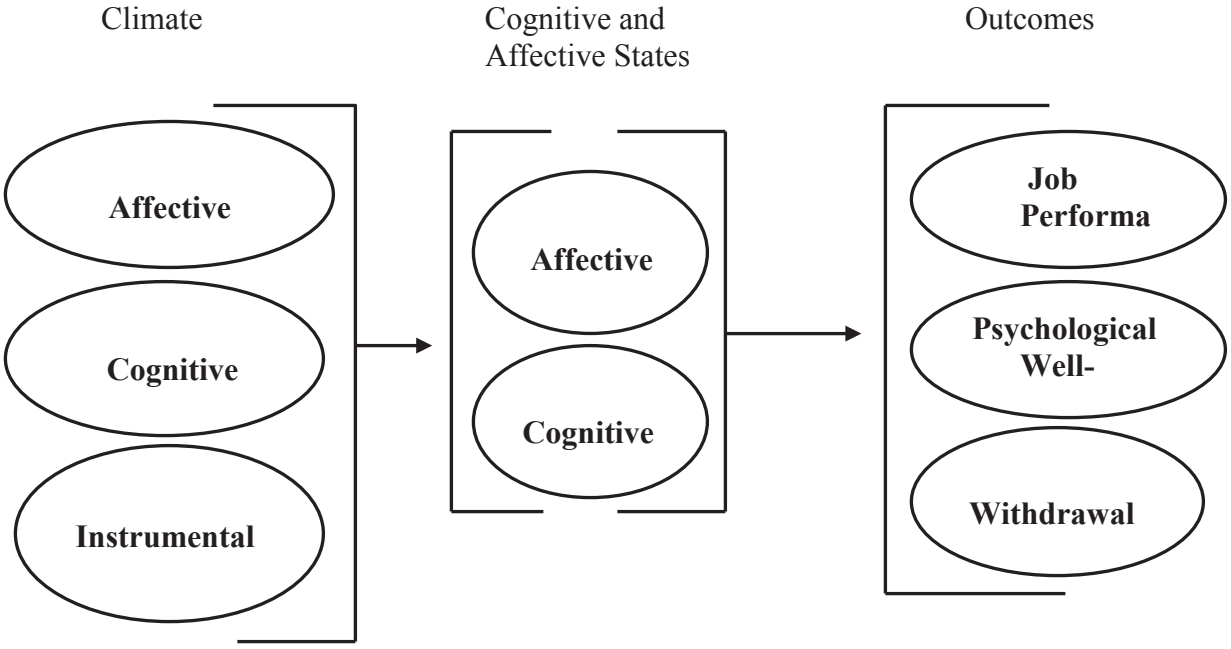
A great leader builds organizational climates and obtains results. The flexible and adaptable leader, shaped by their climate, uses contingent leadership, and obtains results. Which is better? To answer this, we need to measure climate and tie the results to outcomes (Jones, 2003). This calls for climate assessments that are more comprehensive and molar than currently used. As a test of the molar concept, this paper discusses the development of a research tool, the Leadership Command Climate Survey (LCCS).

Background

James and Jones (1974, 1979) developed a climate model. It described relationships to organizational outcomes like satisfaction. Kopelman, Brief and Guzzo (1990) refined this model where perceptions are mediated through cognitive and affective states. Later research was classified according to Ostroff's (1993) taxonomy of molar constructs (Carr et al., 2003). This model had three higher order climate facets, two process variables, and three outcomes (figure 1). Carr et al., (2003) points out that the affective facet

is concerned with interpersonal and social relations like participation, cooperation, warmth, and social rewards. The cognitive facet represents growth, innovation, autonomy, and intrinsic rewards related to the self or involvement in work (Carr et al., 2003). The instrumental facet represents achievement, hierarchy, structure, and rewards that concern task involvement or getting things done (Carr et al., 2003).

FIGURE 1
CLIMATE MODEL MEDIATED BY COGNITIVE AND AFFECTIVE STATES
(CF. CARR, ET AL., 2003).



Moderating and Mediating Variables

Moderating or mediating variables are in most of the climate models. Ostroff's (1993) model had moderating variables called facets that were separate from the other mediating or intervening variables called states. Other researchers used process variables as outcomes like satisfaction (Kinicki, McKee-Ryan, Schriesheim, & Carson, 2002); and commitment (Roberts & Brandon 2010). Benzer and Horner, (2010) report higher correlations with the narrower dimensions of social climate than Carr et al. (2003) did.

House and Mitchell, (1974) similarly predicted that leaders could enhance subordinate empowerment and abilities, and mediate organizational outcomes like effectiveness, satisfaction, motivation, and effectiveness. Thus, consistent with Katz and Kahn's (1978) definition, a leader's role is integrally intertwined with the climate. Leaders provide the necessary information, support, and resources, over and above those provided by the organization or environment.

Bandwidth

Climate is described both as a molar concept about broad outcomes like goals (Hershberger, Lichtenstein, & Knox, 1994) and as distinct subsystems for achieving narrower, specific functions (Schneider, 2000). Carr, et al., (2003) distinguishes between using molar and specific climate constructs by highlighting different methods of measurement and levels of analysis. Bandwidth is the amount of information obtained in a given space of time (Cronbach & Gleser, 1965). The debate is that molar constructs have the bandwidth to predict global outcomes better and specific outcomes are better predicted by narrower bandwidth measures. Carr, et al., (2003) recommend that the bandwidth and

specificity of the outcome should dictate the predictor bandwidth. However, research into molar climate constructs has not produced firm conclusive evidence on the relationships among climate, mediators and outcomes (Pritchard & Karasick, 1973).

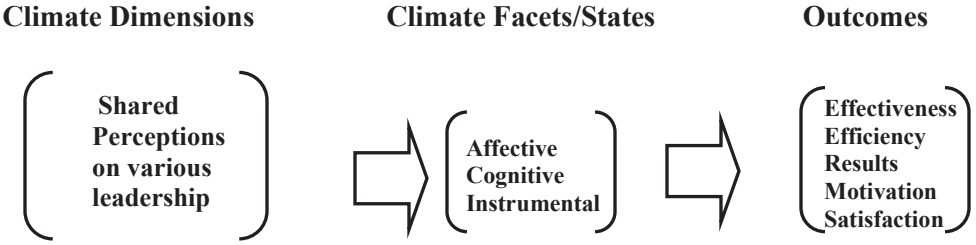
Unless the Army's culture develops positive command climates, conducts regular climate assessments, and improves leader development, command climates, unit effectiveness will continue to degrade (Jones, 2003). As a result, climate research is growing (Jones, 2003). Now climate has come to mean so many different things that climate constructs have lost their meaningfulness (Lindell & Brandt, 2000).

The climate model by James & Jones (1974, 1976), refined by Kopelman et al., (1990), and added to by Ostroff (1993) and Carr et al (2003) was chosen as the most appropriate model to guide this research effort into developing a new molar climate measure, but with a slight modification (See figure 2). However, Carr, et al., (2003) points out that there is little evidence to support the instrumental facet and research has not adequately addressed the relationship of the climate facets to affective, cognitive, and instrumental states. This led to our first hypothesis.

Hypothesis 1:

This modified climate model would reflect the relationships of climate to outcomes as illustrated in figure 2 and could thus, be used as a guide to developing a research tool and empirical test of this model.

FIGURE 2
MODIFIED MODEL HYPOTHESIZING MODERATING RELATIONSHIPS AMONG CLIMATE DIMENSIONS, CLIMATE FACETS/STATES, AND OUTCOMES



METHOD

The first official Army definition of command climate was published in December 1983 as Reference Book (RB) 22-5 (Lempke, 1988). This paper uses FM 22-100 (1999) command climate definition: "A state or condition existing from shared feelings, perceptions, attitudes, and beliefs among Soldiers about the formal and informal organizational policies, practices, and procedures regarding the day-to-day functioning of their unit." Murray, (2003) recommended using standardized surveys of 16 dimensions to measure command climates in all the battalions and brigades in the Army.

FM 22-100, Murray, (2003), (ECAS CAL, Appendix D of FM 22-100, 1999), Unit Climate Profile (UCP - DA Pam 600-69, 1986) and Command Climate Survey (CCS - ARI, 1997), Surveys of Total Army Military Personnel (STAMP-Blass, 1993), and six versions of the MEOCS (Truhon, 2001): (Military Equal Opportunity Climate Survey, Standard; Lite, Senior Leader Equal Opportunity Climate Survey, Equal Employment Opportunity (Knouse, 1996a), and the Small Unit Equal Opportunity Climate Survey were evaluated. FM 22-100 includes a list of leader actions, behaviors, attitudes, beliefs and values that was used to compare Murray's, (2003) recommended climate dimensions and dimensions measured by the other surveys. Table 1 shows the climate dimensions covered by the FM and climate surveys.

The surveys were evaluated by matching the bandwidths of predictors and outcomes. The ECAS did not address FM 22-100 behaviors and was not molar enough to relate perceptions to outcomes. While

appropriate for different levels of leadership within a unit's command climate, the UCP was too specific in antecedents and outcomes and may not relate to outcomes. While appropriate for an analysis of unit effectiveness, the CCS used single item scales, different response formats, and did not relate to molar outcomes. The scales of the STAMP were about atmosphere and morale with one molar outcome (satisfaction). The total quality climate survey measured a specific type of climate (EEO perceptions) and the molar outcomes of satisfaction and effectiveness. An interesting approach was the IRT reduction of 5 MEOCS surveys by Truhon (2001). It measured the molar outcomes of satisfaction and commitment. This combined survey tapped 17 dimensions of the FM22-100. However, most of the constructs represented the affective state. As shown by table 1, most of these measures were more appropriate for specific climate types. They did predict the molar outcomes of satisfaction, commitment, and effectiveness. Using these measures with insufficient bandwidth may attenuate the relationships between climate and the individual-level outcomes. Thus a new climate research tool was created using the 40 plus dimensions in table 1.

Survey Construction

Most of the climate measures were too specific and measured particular climate types. To investigate the specificity and bandwidth of molar constructs, the LCCS was developed in an attempt to create a more concise and molar climate assessment tool and measure how climate relates to outcomes. Normal test development procedures were used.

TABLE 1
COVERED CLIMATE DIMENSIONS WITH DOCTRINE, THEORY, AND EUISTING CLIMATE MEASURES RESEARCH

Dimension	FM 22-100	Murray (2003)	UCP	ECAS	CCS	Social Climate STAMP	Total Quality MEOCS -EEO	MEOCS (5 Versions)
Atmosphere						x		x
Attitudes								x
Benefits/ Pay	x					x		
Builds/ Improves/ Changes	x	x		x				
Cohesion (unit/team/leader)	x	x	x		x	x	x	x
Commitment	x	x						x
Commitment – lack of								x
Communication	x	x	x	x	x			
Competencies	x	x	x	x		x		
Creativity/ Innovation	x							
Consideration/ Respect/Fair/ Ethics/EEO	x		x	x	x		x	x
Decision-making	x							
Differential command behavior								x
Diversity								x
Effectiveness	x	x					x	x
Efficiency	x					x		
Environment	x	x						
Experience	x							
Interpersonal skills	x	x	x					x
Identification with the						x		

Army								
Leadership/ Role model	x	x	x		x			x
Levels of Leadership	x		x					
Senior Leader - Structure	x	x	x	x	x			
Senior Leader - Resources	x	x	x					
Learn From Mistakes	x			x				
Morale						x		
Motivation	x	x	x	x	x			
Overall Climate	x		x		x			
Performance Management	x	x	x	x	x	x		
Results/ Achievement, Quality, & Performance Outcomes	x			x				
Racist/sexist behavior								x
Rewards	x	x	x					
Satisfaction			x			x	x	x
Harassment, sexual, religious, gender, racial, and age discrimination								x
Reverse discrimination								x
Stress	x	x		x	x	x		
Support	x	x	x		x	x		
Training	x		x		x			
Trust	x	x					x	x
Values	x	x		x				
Verbal Abuse								x

Items for each of the dimensions were written, focusing upon the FM 22-100 actions, behaviors, and values. The items were screened, reviewed, modified by focus groups at several military installations, and evaluated as climate indicators (Futterman, Orlandi, & Schinke, 1991, 1991a, 1991b). Items were reviewed and classified by two independent raters who achieved an inter-rater agreement of .78 indicating that about 75% of the items had a shared meaning with the reviewers.

Thirty Captains who completed the survey were instructed to modify the items to either agree or disagree more strongly with the item's content. The final 150 items were administered to 380 enlisted active-duty Army Soldiers at five military installations. Eliminating records with random and irrelevant responses, resulted in 372 records. 57.7% classified themselves as White, 26.1% as Black, 11.4% as Hispanic, and 4.7% as Asian. 11.6% were female and 88.4% were male. Their ages ranged from 20 to 55 years. Their ranks ranged from PFC (Private First Class) to LTC (Lieutenant Colonel).

The dimensions were classified into three facets; affective, cognitive, or instrumental as suggested by Carr, et al., (2003) and Ostroff (1993). Feldt, Kivimäki, Rantala, and Tolvanen, (2004) used a confirmatory factor analysis to construct their measure and found a 3 factor correlated model. Similarly, a PCA (Principle Component Analysis) on this 150-item climate survey developed scales with acceptable levels of internal consistency. The 120 retained items were classified according to their relationship to nine possible outcomes. An inter-rater agreement of .85 was achieved. The PCA revealed four scales more like outcomes than predictors and thus, were considered as outcomes. This way of creating outcome scores has precedence by Ostroff et al., (2002). The remaining scales were classified into affective, cognitive, or instrumental facets. Two raters classified each item as belonging to three states. An inter-rater agreement of .91 was obtained for both classification activities (facet or state). We began with an exploratory or data-driven model-building approach. With the exception of the facets and states being similar, no specific hypotheses were made about the relationships among the constructs.

Hypothesis 2:

The facet and states of the same name (cognitive facet and cognitive state, affective facet and affective state, and instrumental facet and instrumental state) will have similar beta-weights in their predictions.

SPSS 12.0 was used to conduct a series of stepwise and hierarchical multiple regressions. Using the results from the stepwise procedure, 45 hierarchical regression analyses were conducted. This was a test of which dimensions predicted the facets, states, outcomes and to identify the important differential predictions. The detailed results of the 45 hierarchical regression analyses are not presented.

RESULTS

A PCA produced 39 components with eigenvalues greater than one and accounted for 69% of the variance (See table 2). These 39 components were used to derive dimension scales with adequate reliability (See table 3). The coefficient alphas ranged from .66 to .97. Scale scores were computed for each of the nine possible outcomes. The outcome scales and respective means, standard deviations, and alpha coefficients are reported in table 4. The coefficient alphas ranged from .80 to .97.

A PCA was conducted on the 16 climate dimensions to see if it could approximate Ostroff's (1993) taxonomy. The results are presented in table 5. This PCA found three clusters of 4 to 6 scales with eigenvalues greater than one that accounted for about 78% of the variance. Facet scores were computed for each of the three climate facets by summing up the items identified by the PCA for each subscale. State scale scores were computed by summing up individual items that two raters agreed would relate to each of the specific states. The facet/state scale means, standard deviations, and alpha coefficients are reported in table 6. The coefficient alphas ranged from .91 to .98 for the facets and from .89 to .97 for the states.

TABLE 2
TOTAL VARIANCE EXPLAINED BY PRINCIPLE COMPONENTS ANALYSIS

Total Variance Explained			
Component	**Initial Eigenvalues**		
	Total	**% of Variance**	**Cumulative %**
1	38.0856900	25.39046	25.39046
2	6.116086	4.077391	29.46785
3	4.222952	2.815302	32.28315
4	3.478246	2.318831	34.60198
5	2.818888	1.879258	36.48124
6	2.417111	1.611407	38.09265
7	2.089056	1.392704	39.48535
8	2.035222	1.356815	40.84217
9	1.921182	1.280788	42.12295
10	1.886964	1.257976	43.38093
11	1.767290	1.178194	44.55912
12	1.757791	1.171861	45.73098
13	1.742141	1.161427	46.89241
14	1.678724	1.119149	48.01156
15	1.647641	1.098427	49.10999
16	1.631738	1.087825	50.19781
17	1.589867	1.059911	51.25773
18	1.480434	0.986956	52.24468
19	1.478309	0.985539	53.23022
20	1.459869	0.973246	54.20347
21	1.406438	0.937625	55.14109
22	1.383106	0.922071	56.06316
23	1.364462	0.909641	56.97280
24	1.325696	0.883797	57.85660

25	1.282881	0.855254	58.71185
26	1.265759	0.843840	59.55569
27	1.237400	0.824933	60.38063
28	1.231386	0.820924	61.20155
29	1.218486	0.812324	62.01388
30	1.178767	0.785845	62.79972
31	1.157668	0.771779	63.57150
32	1.119429	0.746286	64.31779
33	1.111453	0.740969	65.05875
34	1.080093	0.720062	65.77882
35	1.076734	0.717823	66.49664
36	1.061667	0.707778	67.20442
37	1.038433	0.692289	67.89671
38	1.018114	0.678742	68.57545
39	1.003320	0.668880	69.24433

TABLE 3
DIMENSION AND OUTCOMES SCALE MEANS, STANDARD DEVIATION, AND ALPHA COEFFICIENTS

Climate Dimensions	Means	Standard Deviations	Alpha Coefficients
Negative Climate	7.82	11.98	0.78
Positive Environment	3.65	8.67	0.86
Negative Environment	4.44	7.65	0.79
Strategic	4.28	9.61	0.89
Improving	4.98	8.98	0.89
Developing	1.85	5.46	0.79
Structure	1.96	6.95	0.74
Interpersonal	17.78	28.66	0.96
Preparation	3.52	6.33	0.72
Performance Management	1.83	6.04	0.79
Directing	2.87	6.41	0.71
Values/Ethics	3.87	4.87	0.66
Assessing	2.54	5.53	0.73
Building	1.13	4.55	0.71
Decision-Making	4.13	7.55	0.70
Leadership Perceptions	5.84	16.06	0.79

TABLE 4
MEANS, STANDARD DEVIATIONS, AND ALPHA COEFFICIENTS OF OUTCOMES SCALES

Outcome Scales	Means	Standard Deviations	Alpha Coefficients
Effectiveness	18.22	30.52	0.93
Efficiency	7.77	14.93	0.80
Results	8.06	15.50	0.85
Motivation	12.80	24.51	0.90
Satisfaction	22.09	36.41	0.95
Overall Climate	35.55	58.25	0.97
Positive Climate	27.73	47.82	0.97
Overall Environment	8.09	15.20	0.90
Senior Leadership Climate	13.74	29.87	0.95

TABLE 5
TOTAL VARIANCE EXPLAINED BY PRINCIPLE COMPONENTS ANALYSIS

Total Variance Explained			
Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	13.06372	65.31858	65.31858
2	1.488837	7.444184	72.76276
3	1.116694	5.583471	78.34623

TABLE 6
FACET/STATE SCALE MEANS, STANDARD DEVIATIONS, AND ALPHA COEFFICIENTS

Facet Scales	Means	Standard Deviations	Alpha
Affective Facet	105.91	172.11	0.98
Cognitive Facet	26.81	57.62	0.97
Instrumental Facet	24.89	46.25	0.91
State Scales			
Affective State	39.53	65.12	0.97
Cognitive State	15.45	31.02	0.95
Instrumental State	13.96	29.07	0.89

Correlation matrices provided initial evidence for construct validity. A correlation matrix (Table 7) of the 16 climate dimensions, 9 outcomes, 3 climate facets and 3 states indicated that all the scales were significantly correlated with each other at $p < 0.01$ level. There was sufficient variation in the correlation coefficients to explore the possibility of differential predictions of outcomes when the dimensions, facets or states were independent variables.

Table 8 presents a summary of the 45 hierarchical regression analyses. F tests for the final hierarchical models were significant for all the climate dimensions, facets, states, and outcomes at $p < .001$ level. In general, the beta weights were significant for the sixteen climate dimensions in predicting the three facets, three states, and nine outcomes. These results provide support for hypothesis 1.

DISCUSSION

The LCCS was predictive of molar outcomes and may have utility for commanders to see how they have inspired the workforce and transformed the overall climate. Military training focuses upon accelerating leader development and becoming adaptive and flexible leaders who use their new leadership skills and build or sustain their command climates.

Using James and Jones (1974, 1976) model, refined by Kopelman, et al., (1990) as a theoretical underpinning, explains certain influences between leadership and climate. This climate measure looked at different levels of leadership and related facets/states to global outcomes and helps to give meaning to these molar climate constructs by placing them in a nomological network (Cronbach & Gleser, 1965) and frameworks (Carr, et al., 2003; James & Jones, 1974, 1976; Kopelman et al., 1990; Ostroff, 1993). Most theories of leadership (e.g., Fiedler's Contingency Theory, 1967; Transformational Leadership and Full-Range Model, Bass, Avolio, Jung, & Berson, 2003) predict performance and recommend development. Including leadership into this model addresses one of the gaps in climate research concerning the mediating/moderating linkages between climate and outcomes (Ostroff et al., 2002).

A researcher can use the LCCS to look at leadership and its moderating effect upon molar outcomes. An increased understanding of what environmental characteristics influence leadership perceptions and how these shared experiences translate into outcomes is clearly valuable. Knowing what drivers of organizational change are related to particular outcomes can assist leaders focus an intervention and measure its effects. An organizational assessment and a climate assessment go hand in hand. After skill development and a little time to display and use these new skills, a commander can reassess the climate and see if a transformation to predicted outcomes has occurred and whether there is a need to address other specific climate issues or organizational drivers. Similarly, when using the LCCS, you may find an intuitive difference among leadership levels and then use information about the different drivers in tailored ways to influence certain facets and maximize a cumulative impact on organizational outcomes. This research supports hypothesis 1 where adding the instrumental facets would result in a model to guide the development of the LCCS. This study found support for the mediation model of climate suggested by Kopelman, et al., (1990) in that, this model was adequate in predicting the climate to outcome relationships and provides support for previous research that found differential relationships between the three facets of a climate and outcomes. The changes in beta weights suggest that there may be other mediators involved. Other mediators might be personality, cognitive ability, and leadership style. Previous research has indicated that instrumental (Carr, et al., 2003) states may be related to outcomes, but few have empirically tested this proposition. These results suggests that a molar climate measure would have some utility in evaluating cultures and climates of other military forces and DOD civilian agencies.

TABLE 7
CORRELATIONS AMONG DIMENSIONS, OUTCOMES, FACETS AND STATES

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1. Interpersonal																															
2. Preparing/Training	0.75																														
3. Performance Management	0.76	0.68																													
4. Directing	0.64	0.47	0.50																												
5. Values/Ethics	0.68	0.56	0.53	0.44																											
6. Assessing	0.74	0.64	0.66	0.53	0.58																										
7. Building	0.70	0.64	0.68	0.47	0.56	0.64																									
8. Decision-Making	0.75	0.64	0.64	0.53	0.63	0.64	0.62																								
9. Strategic	0.68	0.57	0.58	0.42	0.58	0.57	0.56	0.55																							
10. Improving	0.70	0.60	0.58	0.40	0.58	0.62	0.56	0.58	0.79																						
11. Developing	0.56	0.51	0.60	0.32	0.47	0.53	0.52	0.51	0.71	0.72																					
12. Structure	0.64	0.56	0.58	0.45	0.48	0.56	0.55	0.54	0.72	0.75	0.69																				
13. Positive Environment	0.75	0.60	0.62	0.47	0.56	0.61	0.70	0.65	0.63	0.62	0.52	0.61																			
14. Negative Environment	0.62	0.48	0.49	0.56	0.49	0.45	0.55	0.50	0.52	0.47	0.36	0.53	0.73																		
15. Leadership Perceptions	0.50	0.39	0.40	0.61	0.42	0.38	0.39	0.44	0.42	0.41	0.31	0.48	0.47	0.64																	
16. Negative Climate	0.81	0.69	0.73	0.74	0.67	0.75	0.65	0.75	0.59	0.61	0.53	0.61	0.66	0.59	0.60																
17. Positive Climate	0.98	0.81	0.81	0.66	0.72	0.80	0.78	0.79	0.71	0.72	0.60	0.67	0.78	0.64	0.51	0.84															
18. Overall Climate	0.97	0.81	0.82	0.69	0.73	0.81	0.77	0.80	0.70	0.72	0.60	0.67	0.77	0.65	0.54	0.90	0.99														
19. Overall Environment	0.74	0.58	0.60	0.55	0.56	0.58	0.68	0.63	0.62	0.59	0.47	0.61	0.94	0.92	0.59	0.68	0.76	0.77													
20. Senior Leader Climate	0.73	0.64	0.65	0.45	0.60	0.64	0.61	0.61	0.90	0.93	0.85	0.88	0.68	0.53	0.46	0.66	0.76	0.76	0.65												
21. Effectiveness	0.90	0.81	0.79	0.57	0.71	0.78	0.74	0.81	0.79	0.82	0.74	0.76	0.78	0.60	0.49	0.83	0.94	0.94	0.75	0.87											
22. Efficiency	0.56	0.42	0.43	0.72	0.46	0.43	0.42	0.50	0.42	0.41	0.33	0.50	0.49	0.66	0.93	0.69	0.57	0.61	0.61	0.47	0.53										
23. Motivation	0.91	0.74	0.80	0.68	0.71	0.73	0.77	0.76	0.77	0.75	0.67	0.73	0.78	0.67	0.61	0.86	0.93	0.94	0.79	0.82	0.91	0.63									
24. Results	0.86	0.72	0.75	0.57	0.64	0.74	0.68	0.69	0.79	0.76	0.72	0.80	0.77	0.66	0.51	0.75	0.88	0.88	0.77	0.86	0.89	0.54	0.87								
25. Satisfaction	0.90	0.75	0.73	0.64	0.71	0.76	0.75	0.75	0.77	0.81	0.62	0.74	0.84	0.76	0.62	0.81	0.93	0.93	0.86	0.83	0.90	0.63	0.91	0.87							
26. Affective Facet	0.97	0.81	0.82	0.67	0.74	0.81	0.77	0.81	0.70	0.72	0.61	0.67	0.78	0.64	0.53	0.89	0.99	0.99	0.76	0.76	0.94	0.60	0.94	0.88	0.93						
27. Cognitive Facet	0.73	0.64	0.65	0.45	0.60	0.64	0.61	0.61	0.91	0.93	0.85	0.88	0.67	0.53	0.46	0.66	0.76	0.76	0.65	0.99	0.87	0.47	0.82	0.86	0.83	0.76					
28. Instrumental Facet	0.75	0.58	0.60	0.71	0.58	0.59	0.65	0.64	0.61	0.59	0.46	0.63	0.85	0.91	0.82	0.75	0.77	0.79	0.94	0.65	0.74	0.82	0.82	0.77	0.87	0.78	0.65				
29. Affective State	0.97	0.81	0.82	0.65	0.74	0.81	0.79	0.83	0.71	0.73	0.62	0.68	0.82	0.66	0.52	0.86	0.99	0.99	0.80	0.77	0.95	0.58	0.94	0.89	0.94	0.99	0.77	0.80			
30. Cognitive State	0.73	0.65	0.66	0.42	0.61	0.65	0.63	0.61	0.90	0.92	0.85	0.84	0.70	0.52	0.41	0.66	0.77	0.77	0.66	0.99	0.88	0.42	0.82	0.87	0.83	0.77	0.99	0.64	0.78		
31. Instrumental State	0.64	0.49	0.51	0.76	0.50	0.50	0.51	0.55	0.52	0.50	0.39	0.59	0.62	0.81	0.94	0.73	0.66	0.69	0.76	0.57	0.62	0.94	0.74	0.66	0.76	0.68	0.57	0.93	0.67	0.52	

All Correlation were significant at the 0.01 level (2-tailed).

TABLE 8
SUMMARY OF FINAL MODELS OBTAINED IN FORTY-TWO HIERARCHICAL MULTIPLE REGRESSION ANALYSES

	Facets			States		
	Affective Facet	Cognitive Facet	Instrumental Facet	Affective State	Cognitive State	Instrumental State
Dimensions as Predictors						
Negative Climate			0.095 ****			0.049 **
Positive Environment		0.049 ****		0.118 ****		
Negative Environment			0.533 ****			0.264 ***
Strategic		0.354 ****			0.336 ****	
Improving		0.423 ****			0.409 ****	
Developing		0.268 ****			0.280 ****	
Structure			0.053 ***			0.070 ***
Interpersonal	0.651 ****			0.553 ****		
Preparation/ training			0.037 *		0.069 ****	
Performance Management			0.050 **			-0.032 **
Directive			0.092 ****			0.196 ***
Values/Ethics	0.077 ****			0.076 ****		
Assessing	0.132 ****			0.118 ****		
Building	0.121 ****			0.117 ****		
Decision-Making	0.116 ****			0.138 ****		
Leadership Perceptions			0.304 ****			0.599 ***
Multiple R	0.993	0.987	0.977	0.995	0.979	0.992
R2	0.985	0.975	0.955	0.989	0.958	0.984
Adjusted R2	0.985	0.974	0.954	0.989	0.958	0.984
F	4957.4 ****	3510.6 ****	1104.4 ****	5561.3 ****	2115.1 ****	3735.2 ****
Facets as Predictors						
Affective Facet				0.94 ****	0.06 ****	-0.11 **
Cognitive Facet				0.03 ***	0.96 ****	-0.01 Insig.
Instrumental Facet				0.04 ****	-0.04 **	1.02 ****
Multiple R				0.99	0.99	0.93
R2				0.99	0.97	0.87
Adjusted R2				0.99	0.97	0.87
F				13029. ****	4478.0 ****	810.0 ****

TABLE 8.2
SUMMARY OF FINAL MODELS OBTAINED IN FORTY-TWO HIEARCHICAL MULTIPLE REGRESSION ANALYSES

	Outcomes																			
	Satisfaction		Motivation		Results		Efficiency		Effective		Overall Climate		Positive Climate		Overall Environment		Senior Leader Climate			
Dimensions as Predictors																				
	Beta Weights of Final Model																			
Negative Climate	-0.058	*	0.132	****	-0.074	*	0.196	****	0.073	**	0.141	****	-0.079	****						
Positive Environment	0.162	****	0.064	**	0.096	**			0.086	****	0.019	****	0.023	****			0.022	**		
Negative Environment	0.166	****			0.114	****			-0.028	*										
Strategic			0.147	****	0.161	****			0.063	****					0.140	****	0.271	****		
Improving	0.256	****			-0.072	*			0.114	****							0.353	****		
Developing			0.089	****	0.141	****			0.132	****							0.219	****		
Structure					0.249	****			0.071	****							0.258	****		
Interpersonal	0.252	****	0.336	****	0.341	****			0.240	****	0.517	****	0.630	****	0.323	****				
Preparation/ training	0.078	****							0.150	****	0.086	****	0.105	****						
Performance Management			0.113	****	0.091	**	-0.055	*	0.048	**	0.075	****	0.091	****						
Directive	0.046	**	0.072	****			0.193	****	-0.039	*	0.051	****	0.062	****						
Values/Ethics	0.060	****	0.056	**					0.032	*	0.056	****	0.068	****						
Assessing	0.081	****	-0.065	**	0.148	****	-0.069	**	0.068	****	0.071	****	0.087	****						
Building	0.045	**	0.144	****	-0.059	*					0.072	****	0.088	****	0.274	****				
Decision-Making	0.037	*							0.160	****	0.042	****	0.051	****						
Leadership Perceptions	0.093	****	0.097	****			0.742	****							0.264	****				
	Final Model Statistics																			
Multiple R	0.982		0.971		0.947		0.954		0.982		0.998		0.998		0.817		0.995			
R2	0.965		0.943		0.896		0.909		0.965		0.997		0.996		0.668		0.990			
Adjusted R2	0.963		0.941		0.893		0.908		0.963		0.997		0.995		0.664		0.990			
F	815.5	****	541.9	****	282.5	****	735.5	****	693.6	****	11876.4	****	7993.7	****	184.4	****	6106.6	****		

TABLE 8.3
SUMMARY OF FINAL MODELS OBTAINED IN FORTY-TWO HIEARCHICAL MULTIPLE REGRESSION ANALYSES

Facets as Predictors	**Beta Weights of Final Model**																			
Affective Facet	0.473	***	0.625	***	0.440	***	-0.060	****	0.701	***	0.988	****	1.002	****	0.046	Insig	0.001		Insig.	
		***		***		***				***				insig						
Cognitive Facet	0.252	*	0.223	*	0.438	*	-0.095	*	0.372	*	-0.007	**	0.008	.	0.053	*	0.997		****	
Instrumental	0.339	***	0.187	***	0.136	***	0.933	****	-	**	0.022	****	-0.016	*	0.868	****	0.000		Insig.	
	Final Model Statistics																			
Multiple R	0.973		0.963		0.932		0.830		0.974		0.999		0.995		0.941		0.999			
R2	0.947		0.927		0.869		0.689		0.949		0.999		0.991		0.885		0.997			
Adjusted R2	0.946		0.926		0.868		0.687		0.949		0.999		0.991		0.884		0.997			
F	2188.5	***	1548.	***	813.8	***	272.3	****	2289.	***	90424.9	****	13111.	****	939.9	****	45098.	****		
States as Predictors	**Beta Weights of Final Model**																			
Affective State	0.600	***	0.634	***	0.461	***	-0.038	Insig.	0.693	***	0.978	****	1.010	****	0.452	****	-0.057	****		
Cognitive State	0.234	***	0.227	***	0.451	***	-0.071	*	0.360	***	-0.026	**	-0.019	p<.1	0.098	*	0.982	****		
Instrumental	0.238	***	0.196	***	0.111	***	0.999	****	-	*	0.051	****	-0.005	Insig	0.404	****	0.094	****		
	Final Model Statistics																			
Multiple R	0.970		0.964		0.935		0.940		0.979		0.993		0.992		0.856		0.989			
R2	0.941		0.928		0.874		0.884		0.958		0.985		0.983		0.733		0.979			
Adjusted R2	0.941		0.928		0.873		0.883		0.958		0.985		0.983		0.731		0.979			
F	1955.8	***	1592.	***	854.6	***	931.8	****	2805.	***	8232.9	****	7180.3	****	337.1	****	5635.1	****		
Facets and States as Predictors	**Beta Weights of Final Model**																			
Affective Facet		mc		mc		mc		mc		mc	0.983	****	1.015	****		mc		mc		
Cognitive Facet	0.234	***		mc		mc		mc		mc		mc		mc		mc		mc		
Instrumental	0.313	***		mc	0.140	***		mc	-	***		mc		mc	0.825	****		mc		
Affective State	0.512	***	0.634	***	0.428	***		mc	0.723	***		mc		mc	0.143	****	-0.057	***		
Cognitive State		mc	0.227	***	0.445	***	-0.093	***	0.363	***		mc		mc		mc	0.982	****		
Instrumental		mc	0.196	***		mc	0.985	****		mc	0.024	****	-0.029	***		mc	0.094	****		
	Final Model Statistics																			
Multiple R	0.975		0.964		0.935		0.940		0.979		0.999		0.996		0.943		0.989			
R2	0.951		0.928		0.875		0.883		0.959		0.999		0.991		0.888		0.979			
Adjusted R2	0.951		0.928		0.874		0.883		0.959		0.999		0.991		0.888		0.979			
F	2401.8	***	1592.	***	857.3	***	1395.9	****	2887.	***	149446.	****	20480	****	1468.	****	5635.1	****		

*p<.05. **p<.01 ***p<.001 ****p<.0001 mc= excluded due to multicollinearity

A modified model tested the relationships among climate dimensions, facets, states and outcomes and provides support for hypothesis 2 where climate can be measured by three molar facets or states. This model creates parsimony by proposing and hypothesizing that six higher order constructs may be redundant where using a set of three (facets or states) are sufficient. This study shows that this model can use either the facets or states and their prediction equations will not suffer. The hierarchical regression analyses demonstrate that using sixteen antecedent climate dimensions did rather well in accounting for the variance in the nine outcomes and (3) facets/states. This test extends the work of Kopelman et al. (1990), Ostroff (1993) and Carr et al., (2003). When the climate dimensions are categorized into Ostroff's (1993) taxonomy, the three higher order facets explain a meaningful amount of variance in outcomes, but the results of this study suggest that both facets and states are not necessary to explain the meditational nature of the relationships from climate to outcomes. When eliminating the redundant scale, the variance accounted for by the remaining states and facets had only a slightly better adjusted R^2. Essentially, whether using facets or states, the choice is academic because the results were similar and appeared to be predicting outcomes similarly. Also, in agreement with Carr et al., (2003), a theme that should be consistently investigated is that of bandwidth so that there be a proper match between predictors and outcomes. This study found support for this hypothesis and that theme.

Meanings of the Climate Dimensions and Outcomes

Sixteen reliable and valid climate dimensions were developed. The LCCS relates to three higher-order molar facets/states that are predictive of nine individual and unit-level outcomes. These 16 dimensions and 9 outcomes mean are shown in tables 9 and 10.

LIMITATIONS

This study has three limitations –not using external criteria to establish better content validity, its use of redundant scales and possibly, a common method variance. Although this study focused on the construction and development of a molar climate measure, its' use of outcome criteria internally derived from the instrument itself and not from external measures assumes some non-zero correspondence with external criteria. External criteria concurrently collected would have established better criterion related validity, but this was not done. Therefore, criterion related validity with external measures must be viewed as one limitation of this study. The LCCS may have a statistical bias toward Army versus other military (or DOD civilian) command climates.

The possibility exists that some climate constructs were excluded. The initial PCA produced a large number of components where several components were not included in the final climate measure because the reliabilities for 1-3 item scales were inadequate. The Subject Matter Experts (SME) were Army officers. They either endorsed or discounted a content area as important. It could be that with another military organization, one construct eliminated by the Army SMEs would now be pertinent and important. Multiple scales were created that may be redundant or too highly correlated. Multicollinearity may attenuate the true relationships among the constructs. However, this was not a problem unless simultaneously using both the facets and states as predictors. Except for the facets and states, each dependent variable contributed unique variance. More needs to be done to differentiate between these two higher order constructs.

As the data was collected from a single source, a common method bias may exist. This may result in an inflation of relationships due to method variance. Data were obtained from Soldier's self-reports without an external outcome measure. However, as Carr et al., (2003) points out, if the differential relationships were due to method variance, one should see similar relationships across the various links in the model. This pattern was not present in the data. Until a confirmatory factor analysis is conducted, a bias may still exist.

FUTURE RESEARCH

Future research should look at ways to define several of the constructs used in this study, expand its focus to include other types of externally measured outcomes mediators, and specific climate measures to provide additional content validity. There is a need to evaluate aspects of the mediational hypothesis before conclusions can be reached about the influence of these molar facets/states on individual- and unit-level performance. External measures of the states would help to identify and define these process variables as independent mediators and modify this model. Other meditational variable include characteristics of the organization, size, and demographic make-up (Carr et al., 2003), individual differences, cognitive ability, motivation to lead, and leadership styles. Moreover, one can expect that moderating variables are likely to have an impact upon a commander's climate transformation efforts. A greater emphasis should be placed on independent, objective measures of organizational performance and should include indicators of diversity. These recommendations emphasize Murphy and Deshon's (2000) call for a multidimensional framework for validity.

A spin off from this avenue of research could look at the factorial invariance or measurement equivalence of the outcome measures when collecting data from several sources. Statistical bias could have important confounding effects upon the outcomes. Perhaps a test of the LCCS with an Air Force population (or DOD civilians) would show different relationships between the command climate and outcomes. With the inclusion of different populations (civilians and other military organizations) being assessed by the same instrument, IRT and Differential Functioning of Items and Tests (DFIT), becomes more pertinent and applicable. This study also sets the stage for such research and testing this model's generalizability to other military organizations and bears future investigation with different levels of leadership.

CONCLUDING REMARKS

A new molar climate measure that includes the influence of leadership upon a command climate has been presented. The model helps to see how leaders influence their climate, what they can do to transform their climates and assists in obtaining one of several outcomes. This measure predicts molar level outcomes where a specific measure may miss the mark. The LCCS measures antecedents in the command climate that may enhance or hinder organizational development. Coupled with an organizational assessment of drivers, this may synergistically accelerate the way we develop leaders and help build effective command climates. Predicting broader outcomes (e.g., motivation and effectiveness), was well served by Carr et al., (2003) and Ostroff et al., (2002) taxonomy of molar climate perceptions. Climate can be conceptualized and measured by three facets/states – affective, cognitive, and instrumental; thereby this study added to the literature evidence on the instrumental state. This study suggests that both climate facets and process states are similar and both sets are not necessary. In conclusion, the LCCS is a reliable, comprehensive, and molar command climate assessment tool. Upon cross-validation with other external criteria and military organizations, the LCCS may prove useful for the evaluation of their organizational drivers and operational commands by linking a Airman's (or other military or DOD civilian) command climate and level of leadership to one several important outcomes and organizational drivers.

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