

RESEARCH REPORT

Hitting the Mark: The Influence of Emotional Culture
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Previous research has established the role of positive emotional cultures such as companionate love and joy in predicting team performance. Building on this work, the present study analyzes the role of positive emotional culture variables as predictors of resilient performance by examining patterns of objective team performance in U.S. Army tank crews over time. We also broaden the emotional culture domain by investigating an action-oriented positive emotional culture of optimism and a negative emotional culture of anger. During a high-stakes international military training exercise, 55 U.S. Army tank crews ($N = 175$) completed a pre-qualification performance event, a final qualification performance event, and surveys at baseline and after both events. The positive emotional culture of optimism predicted a pattern of resilient performance defined as a rebound from poor pre-qualification performance. Emotional cultures of joy and optimism also directly predicted final performance, but neither the emotional culture of companionate love, nor the emotional culture of anger was a significant predictor. Results demonstrate the distinct nature of each of these emotional culture variables, and show that these variables differ from group trait affectivity and cohesion. Teams with a strong emotional culture of optimism were better positioned to rebound in the face of poor performance, suggesting that organizations that promote an optimistic culture develop more resilient teams.

Keywords: emotional culture, team resilience, performance, affect, cohesion

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A team of software engineers has to deliver a product after missing a critical deadline, a sports team loses the final two games before heading into the playoffs, a research team learns a late-stage proposal was denied funding while preparing a key report. Emotions run high. In each scenario, teams are expected to perform in the

wake of setbacks. When responding to negative performance events, teams have an opportunity to demonstrate resilience by responding positively and “bouncing back” (Stoverink et al., 2020). Some teams will rebound and improve performance—other teams will respond with continued poor performance.

Given that almost all teams will at some point experience disappointing performance, organizations have an interest in identifying drivers of team resilience—team characteristics that help teams respond effectively to setbacks. While there are many predictors of team resilience, affect is strongly predictive of resilient processes at the individual level (Cohn et al., 2009), prompting calls in the team resilience literature to examine collective affectively-based predictors (Stoverink et al., 2020). A particularly relevant predictor is emotional culture, defined as the norms, values and deep underlying assumptions regarding the specific types of emotions employees express, and/or should express, in a social unit (Barsade & O’Neill, 2014). Research has demonstrated that certain positive emotional cultures predict team performance, yet it remains unknown whether any positive emotional cultures predict resilient team performance.

Distinguishing the predictive value of different positive emotional cultures on resilience is important for organizations. For instance, if a culture of joviality is the central positive emotional culture underlying resilience, team leaders trying to enhance team resilience would engage in different behaviors (e.g., facilitating fun and playful team behaviors) to shape the culture than they would if a culture of companionate love

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were the key positive emotional culture underlying resilience (e.g., reinforcing messages of caring and affection, facilitating support systems among team members). Thus, organizations may benefit from understanding the role of specific emotional cultures with respect to both performance and responses to setbacks. In the present study, we examine the role of different types of emotional cultures in U.S. Army tank crews engaged in a high-stakes training exercise where many crews had the opportunity to demonstrate resilience and rebound from poor initial performance, but only some succeeded.

Resilient Performance and Emotional Cultures

Theoretically, defining resilience in terms of “bouncing back” implicitly recognizes the role of time (see Bliese et al., 2017). That is, “resilience” can be conceptualized as a dynamic pattern in response to a relevant event (also see Bonanno, 2004; Britt et al., 2016). To date, there have been few, if any, studies that have examined team resilience without relying on perceptual ratings of resilience (e.g., see Hartmann, Weiss, Newman, et al., 2020; Stoverink et al., 2020, for reviews). Although there is value in relying on team member or observer perceptions of resilience, we examine the utility of conceptualizing resilience as a pattern of performance over time using objective metrics in a workplace setting.

Besides assessing how resilient patterns can be modeled using two performance episodes, we identify specific emotional cultures that lead to team resilience. Emotional culture is primarily manifested through the *expression* of emotion within the social unit (Barsade & O’Neill, 2014). This emotion expression can come in myriad forms including bodily postures, vocal cues, facial expressions, language, and behavior (Mauss & Robinson, 2009). Per the emotional culture model, these emotion expressions are the primary conduit through which emotional culture is enacted and transmitted. Emotion expression in all forms serves the function of representing an employee’s current enactment of the culture, and can also trigger inferential processes in other team members (Van Kleef, 2009) about what is considered appropriate. In so doing, emotion expression has a prescriptive element directing future emotion expressions within the team, which reinforce and build the culture. An integral part of this process is that employees express emotions that are considered appropriate in their work context, *regardless* of whether they internally and individually feel those emotions.¹ Different aspects of emotional culture have been linked to organizationally-relevant outcomes (Barsade & Knight, 2015), including subjective employee ratings of job satisfaction, emotional exhaustion, and organizational identification (Yue et al., 2020) as well as to objective performance indicators such as employee absenteeism, patient health, and satisfaction in a long-term care facility, firefighter response times, and accidents (Barsade & O’Neill, 2014; O’Neill & Rothbard, 2017).

We expand existing research in several ways. First, we investigate whether different emotional cultures contribute to a pattern of resilient performance. Second, the nomological net surrounding emotional culture is relatively undeveloped; therefore, we examine how aspects of emotional culture differ from each other and from the established construct of group trait affectivity and from cohesion. Third, emotional culture research has largely focused on positive emotional cultures; we add to the literature by considering anger as an example of negative emotional culture. Finally, we provide a constructive replication of the role of positive emotional cultures on performance in a novel sample with an objective team-level performance outcome.

Differentiating Constructs in Positive Emotional Culture

At its core, emotional culture, like individual emotions, ranges in terms of valence and intensity (Barsade & Gibson, 2007). In the work setting, different discrete positive emotional cultures appear to be relevant in different contexts. For example, Barsade and O’Neill (2014) found an emotional culture of companionate love (characterized by the expression of affection, caring, compassion, and tenderness among employees) to be related to successful team functioning and patient outcomes in healthcare teams. Subsequently, O’Neill and Rothbard (2017) examined both emotional cultures of companionate love and joviality in firefighting units, and found that not only did a culture of companionate love predict less risk-taking off the job, but a culture of joviality was also important. Units high in a culture of joviality (characterized by humor and joking) responded to emergency calls more quickly; however, they also had more accidents and property loss than units low in a culture of joviality. These results suggest that certain positive emotional cultures are uniquely relevant in specific contexts.

Several positive emotional cultures seem likely to be related to resilience. In the present study, we explicitly focus on emotional cultures of companionate love and joy given their established importance for performance and self-reported resilience (Hartmann, Weiss, Hoegl, et al., 2020) in previous research. We also introduce a third positive emotional culture by examining the emotional culture of optimism given that optimism has been established as a factor in a team’s ability to perform (e.g., Brundin & Gustafsson, 2013; Luthans et al., 2008) and has been directly related to resilience (Youssef & Luthans, 2007).

These three positive emotional cultures are not only expected to predict performance directly but to predict a pattern of resilient performance following a setback. Direct effects between emotions and performance may have been found in previous research in part because high performing teams bounce back when they encounter a performance setback. This reasoning has yet to be empirically examined. We do so here and describe below how these emotional cultures may operate to support resilient performance.

In the case of a culture of companionate love, a team’s expression of affection, caring, and compassion may lead to greater psychological resources (Fredrickson et al., 2008). This sense of attachment should contribute not only to a team’s ability to perform, but also their recovery from setbacks because team members are invested in one another and primed to persevere on behalf of one another (Barsade & O’Neill, 2014). In the case of a culture of joy (the superordinate construct incorporating joviality; Shaver et al., 1987), a team’s expression of cheerfulness and enthusiasm has been consistently shown to relate to better performance (Diener et al., 2020). A culture of joy may also enable performance following setbacks by helping the team sustain positive energy rather than get mired in disappointment, as suggested by Hartmann, Weiss, Hoegl, et al.’s (2020) study of the culture of joy and self-reported team resilience.

¹ For example, emotion norms not matching what employees feel can be seen in studies of flight attendants (Hochschild, 1983), Disneyland employees (Van Maanen, 1991), and bill collectors (Rafaeli & Sutton, 1991). While employees can genuinely feel the expected emotions, they do not have to do so for the emotional culture to exist, as explicated in the emotional culture model (Barsade & O’Neill, 2014).

With respect to optimism, we follow Shaver et al.'s (1987) approach and include team perceptions of optimism, hope, and eagerness, which together form the affective prototype of optimism. While these feelings states are differentiable (Bryant & Cvenge, 2004), they share positive, forward-looking emotions that should encourage resilience. Indeed, optimism has been found to predict performance (e.g., Brundin & Gustafsson, 2013; Luthans et al., 2008; Woodman et al., 2009; Youssef & Luthans, 2007) as well as different forms of resilience. For instance, collective optimism positively correlated with perceptions of student team resilience (West et al., 2009) and with supervisor-rated team performance and team ratings of resilience (Meneghel et al., 2016). Optimism also correlated with better individual response to failure in a sales environment (Dixon & Schertzer, 2005). With this foundation, we examine an emotional culture of optimism as a predictor of both performance and resilient performance given that teams with high levels of optimism should be able to remain future focused and maintain a positive mindset.

Hypothesis 1 represents a constructive replication of the direct effects between two emotional cultures (companionate love and joy) reported in previous research (e.g., Barsade & O'Neill, 2014; O'Neill & Rothbard, 2017) and a first-time investigation of the emotional culture of optimism. The replication represents a robust test by examining Time 2 performance while controlling for Time 1 performance using objective team performance outcomes. **Hypothesis 2** focuses on the role of these positive emotional cultures in resilient performance by examining team performance patterns over time.

Hypothesis 1: The emotional cultures of companionate love, joy, and optimism at Time 1 will show a direct relationship to improvements in Time 2 team performance.

Hypothesis 2: The emotional cultures of companionate love, joy, and optimism at Time 1 will interact with Time 1 performance in a pattern indicating resilient performance. Specifically, teams that perform poorly at Time 1, but have stronger positive emotional cultures, will display a significant rebound on Time 2 performance.

A core assumption of the theory leading up to Hypotheses 1 and 2 is that positive emotional cultures are distinguishable from related constructs such as group trait affectivity and cohesion. Based on Schneider's attraction-selection-attrition (1987) framework, George (1990) found convergence in what group members actually felt through their combined trait group positive affectivity (PA) and negative affectivity (NA). This "bottom-up" compositional approach differs from the "top-down" approach of emotional culture. In the top-down approach, emotions enacted by group members reflect the values, norms, and deep underlying assumptions of the emotional culture prescribed to group members (Barsade & Gibson, 2012). Thus, emotional culture is enacted primarily in the socially visible *expression* of emotions within the group, and not in the aggregated dispositional propensities of group members to feel particular emotions.

Emotional culture also differs from cohesion, defined as "... the degree of member integration or "bonding" in which members share a strong commitment to one another and/or to the purpose of the team" (Mathieu et al., 2015, p. 714). The construct of cohesion tends to be relatively broad (Carron & Brawley, 2012), whereas emotional culture focuses on the group's expression of specific emotions.

Despite these differences, cohesion is related to emotional culture in that emotions likely represent one of the "forces acting on members to remain in the group" (Festinger et al., 1950; p. 274). Not surprisingly, cohesion has also been found to correlate with a group's positive emotion (Lawler et al., 2000) and may be influenced by a team's emotional culture. Given this potential overlap, we assess the degree to which the construct of cohesion can be differentiated from positive emotional cultures. We do this by examining the measurement properties of positive emotional cultures with respect to both specific positive emotional cultures and to group cohesion, as well as to group trait affectivity.

Anger as an Example of a Negative Emotional Culture

Despite growing evidence for the importance of positive emotional cultures on team outcomes, there has been relatively little exploration of negative emotional cultures. In applied settings, the emotional culture of some teams is characterized by negative emotions such as fear and anger, and these types of cultures may not be unusual. While such teams are likely familiar to employees and supervisors, there is a dearth of empirical evidence regarding the relationship between these negative emotional cultures and team performance and performance following setbacks. Understanding and managing these negative emotional cultures is potentially important for strengthening team functioning and resilience.

In initiating the examination of negative emotional cultures, we focused on anger because anger is one of the emotions that employees are most likely to express at work (Gibson, 2008) and is related to mainly negative workplace outcomes (Glomb, 2002; Miron-Spektor & Rafaeli, 2009; Rafaeli et al., 2012). In the military, anger is relatively accepted (Adler et al., 2017; Lindebaum et al., 2016) despite the fact that research has found that anger is associated with less successful adjustment (Adler et al., 2017), poorer decision making (Wilk et al., 2013), and more difficulties in relationships (Novaco et al., 2012). Moreover, anger has been negatively correlated with psychological resilience (Fredrickson et al., 2003), suggesting that an emotional culture of anger would prevent teams from being able to galvanize themselves in response to poor performance. In sum, a team characterized by an emotional culture of anger may find itself in conflict and unable to coordinate efforts, presumably inhibiting team performance when attempting to rebound from setbacks. These ideas are presented in **Hypotheses 3** and **4**.

Hypothesis 3: An emotional culture of anger will show a direct relationship to decrements in Time 2 team performance.

Hypothesis 4: An emotional culture of anger will interact with initial performance in predicting Time 2 performance. Specifically, teams that perform poorly at Time 1 and have a stronger emotional culture of anger will display a maladaptive rather than resilient interactive pattern with respect to Time 2 performance.

Method

The present study is a longitudinal assessment of U.S. Army soldiers working in tank crews on an international training mission. Tank crews were composed of four individuals, each with a unique

role, working together. The training event used live fire and was inherently dangerous. This study (Small Team Culture Study) was approved by the institutional review board at the Walter Reed Army Institute of Research (Protocol #2363). This paper is the first publication from this broader data collection.

Study Context

Study participants were active-duty U.S. soldiers on a training exercise in Eastern Europe during the winter of 2017. The training exercise was the start of a 9-month mission that required tank crews to complete a series of training events to test crew proficiency. Following successful completion of these events, crews were then *qualified* and permitted to continue training exercises with other nations. This training exercise, in which crew members were highly dependent on each other, was a mandatory step prior to joining their international counterparts. It was a high stakes endeavor, as failing would prevent the tank crew from progressing to the next phase of training and negatively impact the reputations of the crew members. During the gunnery exercise, the tank was driven through a lengthy obstacle course firing at targets that abruptly appeared at varying distances. The course took approximately 20–40 min, and crews attempted the course once in the daytime and once at night.

Participants

Informed consent was provided by 251 respondents (85% of the sample). The initial sample consisted of 81 crews; however, 23 crews were dropped because poor weather prevented them from completing the night portion of the prequalification event. Two additional crews were dropped because only one crew member agreed to participate, and one crew was dropped because it did not provide survey data at Time 1, resulting in a total of 55 crews and 175 participants for analysis. In terms of demographic characteristics, 53% of the sample were junior enlisted, 36% were non-commissioned officers (NCOs), and 11% were officers. With respect to age, 61% were between the ages of 18–24, 20% were between the ages of 25–29, 18% were between the ages of 30–39, and 1% were over 40 or older. All respondents were males.

Data Collection Procedure

Prior to the first survey, soldiers were briefed and asked to provide informed consent. They were then given a survey to complete (baseline). Approximately 7–10 days later, tank crews completed a “pre-qualification” gunnery event (Time 1 performance). Immediately afterward, the training range staff reviewed crew performance with the teams. Following this review of “pre-qualification” performance, crews completed another survey (Time 1 survey). The final qualifying gunnery event occurred approximately 2–3 days later (Time 2 performance). After participants finished the final gunnery event, they completed a final survey (Time 2 survey). Surveys were linked over time using a personalized code.

Measures

Emotional Cultures

As noted, the construct of emotional culture is primarily manifested in the expression of emotions among the team (Barsade &

O’Neill, 2014). Time 1 emotional culture was therefore measured through participants serving as observers of the emotional culture of their crewmates via emotional expression. Participants were asked, “In general, to what degree do the other soldiers in your crew express the following emotions at work?” The emotional cultures of companionate love, joy, optimism, and anger were rated on a 5-point scale from *Never* to *Very Often*, based on specific emotions relevant to each type of emotional culture (see online supplement). Our measure was “broad enough to include the manifestations of culture at all three levels of abstraction (artifacts, values, and assumptions) . . . ” (Barsade & O’Neill, 2014, p. 567) because participants could use a variety of cues (e.g., facial expressions, language, behaviors) to inform their ratings of the team’s emotional culture. This approach is not the only way to measure emotional culture; other options include cultural artifacts, written value statements, or outside observer ratings. In our context, however, team member ratings were most feasible. Research has also shown—for the culture of companionate love—convergent validity of this group referent-shift consensus model measure (Chan, 1998) with both cultural artifacts and observer ratings (Barsade & O’Neill, 2014).

Performance

Both the Time 1 and Time 2 performance measures consisted of 10 activities (e.g., shooting at a moving pop-up target) each scored on a 100-point scale resulting in a possible performance score of 0–1,000. The points were calculated using standardized procedures based on speed of response, shooting accuracy, and the correct selection of weapon system/ammunition type. Trained observers scored each crew’s performance.

Cohesion

Cohesion was assessed at baseline using the 9-item Social Integration Scale (Smith et al., 1994). Items (e.g., “The members of my crew are quick to defend each other from criticism by outsiders”) were rated on a 5-point scale from *strongly disagree* to *strongly agree*. Cohesion items were analyzed as part of a comprehensive examination of the measurement properties of our constructs (see online supplement).

Group Trait Affectivity

Group trait affectivity was assessed by separately aggregating individual trait PA and NA (Watson & Tellegen, 1985). As trait PA has been correlated with the emotional culture of companionate love and its outcomes (Barsade & O’Neill, 2014), we used it for measurement validation and as a potential control. Since we examine the emotional culture of anger, we also examined trait NA (Watson & Tellegen, 1985). Assessed at baseline, these two measures were the 14-item trait PA and the 16-item trait NA scales, shortened versions of the well-being and stress scales of the Multidimensional Personality Questionnaire (Tellegen, 1982), rated on a 5-point scale from *strongly disagree* to *strongly agree*.

Team Tenure

We assessed the number of months the crew had worked together.

Table 1
ICC, Average $r_{wg(j)}$, and F-Values for Key Variables

Variable	ICC(1)	F-value	p value	ICC(2)	$r_{wg(j)}$
Emotional culture of companionate love Time 1	.18	1.57	.02	.41	.71
Emotional culture of joy Time 1	.17	1.61	.02	.40	.85
Emotional culture of optimism Time 1	.16	1.51	.04	.38	.71
Emotional culture of anger Time 1	.16	1.47	.05	.37	.77
Trait positive affectivity baseline	.00	0.90	.66	.00	.82
Trait negative affectivity baseline	.04	1.16	.25	.13	.74

Data Analyses

Tank crew data are inherently multilevel with crew members providing measures of team-level emotional culture (per the referent-shift consensus model; Chan, 1998), and the performance index (e.g., tank gunnery scores) assessed at the tank crew level. Because the tank crew (as a whole) received performance ratings, we relied on OLS regression with all variables aggregated to the level of the team. Our analyses also examined the discriminant validity of key constructs through a series of confirmatory factor analyses (CFAs) and looked for evidence that teams differed in meaningful ways in terms of emotional culture by focusing on the significance and magnitude of the intraclass correlation coefficient (1) or ICC(1).

Results

ICC(1) and Within-Group Agreement

Following best practices (Bliese et al., 2019), we examined ICC(1) values for scale items to identify items deficient with respect to differentiating crews. The ICC(1) value for the “tenderness” item measuring companionate love was effectively zero, suggesting all-male tank crews did not differ on this item. The three remaining items displayed acceptable between-group differentiation and reliability (Cronbach’s alpha = .77).

Table 1 presents ICC(1), ICC(2) and $r_{wg(j)}$ values for the emotional culture variables and the controls of trait PA and NA. Notice that all ICC(1) values for Time 1 emotional culture variables were 0.16 or larger, indicating at least 16% of the variance in ratings could be explained by tank crew membership. The F-values show that ICC(1) values for all four emotional culture variables would be unlikely to

occur by chance at the 95% significance level. Neither trait PA nor NA displayed significant ICC(1) values (0% and 4%, respectively). These low ICC(1) values help support the construct validity of the emotional culture variables by indicating that crew members’ perceptions of emotional culture were not simply reflecting the group’s trait PA via average levels of dispositional affect (see also online supplement for CFA details). The ICC(2) values were uniformly low as expected due to small team sizes, but do not preclude finding meaningful group-level effects (see Bliese et al., 2018). The average $r_{wg(j)}$ values were all above 0.70. The high $r_{wg(j)}$ values for trait PA and NA are almost certainly a function of the large number of scale items, which inflate $r_{wg(j)}$ estimates (Cohen et al., 2009).

Discriminant Validity of Positive Emotional Culture Items

Full details of the measurement properties of the positive emotional culture variables, trait PA, and cohesion are provided in the online supplement. In summary, a variety of CFA models found support for considering trait PA and cohesion as distinct from positive emotional culture constructs. Models also found evidence distinguishing positive emotional culture variables from one another, with some possible overlap between optimism and joy depending upon which criteria was used.

Descriptive Statistics and Zero-Order Correlations

Table 2 provides means, standard deviations, correlations, and reliability estimates. Overall, gunnery performance scores increased from 596 at Time 1 to 878 at Time 2 highlighting that many teams received relatively low Time 1 scores and had an opportunity to increase performance. The correlation between the two performance

Table 2
Means, Standard Deviations, Correlations and Reliabilities

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Team tenure (months)	5.18	4.62	—									
2. Team positive affectivity baseline	3.18	0.44	.23	.93								
3. Team negative affectivity baseline	2.43	0.53	-.28	-.23	.94							
4. Team cohesion baseline	3.72	0.56	.25	.46	-.20	.93						
5. Team performance Time 1	595.77	168.31	.24	-.07	-.11	-.24	—					
6. Team performance Time 2	878.34	54.91	.14	.18	-.17	.35	.24	—				
7. Emotional culture of companionate love Time 1	2.80	0.58	.40	.50	-.20	.49	-.03	.10	.75			
8. emotional culture of joy Time 1	3.39	0.55	.27	.59	-.20	.57	-.12	.23	.76	.92		
9. Emotional culture of optimism Time 1	3.21	0.56	.45	.55	-.26	.57	-.12	.22	.70	.78	.75	
10. Emotional culture of anger Time 1	2.91	0.53	-.31	-.50	.38	-.31	-.13	-.06	-.51	-.60	-.46	.87

Note. $N = 55$ Teams. Reliabilities (in diagonals) based on individual respondents.

Correlations equal to or larger than |.23| significant at .10, two-tailed. Correlations equal to or larger than |.27| significant at $p < .05$, two-tailed.

Table 3*Main Effect Models for Emotional Culture at Time 1 Predicting Performance at Time 2 Controlling for Time 1 Performance*

Variable	Companionate Love		Joy		Optimism		Anger	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
(Intercept)	804.12***	34.66	755.59***	41.53	761.00***	39.53	827.30***	39.54
Team performance Time 1	0.09*	0.04	0.10**	0.04	0.10**	0.04	0.04*	0.04
Emotional culture of companionate love Time 1	9.77	12.17						
Emotional culture of joy Time 1			25.48*	12.54				
Emotional culture of optimism Time 1					24.91*	12.30		
Emotional culture of anger Time 1							-2.33	13.71
Model R-Square	.09		.15		.15		.08	

Note. * $p < .05$, one-tailed. ** $p < .01$, one-tailed. *** $p < .001$, one-tailed.

scores (.24) indicates some consistency, but also suggests performance changed over time for many teams.

Tests of Hypotheses

Table 3 provides main-effect results relating specific emotional cultures assessed at Time 1 to Time 2 performance. To avoid over-fitting models, non-significant control variables were omitted. In all cases, the Time 1 performance variable was significant, and its inclusion rendered the other controls non-significant. Results partially support Hypothesis 1 in that the emotional cultures of joy and optimism were significantly related to improvements in Time 2 performance; in contrast, the culture of companionate love was not significant. Results did not support Hypothesis 3; an emotional culture of anger was not significantly related to Time 2 performance.

Table 4 provides results testing interactive patterns across Time 1 and Time 2 performance. Hypothesis 2 anticipated an interactive pattern indicative of resilient performance. Notice that the sign of the interaction terms was consistent for all positive emotions; however, it was significant only for a culture of optimism. The form of the interaction is presented in Figure 1. When tank crews performed well at Time 1, they tended to perform well at Time 2 regardless of the level of the culture of optimism at Time 1. In contrast, when tank crews performed poorly at Time 1, a stronger culture of optimism was related to an increase in Time 2 performance. These results are congruent with a resilient pattern, and thus Hypothesis 2 was partially supported. Hypothesis 4 proposed an interaction of an opposite form for anger. The sign of the interaction term was inverse to that of positive cultures, but was not significant.²

Discussion

In this study of tank crews completing a military training exercise, two positive emotional cultures, joy and optimism, predicted better performance; however, only an emotional culture of optimism, not companionate love or joy, predicted a resilient performance pattern in the face of setbacks. These results are among the first to model team resilience as a temporal process by specifically looking at changes in team performance over time. Our approach to understanding resilience augments a literature that has largely focused on perceptual ratings of resilience, and should resonate in applied settings where teams must sustain performance following inevitable setbacks and where leaders are eager to find ways to build resilience.

Interestingly, an emotional culture of anger played no significant role in tank crew performance. While unexpected, this finding is congruent with Barsade and Knight's (2015) observation that negative collective affective constructs are less strongly linked to group member outcomes than positive constructs. It remains to be seen whether negative emotional cultures have less impact than positive ones, or whether they have not yet been examined across enough contexts. It could also be that the results in the present study reflect that people are more attuned to the positive rather than negative emotions of others (Campos et al., 2015). At a minimum, the results highlight that the role of anger in organizations is complex (Geddes et al., 2020).

With respect to understanding emotional cultures in a broader nomological net, our CFA results help support the distinct nature of positive emotional cultures from group trait PA and cohesion. In addition, the ICCs for each emotional culture were much higher than the ICCs for trait PA and NA, indicating emotional culture represented a distinct group-level construct. Overall, these results indicate that the socially observable expression of emotions within teams provides a perspective on the group's culture that is not captured by measuring shared group trait affectivity. Our CFA results also provided some evidence that emotional culture items were distinct from each other although, as would be expected, they did share a fair amount of variance (particularly joy and optimism). Importantly, however, emotional culture items differentially predicted performance outcomes, supporting the need to consider them separately. These findings add empirical evidence to the theoretical proposition that emotional cultures operate at the group level and are discrete constructs.

Overall, these results emphasize that organizations should take the emotional culture of their teams seriously. Given the myriad ways in which emotions can be expressed, leaders should be creative in thinking about how they can instantiate specific emotional cultures. For example, promoting a culture of optimism may be achieved by managers leveraging principles of group emotional contagion (Barsade, 2002), framing communications using techniques such as vivid mental imagery of a positive future (Blackwell et al., 2013), and engaging in a "best possible self" intervention (Meevisen et al., 2011). Leaders can lead by example and reinforce the expressions of optimism and joy in their team members; however, team members

² In the online supplement, we provide a series of robustness checks. First, we re-estimated models using a mixed-effects approach. Second, we examined a total of 71 crews by including the additional 16 tank crews that were only able to complete the day portion of the exercise. The results remained substantively the same for both direct effects and the interaction involving optimism (see Tables S1–S3).

Table 4*Main Effect Models for Emotional Culture at Time 1 Predicting Performance at Time 2 Controlling for Time 1 Performance*

Variable	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
(Intercept)	704.86***	85.51	674.35***	102.99	612.56***	96.64	936.60***	117.33
Team performance Time 1	0.26*	0.14	0.24	0.17	0.38*	0.17	-0.09	0.19
Emotional culture of companionate love Time 1	66.86	46.61						
Time 1 Performance * Companionate love Time 1	-0.10	0.08						
Emotional culture of joy Time 1			61.29	43.39				
Time 1 performance * Joy Time 1			-0.06	0.07				
Emotional culture of optimism Time 1					99.12*	45.86		
Time 1 performance * Optimism Time 1					-0.14*	0.08		
Emotional culture of anger Time 1							-57.86	57.76
Time 1 performance * Anger Time 1							0.09	0.10
Model R-Square	.12		.16		.19		.10	

Note. * $p < .05$, one-tailed. ** $p < .01$, one-tailed. *** $p < .001$, one-tailed.

may also be able to influence emotional culture. In the case of optimism, for instance, team members can deliberately express a positive mindset and encourage each other to focus on the future.

Limitations and Future Directions

While there are strengths to this study, most notably objective performance data from real-world teams, there are also limitations. First, performance was measured in terms of tank crew gunnery scores but not in terms of other team outcomes; other performance outcomes may be influenced by different emotional culture variables. Likewise, it may be valuable to assess the degree to which resilient performance aligns with teams' self-reported resilience. Second, given the all-male sample and context, it would be important to replicate these results in other contexts that include women. Third, the measurement of emotional culture can potentially incorporate descriptive and prescriptive cultural norms (Chatman & O'Reilly, 2016). Given the affective and inferential pathways involved in emotion expression (Van Kleef, 2009), we measured descriptive norms, and implicit prescriptive norms. Nevertheless, it may be helpful to measure prescriptive norms more explicitly, answering the question, "what emotions should you express in this team." However, like Barsade and O'Neill (2014), we found that

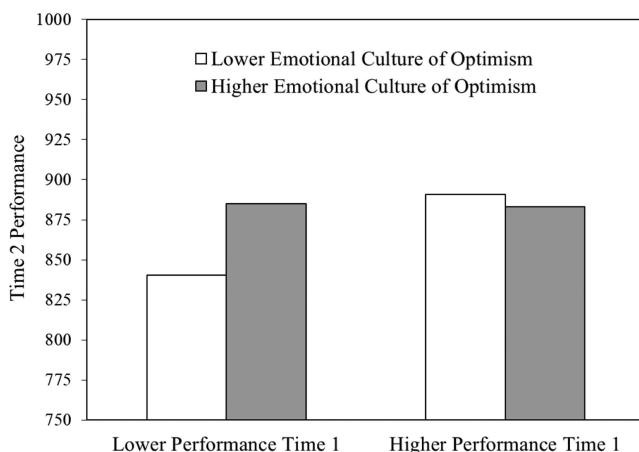
teams displayed insufficient differentiation when we examined prescriptive emotional culture norms measured in this fashion.³ Nevertheless, other unobtrusive measures of culture (Reader et al., 2020), such as text mining of written communication generated by teams, may offer ways to differentiate teams in terms of prescriptive norms. We recognize that the ability to leverage a range of measures depends on constraints associated with the research context. Finally, this was the first examination of the emotional culture of optimism and follow-on work should continue to refine its measurement properties.

With respect to strengthening scientific practice, Wasserstein et al. (2019) encourage authors to be appropriately "modest" when interpreting statistical results. Thus, we examined observed power, or the cumulative likelihood of finding significance given sample characteristics. While significant, the t -values for the relationships between Time 1 emotional cultures of joy and optimism and Time 2 team performance were both 2.03, translating into observed power of 0.65 for one-tailed tests. The t -value reflects the optimal estimate out of a range of plausible sample estimates. In any study, the range of plausible estimates can be conveyed by confidence intervals. For many results, the value of the confidence interval closest to zero would not be statistically significant if a study found that particular value. Therefore, it is important to determine what percent of the confidence interval is statistically significant. In our results for joy and optimism, 65% of the values in the confidence interval are statistically significant (see Bliese & Wang, 2020). Similarly, the significant interaction involving optimism had observed power of 51%. By considering observed power, we clarify that our statistically significant and practically relevant findings (like many in our field) should encourage replication.

In conclusion, our findings indicate emotional culture is an important factor to consider in resilient team performance. While there has been theoretical interest in the idea of "bouncing back" (Stoverink et al., 2020), there has not been as much empirical emphasis on differing ways to operationalize this concept. We believe the use of objective team data represents a valuable contribution to resilience

Figure 1

Interaction Between Performance Over Time and Tank Crew Emotional Culture of Optimism



³ We found ICC values of .04, .03, .06, and .04 for prescriptive measures of companionate love, joy, optimism, and anger, respectively, using the same items as in the descriptive measure but with instructions stating "Other soldiers in my crew *should* express . . ." Unlike Barsade and O'Neill (2014), our low ICCs were not due to range restriction; instead, crew ratings were simply dissimilar. Recall, the ICCs for the descriptive measures were all above .16.

research, and this approach can be expanded to include teams responding to any number of performance setbacks. In short, focusing on how emotional cultures relate to resilience can enrich our understanding of what helps teams “bounce back.”

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