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Just and Inclusive Team Climates Affect Mentoring Satisfaction: The Roles of Negative Mentoring and Race

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Abstract

As more work is being conducted in teams, mentees have increased opportunities to develop non-traditional mentoring relationships. We investigate how and when three aspects of team climate (procedural justice, interpersonal justice, and inclusion) influence mentoring satisfaction among mentees with an informal secondary mentor. Using survey data from 116 researchers on environmental science teams, we test whether (a) just and inclusive team climates are related to mentoring satisfaction through positive and negative mentoring experiences and (b) race moderates the relationships between just and inclusive team climates and mentoring satisfaction. We found that negative mentoring experiences mediated the relationships between just and inclusive team climates and mentoring satisfaction. Further, just and inclusive team climates were positively related to mentoring satisfaction, especially for people of color. These results suggest that positive team climates support informal mentoring in teams by reducing negative mentoring experiences and creating a welcoming environment for individuals from marginalized groups.

Keywords

justice climate, inclusive climate, negative mentoring, mentoring satisfaction, informal mentors, race

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Introduction

The nature of work in the 21st century is increasingly characterized by collaboration and team-based efforts (Kozlowski & Bell, 2003). As a result, employee socialization processes, like mentoring, are also increasingly occurring within teams (Williams et al., 2009). Although mentoring often occurs between a more senior and more junior colleague and is assigned by a supervisor (i.e., formal), other types of mentoring, such as informal peer mentoring between individuals at the same career stage and in mentoring networks, can also positively affect career outcomes (Higgins & Kram, 2001; Thomas et al., 2015). Obtaining mentoring from more than one individual (i.e., secondary mentors) can help provide mentees with a broad range of perspectives, skills, and knowledge (Mezias & Scandura, 2005; Xu & Payne, 2014). Thus, studies have shown that having multiple mentors, mentoring networks, and mentors from different social spheres (i.e., academic, personal, and professional) can increase early-career persistence and success (e.g., Higgins & Kram, 2001).

The trends for mentoring in academic contexts parallel the developments in other work environments. In particular, the growth of team science provides increased opportunities for mentees to develop relationships with secondary mentors (Wuchty et al., 2007). The available evidence suggests that mentoring among these team members can be beneficial. For example, a qualitative study of the mentoring experiences of post-doctoral scholars on science teams found that having multiple mentors can provide mentees access to additional sources of experience, help alleviate negative mentoring experiences with individual mentors, and ease the workload on mentors (Behar-Horenstein & Prikhidko, 2017). Nevertheless, there have been relatively few studies of mentoring in team contexts, and they have been primarily qualitative and have typically focused on specific mentoring programs developed for individuals at a particular career stage or institution. More quantitative research is needed to understand team mentoring experiences of scholars across multiple career stages and at a range of institutions, especially given the potential for team dynamics to influence the quality of mentoring experiences (Meschitti & Lawton Smith, 2017). To do so, the current study draws on social information processing theory (Salancik & Pfeffer, 1978) and social identity theory (Tajfel & Turner, 1985) to investigate whether just and inclusive team climates influence mentoring satisfaction indirectly through positive and negative mentoring experiences (see Figures 1a–c for proposed relationships). As previous work has demonstrated that job outcomes for members of racially marginalized groups may be especially influenced by fair treatment (McKay et al., 2007), we also consider whether race moderates the relationship between just and inclusive team climates and mentoring satisfaction.

Mentoring

Mentoring is defined as a relationship, formal or informal, in which the mentee's development is the focus (Bearman et al., 2007; Young & Perrewé, 2000). Mentors are theorized to provide two main types of support: career and psychosocial (Ragins & Cotton, 1999). Career support includes behaviors that help the mentee advance or develop professionally, including providing challenging assignments that aid in skill development, visibility, networking, and sponsorship. Psychosocial support, such as friendship, counseling, and being a role model, aids in the mentee's personal development and confidence. Mentoring is associated with a number of important workplace outcomes, including positive performance outcomes, positive work attitudes, greater organizational and job commitment, and more career success (Allen et al., 2004; Eby et al., 2013; Ivey & Dupré, 2020).

However, mentoring does not only yield positive outcomes. Eby (2007) defines negative mentoring experiences as those that diminish the personal or professional growth of the mentee and/or the mentor. Negative mentoring refers to specific incidents within a mentoring relationship

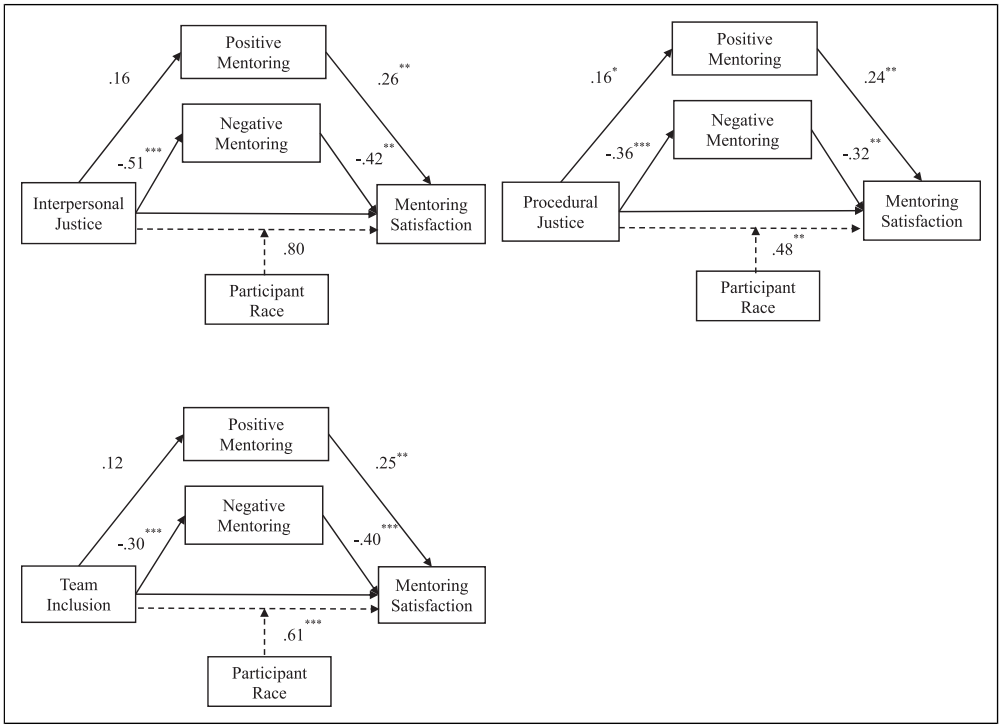

Figure 1. Relationships between team climate, mentoring experiences, mentoring satisfaction, and participant race. *Note.* Solid lines indicate the relationships between team climate and mentoring satisfaction mediated by positive and negative mentoring experiences. Dashed lines indicate race as a moderator of the relationship between team climate and mentoring satisfaction. Unstandardized coefficients are presented. * $p < .05$, ** $p < .01$, ***$p < .001$.

and includes five types of experiences that fall along two broad dimensions: (1) distancing (e.g., neglect and exclusion) and manipulative (e.g., misuse of power) mentor behaviors and (2) poor dyadic fit, which includes a mentor's lack of necessary expertise, mentor dysfunctionality (e.g., bad attitude or personal problems), or mismatch in the values, workstyles, or personality of the mentor and mentee (Eby & Allen, 2002; Eby et al., 2000). Eby et al. (2000) found that 50% of employees had at least one such negative experience. Further, negative mentoring is associated with lower job satisfaction and higher psychological withdrawal (Allen et al., 2004; Eby & Allen, 2002), as well as negative psychological outcomes (e.g., depression and distress: Eby et al., 2004). It might seem theoretically surprising that mentees would voluntarily continue in a mentoring relationship that incorporates negative experiences, but Eby and Allen (2002) point out that all relationships have both positive and negative aspects; so it is unsurprising that some mentees might find a mentoring relationship to be beneficial overall despite some negative experiences. And even in cases where the negative experiences are more significant, a mentee might face significant exit costs from leaving the relationship. Therefore, it is critical to assess both positive and negative aspects of the mentoring relationship.

One way to understand the effects of positive and negative mentoring experiences is to study mentoring satisfaction, which refers to a mentee's overall evaluation and affective response to a mentoring relationship (Xu & Payne, 2014). One of the most important factors affecting mentoring satisfaction is the similarity between mentors and mentees in their values, attitudes, and

beliefs (Allen & Eby, 2003; Eby et al., 2013), although this effect is attenuated and sometimes even reversed when mentoring relationships develop over an extended period of time (Turban et al., 1999). The extent to which mentees' career and psychosocial needs are served by mentors, the time spent with mentors, and the commitment of both parties to the mentoring relationship are also associated with mentoring satisfaction (Allen et al., 1997; Poteat et al., 2009). Mentoring satisfaction is important because it contributes to mentees' sense of affiliation, commitment, and satisfaction with their organizations (Eby et al., 2013; Huang & Weng, 2012). Therefore, we chose to examine it as our outcome of interest in this study.

Mentoring and Team Climate

One characteristic that is likely to be important to mentoring on teams is team climate, or the shared perceptions about what is valued and expected (i.e., norms) on a team (Ostroff et al., 2012; Parker et al., 2003). Researchers have primarily studied aspects of climate specific to mentoring (e.g., perceived organizational support of mentoring) and found it to be positively associated with the amount of mentoring provided (Eby et al., 2006; Ghosh, 2014). However, little research has examined non-mentoring specific aspects of the climate that may nevertheless support mentoring, such as fair and inclusive climates.

Since mentoring is fundamentally a relational task, aspects of team climate related to fair interpersonal treatment may play an important role in shaping mentoring experiences. Social information processing theory (Salancik & Pfeffer, 1978) posits that individuals use the social information in their environment to help them develop expectations about appropriate behavior in that setting. In a team context, the behavior and opinions of other teammates serve as powerful sources of information that shape perceptions of team norms (Chiaburu & Harrison, 2008). Team members may also help interpret and assign meaning to events at work through their interactions and communications with one another, resulting in shared norms and beliefs (Roberson, 2006). Therefore, social information processing theory suggests that if individuals observe others treating their fellow teammates in a just and inclusive manner, they will see this as appropriate behavior in the team environment and treat others, including mentees, similarly. Therefore, we focus on three aspects of team climate related to fair interpersonal treatment and theorize that they will lead to greater mentoring satisfaction: team interpersonal justice, team procedural justice, and team inclusion.

A team climate for interpersonal justice is one in which it is the norm for people to treat one another in a respectful manner (Colquitt, 2001), in this case influencing the quality of interpersonal treatment between mentors and mentees in teams. A team climate with poor interpersonal justice may lead to negative mentoring experiences that are characterized by poor interpersonal treatment such as exclusion and manipulative behavior. Conversely, high levels of team interpersonal justice might foster positive mentoring experiences that are characterized by respectful interactions between a mentor and protégé (Eby et al., 2004; Ragins & Verbos, 2007).

Team procedural justice climate refers to the shared perception that the team's decision-making procedures are fair, ethical, and consistent, and that employees have influence over the decision-making process (Colquitt et al., 2002). Team procedural justice climate may encourage positive mentoring experiences by establishing trust, honesty, and agency between the mentor and protege. For example, Cohen-Charash and Spector (2001) conducted a meta-analysis and found that perceptions of procedural justice were strongly related to trust and positive evaluations of supervisors. Similarly, Miller et al. (2011) found that among audit professionals, procedural justice perceptions were associated with positive relationships with supervisors. Taken together, these findings suggest that team procedural justice could lead to more positive mentoring experiences and fewer negative mentoring experiences.

An inclusive team climate provides an environment where all individuals, including those who come from underrepresented or historically marginalized groups, are treated fairly, valued, and included in decision-making (Nishii, 2013). Although team inclusion has yet to be examined in terms of its effects on mentoring, other studies have found that inclusive climates are associated with positive interpersonal dynamics such as feelings of belonging, psychological safety, enhanced communication, and decreased conflict (Nishii, 2013; Shore et al., 2018). Logically then, poor team inclusion could lead to exclusionary, neglectful, and biased behaviors that foster negative mentoring experiences. On the other hand, high levels of team inclusion could promote positive mentoring experiences by emphasizing norms of fair treatment and encouraging a sense of belonging within the team. Our first hypothesis draws from the existing literature suggesting that team climates associated with fair interpersonal treatment may result in more positive mentoring experiences and fewer negative ones:

Hypothesis 1a: Positive mentoring experiences will mediate the relationship between perceptions of team climate and mentoring satisfaction such that perceptions of more just and inclusive team climates will be associated with more positive mentoring experiences, which will in turn predict higher mentoring satisfaction.
Hypothesis 1b: Negative mentoring experiences will mediate the relationship between perceptions of team climate and mentoring satisfaction such that perceptions of more just and inclusive team climates will be associated with fewer negative mentoring experiences, which will in turn predict higher mentoring satisfaction.

Climates that are just and inclusive may be especially important for understanding the mentoring satisfaction of individuals from marginalized groups (e.g., women, people of color, and sexual minorities), who are likely to attend to these aspects of the work environment (Dickens et al., 2019; Roberson & Kulik, 2007). Social identity theory (Tajfel & Turner, 1985) suggests that individuals seek environments that affirm their important identities and permit authentic self-expression (Kim & Gelfand, 2003; Shelton, 2003). Further, previous experiences with discrimination and exclusion may reinforce the need for environments that increase one's feelings of support and belonging (Emerson & Murphy, 2014; Purdie-Vaughns et al., 2008). Consistent with this theorization, researchers find that compared to those from majority groups, aspects of climate related to fair treatment are more strongly associated with positive career outcomes for members of marginalized groups (McKay et al., 2007; Mor Barak et al., 1998; Settles et al., 2006). Thus, when a team lacks a just and inclusive climate, individuals from marginalized groups may feel especially unwelcome, which may have negative consequences for their mentoring satisfaction. Our second hypothesis builds on previous findings indicating that a climate of fair treatment is particularly important for members of marginalized groups:

Hypothesis 2: Race will moderate the relationship between perceptions of team climate and mentoring satisfaction such that there will be a stronger positive relationship for people of color than for White people.

Current Study

In the current study, we examine how just and inclusive team climates affect mentoring satisfaction among mentees who have an informal secondary mentor. This study offers at least four novel contributions to the mentoring, climate, and diversity literatures. First, we look beyond traditional mentoring relationships to examine mentoring from informal secondary

mentors in a team context. In doing so, we add to this scarce body of literature and provide much needed knowledge about the antecedents and consequences of the quality of these relationships. Second, we extend the literature on climate and mentoring by identifying interpersonal aspects of climate, particularly justice and inclusion, as important antecedents of mentoring quality and mentoring satisfaction. In doing so, we broaden the literature from its current focus on climates that are supportive of mentoring to highlight more distal predictors of mentoring outcomes. Third, we build on previous research to consider the importance of negative mentoring (Simon & Eby, 2003), in addition to positive mentoring, as mediating mechanisms between team climate and mentoring satisfaction. Last, we answer calls to focus on the mentoring experiences of marginalized groups (Blake-Beard et al., 2007; Chanland & Murphy, 2018) by examining whether climate is particularly important to the mentoring experiences of people of color. We test two hypotheses using a sample of researchers on interdisciplinary environmental science teams.

Method

Sample

Potential study participants were recruited from the National Science Foundation (NSF) database of awards for three interdisciplinary environmental science programs. Following IRB approval, we obtained contact information for project principal investigators (PIs) and co-PIs from the public reports available from NSF. We emailed the PIs to request contact information for all team members. Based on the information we collected, we sent email invitations (and two follow-up reminder emails) to 1727 individuals from 229 interdisciplinary environmental science teams. Interested individuals completed an online survey using Qualtrics and could enter to receive one of five $100 Amazon gift cards.

Respondents included 266 individuals from 105 NSF-funded interdisciplinary environmental science teams. These totals represent a response rate of 15.4% of individuals sampled and 45.9% of teams sampled. From the full sample of respondents, we selected the 116 participants who indicated they had at least one mentor on the team who was not their formal mentor, where the formal mentor was defined as an "official advisor, supervisor, or unit-assigned mentor." Those individuals who indicated that they had at least one informal secondary mentor were asked to think of the individual "other than your official advisor, supervisor, or unit-assigned mentor (if you have one) that you go to most often for mentoring" and complete several questions about this mentor and their mentoring relationship.

Participants in the current study reported the average size of their team to be 10.9 individuals (SD = 11.6 team members). The average age of the sample was 40.9 years (SD = 12.6, range = 23–74 years). This sample consisted of 46 women, 66 men (including one trans man), and one gender queer individual (n = 3 did not report their gender). Most participants were cisgender heterosexuals (n = 99; n = 14 LBGTQ; n = 3 did not report their sexual orientation), White (n = 80), and born in the United States (n = 79; n = 35 born outside the United States; two did not report birth origin). However, nearly a third identified as a person of color (n = 32; n = 15 Hispanic/Latinx; n = 11 Asian/Asian-American/Pacific Islander; n = 3 Black/African American; n = 2 Middle Eastern; n = 1 Native American; n = 4 did not report their race). Faculty represented the largest group of respondents (n = 44 faculty; n = 10 assistant professors, n = 9 associate professors, n = 25 full professors) but were a minority of the full sample (37.93%). Other participants were graduate students (n = 40), post-doctoral scholars (n = 23), and post-baccalaureate staff or technicians (n = 9).

Measures

Since many of the scales that we used in the study focused on employees in an organizational context, we adapted the items used in this study to focus on team members in an academic, rather than corporate context. In addition, we used a subset of items from the original scales to reduce participant burden that may emerge with long surveys. All scales were assessed on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*) unless noted otherwise, and scales were averaged such that higher numbers represent higher levels of the construct.

All scales had good reliability (see Table 1) and alphas that were similar to those in the original publications except for the team interpersonal justice scale, which had a reliability of .62, likely because the scale is only made up of two items and Cronbach's alpha is biased by the number of items in a scale (Sijtsma, 2009). In addition, the scales showed concurrent validity with other measures in our dataset. Specifically, team interpersonal justice was positively associated with team members avoiding conflict (r =.23, p = .013), team procedural justice was positively associated with voice (r = .65, p < .001), team inclusion was positively associated with shared purpose (r = .61, p < .001), and team members valuing secondary mentoring was negatively associated with negative mentoring experiences (r = −.23, p = .014) and positively associated with positive mentoring experiences (r = .23, p = .016).

Team climate. We assessed three aspects of team climate. Justice perceptions were taken from the Organizational Justice Scale (Colquitt, 2001) and were assessed on a 5-point scale (1 = *not at all* to 5 = *always*). Two items from the interpersonal justice subscale were adapted to measure perceptions of *team interpersonal justice*, or the extent to which the team leader is perceived to be respectful (e.g., "To what extent have your project team leaders... treated you with respect?"). Additionally, four items were adapted to assess perceptions of *team procedural justice*, or the extent to which the team's processes are perceived to be fair and equitable (e.g., "In your team, to what extent... have policies been applied consistently and equally to everyone?"). The alphas in the current sample (.62 and .78) are similar to those of the original subscales (79 and .78).

Participants' perceptions of *team inclusion* were measured with five items, four of which were adapted from Pugh et al. (2008) Employee Opinion Survey and one created for this study. These items assessed the extent to which individuals perceived that their team values diversity and inclusion along a number of dimensions (e.g., "Our team makes it easy for people from diverse backgrounds to fit in"). The Crohnbach's alpha in the current sample (.87) was similar to that reported in the original Pugh et al. (2008) study (.76).

Table 1. Descriptive Statistics Among Study Variables.

	M (SD)	1	2	3	4	5	6	7
1. Interpersonal justice	4.66 (.56)	**.62**						
2. Procedural justice	4.08 (.79)	.62**	**.78**					
3. Team inclusion	4.25 (.72)	.53**	.70**	**.87**				
4. Positive mentoring	3.53 (.69)	.13	.19*	.12	**.88**			
5. Negative mentoring	1.89 (.60)	−.48**	−.48**	−.36**	−.34**	**.80**		
6. Mentoring satisfaction	4.28 (.79)	.37**	.53**	.45**	.36**	−.49**	—	
7. Race	—	.03	−.06	.10	.07	.10	−.06	—

Note. *N*'s ranged from 112 to 116. Scale reliabilities (Cronbach's alpha) are shown in boldface along the diagonal. Race is coded such that 0 = White and 1 = people of color. *p < .05 **p < .01.

Mentoring. We assessed two aspects of participants' relationship with their informal secondary mentor. We measured the extent to which the mentor provided *positive mentoring* (alpha = .88), defined here as career, psychosocial, and instrumental mentoring, using 13 items. We adapted nine items from the Mentor Role Instrument (Ragins & McFarlin, 1990) to assess participants' experiences of receiving career and psychosocial mentoring in an academic context (e.g., "Gives me opportunities that push me into developing new skills"; "Provides me with emotional support and encouragement") and used four items from Tenenbaum et al. (2001) to assess instrumental mentoring (e.g., "Helps me improve my writing skills"). We also assessed perceptions of *negative mentoring* (alpha = .80), which included participants' perceptions that their mentor is neglectful, ineffectual, or the relationship has conflict, using seven items from Eby et al. (2004) (e.g., "My mentor has intentionally hindered my professional development"; "My mentor and I have a different understanding of effective work"). The alphas in the current sample are similar to those of the original subscales (which ranged from .77 to .94).

Mentoring satisfaction. We assessed participants' satisfaction with their informal secondary mentoring using a single item that asked "Overall, how satisfied are you with the quality of mentoring you have received from members of your team that are not your official advisor/unit assigned mentor?" Participants responded on a 5-point scale that ranged from (1 = *very dissatisfied* to 5 = *very satisfied*). Although a single-item measure is not ideal, numerous studies in the domains of job satisfaction and life satisfaction have found that single-item measures of satisfaction perform equally well as their multi-item counterparts (Abdel-Khalek, 2006; Cheung & Lucas, 2014; Scarpello & Campbell, 1983; Wanous et al., 1997). This item, worded to include only secondary mentors, allowed us to isolate the effect of mentoring by the most significant secondary mentor on satisfaction with secondary mentoring on the team overall.

Race. We assessed race using participants' self-identified racial identity. Since we were most interested in how people of color compare to White people, we coded White participants as 0 and people of color participants (as defined above) as 1. Although we acknowledge that all people of color are not a monolith, combining them into a single group permitted us a large enough sample to examine their experiences as compared to White people. Further, people of color share many experiences within academia, including discrimination and marginalization, which may similarly impact their team climate and mentoring perceptions (Turner et al., 2008).

Results

Preliminary Analyses

Due to the nested nature of the data, we calculated the number of teams with more than one respondent; only 40% of the teams did so. We also found that intraclass correlation coefficients (ICCs) for all study variables ranged from 2% to 7%, suggesting little variance was explained by respondents being on the same team. These low ICC's are below the recommended level of 10% or greater to conduct multi-level analyses (Bliese, 2000); combined with the low frequency of multiple raters in our study, we determined that these data were not appropriate for multi-level modeling.

We found that 11% of cases in our dataset had missing data. We conducted Little's MCAR test and found that our data were not missing completely at random (χ^2 (103) = 348.145, p = .038) so we used multiple imputation procedures on all of the variables in our analysis, except for race, to create a dataset with complete data. Thus, in the imputed dataset, the only missing data were four cases on the race variable. As a result, Hypothesis 1 analyses (which do not involve race) use the

full sample ($n = 116$), whereas Hypothesis 2 analyses (which include race as a moderator) have an n of 112.

Post-hoc power analyses were conducted using G*power (Faul et al., 2007). For Hypothesis 1 analyses, given a sample size of 116, three predictors and our observed effects, power ranged from .99 to 1.0. For Hypothesis 2 analyses, given a sample size of 112, three predictors and our observed effects, power ranged from .75 to .77 indicating that this analysis was somewhat underpowered to detect significant effects.

Hypothesized Analyses

Table 1 displays descriptive statistics and zero-order correlations among variables. Analyses were conducted using PROCESS 3.0 (Hayes, 2017) in SPSS version 26. To test Hypotheses 1a and 1b, we conducted three parallel mediation models (one for each team climate variable) using Model 4 with 5,000 bootstrap samples. In the models, team climate was the independent variable, positive and negative mentoring experiences were the mediators, and mentoring satisfaction was the dependent variable. For Hypothesis 2, we used Model 1 to test three moderated regression models (one for each climate variable) in which team climate was the independent variable, participant race was the moderator, and mentoring satisfaction was the dependent variable. We found that the moderated regression model for team interpersonal justice violated the assumption of homoscedasticity, so following the recommendations of Rosopa et al. (2013) and Hayes and Cai (2007), we used a heteroskedasticity-consistent standard error (HCSE) estimator provided in the PROCESS macro, specifically HC3, in this model.

Hypothesis 1a predicted that positive mentoring experiences would mediate the relationship between perceptions of team climate and mentoring satisfaction. Results showed that team procedural justice was related to more positive mentoring experiences, whereas team interpersonal justice and team inclusion were not related to positive mentoring experiences (see Figures 1a–c). More positive mentoring experiences were associated with greater mentoring satisfaction in all three team climate models. However, the indirect effects of positive mentoring experiences was not statistically significant (see Table 2), suggesting that team interpersonal justice, team procedural justice, and team inclusion were not indirectly associated with mentoring satisfaction through positive mentoring experiences, when controlling for the effect of negative mentoring experiences. Therefore, Hypothesis 1a was not supported.

Hypothesis 1b predicted that negative mentoring experiences would mediate the relationship between team climate and mentoring satisfaction. Results showed that team interpersonal justice, team procedural justice, and team inclusion were all related to fewer negative mentoring experiences, and in turn, fewer negative mentoring experiences were associated with greater

Table 2. Indirect Effects of Climate on Mentoring Satisfaction Through Positive and Negative Mentoring Experiences.

	Positive Mentoring				Negative Mentoring			
	b	se	95% CI		*b*	se	95% CI	
			Lower	Upper			Lower	Upper
Interpersonal justice	.04	.03	−.01	.11	.21	.08	.07	.37
Procedural justice	.04	.02	−.00	.09	.11	.06	.01	.25
Team inclusion	.03	.03	−.01	.09	.12	.05	.04	.25

Note. 5000 bootstrap resamples were used. Unstandardized estimates of the indirect effects are presented.

mentoring satisfaction (see Figures 1a–c). There was also a statistically significant indirect effect of negative mentoring experiences above and beyond the effect of positive mentoring experiences, suggesting that team interpersonal justice, team procedural justice, and team inclusion were indirectly associated with greater mentoring satisfaction, as mediated by fewer negative mentoring experiences (see Table 2), supporting Hypothesis 1b.

Finally, Hypothesis 2 predicted that the relationship between team climate and mentoring satisfaction would be moderated by race such that the relationship would be stronger for people of color than White people. Analyses showed a significant interaction for team procedural justice, and team inclusion, but not for team interpersonal justice. Simple slope analyses, using one standard deviation above and below the mean of team climate, showed that team procedural justice and team inclusion were associated with greater mentoring satisfaction among both groups although the relationships were stronger for people of color than for White people (see Figures 2a and b). Thus, we found partial support for Hypothesis 2.

Discussion

In this study, we sought to understand how perceptions of team climate influence mentoring satisfaction among those who have an informal secondary mentor on their team. Drawing on social information processing theory (Salancik & Pfeffer, 1978), we theorized that climate perceptions reflect expectations about appropriate behaviors and such norms affect mentoring experiences. We found that negative mentoring experiences, rather than positive experiences, mediated the relationship between team climate (team interpersonal justice, team procedural justice, and team inclusion) and mentoring satisfaction. Furthermore, as suggested by social identity theory (Tajfel & Turner, 1985), two aspects of team climate were more strongly related to mentoring satisfaction for people of color than for White people. These results have important implications for how positive climates can support mentoring in a team context, especially for team members from racially marginalized groups. In particular, our research contributes to the mentoring literature by demonstrating that just and inclusive team climates can promote mentoring satisfaction by reducing the amount of negative mentoring experiences individuals have. Further, we advance research on alternative mentoring (Allen & Finkelstein, 2003; Mezias & Scandura, 2005) by highlighting that informal secondary mentors can provide assistance to mentees and that teams are one way that relationships with informal secondary mentors can emerge.

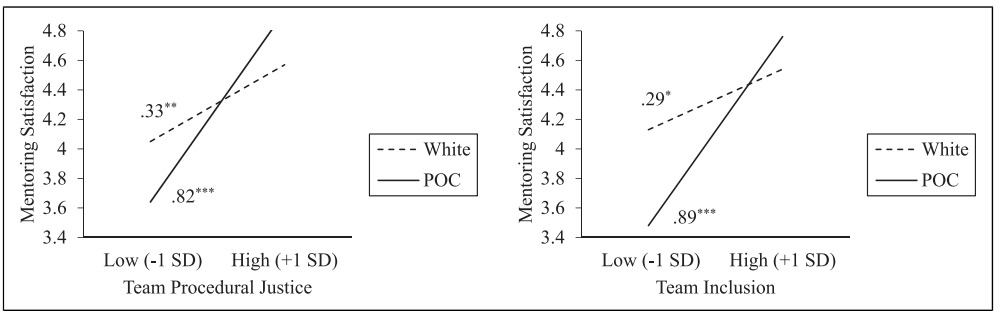

Figure 2. Interactive effects of team climate and race on mentoring satisfaction. *Note*. The coefficients presented are unstandardized linear regression coefficients. Low refers to one standard deviation below the mean and high refers to one standard deviation above the mean. POC stands for people of color. * $p <$ .05, ** $p <$ .01, ***$p <$ .001.

Our first Hypothesis was that both positive (H1a) and negative (H1b) mentoring experiences would mediate the relationship between team climate (team interpersonal justice, team procedural justice, and team inclusion) and mentoring satisfaction. Although our hypotheses were only partially supported, important patterns emerged. First, our results indicated that all three types of team climate were related to negative mentoring, but only team procedural justice was associated with positive mentoring. The fact that team interpersonal justice and team inclusion were only related to negative mentoring suggests that the extent to which respect and inclusion are perceived to be the norm on teams may be primarily relevant to reducing problematic mentoring experiences, such as neglect, manipulation, and lack of fit. In contrast, perceptions that the team values fairness (i.e., procedural justice) were associated with both fewer experiences of negative mentoring and more positive mentoring that provides career and psychosocial assistance. Our findings lend further support to social information processing theory (Salancik & Pfeffer, 1978) by underlining the importance of values and expectations for interpersonal interactions in a team setting and bolster other studies which find that the organizational context influences mentoring outcomes (Eby et al., 2006; Ghosh, 2014).

Second, we found that more positive, and fewer negative, mentoring experiences were both associated with greater mentoring satisfaction. Our focus on satisfaction with the quality of mentoring as our outcome reflects both our interest in individuals' perceptions of team processes and the importance of satisfaction perceptions on important career outcomes including job satisfaction and commitment (Eby et al., 2013; Huang & Weng, 2012). Our findings support the growing body of literature that focuses on negative mentoring in addition to positive mentoring as relevant to understanding mentoring outcomes (Eby et al., 2004, 2000). Previous research found that negative mentoring experiences were a stronger predictor of mentee outcomes than positive mentoring (Eby et al., 2010), and our results support the importance of negative mentoring, along with more supportive experiences, for mentee outcomes.

Third, our mediation analyses provide additional support for the significance of negative mentoring, which mediated the relationship between all three dimensions of team climate and mentoring satisfaction. That is, teams that are viewed as more respectful, fair, and inclusive resulted in greater mentoring satisfaction because they were associated with fewer negative mentoring experiences with a secondary informal mentor. Although positive mentoring is important for mentoring satisfaction, it did not account for the effect of more supportive team climates on this outcome. These results reinforce the need for mentors, mentoring programs, and teams to consider ways to reduce negative mentoring, which includes behaviors such as mentor neglect, manipulation, and dysfunctionality. Our results suggest that one can do so by improving the team climate such that decision-making procedures are fair, ethical, and consistent; respect between team members is enhanced; and individuals from diverse backgrounds feel valued and included.

We found partial support for our second hypothesis that predicted that the relationship between team climate and mentoring satisfaction would be stronger for people of color than for White people. Team procedural justice and team inclusion were significantly related to mentoring satisfaction for people of color more than for White people. Specifically, the more mentees of color viewed the team's decision-making procedures as fair and transparent and felt the team was inclusive, the more they reported being satisfied with the quality of mentoring they received on the team. Previous research consistently finds that aspects of climate related to fair treatment (e.g., diversity climate) are more strongly related to job outcomes for employees of color (McKay et al., 2007; Mor Barak et al., 1998), and our findings extend the effect of a positive climate for people of color to mentoring satisfaction. This relationship may be due to the fact that individuals from marginalized groups are especially attentive to cues that indicate they belong and are valued in an organizational context (Dickens et al., 2019; Emerson & Murphy, 2014). It is possible that a

significant interaction did not emerge for team interpersonal justice because of the uneven sample sizes between White people and people of color, or because the moderation analyses were somewhat underpowered. Given this, further research is needed to confirm our findings. Nevertheless, given the importance of mentoring for career outcomes like career advancement, organizational commitment, and job satisfaction (Eby et al., 2004), these findings suggest that efforts to diversify academia, especially in STEM, need to attend to climate.

Our research makes contributions to the growing literature on alternative mentoring models by demonstrating the importance of informal secondary mentors. Although we did not conduct a comparison with formal mentors, our results suggest that informal secondary mentors positively contribute to the mentoring experiences of mentees and teams provide an important context in which mentees can have access to and develop these types of mentoring relationships. Unlike formal mentoring relationships, informal mentoring relationships are voluntary and typically develop spontaneously based on the needs of the mentee or mentor, mutual liking, or shared experiences or identities (Janssen et al., 2016; Mezias & Scandura, 2005). These relationships can also compensate for weaknesses in the formal mentoring relationship (Desimone et al., 2014) and be particularly valuable for members of marginalized groups who may struggle to find mentors who share their identities and experiences (Johnson-Bailey, 2004; Meschitti & Lawton Smith, 2017).

Limitations and Future Directions

Despite its many strengths, we identify four limitations of our study. First, we measured mentoring satisfaction with a single item asking participants how satisfied they were with the mentoring they received on the team for secondary mentors. Although one-item satisfaction measures tend to perform just as well psychometrically as multi-item measures (Scarpello & Campbell, 1983; Wanous et al., 1997), they do require participants to evaluate their experiences globally and therefore lack detail about satisfaction in specific areas. Thus, future research should attempt to replicate our findings with a multi-item measure of mentoring satisfaction. In addition, future studies should examine the same relationships that we have presented here at the team level to ensure that these findings remain even after accounting for within-team variance.

Another limitation of this study is that we did not have enough power to examine whether the relationships between team climate and mentoring satisfaction were the same for each of the different racial/ethnic groups under the umbrella of people of color. Future research should investigate whether the influence of team climate on mentoring satisfaction is the same for Black, Indigenous, Latinx, Middle Eastern, and Asian team members; despite facing some shared challenges within the academy, differences in stereotypes and numerical representation contribute to important group differences in experiences (Turner et al., 2008). As we noted, the observed findings might be related to the attentiveness of marginalized groups to cues about whether their teams value justice and inclusion, but it is also possible that the members of marginalized groups personally experience more injustice on their teams. Therefore, the specific reasons for these associations merit further investigation.

A third limitation is that we focused specifically on environmental scientists funded by the NSF. This population is likely to have both similarities and differences in comparison with other scientists and those working in other occupations. For example, teamwork is becoming increasingly important across many different fields, but there might be less hierarchy in the academic context than in some business contexts. Even within the academy, environmental scientists may be inclined toward more progressive views, and thus more sympathetic to efforts at promoting diversity, equity, and inclusion, than scientists working in other fields. Thus, it would be helpful to

investigate the extent to which the relationships we have identified apply to other populations and contexts.

Finally, because our data are cross-sectional, we were only able to provide evidence of the association between variables. Although we found that team justice climate perceptions influenced mentoring, previous research has found that mentoring influences perceptions of organizational justice (Kristic, 2003; Scandura, 1997); it is likely that climate perceptions and mentoring have a reciprocal relationship over time. Therefore, it is important that future studies use longitudinal methods to better understand the causal relationships and temporal ordering of these variables. Moreover, given that all three aspects of climate examined in our study were associated with negative mentoring but only one of them (team procedural justice) was associated with positive mentoring, it would be valuable to probe more deeply into the relationships between specific aspects of climate and the different features of mentoring relationships (e.g., formal mentoring, informal secondary mentoring, mentoring from multiple team members, positive mentoring, negative mentoring, and overall mentoring satisfaction).

Theoretical and Practical Implications

Despite these limitations, this study suggests important avenues for practical implementation of its findings. From a theoretical perspective, our findings demonstrate the fruitfulness of using social information processing theory to understand mentoring perceptions and highlight the importance of further efforts to understand how climates for team inclusion and fairness can affect mentoring practices and perceptions. Our study also has important practical implications for those leading and participating in teams, particularly those in academic settings. By working to create and maintain a just and inclusive climate, teams have the ability to reduce negative mentoring experiences and reduce mentoring inequality for team members from marginalized groups. There are many ways to foster just and inclusive climates on teams. For example, paying close attention to team composition, building teamwork skills, and spending time to foster interpersonal relationships can help improve climate (e.g., Cheruvelil et al., 2014). In addition, it is important to foster and model open discussion and participatory decision-making, such as creating, revising, and implementing team policies regarding practices such as authorship and data sharing (Elliott et al., 2017; Oliver et al., 2018). Finally, team leaders should not assume that all team members have the skills to be part of effective mentor-mentee relationships; therefore, professional development in this area should be regularly encouraged and provided (Montgomery, 2018).

For those working in the business setting, our findings highlight the importance of providing training for team leaders about steps they can take to promote inclusive and fair climates on their teams (e.g., engaging in team building activities, developing procedures that are fair and clear, and fostering participatory processes for decision-making). Team leaders can also provide more positive experiences for members of underrepresented groups by striving to recruit a "critical mass" of them on their teams rather than including only one or two "token" members of these groups (Kanter, 1977). Training for all team members should also include information about the value of fostering informal mentoring relationships and the potential for negative mentoring experiences to harm these relationships.

In conclusion, the goal of the current study was to examine how just and inclusive team climates in academia influence mentoring satisfaction through negative and positive mentoring experiences. We found that negative mentoring experiences, rather than positive mentoring experiences, explained the relationship between just and inclusive team climates and mentoring satisfaction. In addition, we found that just and inclusive team climates are related to mentoring satisfaction, especially for people of color. These results suggest that to promote the success of their members, and especially those from marginalized groups, teams should be taking steps to foster more just and

inclusive climates, such as by attending to team composition, building teamwork skills and interpersonal relationships, creating policies that foster fair and open decision-making, and engaging in professional development related to effective mentoring.

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Author Contributions

All authors contributed to idea generation, research framing, and paper writing. Kathrina J. Robotham and Isis H. Settles conducted all analyses, with Kendra S. Cheruvelil, Georgina M. Montgomery, and Kevin C. Elliott providing help with interpretation. Kathrina J. Robotham coordinated the writing process. Kevin C. Elliott provided administration for the project.

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Author Biographies

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Kevin C. Elliott is a Professor in Lyman Briggs College, the Department of Fisheries and Wildlife, and the Department of Philosophy at Michigan State University. He received his PhD in the History and Philosophy of Science from the University of Notre Dame, and his current scholarship explores the roles that ethical and social values play in scientific research, especially in the environmental sciences. Outside of work, he enjoys reading and going for walks with his family.