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Team members' emotional displays as indicators of team functioning

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Emotions are inherent to team life, yet it is unclear how observers use team members' emotional expressions to make sense of team processes. Drawing on Emotions as Social Information theory, we propose that observers use team members' emotional displays as a source of information to predict the team's trajectory. We argue and show that displays of sadness elicit more pessimistic inferences regarding team dynamics (e.g., trust, satisfaction, team effectiveness, conflict) compared to displays of happiness. Moreover, we find that this effect is strengthened when the future interaction between the team members is more ambiguous (i.e., under ethnic dissimilarity; Study 1) and when emotional displays can be clearly linked to the team members' collective experience (Study 2). These studies shed light on when and how people use others' emotional expressions to form impressions of teams.

How do people make sense of social collectives? This question has a long-standing interest in the social sciences (Hamilton & Sherman, 1996), because observers' understanding of what goes on between other individuals informs their behavioural responses (Abelson, Dasgupta, Park, & Banaji, 1998; Magee & Tiedens, 2006). A special type of social collective is the team, in which individuals work together on a joint task (Ilgen, 1999). There are many reasons why outside observers may want to develop an understanding of a team's functioning and future trajectory, for instance because their task is to supervise the team or because they are considering sponsoring or potentially joining the team as a member. However, making sense of a team's trajectory is an uncertain endeavour because explicit information about team functioning is often not available. This problem is further exacerbated by the fact that team ventures are simultaneously potent and precarious. When individuals join forces in teams, great achievements can be obtained (Guzzo & Dickson, 1996), but teams are also a potential breeding ground for myriad negative outcomes such as intra-team conflicts, social inhibition, decision-making biases and productivity losses (Jehn, 1995; Kerr & Tindale, 2004). We propose that, in their sense-making efforts, observers therefore make use of dynamic signals that provide up-to-date diagnostic information about the likely trajectory

of a team, such as the composition of team members' emotional expressions.

Although previous research has illuminated how cognitive representations of groups are developed and used, most of this research has focused on rather stable characteristics of teams (e.g., team size, interdependence, cf., Phillips, Weisbuch, & Ambady, 2014). Additionally, this research tends to focus on large, abstract groups, such as "women" or "Americans", rather than smaller, distinct and more dynamic groups, such as work teams (Abelson et al., 1998; Lickel et al., 2000). Accordingly, more dynamic cues that might inform observers' perceptions of teams, such as the team members' emotional expressions, have been largely overlooked. To address this issue, we propose that team members' emotional displays play an important role in shaping observers' expectations regarding team functioning. Moreover, we draw on Emotions as Social Information (EASI) theory (Van Kleef, 2009) to predict that such emotional cues become more informative to observers to the degree that the emotions are perceived as more diagnostic for the team's future interaction.

We report two experiments examining how observers' perceptions of teams are shaped by team members' emotional expressions. Specifically, we propose that observers use the emotional displays of team members as informative cues when trying to predict how team processes will unfold. We develop the argument that such emotional cues are more influential in shaping observers' perceptions (1) when the trajectory of the team is more difficult to predict (i.e., under ethnic dissimilarity) and (2) when the affective cues can be more clearly attributed to the team's likely social interaction.

EMOTIONAL DISPLAYS HELP TO MAKE SENSE OF SOCIAL SITUATIONS

Solomon Asch (1952) noted that "our [initial] impressions of teams are often global, corresponding to particularly blunt central qualities" (pp. 234–235). Additionally, many empirical phenomena point to the dynamic, ever-evolving and constantly changing nature of team impressions (Kashima, Woolcock, & Kashima, 2000). Team situations are "fuzzy", in that observers lack full information about team member's motives and intentions. This requires individuals to *make sense* of the social environment by relying on a variety of cues that can help them understand the situation (Hamilton & Sherman, 1996). In this respect, emotional expressions displayed by team members might be particularly informative (Manstead & Fischer, 2001; Van Kleef, De Dreu, & Manstead, 2010).

EASI theory (Van Kleef, 2009) posits that people use others' emotional displays to make sense of social situations. Emotions arise as a result of an individual's conscious or unconscious evaluation (appraisal) of some event as relevant to a particular concern or goal (Frijda, 1986; Lazarus, 1991). As such, observing a particular emotion in another person provides information about how that person regards the situation (Keltner & Haidt, 1999; Manstead, 1991; Oatley & Johnson-Laird, 1987).

Empirical research in various domains of social interaction points to the informative value of emotions. For example, it has been found that individuals infer from a partner's expression of guilt that the partner values the relationship and is willing to make amends (Baumeister, Stillwell, & Heatherton, 1994). Likewise, embarrassment is interpreted as a signal that the expresser feels bad about a transgression (Keltner & Buswell, 1997). Other work has shown that negotiators use their counterparts' emotional expressions to inform their own negotiation strategy (Van Kleef, De Dreu, & Manstead, 2004), and that emotional expressions shape people's construal of social situations in terms of cooperation versus competition (Van Doorn, Heerdink, & Van Kleef, 2012). Given that emotions tend to arise in social interactions (Manstead, 1991; Parkinson, 1995), they may also be used by observers as a window into the trajectory of team processes (Magee & Tiedens, 2006).

Advancing a line of research on the diagnostic value of group emotions (e.g., Le Bon, 1897; McDougall, 1920), Magee and Tiedens (2006) illustrated the informative nature of emotions for team perceptions by demonstrating that observers perceive groups to be more cohesive when group

members portrayed happiness rather than sadness. Moreover, they showed that homogeneous emotional expressions increased perceptions of common fate compared to mixed emotional expressions. In the present paper, we integrate their findings with EASI theory to develop the idea that team members' emotional displays become more or less influential in shaping observers' inferences regarding team functioning depending on situational characteristics.

PRESENT STUDIES AND HYPOTHESES

We describe two experiments that examine how team members' emotional displays shape inferences regarding team functioning.[1] To connect to prior research (Magee & Tiedens, 2006), we focus on displays of happiness and sadness, representing positive and negative valence (Russell & Carroll, 1999). Happiness arises when goals have been met (or good progress is being made towards attaining them) and expectations are positive (Frijda, 1986; Lazarus, 1991). Sadness, on the other hand, arises when success seems unlikely, coping potential is low, and people are dissatisfied with task progress or interpersonal relationships (Smith & Ellsworth, 1985). We therefore propose, in line with Magee and Tiedens (2006), that inferences regarding future team functioning will be more positive when team members display happiness rather than sadness.

We further identify an important qualification and elaboration to this previous work by examining two situational contingencies of the use of emotional expressions as a source of information. According to EASI theory, individuals are more likely to use others' emotional expressions as a source of information to the degree that (1) the situation is ambiguous and (2) emotional cues are more relevant to make sense of the situation (Van Kleef et al., 2010). We address both of these social-contextual factors in the present paper.

First, we argue that a team's situation is more ambiguous when the team is composed of dissimilar rather than similar people (van Knippenberg, De Dreu, & Homan, 2004). Demographic differences within teams render inferences about the team more difficult for observers to draw, because these dissimilarities create potential benefits as well as detriments for teams (van Knippenberg et al., 2004). Differences between people increase the variety of perspectives and viewpoints available during teamwork (Cox, Lobel, & McLeod, 1991). This can improve task-related outcomes and communication adequacy (van Knippenberg et al., 2004). However, differences between people also set the stage for negative team processes such as lowered satisfaction, increased stress, conflicts and distrust (Williams & O'Reilly, 1998). People generally prefer to work with similar rather than dissimilar others (Tajfel & Turner, 1986), and dissimilarity therefore constitutes a potential liability for team functioning. As a result, ethnic dissimilarity (compared with ethnic similarity) is proposed to increase the differential inferences based on displays of happiness versus sadness. We therefore predicted that the differential influence of displays of sadness versus happiness on observers' ratings of future team functioning will be greater for teams composed of members who are ethnically dissimilar compared to teams composed of ethnically similar team members (Hypothesis 1). We tested this planned contrast hypothesis in Study 1.

Second, we propose that emotional cues are more relevant for the observer's sense-making of a dissimilar team to the degree that these emotions provide information that can be directly related to the team's interaction. That is, if the emotional displays came about in the context of an (anticipated) interaction among the team members, the displays should be more relevant in helping an observer to understand the team's trajectory than when the emotions developed outside of the team context. Previous research has illustrated that emotional displays are more likely to influence attitudes about a particular topic when the emotions appear to be relevant (as opposed to incidental) to that topic (Van Kleef, Van Doorn, Heerdink, & Koning, 2011). Similarly, we

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[1] Sample sizes were determined by the availability of participants during the specific laboratory periods. No participants were excluded from the current samples, and all manipulations and measures are discussed in the text and in Footnotes 3–5.

propose that the differences between sadness and happiness will be greater when the emotional displays can be assumed to provide more interaction-relevant information. Specifically, we predicted that the difference between the effects of sadness and happiness on observers' ratings of team functioning will be greater when the expressions are believed to follow rather than precede a team interaction (Hypothesis 2). We tested this planned contrast hypothesis in Study 2.

For the sake of simplicity, we focus on the smallest possible team: the dyad (Kozlowski & Bell, 2003). Although certain team processes are limited to teams that consist of more than two people (e.g., minority influence, subgroup categorisation, newcomer effects), many processes and outcomes that are relevant and consequential in teams, such as trust, liking, conflict and team effectiveness, can also be observed within dyadic teams (e.g., Olekalns & Smith, 2005; Rink & Ellemers, 2010; Serva, Fuller, & Mayer, 2005; Van der Kleij, Lijkwan, Rasker, & De Dreu, 2009). Accordingly, a pilot study that was set up as a conceptual replication of Magee and Tiedens (2006) yielded results that were highly similar to those obtained in the original study, which involved perceptions of larger teams.[2]

Because these pilot data supported Magee and Tiedens' previous findings, we employed this dyadic team setup in both studies, in which we showed participants photographs of team members displaying a certain emotion. The pictures were obtained from a validated picture set (e.g., Amsterdam Dynamic Facial Expressions Set [ADFES]; Van der Schalk, Hawk, Fischer, & Doosje, 2011). Participants were asked to report on their relational impressions, including perceived team trust, liking and conflicts, as well as critical task-related outcomes, including team effectiveness and team satisfaction (Campion, Medsker, & Higgs, 1993).

STUDY 1

Method

A total of 122 participants (84 females, M_{age} = 21.31, SD_{age} = 4.03) participated in the experiment. Participants were randomly assigned to one of four conditions of a 2 (emotional displays: both happy vs. both sad) by 2 (ethnicity composition: both White males vs. one White male and one Black male) design.[3] The experiment was programmed in

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[2] We ran a pilot study (N = 56; 42 females, M_{age} = 21.62, SD_{age} = 4.92), which was intended to conceptually replicate the research of Magee and Tiedens (2006) and to confirm the suitability of a dyadic team setting for addressing the current research questions. Participants observed an ethnically dissimilar dyad (one Dutch male and one Moroccan male) displaying either both happiness, both sadness or one displaying happiness and the other sadness (counterbalanced; i.e., the mixed-emotion condition). Participants then provided ratings of anticipated liking, trust, stress, satisfaction and team effectiveness. We also asked participants to what extent each team member had expressed sadness and happiness (1 = sad to 7 = happy). The emotion manipulation was successful, such that happy (sad) faces were rated significantly higher (lower) than the midpoint of the scale (all Fs > 3.39; all ps < .01; all ds > 1.02). Additionally, we found a significant main effect of our emotion manipulation on all dependent variables (multivariate test: Pillai's trace = 0.45, F = 2.91, p = .003; univariate tests: all Fs > 3.75, all ps ≤ .03, all. $\eta_p^2 \geq 0.12$) Comparisons between the conditions showed that observers anticipated lower trust, liking, satisfaction and team effectiveness and higher stress when both dyad members portrayed sadness rather than happiness (all Fs > 5.94, all ps ≤ .02, all. $\eta_p^2 \geq .15$). The mixed-emotion condition differed from happiness (all Fs > 4.80, all ps ≤ .035, all $\eta_p^2 \geq 0.12$) but not from sadness (all Fs < 3.29, all ps ≥ .08, all $\eta_p^2 \leq .09$) for liking, trust and stress; it differed from sadness (F[1, 35] = 4.77, p = .04, $\eta_p^2 = 0.12$) but not from happiness (F[1, 36] = 0.38, p = .54, $\eta_p^2 = 0.01$) for team effectiveness; and it did not differ from both other emotion conditions for satisfaction (both Fs < 3.02, both ps ≥ .09, both $\eta_p^2 \geq .08$).

[3] We also included a mixed-emotion condition in this study (N = 121, for which we counterbalanced the emotional displays across ethnicity). We found no differences between the two mixed-emotion conditions (i.e., sad-happy vs. happy-sad order on the screen) on the dependent variables (all Fs < 0.41, all ps > .52). Within the mixed-emotion condition, we only obtained an effect of our ethnicity manipulation for anticipated stress, F(1, 119) = 7.43, p = .007, $\eta_p^2 \geq .06$), not for the other dependent variables (all Fs < 1.93, all ps > 0.17). The mixed-emotion condition differed from the happy condition but not from the sad condition for liking (p difference mixed-sad = .43; p difference mixed-happy < .001), trust (p difference mixed-sad = .22; p difference mixed-happy = .001) and team effectiveness (p difference mixed-sad = .16; p difference mixed-happy < .001). For anticipated stress, the mixed-emotion condition did not differ from the happy condition, but did differ from the sad condition (p difference mixed-sad = .02; p difference mixed-happy = .38).

Table 1. *Means and standard deviations for dependent variables in Study 1*

Condition	Ethnically similar team				Ethnically dissimilar team				Overall		
	Both happy		Both sad		Both happy		Both sad				
	M	SD	M	SD	M	SD	M	SD	M	SD	α
Liking	5.11	0.77	4.55	0.81	5.61	0.86	4.50	0.79	4.93	0.87	0.89
Trust	4.97	0.73	4.58	1.01	5.25	0.75	4.32	0.94	4.77	0.93	0.88
Stress	3.12	1.12	3.50	1.23	2.77	1.06	3.53	1.02	3.24	1.14	0.83
Team effectiveness	5.10	0.84	4.17	1.09	5.39	0.88	4.07	1.02	4.66	1.11	0.89

Authorware. The ethnic composition and the emotional displays of the team members were manipulated by means of pictures.

We presented participants with the following cover story:

> We are interested in how well people can predict how a collaboration between two people at work will develop. We will show you pictures of two people who will work together as a team on a task. We then present you with a number of statements concerning your anticipation of the development of their collaboration.

After reading this information, participants saw the two pictures of the team members. Participants then responded to several statements measuring the dependent variables. These statements were presented directly under the pictures. After the dependent variables were assessed, the pictures were removed from the screen, and the manipulation checks and demographical questions were measured.[4] Means, SDs and alphas are presented in Table 1.

Measures

Manipulation checks

To check our emotional displays manipulation, we asked participants to what extent each team member had expressed sadness and happiness (1 = sad to 7 = happy). We checked our manipulation of ethnicity composition by asking whether the two persons were of the same (1) or different (7) ethnicity.

Liking

Three items assessed anticipated liking in the team (adapted from Wojciszke, Abele, & Baryla, 2009; e.g., "These people will enjoy working together").

Trust

Four items by Simons and Peterson (2000) were adapted for the present research and measured the anticipated degree of team trust (e.g., "I expect these people to trust each other").

Stress

Anticipated stress of the team members was assessed with three questions (adapted from Cohen, Kamarck, & Mermelstein, 1983; e.g., "I think that working together will be a stressful experience for these people").

Team effectiveness

Three items measured the anticipated effectiveness of the team (adapted from Yammarino &

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[4] For exploratory purposes, we also measured three personality traits in both studies before the emotion manipulation (i.e., agreeableness, openness to experience and need for structure). These variables did not affect the pattern of results and are therefore not discussed in the paper. Additionally, we measured diversity beliefs and social dominance orientation at the end of the experiment for an unrelated research project pertaining to diversity perceptions of teams. In this context, we also used eight questions to measure variability perceptions of the dyadic team. As these questions are not relevant to our present research question, we decided not to include them in the present paper. Interested readers are welcome to contact the first author for additional information about these measures.

Dubinsky, 1990; e.g., "I expect these people to perform well together").

Results

Data treatment

We used multivariate analyses of variance (MANOVAs) to test Hypothesis 1. The multivariate test of the four dependent variables was significant for the manipulation of emotional displays (Pillai's trace = 0.27, F = 10.72, p < .001, $\eta_p^2 = 0.27$), but not for the ethnicity composition manipulation (Pillai's trace = 0.03, F = 0.92, p = .45, $\eta_p^2 = 0.03$) or the interaction (Pillai's trace = 0.05, F = 1.46, p = .22, $\eta_p^2 = 0.05$). However, in line with Hypothesis 1, the effect of the emotion manipulation on the dependent variables was considerably greater under ethnic dissimilarity (Pillai's trace = 0.23, F = 8.43, p < .001, $\eta_p^2 = 0.37$) than under ethnic similarity (Pillai's trace = 0.11, F = 3.67, p = .01, $\eta_p^2 = 0.20$). We thus proceeded to test our specific planned contrasts using simple main effects analysis.

Manipulation checks

Participants in the sadness condition scored significantly lower than the midpoint of the scale, indicating that they perceived both team members to be sad (M = 2.93, SD = 0.94), $t(62)$ = − 9.04, p < .001, d = − 1.14. Similarly, participants in the happiness condition scored significantly higher than the midpoint of the scale, indicating that they perceived more happiness in the team (M = 5.79, SD = 1.25), $t(58)$ = 10.96, p < .001, d = 1.43.

Additionally, participants who were presented with the ethnically similar team members (M = 2.29, SD = 1.83) indicated more ethnic similarity than did participants who saw the ethnically dissimilar team members (M = 6.87, SD = 0.34), $F(1, 120)$ = 365.42, p < .001, $\eta_p^2 = 0.75$.

Liking

Our emotion manipulation had a main effect on anticipated liking, $F(1, 118)$ = 22.47, p < .001, $\eta_p^2 = 0.02$ (Figure 1). Participants in the happy condition (M = 5.37, SD = 0.85) anticipated the team members to like each other more than did
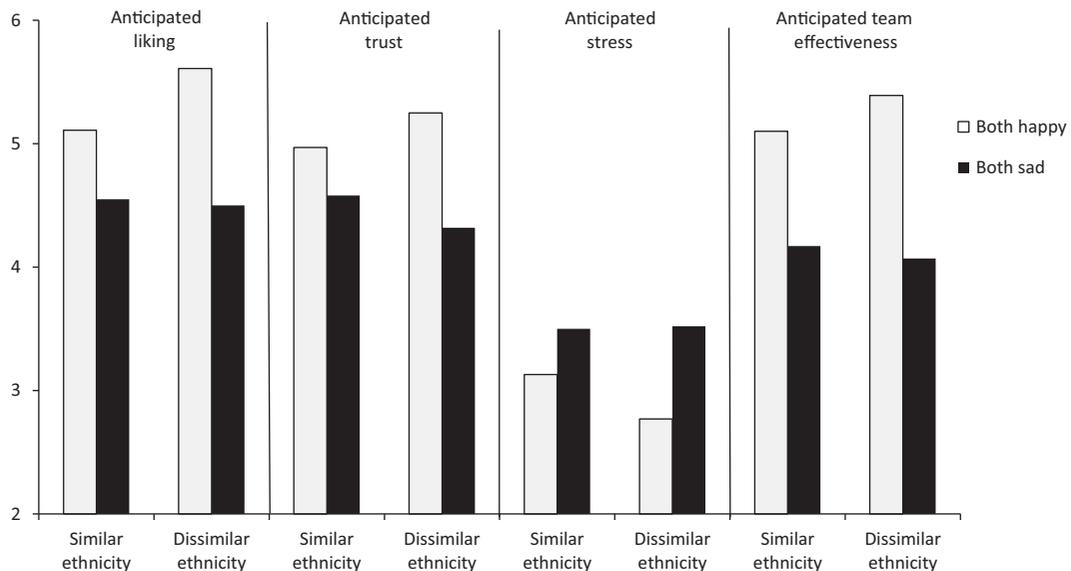

Figure 1. *Effects of the emotional display and team ethnicity composition manipulations on the anticipated interaction ratings in Study 1.*

participants in the sad condition ($M = 4.65$, SD = 0.79). There was no main effect of ethnic composition, $F(1, 118) = 2.55$, $p = .11$, $\eta_p^2 = 0.02$. The interaction between emotion and ethnicity was significant, $F(1, 118) = 5.62$, $p = .02$, $\eta_p^2 = 0.05$. Supporting Hypothesis 1, planned comparisons showed that emotion had a stronger effect in the ethnic dissimilarity condition than in the ethnic similarity condition, as reflected in a significant simple effect of emotional display in the ethnic dissimilarity condition and a non-significant effect in the ethnic similarity condition. Specifically, when participants observed an ethnically dissimilar team, they anticipated greater liking in the team when both persons showed happiness than when they showed sadness, $F(1, 118) = 24.87$, $p < .001$, $\eta_p^2 = 0.28$. This difference was not significant under ethnic similarity, $F(1, 118) = 2.85$, $p = .09$, $\eta_p^2 = 0.05$.

Trust

We obtained a main effect of our emotion manipulation on anticipated trust, $F(1, 118) = 17.52$, $p < .001$, $\eta_p^2 = 0.13$. Participants in the happy condition ($M = 5.11$, SD = 0.75) anticipated the team members to trust each other more than did participants in the sad condition ($M = 4.45$, SD = 0.97). There was no main effect of ethnic composition, $F(1, 118) = 0.01$, $p = .93$, $\eta_p^2 = 0.001$), and a non-significant trend for the interaction effect, $F(1, 118) = 2.94$, $p = .09$, $\eta_p^2 = 0.24$. In line with our prediction, planned comparisons showed that participants who observed an ethnically dissimilar team anticipated more trust when both team members displayed happiness than when they displayed sadness, $F(1, 118) = 17.13$, $p < .001$, $\eta_p^2 = 0.23$. For ethnically similar teams, the difference was not significant, $F(1, 118) = 3.11$, $p = .08$, $\eta_p^2 = 0.05$.

Stress

The emotion manipulation had a significant effect on anticipated stress, $F(1, 118) = 7.92$, $p = .006$, $\eta_p^2 = 0.06$. Participants in the happy condition ($M = 2.95$, SD = 1.10) anticipated the team members to experience less stress than participants

in the sad condition ($M = 3.51$, SD = 1.12). The main effect of ethnic composition, $F(1, 118) = 0.65$, $p = .42$, $\eta_p^2 = 0.01$, and the interaction, $F(1, 118) = 0.88$, $p = .35$, $\eta_p^2 = 0.007$, were not significant. Supporting our prediction, planned comparisons showed that participants anticipated less team stress when an ethnically dissimilar team displayed happiness than when the team displayed sadness, $F(1, 118) = 7.97$, $p = .006$, $\eta_p^2 = 0.12$. For ethnically similar teams, the difference between happiness and sadness was again not significant, $F(1, 118) = 1.59$, $p = .21$, $\eta_p^2 = 0.03$.

Team effectiveness

Finally, we found a significant main effect of the emotion manipulation on anticipated team effectiveness, $F(1, 118) = 41.82$, $p < .001$, $\eta_p^2 = 0.26$. Participants in the happy condition ($M = 5.24$, SD = 0.86) anticipated the team members to be more effective than did participants in the sad condition ($M = 4.12$, SD = 1.05). The main effect of ethnic composition, $F(1, 118) = 0.29$, $p = .59$, $\eta_p^2 = 0.002$, and the interaction, $F(1, 118) = 1.27$, $p = .26$, $\eta_p^2 = 0.01$, were not significant. Planned comparisons revealed that participants anticipated lower effectiveness when an ethnically dissimilar team displayed sadness rather than happiness, $F(1, 118) = 28.35$, $p < .001$, $\eta_p^2 = 0.33$. We obtained a similar pattern for homogeneous teams although the difference was less pronounced, $F(1, 118) = 14.51$, $p < .001$, $\eta_p^2 = 0.19$.

Discussion

Consistent with prior findings (Magee & Tiedens, 2006), the current data show that participants used the emotional cues provided by team members to form impressions about the team's interaction, and that observers inferred more negative team interactions from displays of sadness than from displays of happiness. Moreover, and supporting Hypothesis 1, planned contrast tests provided first-time evidence that emotional cues may be more diagnostic for observers when the team they observe is composed of people of different ethnic backgrounds than when the team members are ethnically similar.

This finding is consistent with the theoretical idea that emotional displays become increasingly relevant in more ambiguous social situations in which interactions are more difficult to predict (Van Kleef et al., 2010), as is the case in teams consisting of members with different ethnic backgrounds (van Knippenberg et al., 2004).

In Study 2, we tested a second moderator that should influence the degree to which team members' emotional displays are used to inform inferences about the team's interaction: the degree to which the emotions displayed by team members are likely to reflect the team's experience together. In light of the findings of Study 1, we examined this idea within ethnically dissimilar teams. We expected that the emotional displays of the ethnically dissimilar team members are more likely to be used by observers to develop judgements concerning the team's trajectory, but especially so when these emotional displays can be more directly linked to the team's interaction. We compared observations of teams whose members' pictures had supposedly been taken *before* or *after* they had met each other. Besides examining effects on the processes and outcomes addressed in Study 1, we added measures of team satisfaction and anticipated conflict.

STUDY 2

Method

Seventy-eight participants (47 females, M_{age} = 20.35, SD_{age} = 2.93) enrolled in an experiment that was similar in procedure and cover story to Study 1, but with all teams being ethnically dissimilar (i.e., composed of a Moroccan and a Dutch male).[5] This time we manipulated when the

pictures of the team members had ostensibly been taken. Participants were randomly assigned to one of four conditions of a 2 (emotional displays: both happy vs. both sad) by 2 (picture timing: before vs. after meeting each other) design.

The picture-timing manipulation was presented using the following text, which followed the general introduction described in Study 1:

> Two people will work together on this task as a team. On the next page, we will show you pictures of these two people. The pictures were taken [before/after] the people were told with whom they would work together. At the time the pictures were taken, they thus [did not know/ already knew] who their partner would be for this task.

As in Study 1, the pictures were then presented on the next page, and subsequently, participants responded to the statements that were presented underneath the pictures. The pictures were removed from the screen for the manipulation check questions and demographics. Means, SDs and alphas are presented in Table 2 and visualised in Figure 2.

Measures

Anticipated interaction measures

We employed the same questionnaires as in Study 1. We also added three items to measure anticipated satisfaction among team members during and after working together (e.g., "I expect these people to be satisfied with the cooperation within their team"). Additionally, we measured to what extent participants anticipated task, relationship and process conflicts between the team members (Jehn, 1995; Jehn & Mannix, 2001). We used four items for each type of conflict (e.g., "Do you

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[5] We also included a mixed-emotion condition in this study (N = 40), which showed no effects of our picture-timing manipulation on any of the dependent variables (all Fs < 2.10, all ps > .16). The mixed-emotion condition fell in between the happy and sad conditions for liking (p difference mixed-sad = .003; p difference mixed-happy <.001), stress (p difference mixed-sad = .02; p difference mixed-happy = .002) and satisfaction (p difference mixed-sad = .02; p difference mixed-happy < .001). The mixed-emotion condition did not differ significantly from both other emotion conditions for relationship conflict (p difference mixed-sad = .28; p difference mixed-happy = .07), and was significantly different from the happy condition but not from the sad condition for trust (p difference mixed-sad = .08; p difference mixed-happy < .001), task conflict (p difference mixed-sad = .56; p difference mixed-happy < .001), process conflict (p difference mixed-sad = .96; p difference mixed-happy < .001) and team effectiveness (p difference mixed-sad = .18; p difference mixed-happy < .001).

Table 2. *Means and standard deviations for dependent variables in Study 2*

| | Pictures taken before members met | | | | Pictures taken after members met | | | | | | |
| | Both happy | | Both sad | | Both happy | | Both sad | | Overall | | |
Condition	M	SD	M	SD	M	SD	M	SD	M	SD	α
Liking	5.15	0.99	4.19	0.59	5.26	1.02	2.89	1.18	4.41	1.35	0.89
Trust	5.00	0.94	4.18	0.82	4.89	0.99	3.03	0.92	4.37	1.13	0.88
Stress	2.83	0.97	3.76	1.33	2.94	1.33	5.11	1.18	3.63	1.50	0.87
Satisfaction	4.87	1.10	3.80	1.22	4.96	1.01	2.42	1.24	4.05	1.52	0.94
Task conflict	3.89	0.85	3.79	1.10	3.58	1.06	5.00	0.88	4.05	1.11	0.83
Relationship conflict	3.17	1.13	3.22	1.18	3.07	1.24	4.56	1.32	3.49	1.30	0.87
Process conflict	3.39	1.01	3.74	1.07	3.08	1.60	4.75	1.27	3.71	1.41	0.92
Team effectiveness	4.94	0.97	3.61	0.95	4.97	1.06	2.88	1.21	4.14	1.37	0.88

expect interpersonal frictions between these people?"; "Do you expect disagreements about work between these people?"; "Do you expect disagreements about how the task should be done between these people?").

Manipulation checks

The manipulation checks for the emotional displays of the team members were the same as in the previous experiment. We checked our picture-timing manipulation using three questions asking whether "the persons in the pictures knew that they would work together on the task", "the pictures were taken after they had learned that they would work together" and "the pictures were taken before they had learned that they would work together [recoded]" ($α = 0.94$; $M = 4.57$, SD = 2.25).

Results

Data treatment

We used MANOVAs to test our hypothesis for the eight separate constructs. The multivariate test was significant for the emotional displays manipulation
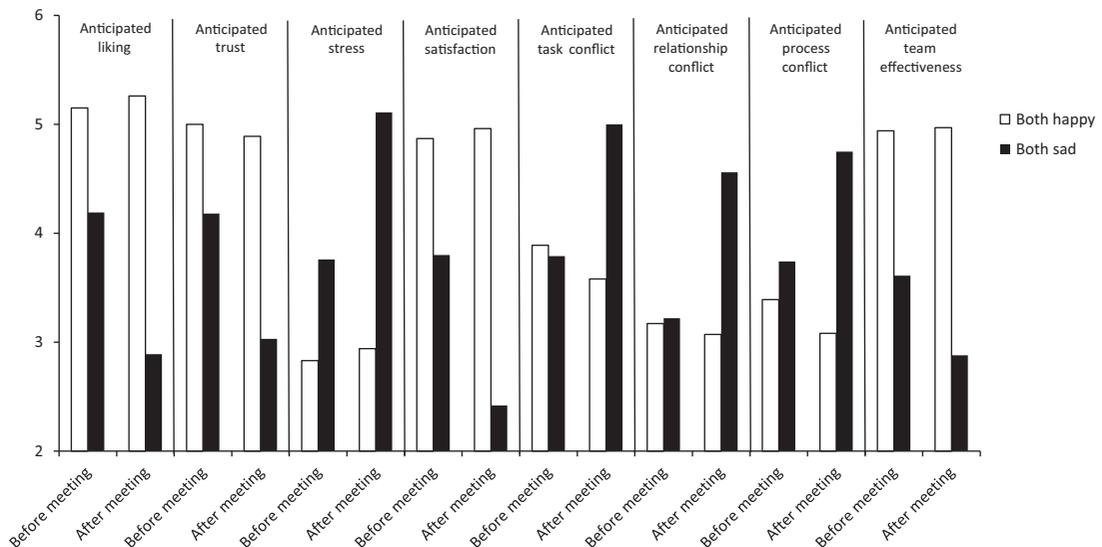

Figure 2. *Effects of the emotional display and picture-timing manipulations on the anticipated interaction ratings in Study 2.*

(Pillai's trace = 0.54, F = 9.86, p < .001, $\eta_{p}^{2} = 0.54$) and for the interaction between emotional displays and picture timing (Pillai's trace = 0.22, F = 2.36, p < .03, $\eta_{p}^{2} = 0.22$), but not for the main effect of picture timing (Pillai's trace = 0.16, F = 1.53, p = .16, $\eta_{p}^{2} = 0.15$). Moreover, in line with our prediction, the effect of the emotion manipulation on the dependent variables was greater when the pictures were taken after the team members had met each other (Pillai's trace = 0.52, F = 9.26, p < .001, $\eta_{p}^{2} = 0.65$) than before they had met each other (Pillai's trace = 0.28, F = 3.38, p = .003, $\eta_{p}^{2} = 0.48$). We thus proceeded to test our specific planned contrast analyses using simple main effects analysis.

Manipulation checks

We checked the emotional display manipulation by comparing participants' responses to the mid-point of the scale. Participants in the sadness condition scored significantly lower than the midpoint of the scale, indicating that they perceived both dyad members to be sad (M = 2.35, SD = 1.11), $t(36) = -9.03$, p < .001, $d = -1.49$. Similarly, participants in the happiness condition scored significantly higher than the midpoint of the scale (M = 6.23, SD = 0.95), demonstrating that they perceived the team members to portray happiness, $t(58)$ = 15.05, p < .001, d = 2.35.

Participants in the pictures-after-meeting condition agreed more with statements that the pictures were taken after the two team members had met each other (M = 6.26, SD = 1.45) compared to participants in the pictures-before-meeting condition (M = 2.26, SD = 1.15), $F(1, 76)$ = 150.18, p < .001, $\eta_{p}^{2} = 0.66$. Thus, the manipulations were successful.

Liking

A main effect of the emotion manipulation showed that participants in the happy condition (M = 5.21, SD = 0.99) anticipated the team members to like each other more than did participants in the sad condition (M = 3.52, SD = 1.13), $F(1, 74)$ = 56.48, p < .001, $\eta_{p}^{2} = 0.43$. A main effect of the timing manipulation showed that participants in the pictures-before-meeting condition anticipated more liking (M = 4.67, SD = 0.93) compared to participants in the pictures-after-meeting condition (M = 4.19, SD = 1.61), $F(1, 74)$ = 7.09, p = .01, $\eta_{p}^{2} = 0.09$. Moreover, there was a significant Emotion × Timing interaction, $F(1, 74)$ = 10.06, p = .002, $\eta_{p}^{2} = 0.12$. In line with Hypothesis 2, planned comparisons showed that participants in the pictures-after-meeting condition anticipated less liking when the team members displayed sadness rather than happiness, $F(1, 74)$ = 61.79, p < .001, $\eta_{p}^{2} = 0.55$. The effect in the pictures-before-meeting condition was less pronounced, $F(1, 74)$ = 8.84, p = .004, $\eta_{p}^{2} = 0.27$.

Trust

A main effect of the emotion manipulation showed that participants in the happy condition (M = 4.94, SD = 0.96) anticipated the team members to trust each other more than did participants in the sad condition (M = 3.73, SD = 0.97), $F(1, 74)$ = 32.86, p < .001, $\eta_{p}^{2} = 0.31$. A main effect of the timing manipulation indicated that participants in the pictures-before-meeting condition thought that the team members trusted each other more (M = 4.59, SD = 0.96) than in the pictures-after-meeting condition (M = 4.17, SD = 1.24), $F(1, 74)$ = 5.52, p = .02, $\eta_{p}^{2} = 0.07$. The interaction was marginally significant, $F(1, 74)$ = 3.35, p = .07, $\eta_{p}^{2} = 0.04$. Planned comparisons revealed that participants in the pictures-after-meeting condition anticipated more trust when both team members displayed happiness than when they displayed sadness, $F(1, 74)$ = 30.83, p < .001, $\eta_{p}^{2} = 0.42$. Again, the effect in the pictures-before-meeting condition was weaker, $F(1, 74)$ = 7.10, p = .009, $\eta_{p}^{2} = 0.19$.

Stress

A main effect of emotion revealed that participants in the happy condition (M = 2.89, SD = 1.17) anticipated the team members to experience less stress than did those in the sad condition (M = 4.45, SD = 1.41), $F(1, 74)$ = 31.06, p < .001, $\eta_{p}^{2} = 0.30$. A main effect of timing showed that anticipated stress was higher in the pictures-after-meeting condition (M = 3.92, SD = 1.66) than in

the pictures-before-meeting condition ($M = 3.30$, SD = 1.24), $F(1, 74) = 6.89$, $p = .01$, $\eta_p^2 = 0.09$. Moreover, we found a significant interaction, $F(1, 74) = 4.98$, $p = .03$, $\eta_p^2 = 0.06$. In the pictures-after-meeting condition, participants anticipated less stress when the dyad displayed happiness rather than sadness, $F(1, 74) = 32.83$, $p < .001$, $\eta_p^2 = 0.43$. In the pictures-before-meeting condition, the effect was again less pronounced, $F(1, 74) = 5.20$, $p = .03$, $\eta_p^2 = 0.14$.

Satisfaction

A main effect of emotion showed that participants in the happy condition ($M = 4.92$, SD = 1.04) anticipated the team members to be more satisfied than did participants in the sad condition ($M = 3.09$, SD = 1.40), $F(1, 74) = 48.31$, $p < .001$, $\eta_p^2 = 0.40$. A main effect of timing indicated that participants in the pictures-before-meeting condition believed the team members to be more satisfied with the collaboration ($M = 4.33$, SD = 1.27) than did those in the pictures-after-meeting condition ($M = 3.81$, SD = 1.69), $F(1, 74) = 6.16$, $p = .02$, $\eta_p^2 = 0.08$. The interaction was also significant, $F(1, 74) = 7.92$, $p = .006$, $\eta_p^2 = 0.097$. Supporting our prediction, participants in the pictures-after-meeting condition anticipated more satisfaction when the dyad displayed happiness rather than sadness, $F(1, 74) = 51.39$, $p < .001$, $\eta_p^2 = 0.57$. Again, the effect in the pictures-before-meeting condition was less pronounced, $F(1, 74) = 7.98$, $p = .006$, $\eta_p^2 = 0.18$.

Task conflict

Participants in the happy condition anticipated less task conflict in the team ($M = 3.71$, SD = 0.98) than did those in the sad condition ($M = 4.41$, SD = 1.52), $F(1, 74) = 8.79$, $p = .004$, $\eta_p^2 = 0.11$. Furthermore, participants in the pictures-after-meeting condition anticipated more task conflict in the team ($M = 4.22$, SD = 1.21) than did those in the pictures-before-meeting condition ($M = 3.84$, SD = 0.97), $F(1, 76) = 4.01$, $p = .049$, $\eta_p^2 = 0.05$. Again, the Emotion × Picture-timing interaction was significant, $F(1, 76) = 11.56$, $p = .001$, $\eta_p^2 = 0.14$. Participants in the pictures-after-meeting condition

anticipated more task conflict when the team displayed sadness rather than happiness, $F(1, 74) = 21.84$, $p < .001$, $\eta_p^2 = 0.35$. The effect in the pictures-before-meeting condition was not significant, $F(1, 74) = 0.09$, $p = .77$, $\eta_p^2 = 0.003$.

Relationship conflict

A main effect of emotion showed that participants in the happy condition anticipated less relationship conflict in the team ($M = 3.09$, SD = 1.40) than did those in the sad condition ($M = 4.92$, SD = 1.04), $F(1, 74) = 10.23$, $p = .002$, $\eta_p^2 = 0.12$. A main effect of timing indicated that participants anticipated more relationship conflicts when the pictures were taken after ($M = 3.73$, SD = 1.41) rather than before the team members had met each other ($M = 3.22$, SD = 1.12), $F(1, 74) = 4.82$, $p = .03$, $\eta_p^2 = 0.06$. We also obtained a significant interaction, $F(1, 76) = 6.65$, $p = .01$, $\eta_p^2 = 0.08$. Participants in the pictures-after-meeting condition anticipated less relationship conflict when the team displayed happiness rather than sadness, $F(1, 74) = 15.48$, $p < .001$, $\eta_p^2 = 0.26$. In the picture-before-meeting condition, the difference was not significant, $F(1, 74) = 0.02$, $p = .89$, $\eta_p^2 = 0.001$.

Process conflict

Participants in the happy condition anticipated less process conflict in the team ($M = 3.21$, SD = 1.36) than did those in the sad condition ($M = 4.26$, SD = 1.27), $F(1, 74) = 11.98$, $p = .001$, $\eta_p^2 = 0.14$. There was no main effect of timing, $F(1, 74) = 1.44$, $p = .23$, $\eta_p^2 = 0.02$, but the interaction was again significant, $F(1, 76) = 5.16$, $p = .03$, $\eta_p^2 = 0.07$. In the pictures-after-meeting condition, participants anticipated less process conflict when the team members displayed happiness rather than sadness, $F(1, 74) = 17.71$, $p < .001$, $\eta_p^2 = 0.26$. Again, the effect was not significant in the pictures-before-meeting condition, $F(1, 74) = 0.66$, $p = .42$, $\eta_p^2 = 0.03$.

Team effectiveness

A main effect of emotion revealed that participants in the happy condition ($M = 4.96$, SD = 1.01) anticipated the team to be more effective

than did participants in the sad condition (M = 3.23, SD = 1.14), $F(1, 74) = 50.93$, $p < .001$, $\eta_{p}^2 = 0.41$. There was no main effect of timing, $F(1, 74) = 2.17$, $p = .15$, $\eta_{p}^2 = 0.03$, and no interaction, $F(1, 76) = 2.51$, $p = .12$, $\eta_{p}^2 = 0.033$. In line with Hypothesis 2, participants in the pictures-after-meeting condition anticipated lower effectiveness when the team members displayed sadness rather than happiness, $F(1, 74) = 40.98$, $p < .001$, $\eta_{p}^2 = 0.47$, and this effect was weaker in the pictures-before-meeting condition, $F(1, 74) = 14.38$, $p < .001$, $\eta_{p}^2 = 0.34$.

Discussion

Study 2 supports the hypothesis that when emotional cues entail more interaction-relevant information, observers are more likely to use these emotional displays to inform their perceptions of the team. This illustrates that emotional expressions do not merely produce simple positive versus negative perceptions congruent with the valence of the expressions. Rather people extract social information from emotional expressions to the degree that the expressions are relevant and potentially diagnostic (Van Kleef et al., 2011). This conclusion adds to work on the interpersonal effects of emotions (e.g., Fischer & Manstead, in press; Keltner & Haidt, 1999; Van Kleef, 2009) and qualifies previous main effects of emotional cues on impressions of groups (Magee & Tiedens, 2006).

It is important to note that we tested these predictions only in the context of ethnically dissimilar teams, because Study 1 had shown that the effects of emotional expressions are more pronounced when observers rate ethnically dissimilar rather than ethnically similar teams. This implies that our hypothesis tests in Study 2 may have been rather conservative, as the main effect of emotional display was quite strong because of the ethnically dissimilar team composition (cf. Study 1). It would therefore seem plausible that the moderating influence of the picture-timing manipulation observed in Study 2 would be stronger in the context of ethnically similar teams, but future research is needed to examine this empirically.

GENERAL DISCUSSION

We demonstrated that observers use team members' emotional expressions to arrive at judgements about the team's future functioning. Both studies show that expressions of sadness resulted in more negative perceptions of interaction quality (on both relational and task-relevant dimensions) than expressions of happiness. Additionally, we qualify this effect by showing that emotional expressions were more likely to influence the observer's perception of the team when the team's trajectory was more likely to be ambiguous (i.e., when the team was ethnically dissimilar rather than similar; Study 1) and when the emotional displays could be more clearly linked to the team's collective experience (Study 2).

Theoretical implications

There has been a long-standing interest in social perception, that is, how people perceive and make sense of others and their behaviours (Hamilton & Sherman, 1996). By examining how the emotional displays of team members are used by observers to predict team functioning, we contribute to scientific understanding of person perception more broadly (Phillips et al., 2014) and to the emerging scholarly interest in perceptions of collective affect more specifically (Sanchez-Burks & Huy, 2009). Providing a conceptual replication of Magee and Tiedens (2006) in a dyadic team context, we found that displays of happiness are associated with more positive anticipated outcomes than displays of sadness. Importantly, we extend their work by showing that the degree to which observers make inferences based on team members' emotional displays depends on the specific social context within which the emotions are displayed.

First, building on EASI theory (Van Kleef, 2009), we illustrated that the emotions that team members display become more diagnostic to observers when the team's possible trajectory is more ambiguous. More specifically, we found that observers used the emotional expressions of team members especially when the team's future was more uncertain due to the team's precarious demographic

composition. That is, the diagnostic value of happiness versus sadness became more pronounced under ethnic dissimilarity than under ethnic similarity.

Second, our data illuminate that the diagnostic value of emotional displays increases when the emotions are more closely linked to the interaction. That is, people are more likely to draw team-trajectory inferences from emotional displays when these are directly relevant to the situation at hand. When emotional expressions were displayed after (rather than before) team members met each other, they had a significantly stronger influence on observers' judgements of the team's subsequent interaction. This finding supports a key tenet of EASI theory (Van Kleef, 2009) by showing that emotional expressions are used as a source of information when making sense of social situations, especially to the degree that the emotions are potentially relevant to the situation.

Although there is accumulating evidence that the development and existence of collective affect is important for the survival and functioning of teams (e.g., Barsade & Gibson; 2012; Spoor & Kelly, 2004), understanding of how team affect influences observers' perceptions of teams is limited. Nevertheless, the perceptions people have of anticipated team functioning may be highly influential in shaping their behaviour towards those teams. For instance, aspiring members may use the emotional displays of team members to decide whether or not to join a particular team. A representative negotiator may adapt his/her negotiating behaviour towards another team based on the degree of future cooperativeness suggested by the team members' emotional expressions. A supervisor may determine how to guide a team towards a certain goal depending on the emotional displays of its members. In light of the present finding that emotional displays affect people's judgements about teams' trajectories, considering emotional expressions might be crucial in predicting how people will relate to teams.

Limitations and future directions

The current work aimed to illuminate when and how people use team members' emotional displays to form impressions about the team's interaction. To examine this question, we made some methodological decisions that could produce boundary conditions on the generalisability of our findings. For one, we tested our hypotheses in the most simple team setting: the dyad. For theoretical as well as empirical reasons, many influential team researchers see dyads as teams (e.g., Kozlowski & Bell, 2003; Williams, 2010), suggesting that our findings may extend to larger groups. Indeed, Magee and Tiedens (2006) found that homogeneous sadness among members of a triad led to negative observer perceptions of relationships within the team. The fact that we replicated this effect in a dyadic context increases confidence that our other findings also generalise to larger teams. Nevertheless, future research is needed to substantiate this. Moreover, when examining team processes that are specific to larger teams, such as minority influence, subgroup categorisation and coalition formation (Williams, 2010), a focus on larger collectives is needed.

Furthermore, we focused on sadness and happiness as prototypical examples of emotions with positive versus negative valence (Magee & Tiedens, 2006; Russell & Caroll, 1999). Future research might fruitfully set out to test the effects of other discrete emotions such as guilt, fear, anger and disgust, to understand whether and how the specific appraisal patterns and relational themes of discrete emotions might differentially affect observer's judgements of teams (Smith & Ellsworth, 1985). For instance, given that anger implies the assignment of blame, it would suggest that teams in which members display anger are perceived as experiencing even more conflict than teams in which members express sadness.

In a related fashion, we decided to focus on facial expressions of emotions rather than other cues that can be used to infer information about the trajectory of the team. Future research might examine other dynamic cues such as verbal statements, gossip or body language to test whether the effects are similar for different types of dynamic informational cues. Relatedly, even though we used several validated pictures to manipulate the emotional displays of the team members, one picture of a white male was

used in both studies. Future research could use a greater variety of pictures to examine whether the current findings generalise to inferences about different combinations of individuals.

Additionally, we did not incorporate a "neutral" emotion condition. The reason for this decision was that our interest in testing whether and when observers use the emotional expressions of team members to arrive at inferences regarding the team's interaction does not require the inclusion of a neutral control condition. As a result, even though our findings allow for conclusions regarding the differential use of emotional displays as a function of situational characteristics, it is unclear whether our effects are driven primarily by happiness, sadness or both. Future studies could incorporate a non-emotional control condition to shed more light on this question. However, there is an ongoing debate among emotion researchers pertaining to whether a pure "neutral" emotional state actually exists, and what this neutral (or still-faced) expression communicates (e.g., Tronick, 1989), which might not make it an appropriate control condition.

Finally, we did not incorporate any potential individual differences in the ability of observers to detect emotional displays. One could predict that observers who are better able or more willing to understand and deal with emotions might be more strongly influenced by team members' emotional displays. Future research could therefore include measures of, for instance, emotional intelligence (MacCann & Roberts, 2008; Mayer, Salovey, Caruso, & Sitarenios, 2003), empathy (Davis, 1983) and epistemic motivation (Ford & Kruglanski, 1995). A particularly relevant ability in this respect might be emotional aperture (Sanchez-Burks & Huy, 2009), which is linked to recognising the emotional composition of a group, rather than of individuals, and which might be especially relevant when one is interested in understanding how observers make sense of the collective experience of teams.

CONCLUSION

The question of how people make sense of collectives has been of great interest in many fields within the social sciences, from psychology to behavioural economics to organisational studies. The present data point to the crucial role of emotional expressions in shaping observers' understanding of future team life. Our empirical contributions reveal that, rather than consistently binding or splintering teams, negative and positive emotions become more informative and influential to the degree that they are more necessary and more useful to make sense of the future experience of team members. As such, this work moves the field forward in understanding the conditions that modulate the important functions of emotional displays as informative cues and coordinators of behaviour in social collectives.

DISCLOSURE STATEMENT

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