



UvA-DARE (Digital Academic Repository)

Emotional influence in groups: The dynamic nexus of affect, cognition, and behavior

van Kleef, G.A.; Heerdink, M.W.; Homan, A.C.

DOI

[10.1016/j.copsyc.2017.07.017](https://doi.org/10.1016/j.copsyc.2017.07.017)

Publication date

2017

Document Version

Final published version

Published in

Current Opinion in Psychology

[Link to publication](#)

Citation for published version (APA):

van Kleef, G. A., Heerdink, M. W., & Homan, A. C. (2017). Emotional influence in groups: The dynamic nexus of affect, cognition, and behavior. *Current Opinion in Psychology*, 17, 156-161. <https://doi.org/10.1016/j.copsyc.2017.07.017>

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

UvA-DARE is a service provided by the library of the University of Amsterdam (<https://dare.uva.nl>)



ELSEVIER

Emotional influence in groups: the dynamic nexus of affect, cognition, and behavior

Gerben A van Kleef, Marc W Heerdink and Astrid C Homan

Groups are a natural breeding ground for emotions. Group life affords unique opportunities but also poses critical challenges that may arouse emotional reactions in group members. Social-functional approaches hold that these emotions in turn contribute to group functioning by prompting group members to address concerns that are relevant to the group's success. Guided by Emotions as Social Information (EASI) theory, this paper reviews research on the affective, cognitive, and behavioral consequences of emotional expressions in groups. Affective processes include emotional contagion and affective convergence, and resulting states such as group affective tone and affective diversity. Cognitive processes include inferences group members draw from each other's emotional expressions. We discuss how these affective and cognitive processes shape behavior and group functioning. We conclude that the traditional (over)emphasis on affective processes must be complemented with a focus on cognitive processes to develop a more complete understanding of the social dynamics of emotions in groups.

Address

University of Amsterdam, Department of Social Psychology, P.O. Box 15900, 1001 NK Amsterdam, The Netherlands

Corresponding author: van Kleef, Gerben A (g.a.vankleef@uva.nl)

Current Opinion in Psychology 2017, **17**:156–161

This review comes from a themed issue on **Emotion**

Edited by **Batja Gomes de Mesquita** and **Lisa Feldman Barrett**

For a complete overview see the [Issue](#) and the [Editorial](#)

Available online 19th July 2017

<http://dx.doi.org/10.1016/j.copsyc.2017.07.017>

2352-250X/© 2017 Elsevier Ltd. All rights reserved.

Emotions are an intrinsic element of group life. Social interactions are the primary elicitors of emotions [1–3], and groups create ample opportunity for such emotionally evocative encounters [4*]. Given that the emotions that arise during group interactions are often expressed in one way or another — whether deliberately or inadvertently —, the question arises how these emotional expressions influence group functioning. Here we set out to answer this question.

Departing from the traditional view that emotions cloud critical judgment and turn groups into rationally

incapacitated, impulsive, and potentially dangerous entities [5,6], contemporary theoretical approaches emphasize that emotions fulfill key social functions in groups that help their members address the various problems associated with living and working in groups [7–10]. For instance, emotions have been proposed to play a role in the development and maintenance of group cohesion, the allocation of roles and responsibilities among group members, the management of deviance and defection, and the coordination of collective efforts to attain shared goals [9,11–16].

Despite a growing interest in emotions in groups, the extant literature is scattered, and theoretical integration is lacking. We provide an integrative review of empirical support for the presumed functions of emotions in groups, examining in particular how emotional expressions shape group processes and outcomes. Our focus is on small, interactive groups rather than larger and more abstract collectives such as organizations, nations, or groups defined by demographic characteristics such as age, gender, ethnicity, or social-economic status. Although the role of emotions is also studied quite fruitfully in the context of larger collectives and intergroup relations [14], most notably in the interrelated areas of group-based emotions [17–19], intergroup emotions theory [20,21], and collective action [22,23], this research tends to focus on the social origins and consequences of emotional *experience* rather than on the social consequences of emotional *expression*. As such, much of this work falls outside the scope of this article, which centers on the social effects of emotional expressions in groups.

The paper unfolds as follows. We begin by summarizing a recent theoretical approach to understanding the social effects of emotions, which is useful for analyzing the effects of emotional expressions in groups: Emotions as Social Information (EASI) theory [24,25]. Guided by this framework, we review research on the effects of emotional expressions on affective and cognitive processes in groups, and we consider how these processes in turn shape behavioral outcomes. Finally, we highlight key conclusions emerging from our review and provide directions for future research.

Theoretical background: Emotions as Social Information (EASI) theory

EASI theory [24,25] is rooted in the social-functional approach to emotion [13,15,24]. The theory explains how emotional expressions regulate social and

organizational life by eliciting affective reactions (i.e. reciprocal and complementary emotions and sentiments) and/or cognitive inferences (i.e. judgments about the source, meaning, and implications of the expresser's emotion) in observers [25]. Observers' behavioral responses to others' emotional expressions depend on the relative strength of affective and inferential processes, which is determined by the observer's information processing motivation and ability and the perceived appropriateness of the emotional expression in light of the social context. The EASI framework has been used to inform theoretical analyses of the role of emotional expressions in social decision making [26], social influence [27], and organizational behavior [28]. Extending previous analyses, here we apply EASI theory to understand and integrate disparate findings concerning the effects of emotional expressions on affective and cognitive processes and behavioral outcomes in groups.

Affective processes: emotional contagion and affective convergence

A considerable body of research has investigated various forms of affective reactions to emotional expressions in groups. This work primarily focuses on emotional contagion, the tendency to 'catch' the emotions of others [29] via automatic, non-conscious processes (e.g. 'primitive' emotional contagion) and/or more conscious, deliberate processes (e.g. social comparison [4]). Theorists have proposed that the resulting convergent emotional state facilitates bonding and coordinated action toward joint goals [9]. Accordingly, researchers have shown a strong interest in the emergence of shared affective states in groups [30], which are commonly referred to as 'group affective tone' [31,32,33] or 'group emotion' [4,11].

In a series of studies on teams of nurses and accountants [34] and professional cricket players [35], Totterdell and colleagues observed that group members' moods became linked over time. Moreover, the cricket study showed that players' moods were more strongly correlated with the current aggregate mood of their own team than with the aggregate mood of the other team (also see [36,37]) or with the aggregate mood of their own team at other times. Along similar lines, Bartel and Saavedra [38] found that work groups converged for eight distinct mood categories, showing furthermore that high-arousal moods (e.g. cheerful enthusiasm, hostile irritability) spread more readily among the group members than low-arousal moods (e.g. serene warmth, depressed sluggishness). Emotional contagion was also observed in a controlled laboratory study by Barsade [39], although this study did not reveal differential spreading of high-arousal versus low-arousal moods. Furthermore, consistent with the notion that the emotions of high-power individuals are more influential than those of low-power individuals [40,41], the emotional expressions of leaders have been shown to exert a

considerable impact on the emotional states of groups of followers [33,42].

Supporting the idea that multiple mechanisms underlie emotional contagion [4,29], other work has found that emotions also spread in groups in the absence of visible emotional expressions. In a study involving physically separated virtual team members, members who were confronted with a confederate who expressed anger or happiness via text messages caught these emotions and in turn displayed the same emotion to other teammates via text messages, thus reinforcing the emotional state within the team [43; also see 44]. Another study found that displays of joy and fear by one person were involuntarily transmitted via a second person to a third one, even if the third person could not explicitly recognize the second person's emotional expression [45].

Even though emotional contagion is prevalent, it is subject to moderating influences. The likelihood that emotions spread across group members increases to the degree that group members score higher on the dispositional susceptibility to emotional contagion, are more committed to the team, are engaged in collective rather than individual activities, are more identified, and have a more collectivistic orientation [34,35,46,47]. These boundary conditions notwithstanding, the extant literature is consistent with EASI theory's postulate that emotional expressions can exert influence in groups by eliciting affective processes in fellow group members.

Cognitive processes: drawing inferences from emotional expressions

Besides relatively automatic affective processes, group members may engage in more deliberate and effortful cognitive interpretation of each others' emotional expressions. Living and working in groups can be challenging, because group members tend to have limited insight into each others' goals, motives, intentions, and expectations. When navigating group interactions, people may therefore turn to their fellow group members' emotional expressions to inform their understanding of the socially complicated situation they are in [48–51].

As a case in point, Van Doorn and colleagues [52] found that individuals construed a social setting as more cooperative when fellow group members expressed happiness rather than no emotion, whereas they construed the situation as more competitive when fellow group members expressed anger. Furthermore, Heerdink and colleagues [53,54,55] demonstrated that individuals use the emotional expressions of their fellow group members to gauge their momentary levels of acceptance. Nonverbal expressions of happiness automatically triggered concepts associated with inclusion, whereas nonverbal expressions of anger triggered associations with exclusion [53]. Moreover, expressions of anger elicited self-relevant

inferences of rejection [54**], which linearly increased as more group members expressed anger [55].

The informational value of emotional expressions may not only serve fellow group members but third parties as well. Magee and Tiedens [56*] found that outside observers inferred various characteristics of three-person groups based on the valence and the consistency of the nonverbal emotional expressions of the group's members. Participants perceived a greater degree of common fate between group members when all members displayed the same emotion than when they displayed different emotions. Moreover, groups were perceived as more cohesive when all members displayed happiness than when they displayed sadness or showed different emotions, due to inferences of interpersonal liking.

Along similar lines, Homan and colleagues found that participants anticipated more cooperative interactions, higher satisfaction, greater interpersonal liking and trust, and less conflict when both members of a two-person team showed happiness than when both showed sadness [57*]. Consistent with the theoretical idea that emotional expressions can disambiguate social situations [26,50,51], group members' emotional expressions triggered stronger inferences when there was greater ambiguity surrounding the future trajectory of the team and when the emotional expressions were more likely to reflect team processes rather than dispositional positive or negative affectivity [57*]. In another study, observers inferred greater relational well-being between group members and expected better team performance when the members showed socially engaging emotions (sadness and appreciation) rather than socially disengaging emotions (anger and pride [58]).

Finally, emotional expressions can clarify and reinforce group norms [15,54**], because norm violations tend to evoke strong negative emotional reactions in observers [59]. Hareli and colleagues found that fellow group members' expressions of anger in response to a transgression are particularly effective in triggering inferences that a norm has been violated and in facilitating the learning of the norm [60*,61]. In short, consistent with the EASI framework, a growing body of research indicates that emotional expressions can exert influence in groups by eliciting cognitive (i.e. inferential) processes in fellow group members. In addition, emotional expressions in groups can trigger inferences in outside observers, which may in turn influence how they relate to the group.

Behavioral outcomes: how affect and cognition shape group functioning

Now that we have reviewed the affective and cognitive processes that can be triggered by emotional expressions in groups, the next step is to examine how these processes in turn shape behavior and group functioning. Several

studies have documented the downstream behavioral consequences of affective processes in groups. Correlational field studies found that positive group affective tone was associated with reduced absenteeism [32,62; but see 63], and experimental studies established causal effects of positive group affective tone on cooperation [39**], group creativity [64,65], and coordination [33**]. Conversely, negative group affective tone has been linked with reduced prosocial behavior [32] and lower team performance [66].

More recent work has qualified these straightforward valence-congruent effects by considering the extent to which the impact of mood on cognition is conducive to performance in a given group task. Consistent with research on the effects of moods on individual-level cognitive processing [67,68], Klep and colleagues [69] found that groups that were induced to experience shared positive affect (by having group members watch the same mood-inducing film) exhibited enhanced creative performance, whereas groups induced to experience shared negative affect showed better analytical performance (also see [70]). Another study similarly showed that negative affectivity benefited group information processing and decision quality when information was scattered among group members but not when information was shared [71], presumably because the information-processing benefits of negative affect are particularly useful in situations where new information must be pooled to reach an optimal group decision. Interestingly, however, and consistent with the broaden-and-build hypothesis of positive affect [72], other research found that teams considered more critical information when they were in a positive rather than negative affective state [73]. A crucial difference that may help explain these apparently contradictory findings is that the affect manipulation was experienced as a group in some work [69] and individually in other work [73]. We speculate that negative affect also decreases social engagement, and that this tendency needs to be offset (e.g. through interactive affect sharing) in order for the cognitive benefits of negative group affect to become visible.

Compared to the role of affective processes, the role of cognitive processes as links between emotional expressions and group functioning has received sparse attention. A notable exception is a series of studies by Heerdink and colleagues, who examined whether expressions of anger on the part of fellow group members can force deviant group members back in line [54**]. They showed that people interpret fellow group members' anger expressions as a signal of potential rejection by the group, whereas people interpret expressions of happiness as a sign of acceptance. Inferences of imminent rejection in turn led deviant group members to conform to the angry majority, but only when they were concerned about their group membership and motivated to stay in the group.

A compatible effect was observed in a study by Van Kleef and colleagues on the effects of leader emotional expressions on team performance [42**]. Followers interpreted expressions of anger on the part of their leader as a sign that their performance was subpar, whereas they took expressions of happiness as an indication that they had done well. These performance inferences in turn predicted team performance, but only when team members were motivated to engage in thorough information processing. In line with EASI theory, cognitive processes (i.e. inferences about performance quality) mediated behavioral responses to the leader's emotional expressions among followers with high information processing motivation. Conversely, affective reactions (i.e. positive versus negative emotions and liking of the leader) mediated responses to the leader's emotions among followers with low information processing motivation. Other findings indicate that a leader's expressions of anger can increase team performance when team members perceive their leader's anger as appropriate, whereas performance is undermined when team members deem their leader's anger inappropriate [74].

Conclusions and future directions

Recognizing the inherent difficulties of living and working in groups and the critical role of emotions in coordinating social exchange [24], contemporary theoretical approaches highlight the important functions of emotional displays in regulating group life [7–10]. Moreover, scholars have recently begun to examine long-standing theoretical notions that emotional displays in groups play a role in the development and maintenance of group cohesion, the learning and upholding of social norms, the regulation of deviance and defection, and the coordination of shared efforts to achieve group goals [9,11–16].

Whereas early work on emotions in groups showed a strong emphasis on affective convergence [33**,35**,38,39**], more recent studies have begun to investigate the informational value of emotional expressions in groups. Consistent with Emotions as Social Information theory [24,25], this research indicates that individuals use group members' emotional expressions to gain insight into their own performance level [42**], their inclusionary status in the group [53,54**,55], the norms of the group [60*,61], and the functioning of the group as a whole [56*,57*,58]. We call for more research on such cognitive processes to enable a fuller understanding of the social effects of emotions in groups.

Most of the work reviewed here hinges on the (implicit) assumption that groups are emotionally homogeneous. However, different members of a group may experience and express different emotions [75,76], and individual group members may be differently affected by their fellow group members' emotions depending on the degree to which those emotions are shared [55]. This

begs the question of how divergent emotions in groups combine to create group-level outcomes. Answering this question requires more complex research designs that allow for variations in emotional diversity in groups.

As scientific understanding of emotional dynamics in groups matures, we can begin to build more integrative theories by conceptualizing emotions as critical linking pins between group-related challenges and outcomes. For instance, the long-standing quest to understand and manage issues related to diversity, conflict, social loafing, deviance, and lack of information sharing in groups could be informed by considering how the emotional expressions that may be provoked by these challenges shape affective and cognitive processes and concomitant group functioning. Such theoretical integration promises to enhance understanding of the pivotal role of emotions in shaping group functioning.

Conflict of interest statement

Nothing declared.

References and recommended reading

Papers of particular interest, published within the period of review, have been highlighted as:

- of special interest
- of outstanding interest

1. Anderson PA, Guerrero LK: *The Handbook of Communication and Emotion*. San Diego, CA: Academic Press; 1998.
2. Parkinson B: **Emotions are social**. *Br J Psychol* 1996, **87**:663-683.
3. Planalp S: *Communicating Emotion: Social, Moral, and Cultural Processes*. Cambridge, UK: Cambridge University Press; 1999.
4. Kelly JR, Barsade SG: **Mood and emotions in small groups and work teams**. *Organ Behav Hum Decis Process* 2001, **86**:99-130. This paper presents a comprehensive model of the bottom-up and top-down processes through which emotions arise and become shared in groups.
5. Le Bon G: *The Crowd: A Study of the Popular Mind*. London: Ernest Benn; 1895.
6. McDougall W: *Outline of Psychology*. New York: Scribner; 1923.
7. Bar-Tal D, Halperin E, de Rivera J: **Collective emotions in conflict situations: societal implications**. *J Soc Issues* 2007, **63**:441-460.
8. Keltner D, Gross JJ: **Functional accounts of emotions**. *Cogn Emot* 1999, **13**:467-480.
9. Spoor JR, Kelly JR: **The evolutionary significance of affect in groups: communication and group bonding**. *Group Processes Intergroup Relat* 2004, **7**:398-412.
10. von Scheve C, Salmela M: **Collective emotions: an introduction**. In *Collective Emotions*. Edited by von Scheve C, Salmela M. Oxford: Oxford University Press; 2014:xiii-xxv.
11. Barsade SG, Gibson DE: **Group emotion: a view from top and bottom**. In *Research on Managing Groups and Teams*. Edited by Gruenfeld D, Mannix E, Neale M. Stamford, CT: JAI Press; 1998: 81-102.
12. Fischer AH, Manstead ASR: **Social functions of emotion and emotion regulation**. In *Handbook of Emotions*, edn 4. Edited by Barrett LF, Lewis M, Haviland-Jones JM. New York: Guilford; 2017: 424-439.
13. Frijda NH, Mesquita B: **The social roles and functions of emotions**. In *Emotion and Culture: Empirical Studies of Mutual*

- Influence*. Edited by Kitayama S, Markus HS. Washington, DC: American Psychological Association; 1994:51-87.
14. Iyer A, Leach CW: **Emotion in inter-group relations**. *Eur Rev Soc Psychol* 2008, **19**:86-125.
 15. Keltner D, Haidt J: **Social functions of emotions at four levels of analysis**. *Cogn Emot* 1999, **13**:505-521.
 16. Van Kleef GA, Fischer AH: **Emotional collectives: how groups shape emotions and emotions shape groups**. *Cogn Emot* 2016, **30**:3-19.
 17. Cialdini RB, Borden RJ, Thorne A, Walker MR, Freeman S, Sloan LR: **Basking in reflected glory: three (football) field studies**. *J Pers Soc Psychol* 1976, **34**:366-375.
 18. Doosje B, Branscombe NR, Spears R, Manstead AS: **Guilty by association: when one's group has a negative history**. *J Pers Soc Psychol* 1998, **75**:872-886.
 19. Leach CW, Spears R, Branscombe NR, Doosje B: **Malicious pleasure: Schadenfreude at the suffering of another group**. *J Pers Soc Psychol* 2003, **84**:932-943.
 20. Mackie DM, Devos T, Smith ER: **Intergroup emotions: explaining offensive action tendencies in an intergroup context**. *J Pers Soc Psychol* 2000, **79**:602-616.
 21. Smith ER, Seger CR, Mackie DM: **Can emotions be truly group level? Evidence regarding four conceptual criteria**. *J Pers Soc Psychol* 2007, **93**:431-446.
 22. Van Zomeren M, Spears R, Fischer AH, Leach CW: **Put your money where your mouth is! Explaining collective action tendencies through group-based anger and group efficacy**. *J Pers Soc Psychol* 2004, **87**:649-664.
 23. Tausch N, Becker JC, Spears R, Christ O, Saab R, Singh P, Siddiqui RN: **Explaining radical group behavior: developing emotion and efficacy routes to normative and nonnormative collective action**. *J Pers Soc Psychol* 2011, **101**:129-148.
 24. Van Kleef GA: **How emotions regulate social life: the emotions as social information (EASI) model**. *Curr Dir Psychol Sci* 2009, **18**:184-188.
 25. Van Kleef GA: *The Interpersonal Dynamics of Emotion: Toward an Integrative Theory of Emotions as Social Information*. Cambridge, UK: Cambridge University Press; 2016.
 26. Van Kleef GA, De Dreu CKW, Manstead ASR: **An interpersonal approach to emotion in social decision making: the emotions as social information model**. *Adv Exp Soc Psychol* 2010, **42**:45-96.
 27. Van Kleef GA, Van Doorn EA, Heerdink MW, Koning LF: **Emotion is for influence**. *Eur Rev Soc Psychol* 2011, **22**:114-163.
Drawing on the Emotions as Social Information (EASI) framework, this article offers a theoretical analysis of the ways in which emotional expressions enable people to exert social influence on others by triggering affective reactions and/or inferential processes in them.
 28. Van Kleef GA, Homan AC, Cheshin A: **Emotional influence at work: take it EASI**. *Organ Psychol Rev* 2012, **2**:311-339.
 29. Hatfield E, Cacioppo JT, Rapson RL: *Emotional Contagion*. New York: Cambridge University Press; 1994.
 30. Walter F, Bruch H: **The positive group affect spiral: a dynamic model of the emergence of positive affective similarity in work groups**. *J Organ Behav* 2008, **29**:239-261.
 31. Collins AL, Lawrence SA, Troth AC, Jordan PJ: **Group affective tone: a review and future research directions**. *J Organ Behav* 2013, **34**:S43-S62.
 32. George JM: **Personality, affect, and behavior in groups**. *J Appl Psychol* 1990, **75**:107-116.
 33. Sy T, Côté S, Saavedra R: **The contagious leader: Impact of the leader's mood on the mood of group members, group affective tone, and group processes**. *J Appl Psychol* 2005, **90**:295-305.
The authors demonstrate experimentally that a leader's induced mood influences the affective tone of the group. The group's affective tone, in turn, influences group processes, in such a way that positive mood improves the group's coordination, whereas negative mood increases group effort.
 34. Totterdell P, Kellett S, Teuchmann K, Briner B: **Evidence of mood linkage in work groups**. *J Pers Soc Psychol* 1998, **74**:1504-1515.
 35. Totterdell P: **Catching moods and hitting runs: mood linkage and subjective performance in professional sport teams**. *J Appl Psychol* 2000, **85**:848-859.
This article presents real-world evidence for affective convergence within sports teams. By tracking player moods of both teams during a cricket match, the authors demonstrated that players are more influenced by their own team's affective state than by the other team's affective state.
 36. Van der Schalk J, Fischer A, Doosje B, Wigboldus D, Hawk S, Rotteveel M, Hess U: **Convergent and divergent responses to emotional displays of ingroup and outgroup**. *Emotion* 2011, **11**:286-298.
 37. Weisbuch M, Ambady N: **Affective divergence: automatic responses to others' emotions depend on group membership**. *J Pers Soc Psychol* 2008, **95**:1063-1079.
 38. Bartel CA, Saavedra R: **The collective construction of work group moods**. *Adm Sci Q* 2000, **45**:197-231.
 39. Barsade SG: **The ripple effect: emotional contagion and its influence on group behavior**. *Adm Sci Q* 2002, **47**:644-675.
In this paper, the author demonstrates experimentally that group members' emotional displays spread to other group members, independent of emotional valence or energy level. Positive emotional contagion in turn influenced individual and group-level outcomes, such as cooperation, conflict, and performance.
 40. Anderson C, Keltner D, John OP: **Emotional convergence between people over time**. *J Pers Soc Psychol* 2003, **84**:1054-1068.
 41. Keltner D, Van Kleef GA, Chen S, Kraus MW: **A reciprocal influence model of social power: emerging principles and lines of inquiry**. *Adv Exp Soc Psychol* 2008, **40**:151-192.
 42. Van Kleef GA, Homan AC, Beersma B, Van Knippenberg D, Van Knippenberg B, Damen F: **Searing sentiment or cold calculation? The effects of leader emotional displays on team performance depend on follower epistemic motivation**. *Acad Manag J* 2009, **52**:562-580.
This study examined how leaders' expressions of anger versus happiness influence team functioning, showing that teams consisting of members with low information processing motivation performed better when the leader expressed happiness, whereas teams of members with high information processing motivation performed better when the leader expressed anger. In line with EASI theory, inferential processes (i.e. inferences about performance quality) mediated behavioral responses to the leader's emotional expressions among followers with high information processing motivation, whereas affective reactions (i.e. positive versus negative emotions and liking of the leader) mediated responses to the leader's emotions among followers with low information processing motivation.
 43. Cheshin A, Rafaeli A, Bos N: **Anger and happiness in virtual teams: emotional influences of text and behavior on others' affect in the absence of non-verbal cues**. *Organ Behav Hum Decis Process* 2011, **116**:2-16.
In a group-level experiment, the authors find that group emotional contagion also occurs non-verbally, by means of textual cues only. Moreover, they show that different behaviors of a team member shape different perceptions of the actor's emotions, such that flexible behaviors are associated with happiness, and resolute behaviors with anger.
 44. Salminen M, Ravaja N, Kallinen K, Saari T: **Mediated cues of group emotion during knowledge-work tasks: effects on subjective and physiological responses**. *Interact Comput* 2013, **25**:60-73.
 45. Dezechache G, Conty L, Chadwick M, Philip L, Soussignan R, Sperber D, Grèzes J: **Evidence for unintentional emotional contagion beyond dyads**. *PLoS ONE* 2013, **8**:e67371.
 46. Ilies R, Wagner DT, Morgeson FP: **Explaining affective linkages in teams: individual differences in susceptibility to contagion and individualism-collectivism**. *J Appl Psychol* 2007, **92**:1140-1148.
 47. Tanghe J, Wisse B, Van der Flier H: **The formation of group affect and team effectiveness: the moderating role of identification**. *Br J Manag* 2010, **21**:340-358.
 48. de Melo CM, Carnevale PJ, Read SJ, Gratch J: **Reading people's minds from emotion expressions in interdependent decision making**. *J Pers Soc Psychol* 2014, **106**:73-88.

49. Hareli S, Hess U: **What emotional reactions can tell us about the nature of others: an appraisal perspective on person perception.** *Cogn Emot* 2010, **24**:128-140.
50. Manstead ASR, Fischer AH: **Social appraisal: the social world as object of and influence on appraisal processes.** In *Appraisal Processes in Emotion: Theory, Research, Application*. Edited by Scherer KR, Schorr A, Johnstone T. New York: Oxford University Press; 2001:221-232.
51. Van Kleef GA: **The emerging view of emotion as social information.** *Soc Pers Psychol Compass* 2010, **4**:331-343.
52. Van Doorn EA, Heerdink MW, Van Kleef GA: **Emotion and the construal of social situations: inferences of cooperation versus competition from expressions of anger, happiness, and disappointment.** *Cogn Emot* 2012, **26**:442-461.
- This article demonstrates the role of inferential processes in dyads and groups by showing that emotional expressions influence observers' construal of a situation. Across three studies, the authors find that angry expressions consistently shift the perception of a situation from cooperative to more competitive, whereas happy expressions have the opposite effect.
53. Heerdink MW, Van Kleef GA, Homan AC, Fischer AH: **Emotional expressions as cues of rejection and acceptance: evidence from the affect misattribution paradigm.** *J Exp Soc Psychol* 2015, **56**:60-68.
54. Heerdink MW, Van Kleef GA, Homan AC, Fischer AH: **On the social influence of emotions in groups: interpersonal effects of anger and happiness on conformity versus deviance.** *J Pers Soc Psychol* 2013, **105**:262-284.
- This article explores the role of inferential processes in shaping within-group interactions. The authors demonstrate that angry and happy reactions to deviant behavior elicit inferences of rejection and acceptance in the deviant, respectively, which drive the deviant's subsequent conformity.
55. Heerdink MW, Van Kleef GA, Homan AC, Fischer AH: **Emotional reactions to deviance in groups: the relation between number of angry reactions, felt rejection, and conformity.** *Front Psychol* 2015, **6**(830):1-12.
56. Magee JC, Tiedens LZ: **Emotional ties that bind: the roles of valence and consistency of group emotion in inferences of cohesiveness and common fate.** *Pers Soc Psychol Bull* 2006, **32**:1703-1715.
- In three experiments, the authors show that group-based emotions influence outsiders' perceptions of groups. More positive and consistent group-level emotions were associated with greater perceptions of cohesion and common-fate, respectively, than more negative and inconsistent displays of emotions.
57. Homan AC, Van Kleef GA, Sanchez-Burks J: **Team members' emotional displays as indicators of team functioning.** *Cogn Emot* 2016, **30**:134-149.
- In two experiments, the authors show that observers infer levels of team functioning from the emotional displays of team members, such that expressions of sadness elicit more pessimistic inferences of group functioning than expressions of happiness. Moreover, they find that the displayed emotions become more informative for observers to the degree that the group's situation is more ambiguous and when the emotional displays can be more clearly linked to the group's collective experience.
58. Rothman NB, Magee JC: **Affective expressions in groups and inferences about members' relational well-being: the effects of socially engaging and disengaging emotions.** *Cogn Emot* 2016, **30**:150-166.
59. Van Kleef GA, Wanders F, Stamkou E, Homan AC: **The social dynamics of breaking the rules: antecedents and consequences of norm-violating behavior.** *Curr Opin Psychol* 2015, **6**:25-31.
60. Hareli S, Moran-Amir O, David S, Hess U: **Emotions as signals of normative conduct.** *Cogn Emot* 2013, **27**:1395-1404.
- In this paper, different emotional responses to norm transgressions within a group are compared. The authors conclude that anger is a more effective signal of non-normative behavior than sadness or neutral emotions, because people infer from the anger that the displayed behavior is norm-incompatible.
61. Hareli S, Kafetsios K, Hess U: **A cross-cultural study on emotion expression and the learning of social norms.** *Front Psychol* 2015, **6**(1501):1-12.
62. Mason CM, Griffin MA: **Group absenteeism and positive affective tone: a longitudinal study.** *J Organ Behav* 2003, **24**:667-687.
63. Dineen BR, Noe RA, Shaw JD, Duffy MK, Wiethoff C: **Level and dispersion of satisfaction in teams: using foci and social context to explain the satisfaction-absenteeism relationship.** *Acad Manag J* 2007, **50**:623-643.
64. Grawitch MJ, Munz DC, Elliott EK, Mathis A: **Promoting creativity in temporary problem-solving groups: the effects of positive mood and autonomy in problem definition on idea-generating performance.** *Group Dyn: Theory Res Pract* 2003, **7**:200-213.
65. Grawitch MJ, Munz DC, Kramer TJ: **Effects of member mood states on creative performance in temporary workgroups.** *Group Dyn: Theory Res Pract* 2003, **7**:41-54.
66. Jordan PJ, Lawrence SA, Troth AC: **The impact of negative mood on team performance.** *J Manag Organ* 2006, **12**:131-145.
67. Forgas JP, George JM: **Affective influences on judgments and behavior in organizations: an information processing perspective.** *Organ Behav Hum Decis Process* 2001, **86**:3-34.
68. Schwarz N, Bless H: **Happy and mindless, but sad and smart? The impact of affective states on analytic reasoning.** In *Emotion and Social Judgment*. Edited by Forgas JP. Oxford: Pergamon; 1991:55-71.
69. Klep A, Wisse B, Van der Flier H: **Interactive affective sharing versus non-interactive affective sharing in work groups: comparative effects of group affect on work group performance and dynamics.** *Eur J Soc Psychol* 2011, **41**:312-323.
70. Visser VA, Van Knippenberg D, Van Kleef GA, Wisse B: **How leader displays of happiness and sadness influence follower performance: emotional contagion and creative versus analytical performance.** *Leadersh Q* 2013, **24**:172-188.
71. Kooij-de Bode HJ, Van Knippenberg D, Van Ginkel WP: **Good effects of bad feelings: negative affectivity and group decision-making.** *Br J Manag* 2010, **21**:375-392.
72. Fredrickson BL: **The role of positive emotions in positive psychology: the broaden-and-build theory of positive emotions.** *Am Psychol* 2001, **56**:218-226.
73. Bramesfeld KD, Gasper K: **Happily putting the pieces together: a test of two explanations for the effects of mood on group-level information processing.** *Br J Soc Psychol* 2008, **47**:285-309.
74. Van Kleef GA, Homan AC, Beersma B, Van Knippenberg D: **On angry leaders and agreeable followers: how leaders' emotions and followers' personalities shape motivation and team performance.** *Psychol Sci* 2010, **21**:1827-1834.
75. Barsade SG, Ward AJ, Turner JDF, Sonnenfeld JA: **To your heart's content: a model of affective diversity in top management teams.** *Adm Sci Q* 2000, **45**:802-836.
76. Sanchez-Burks J, Huy QN: **Emotional aperture and strategic change: the accurate recognition of collective emotions.** *Organ Sci* 2009, **20**:22-34.