Emotion

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Shlomo Hareli, Shimon Elkabetz, and Ursula Hess

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Drawing Inferences From Emotion Expressions: The Role of Situative Informativeness and Context

Shlomo Hareli and Shimon Elkabetz
University of Haifa

Ursula Hess
Humboldt-University of Berlin

How people react emotionally to an event can tell us much about the event itself. However, emotions vary in their situative informativeness, that is, in how much information about the situation they provide. We predicted that when emotions are shown that are low in situative informativeness participants rely more on context information, then when the emotions shown are high in situative informativeness. This hypothesis was tested in 2 studies in which participants were asked to evaluate the quality of a player's performance based on the emotional reactions of spectators to an unknown ball game. Spectators reacted either with awe (high in situative informativeness), or with happiness or neutrality (low in situative informativeness). Participant also received context information. The findings supported the predictions and illustrate how emotions and context interact to inform us about events.

Keywords: situative informativeness, social perception, awe, happiness

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Imagine you are touring a foreign country and as you walk through a park you see players in a ball game that is unknown to you. You decide to watch for a while. There are other spectators around who also watch the game. As the players make their moves, the spectators (some of whom seem to be from the same teams as the players) react with various facial expressions. What can you make of these expressions? Do they help you to understand the game and the performance of the players? Does it make a difference who shows what expression? Does the answer to the previous question depends on the type of emotion expressed? These were the questions we asked in the present research.

Specifically, emotional facial expressions signal not only the emotional state of a person but they also provide information about the situation that elicited the expression. This notion is derived from appraisal theories of emotion (Frijda, 1986; Scherer, 1987). Appraisal theories posit that emotions are elicited by appraisals of an (internal or external) event in light of the goals, resources, and values of the perceiver. This implies that the resulting facial expression necessarily provides information not only about the goals, resources, and values of the perceiver as shown by Hareli and Hess (2010) but also about the situation.

Shlomo Hareli and Shimon Elkabetz, The Laboratory for the Study of Social Perception of Emotions and The Interdisciplinary Center for Research on Emotions, Department of Business Administration, University of Haifa; Ursula Hess, Department of Psychology, Humboldt-University of Berlin.

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Correspondence concerning this article should be addressed to Shlomo Hareli, Department of Business Administration, University of Haifa, 199 Aba, Khoushy Avenue, Mount Carmel, Haifa 3498838, Israel. E-mail: shareli@gsb.haifa.ac.il

People's naïve emotion theories tend to be in line with appraisals and the "stories" they tell (Parkinson, 1999, 2001; Roseman & Evdokas, 2004; Scherer, 1997; Smith & Ellsworth, 1985). That is, people generally seem to be aware of the appraisals that underlie a given emotion. This also means that observers can "reverse engineer" or reconstruct the relationship between the person and the event based on the emotion expressed (de Melo, Carnevale, Read, & Gratch, 2014; Hareli & Hess, 2010; Weiner, 2006).

For example, anger is defined by appraisals of an event as relevant (as only relevant events elicit emotions) as well as goal obstructive, controllable, and incompatible with norms (Scherer, 1987). Hence, situations in which anger is shown are likely those that do not conform to norms. Indeed, Hareli, Moran-Amir, David, and Hess (2013) could show that when witnesses to an event show anger, observers conclude that a norm was violated. Conversely, when a person shows happiness, we can conclude that the situation was not only pleasant for the person, but also did not violate social rules and norms.

As such, emotions can be viewed as compacted and encapsulated messages such that each emotion conveys specific information that is relatively typical and unique to it (Hess & Hareli, 2016). This idea is consistent with Lazarus's (1991) notion of core relational themes, which suggests that each emotion includes a characteristic message about a person-environment relation.

In what follows, we make the claim that different emotions vary in terms of their situative informativeness. In other words, emotions vary in terms of how detailed the message conveyed by them is and hence in the extent to which they leave aspects of the situation ambiguous. This notion is borrowed from analyses of the psychological characteristics of linguistic categories (Semin & Fiedler, 1988). One important implication of this property of emotions is that it influences the extent to which observers' must consider contextual information to make sense of the situation based on the perceived emotion. Specifically, while all emotion expressions provide information about the situation that elicited it

(along with information on the goals, values, and resources of the emoter), the degree of specificity of this information varies. If an emotion is low in situative informativeness the underlying appraisal pattern provides few details about the situation. In this case, information about the situation itself is required to make sense of the expression in that specific context. By contrast, if an emotion is high in situative informativeness the underlying appraisal pattern provides sufficient details about the situation without the need for recourse to additional information. In other words, to the degree that emotions are lacking in situational informativeness the observer has to construct the meaning of the emotion in light of the specific context in which it was shown.

The above definition of situative informativeness of a given emotion refers to the appraisal patterns that underlie emotions. We suggest that emotions that are characterized by more specific appraisals should be more informative. We already mentioned the studies by Hareli and colleagues (2013) in which participants saw a sequence of events followed by expressions of either anger or sadness.

Both anger and sadness are based in an appraisal of goal obstruction, that is, the situation is contrary to the motivational goals of the emoter (Scherer, 1999). Yet, anger is also based in an appraisal of norm violation. Thus, whereas sadness only signals that an event was undesirable for the emoter because it blocks them from reaching a goal, anger also informs the observer that the blockage was because of a norm violation and not some other type of event. Hence participants were better able to interpret the event that elicited anger as a norm violation than when the same event elicited sadness (Hareli, Kafetsios, & Hess, 2015; Hareli et al., 2013). In other words, the higher situational informativeness of anger limited the possible range of meanings of the event and allowed easier access to the correct answer. Conversely, this means that participants' interpretation of anger should be influenced to a lesser degree by extraneous situational information than would be the case for sadness, because the information is known to be irrelevant to the degree that it does not involve a norm violation. This is not to say that perception of anger is immune to context effects. Only that there is less room for context to determine the specific inferences derived from anger than those derived from sadness.

To more formally test this notion in the context of positive emotions, we focused on the emotions of awe and happiness as well as neutrality. Awe is high in situational informativeness as it is based in a very specific set of appraisals. Specifically, awe is elicited by events that are "larger than the self." This includes nature, art, and religion (Keltner & Haidt, 2003; Shiota, Keltner, & Mossman, 2007) but also achievements. Thus, in a study by Campos, Shiota, Keltner, Gonzaga, and Goetz (2013) participants rated awe as significantly higher on an item that described being overwhelmed by vastness in a number of domains including achievement, which is the context we used in this study.

Participants saw images from a fictitious ball game as well as the emotional responses of spectators. The participants' task was to evaluate the performance of the last player. The images showed the playing field as well as spectators who either support the team of the player currently on the field (supporters), the opposing team (opponents), or spectators who do not support either team (unaffiliated spectator). Identity of supporter served as context information. In Study 1, participants saw the final throw in the game followed by the reactions of an individual who was identified either as a supporter, an opponent, or an unaffiliated spectator based on the color of their shirts. The spectator showed either awe, happiness, or neutrality in reaction to the last throw.

In the context of a game, an appraisal of something vast or outstanding as signaled by an awe expression is expected to signal that a player's performance exceeded standards and, therefore, she or he must have played well. That is, awe is high in situative informativeness and hence performances that elicit awe should be considered outstanding, regardless of who shows this emotion. By contrast, happiness is not based in very specific appraisals. Events that elicit happiness are pleasant and goal conducive but nothing else is specified about them. Neutrality only suggests that nothing particularly positive or negative has happened. That is, both emotions require additional information for us to know whether the performance that elicited the expression was good or bad.

In a competition there are clear motivational goals associated with being a supporter of a team and there is a clear negative interdependence between supporters of opposing teams. Thus, a supporter of Team A would consider anything that advances that team's chances of winning as goal conducive and anything that advances the opposing team's (Team B) chances of winning as goal obstructive. Using reverse engineering (Hareli & Hess, 2010) participants can conclude that when a supporter of Team A reacts with happiness, an emotion that signals goal conduciveness (Scherer, 1987), the eliciting event is good for Team A and, thereby, bad for Team B. By contrast, if the supporter of that team reacts with a negative emotion or neutrality, the converse conclusion should be reached. Thus, only when we know whether a given person supports a given team can we draw conclusions about a player's performance based on the spectator's expressions of happiness and neutrality.

In summary, we predicted that when any of the spectators, regardless of their affiliation, show awe in response to a throw, the performance of the player would be considered excellent. By contrast, the deductions based on expressions of happiness and neutrality should depend on the context in which they were shown. We confirmed these predictions in Study 1 and showed in Study 2 that they are mediated by an appraisal of an event as surpassing expectations transmitted by the awe expression. First, we conducted a pretest to confirm that expressions of awe in the context of an achievement are perceived as signaling an outstanding performance.

Pretest

The goal of this pretest was to establish that in the context of an achievement, expressions of awe, more than expressions of happiness and neutrality are associated with appraising the performance as outstanding. Prior research indeed suggested that awe can signify the vastness of an achievement by seeing it as challenging one's worldview (Campos et al., 2013). However, it remains unclear to what extent this also holds for performance and translates to seeing it as outstanding or extraordinary.

Method

Participants

In total, 116 (62 men) participants with a mean age of 36 years (SD = 9.94) who were recruited through Amazon MTurk completed the study and passed control questions probing for attention.

Procedure and Dependent Measures

After consent was obtained, participants received a verbal description of the game that was used in the main studies. We used a verbal description with the labels of the emotions rather than photographs to ensure that participants based their judgments on the perceived meaning of the emotions rather than on incidental aspects such as the gender or the attractiveness of the expresser. Participants were asked to imagine that during the course of a trip, they watched a group of people playing a ball game whose rules they do not know. In the game, two players are competing. They each throw three iron balls. It appears that the goal is to throw the balls as distant as possible from the throwing line but also such that the balls fall as close as possible. They were further told that they arrived just as the game was about to finish and so they only see one player who is about to throw the last ball. This ball, like the other two, lands just beyond the last flag of the field that marks 15 m distance. This ball landed not too far from the other two forming what appears to be a perfect triangle. To manipulate the information about the emotional response after the performance, participants received the information that they further see another spectator across from them who expresses awe, happiness, or indifference (i.e., neutrality) after this throw.

The participants' task was to rate the likelihood that the player's performance exceeded the typical performance expected from a good player, was extraordinary and outstanding. The scales were 7 points scales anchored with 1 = *very low*, 4 = *moderate*, and 7 = *very high*.

Results

Because all three ratings of performance were highly correlated ($\alpha = .95$), they were combined into one measure representing an appraisal of the performance as outstanding. A one-way analysis of variance (ANOVA) with emotion expressed as independent variable was conducted. A significant main effect for spectator emotion emerged, $F(2, 113) = 31.01$, $p < .001$, $\eta_p^2 = .35$. Post hoc tests conducted at $p < .05$, indicated, as expected, that awe expressions were rated signaling a more outstanding performance ($M = 6.02$, $SD = .85$, 95% confidence interval [CI] [5.60, 6.44]) than did happiness expressions ($M = 5.18$, $SD = 1.17$, 95% CI [4.79, 5.57]) that were rated higher than neutral expressions ($M = 3.68$, $SD = 1.59$, 95% CI [3.25, 4.10]). Overall, this confirms that expressions of awe in response to a specific performance are perceived as indicating an outstanding performance.

Study 1

Method

Participants. In total, 416 (254 men) participants with a mean age of 32 years ($SD = 10$) were recruited through Amazon MTurk, completed the study, and passed control questions probing for attention.

Stimulus materials.

Spectators. Facial expressions of awe, happiness, and neutrality from 2 men and 2 women were taken from the Haifa set of facial expressions, a validated set of posed expressions created by Elkabetz (2015, see supplementary materials for examples). Neutrality was chosen rather than a negative expression such as anger, because informal pretests suggested that a negative emotion would be inappropriate for a friendly game in the park. Because a neutral expression does not signal goal conduciveness it represents, however, an appropriate counterpoint to happiness. Digital image manipulation was used to color the actors' shirts (blue = supporter; yellow = opponent; white = unaffiliated spectator).

Ball game. A series of 10 photos was shown, which depicted a fictitious, boule-like ball game taking place in an open field. Participants saw the game field, a group of people watching the game, a person taking his turn in the game, as well as the final position of the three balls thrown by the player. This last image was followed by a close-up of the "reaction" of either a supporter, an opponent or of an unaffiliated spectator (as identified by the color of their shirts). To create the impression that the expression was a reaction to the player's performance, part of the field was inserted into the background of each expresser, using green screen editing software (Camtasia Studio 8, Techsmith, www.techsmith.com/camtasia.html). Two different sets of photos, each with a different player and composition of spectators were used. Figure 1 depicts the sequence of slides presented to participants (full in-

Figure 1. Selected slides by order of presentation depicting the game and its result and examples of spectators as a function of support type and expression—Study 1. See the online article for the color version of this figure.

structions, pictures depicting the sequence of events in the game as well as examples of spectators and emotion expressions appear in the supplementary material).

Dependent measures. Following the sequence of photos, participants were first asked to briefly describe in an open answer format what they thought the goal of the game was to make sure that they had paid attention and then answered a series of questions on scales anchored with 0 = *very low* to 6 = *very high*, regarding the quality of the performance, skill level of the player, the likelihood that the performance exceeded the standard performance for this game, the likelihood that the player was setting a new record and that he will win the game and the extent to which the performance in question was an outstanding one. A PCA on these variables suggested that a one factor solution explained 67.57% of the variance, hence the items were combined into one variable called performance quality ($\alpha = .89$). In addition, participants were asked to rate how confident they were about the evaluation of the performance and about the evaluation of the performance as an outstanding one ($r = .50$). These ratings were also combined into one variable called confidence in evaluation. Finally, participants were asked to rate to what extent the spectator they just viewed expressed neutrality (no response), awe and happiness in response to the last player's performance. These scales were anchored with 0 = *not at all* to 6 = *to a large extent*. These ratings served as manipulation checks.

Results and Discussion

Emotion perception. A series of one-way ANOVAs was conducted on each of the emotion intensity ratings. Across all three ratings, as expected, a significant main effect for spectator emotion emerged for ratings of awe, $F(2, 413) = 242.58$, $p < .001$, $\eta_p^2 = .54$, happiness, $F(2, 412) = 216.65$, $p < .001$, $\eta_p^2 = .51$, and neutrality, $F(2, 413) = 144.04$, $p < .0001$, $\eta_p^2 = .41$, respectively.

As expected awe expressions were rated as showing significantly more awe ($M = 5.08$, $SD = 1.05$, 95% CI [4.82, 5.33]) than happiness expressions ($M = 2.50$, $SD = 1.72$, 95% CI [2.67, 2.73]) with neutral expressions rated as showing the least awe ($M = 1.12$, $SD = 1.49$, 95% CI [0.87, 1.37]). Similarly, happy expressions ($M = 4.82$, $SD = 1.14$, 95% CI [4.59, 5.05]) were rated as showing significantly more happiness than awe expressions ($M = 3.73$, $SD = 1.83$, 95% CI [3.48, 3.99]), with neutral expressions rated as least happy ($M = 1.23$, $SD = 1.45$, 95% CI [0.98, 1.48]). Finally, neutral expressions were rated as most neutral ($M = 3.94$, $SD = 1.88$, 95% CI [3.67, 4.21]). Happy expressions were rated as more neutral ($M = 1.29$, $SD = 1.46$, 95% CI [1.04, 1.54]) than awe expressions ($M = 0.90$, $SD = 1.41$, 95% CI [0.62, 1.18]). As such, all expressions were recognized as intended.

Perceived performance quality. A 3 spectator role (supporter, opponent, and unaffiliated) × 3 spectator emotion (awe, happiness, and neutrality) ANOVA on perceived performance quality, revealed significant main effects of spectator emotion, $F(2, 407) = 76.92$, $p < .001$, $\eta_p^2 = .26$, and spectator role, $F(2, 407) = 5.90$, $p = .003$, $\eta_p^2 = .03$, which were qualified by the expected interaction between these two variables, $F(4, 407) = 35.18$, $p < .001$, $\eta_p^2 = .26$. For means and standard errors see Figure 2. Specifically, Post hoc tests showed that when any of the spectators expressed awe, participants inferred that the quality of the performance of the player was high and in fact higher than for any other expression. Expressions of happiness and neutrality, by contrast, were interpreted as a function of spectator role. When either a supporter showed happiness or an opponent showed neutrality, performance quality was rated as high. The reverse pattern of expressions was rated as signaling a low performance. The pattern of ratings for unaffiliated observers followed the pattern for supporters, but was less extreme suggesting that unaffiliated observers were considered to be more inclined to be in favor of whoever was playing.

For the perceived confidence in the judgment of the performance only a main effect of emotion emerged, $F(2, 406) = 3.70$ $p = .026$, $\eta_p^2 = .02$. Post hoc tests revealed that observers were more confident about their judgment of the performance when they saw a spectator expressing awe ($M = 4.08$, $SD = 1.45$, 95% CI [3.82, 4.33]) than when they saw a spectator expressing neutrality ($M = 3.57$, $SD = 1.48$, 95% CI [3.32, 3.83]), with confidence for happy spectators intermediate and not different than in either of these conditions ($M = 3.84$, $SD = 1.50$, 95% CI [3.60, 4.07]). That

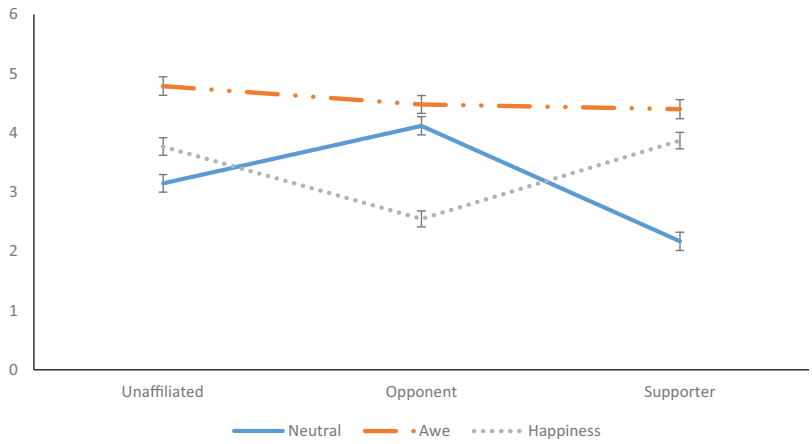

Figure 2. Perceived performance as a function of emotion expressed and the supporter's identity. See the online article for the color version of this figure.

Figure 3. Selected slides by order of presentation depicting the game and its result with changes as a function of condition. See the online article for the color version of this figure.

observers were rather confident about their appraisals of performance level when awe was expressed is consisted with the idea that awe conveys a rather clearer and unambiguous message about the performance. However, observers were about as confident when witnessing happiness, which was found to be a less clear and more ambiguous message about the performance. This may be explained by the fact that the ambiguous message conveyed by happiness was disambiguated by providing information about the spectator.

In summary, the findings from Study 1 showed that participants interpreted expressions of awe as indicative of a high quality performance independent of context whereas the conclusions drawn from happy and neutral expressions depended on the context, specifically on who showed the expression. As such, the study confirmed that the situative informativeness of an emotion determines the extent to which observers can make sense of the emotion-eliciting event without necessary recourse to other context information.

We assume that the higher informativeness of awe is linked to its association with an appraisal of "vastness" of the performance, that is, of a performance that exceeds expectations, as shown by the pilot study. Yet, we did not measure this appraisal explicitly in the main study because of the demand effects of asking about the quality of the performance while at the same time asking about a semantically almost identical appraisal. We conducted Study 2 to assess to what degree information provided by an awe expression alone is congruent with information about the performance.

For this, participants either saw the same game as in Study 1, or they saw the same game including information about the performance. First, before the throw by the last player they saw three additional slides showing the previous player's game, which was supposedly indicated by an unaffiliated observer to be typical for the game. This provides benchmark information on the standard relevant to the evaluation of the performance.

In two additional conditions we provided increasingly explicit appraisal information about the performance. Specifically, participants saw the original game but before the last throw, a slide was added with a sign that marks the record throw for that field so far (previous record condition) or they saw the original game with the addition that a speech bubble was added to the spectator reaction which read "Unbelievable . . . This is a far better performance than I have ever seen in all the Years I have been following this game." We predicted that to the degree that additional information congruent with the presumed awe appraisal is provided, the difference in the evaluation between happy and awe reactions by an unaffiliated observer will disappear. Specifically, when the explicit appraisal information is provided all three reactions should be evaluated similarly. Figure 3 depicts the sequence of slides presented to participants in each information condition.

Study 2

Method

Participants. In total, 820 (506 men, 1 gender unknown) participants with a mean age of 37 years ($SD = 12$) were recruited through Amazon MTurk, completed the study and passed control questions probing for attention.

The same stimulus material and questions[1] as for Study 1 were used but only reactions of unaffiliated observers were shown. For the control condition the identical set of slides as in Study 1 was shown. For the other conditions, in addition to this set of slides, slides were added into the sequence of slides depicting the game or the last slide showing the expression of the unaffiliated fan was modified. Specifically, for the benchmark condition, three slides were added before the throw by the last player, which showed the results of another player and were described by an unaffiliated observer as typical for this game. The performance was worse than that of the last player both in terms of distance of the balls and the

[1] Because of a clerical error the question regarding the participants' confidence in their evaluation of the performance as an outstanding one was omitted.

formation of their landing positions. A slide indicating that participants are about to see a typical performance for the game preceded the slides depicting the performance. For the previous record condition, a slide was inserted right before the last throw, which indicated the farthest distance recorded for a game on this field. The record was clearly below the last player's performance. Finally, for the appraisal condition, the slide showing the reaction of the spectator was modified by adding a speech bubble saying "Unbelievable . . . This is a far better performance than I have ever seen in all the Years I have been following this game." A full description of the conditions and the additional slides used appear in the supplementary material.

Results and Discussion

Emotion perception. We first assessed whether the expressions were perceived as intended in each of the four conditions. For this we conducted a 3 expression (awe, happiness, and neutrality) × 4 condition (control, benchmark, previous record, and appraisal information) ANOVA on the emotion ratings.

For awe ratings a significant main effect of emotion emerged, $F(2, 808) = 415.15$, $p < .001$, $\eta_p^2 = .51$, such that overall awe expressions were rated as showing more awe than happiness expressions, with neutral expressions showing the least awe (for means and *SD*s see Table 1). In addition, a main effect of condition, $F(3, 808) = 54.32$, $p < .001$, $\eta_p^2 = .17$, was qualified by an Emotion × Condition interaction, $F(3, 808) = 15.18$, $p < .001$, $\eta_p^2 = .10$. Specifically, whereas for awe expressions, condition had no effect, $F(3, 808) = 0.46$, $p = .712$, $\eta_p^2 = .01$, significant effects of condition emerged for happy, $F(3, 808) = 20.54$, $p < .001$, $\eta_p^2 = .19$, and neutral expressions, $F(3, 808) = 46.68$, $p < .001$, $\eta_p^2 = .34$. For both happy and neutral expressions, the appraisal relevant information affected ratings of awe such that explicit appraisal information led participants to attribute awe to the expression independent of whether awe was shown. This was most striking in the case of the neutral expression, where a neutral expression plus speech bubble was rated as showing quite intense awe whereas the neutral expression in the other three conditions received awe ratings around 1 on a scale from 0 to 6.

As regards ratings of happiness, a main effect of emotion emerged, $F(2, 808) = 506.24$, $p < .001$, $\eta_p^2 = .56$, such that happy expressions were rated as most happy, followed by awe expressions with neutral expressions rated as least happy (see Table 1). As was the case for ratings of awe, a main effect of condition, $F(3, 808) = 20.37$, $p < .001$, $\eta_p^2 = .07$, was qualified by a condition by emotion interaction, $F(3, 808) = 6.85$, $p < .001$, $\eta_p^2 = .05$. For happy expressions no effect emerged, $F(2, 808) = 0.95$, $p = .419$, $\eta_p^2 = .01$; however, for happiness ratings of awe expressions, a significant effect of condition, $F(2, 808) = 2.84$, $p = .038$, $\eta_p^2 = .03$, emerged such that more happiness was attributed to awe expressions accompanied by the explicit appraisal information than in the no information control condition. For happiness ratings of neutral expressions, a main effect of condition emerged as well, $F(2, 808) = 21.35$, $p < .001$, $\eta_p^2 = .19$, such that more happiness was attributed to a neutral expression accompanied by the explicit appraisal information than in the other three conditions.

For ratings of neutrality, a main effect of emotion emerged, $F(2, 808) = 405.35$, $p < .001$, $\eta_p^2 = .50$, such that neutral expressions were rated as more neutral than happy expressions, with awe expressions being rated as least neutral (see Table 1). A main effect of condition, $F(3, 808) = 6.50$, $p < .001$, $\eta_p^2 = .02$, was qualified by an emotion by condition interaction, $F(3, 808) = 6.56$, $p < .001$, $\eta_p^2 = .05$, such that no effects emerged for awe, $F(3, 808) = 1.42$, $p = .238$, $\eta_p^2 = .02$, and happiness expressions, $F(3, 808) = 0.89$, $p = .448$, $\eta_p^2 = .01$. By contrast, for neutral expressions the main effect of condition was significant, $F(3, 808) = 14.28$, $p < .001$, $\eta_p^2 = .14$. Congruent with the case for awe and happiness ratings, when the neutral expression was accompanied by the explicit appraisal information the expression was rated as less neutral than in all other conditions.

In summary, the expressions were overall rated as expected. Interestingly, however, context influenced the ratings such that observers attributed emotions to the expressions based on what they knew about the situation. This was most striking for the neutral expressions that were rated as expressing more awe and happiness and less neutrality when accompanied by an explicit appraisal of awe than in any other condition. By contrast, ratings of awe expressions were much less affected by condition. For ratings of awe and neutrality no condition effect emerged and for ratings of happiness only a barely significant effect explaining no more than 3% of the variance emerged.

Perceived performance quality. A 3 expression (awe, happiness, and neutrality) × 4 condition (control, benchmark, previous record, and appraisal information) ANOVA on the composite performance quality rating that included the same scales as in Study 1 ($\alpha = .94$) revealed a main effect of emotion, $F(2, 808) = 287.40$, $p < .001$, $\eta_p^2 = .42$, such that overall, performances were rated as better when the spectator reacted with awe than with happiness and least good when the spectator reacted with neutrality (see Figure 4). However, a main effect of condition, $F(2, 808) = 63.12$, $p < .001$, $\eta_p^2 = .19$, which was qualified by the expected emotion by condition interaction, $F(3, 808) = 20.39$, $p < .001$, $\eta_p^2 = .13$, emerged as well. Specifically, for performances responded to with an awe expression, condition had no effect, $F(3, 808) = 1.82$, $p = .145$, $\eta_p^2 = .02$. This was expected because awe is characterized by an appraisal of vastness, something that ex-

Table 1
Means and SDs of Perceived Emotions as a Function of Emotion Expression and Condition

	Emotion expression					
	Awe		Happiness		Neutrality	
Condition	*M*	*SD*	*M*	*SD*	*M*	*SD*
Perceived awe						
Control	5.12	1.26	2.86	1.50	1.01	1.47
Benchmark	5.28	1.14	3.48	1.28	1.17	1.68
Previous record	5.20	1.26	3.63	1.56	.84	1.30
Explicit appraisal	5.34	1.07	4.83	1.60	3.73	2.00
Perceived happiness						
Control	4.06	1.65	4.92	1.06	.96	1.32
Benchmark	4.36	1.26	5.05	1.04	1.16	1.72
Previous record	4.17	1.50	5.10	.96	1.10	1.47
Explicit appraisal	4.70	1.18	5.22	1.06	2.91	1.93
Perceived neutrality						
Control	.65	1.40	1.17	1.46	4.93	1.42
Benchmark	.72	1.32	1.23	1.52	4.75	1.57
Previous record	1.05	1.68	1.32	1.68	4.72	1.77
Explicit appraisal	1.07	1.62	.91	1.54	3.19	2.20

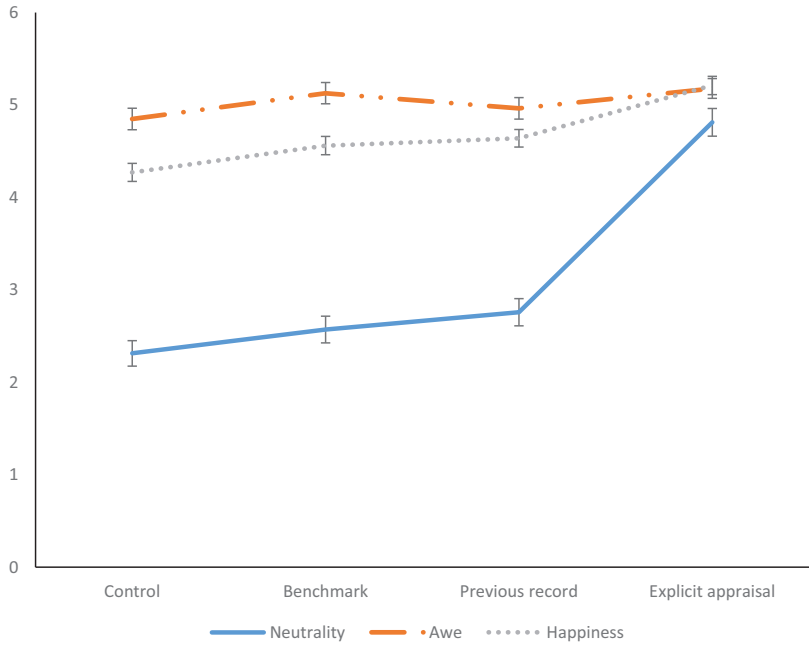

Figure 4. Perceived performance as a function of emotion expression and information provided. See the online article for the color version of this figure.

ceeds expectations, and hence the information to this effect provided by us did not in fact add any information that was not already contained in the expression. Conversely, for performances responded to with a happy, $F(3, 808) = 16.55$, $p < .001$, $\eta_p^2 = .16$, or neutral expression, $F(3, 808) = 60.20$, $p < .001$, $\eta_p^2 = .40$, condition had a clear effect on the rated quality of the performance. Post hoc tests conducted at $p < .05$, indicated that, for the happy expression, performance quality was rated lowest when no information was given and highest when the explicit appraisal information was given with the other two conditions, which did not differ, in between. That is, providing benchmark information about the standard performance and information about the previous record both caused a significant increase in the perceived quality of the performance relative to the control condition. Yet, the performance in these conditions was still rated as lower than when full appraisal information was added to the expression of happiness. For the neutral expression, the control condition and the benchmark information resulted in the lowest perceived performance quality, adding information about the previous record for the field yielded a higher rating and the highest rating emerged when the explicit appraisal information was given. Notably, whereas perceived performance quality was highest for performances reacted to with awe in the control and the benchmark condition, the difference to happiness is nonsignificant in the two conditions where explicit information about a performance standard was provided, that is, in the previous record and appraisal information conditions. Thus, as expected, information about standard performance along with information about the performance in question allows the perceiver to understand that the present performance surpasses the standard. This, taken together with an expression of neutrality and more so with happiness, causes an increase in the perceived quality of the performance. However, it is only when explicit appraisal information suggesting that the standard performance was clearly surpassed that the gap in quality of perceived performance between expressions of awe and happiness is bridged. An interesting finding was that even for neutrality in this condition the perceived quality of performance is strongly increased albeit less than for happiness. This suggests that because neutrality signals that nothing notable happened, the expression undermines the information conveyed by the appraisal. This possibility gains further credence by considering the findings for perceived confidence.

For the participants' confidence in their evaluation of the player's performance, a main effect of emotion emerged, $F(2, 808) = 30.64$, $p < .001$, $\eta_p^2 = .10$, such that confidence was lower for neutral expressions. Further, a significant main effect of condition, $F(3, 808) = 35.35$, $p < .001$, $\eta_p^2 = .08$, was qualified by the emotion by condition interaction, $F(3, 808) = 2.53$, $p = .020$, $\eta_p^2 = .02$. For awe and happy expressions, only the addition of the explicit appraisal information significantly increased participants' confidence in their evaluation (see Figure 5). For neutral expressions, providing a benchmark or information about the previous record increased confidence with respect to the control condition and confidence was further increased in the explicit appraisal condition.

In all, Study 2 showed that adding information congruent with the presumed appraisal for awe of an event that is characterized by vastness and in the case of achievement represents an outstanding achievement, to happy or neutral emotions results in increased performance ratings as well as in increased confidence in the ratings. The rated performance quality was highest when explicit appraisal information was provided. By contrast, as awe expressions already carry this information, its addition had no further effects.

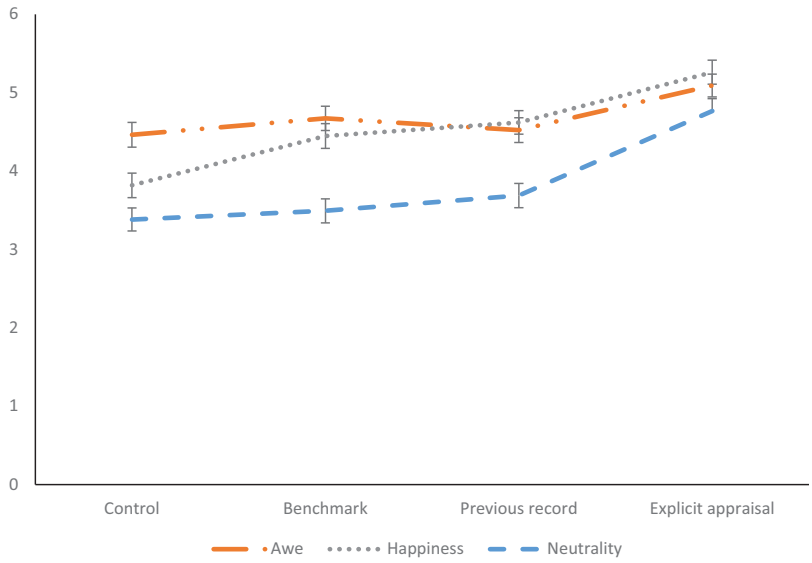

Figure 5. Confidence in the player's evaluation as a function of emotion expression and information provided. See the online article for the color version of this figure.

It is notable that, explicit performance information also influenced the emotion ratings of the expressions. Especially when participants were told that the expresser considered the performance to be outstanding, neutral and happy expressions were rated as signaling more awe and happiness as well as less neutrality. This effect was particularly striking for the neutral expressions. This finding supports findings from the literature (e.g., Aviezer et al., 2008) that context information can have a striking effect on the perception of emotions. The fact that this was the case only for happiness and neutrality but not for awe may suggest a role for situative informativeness also when it comes to the identification of emotions and not only inferences drawn from them. However, as we chose the additional information to be congruent with awe appraisal information, this may also be an artifact of the semantic similarity of the information that we wanted to demonstrate in this study. Future research could address the effect of placing awe expressions into an incongruent context. For example, when the performance in a game is clearly a failure. Aviezer et al. (2008) showed that incongruence between context and expressions of emotions can decrease identification accuracy. One may expect that the identification of awe expressions will also be hampered in such conditions.

General Discussion

In the present article we suggested that emotions vary in their situative informativeness, that is, in how much information about the situation they provide. We predicted that when emotions are shown which are low in situative informativeness perceivers rely more on context information, then when the emotions shown are high in situative informativeness. In two studies we predicted and found that awe compared with happiness and neutrality has high situative informativeness. Specifically, based on the fact that awe is associated with an appraisal of vastness and the surpassing of standards (Campos et al., 2013) we predicted and showed that awe expressions shown in an achievement context signal an appraisal of an outstanding performance. Accordingly, awe expressed in response to a given performance indicated to observers that the performance was of a high quality. By contrast, because expressions of happiness and neutrality do not have specific achievement related appraisals, their interpretation depended on context. Specifically, in Study 1, participants rated a player's performance in an unknown ball game to be better when spectators reacted with awe. In this case it did not matter whether the observer supported the player's team or an opposing team or was unaffiliated. By contrast, when the performance was reacted to with happiness or neutrality the performance rating depended on the spectator's affiliation with the player. In Study 2, we could show that when appraisal congruent additional information was provided, performance ratings improved for happiness or neutrality so that they reached or came close to performance ratings for performances reacted to with awe expressions. Yet, for awe expressions, which already contain this information, the added information had no effect.

The concept of situative informativeness is, therefore, of relevance to the discussion regarding the influence of context on the interpretation of emotion expressions. Specifically, the field of emotion research has called for a more systematic inclusion of context in emotion research (Barrett, Mesquita, & Gendron, 2011; Hess & Hareli, 2015). Constructivist theories in particular (Faucher, 2013) posit that emotion expressions cannot be understood outside the context in which they occur. The present research demonstrates the importance of context for both the labeling of emotion expressions and the conclusions drawn from them. Yet, at the same time, an important limiting factor was revealed. Some emotions, such as awe, are characterized by specific appraisals that are less susceptible for reinterpretation as a function of context. In the case of awe, because

it indicates vastness and the surpassing of standards, the evaluation of the object of the emotion is quite independent of who shows this emotion and what their motivations and goals are. Thus, both supporters and opponents' awe signals the same excellent performance.

The present research only focused on awe and happiness with neutrality as a substitute for a negative affect expression. However, other emotions vary also in situative informativeness. Thus, anger but not sadness signals norm violations (Hareli et al., 2013). However, there are different forms of anger, some related to aggression whereas others are related to righteous outrage (Hess, 2014) and confusion between these forms of anger may make anger more malleable to context information in that the type of anger may be malleable independent of its level of situative informativeness. Further, the present research suggests that emotions high in situative informativeness do not affect inferences extracted from them when context information is redundant with what the information contained in the emotions already suggests. Yet, even for such emotions, context may provide information that is not suggested by them or that even contradicts it. In such a situation it is expected that the context will have an impact on how these emotions are perceived. In summary, the present research strongly suggests that context effects may not be equally strong or relevant for all emotions. Current research offers very little in terms of understanding the factors that determine the conditions under which context has an effect on the perception of emotions. Therefore, the notion of situative informativeness is important as it defines an important property of emotions that can be useful in predicting and examining the effect of context on their perception. Accordingly, future research on context effects on emotion expressions should consider situative informativeness as a potential moderator of such effects.

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