

# Distinguishing motive through perception of emotions

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The question of whether people use perceived expressions of emotion to infer motive is tested in this study. Naïve observers viewed target subjects performing a simple «tower building» task under more or less motivating conditions. Observers ranked target effort levels and ticked emotions displayed of four targets. Motive rankings matched target motive conditions well. Emotion checklist scores also showed high accuracy when compared with target self-reports of emotions experienced. Regression showed that most of the variance in motivation ratings was accounted for by emotions observed. Discussion centers on applications of this understanding of emotive perception in organizations, and the relation between the first two components of Salovey and Mayer's (1990) model of emotional intelligence.

*La distinción de los motivos a través de la percepción de las emociones.* Este estudio analiza la cuestión de si las personas utilizan la percepción de la expresión de las emociones de otras personas para inferir sus motivos. Observadores noveles analizaron a personas-objetivo mientras ejecutaban una tarea simple como la «construcción de una torre», bajo condiciones de mayor o menor motivación. Los observadores evaluaron los niveles de esfuerzo de las personas-objetivo mediante una escala y marcaron las emociones expresadas por cuatro de estas personas. La evaluación de los motivos concordó con las condiciones motivantes de las situaciones experimentales. Las puntuaciones en la lista de emociones fueron también altamente precisas al compararlas con el autoinforme de las emociones vividas por las personas-objetivo. El análisis de regresión mostró que la mayor parte de la varianza de la escala de motivación fue explicada por las emociones observadas. La discusión de estos resultados se centra en las aplicaciones de la comprensión de la percepción de las emociones en las organizaciones, y en la relación entre los dos primeros componentes del modelo de inteligencia emocional de Salovey y Mayer (1990).

Understanding our emotions is both an old and intuitively relevant pursuit. Darwin's concern with emotions has been cited as an impetus for more recent basic research regarding these essential aspects of human existence (Ekman, 1992; Mayer, Salovey, & Caruso, 2004). The research reported here follows in this tradition, attempting to untangle the complex processes that explain why we have, and more importantly, why we display emotions. We argue that people effectively use emotive displays to communicate and distinguish motive, with important implications for organizational practices, and particularly for the second component of emotional intelligence—interpretation of emotion.

Although previous laboratory research on accuracy has shown numerous biases in person perception, a small body of longitudinal research in work organizations (e.g. Bray & Howard, 1983; Howard & Bray, 1989) suggests that the success of person perception based practices (e.g. assessment centers and selection interviews) relies on accurate judgments of target motivation. While this flies in the face of considerable evidence suggesting humans are inaccurate in their judgments of others (see Funder, 1987; Sawyer, 1966), the accurate

and nearly universal perception of emotion (Ekman, 1992; Russell, 1994) provides a viable counter-explanation. In the present study, we examine the accuracy of human judgments of others' motive levels, and the extent to which these judgments may be based on inferences drawn from emotive cues.

## Judgmental accuracy

A substantial literature over the past several decades has called into question the accuracy of person perception (Funder, 1987). In particular, a host of heuristics and biases are thought to be fundamental aspects of the way that people view and respond to one another (see Cialdini, 1997 for a discussion). While there is little doubt that biases and heuristics are integral to person perception and social cognition, it is not always clear why or under what conditions people are inclined to use, for example, attributional biases (Harvey & Weary, 1985). It has been suggested, however, that this «black box» of heuristics and biases may be accounted for by mechanisms associated with innate *observer* motive systems (Cialdini, 1997). What has not been considered, is the possibility that innate *target* motive systems may play a central role in person perception *accuracy*, as well.

Further confusing the issue is the problem of defining accuracy (Kruglanski, 1989; Murphy & Cleveland, 1995; Sulsky & Balzer, 1988). Common to most operational definitions of accuracy is the use of laboratory circumstances, without accounting for what

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Kruglanski refers to as «utility» accuracy—the comparison of human judgments with later events of importance. This «criterion problem» (Austin & Villanova, 1992) with accuracy is exacerbated by findings showing impressive long term predictive accuracy of human judgments in applied settings, such as assessment centers (Howard & Bray, 1989) and job interviews (Dipboye & Gaugler, 1993). Such utility accuracy outside of laboratory conditions suggests a need for broader definition of accuracy to include more ecologically valid indicators (cf. Russell, 1994).

So, apart from this issue of operational definition, why the difference in laboratory and field study findings? Several clues may help to answer this question. First, a notable characteristic of applied person perception settings is the evaluation of motive as a basis for predictive accuracy (Bray & Howard, 1983; Jones & Whitmore, 1995; London, 1997). Rather than evaluating accuracy only in terms of «rational-cognitive» dimensions, such as decisions about numbers of names (availability heuristic) and percentage of votes cast (hindsight bias), these studies evaluated the accuracy of observers' judgments about motives, as well. In assessment centers, in particular, assesses are observed by and interact with observers in structured settings, after which ratings are made of skills, abilities and motive dimensions. While skill and ability dimensions have shown adequate predictive accuracy, the utility accuracy of motive ratings has been more impressive, sometimes predicting a broad range of behaviors over substantial time periods (Bray & Howard, 1983; Jones & Whitmore, 1995).

A second set of clues for answering the question of why motive-based person judgments may tend to be accurate comes from the research on accuracy of emotion perception (Russell, 1994; Elfenbein, Mandal, & Ambady, 2004). Considerable evidence (and controversy) has been amassed showing a cross-cultural tendency to understand smiles as «happiness», frowns as «anger» or «sadness», and so on. The universality hypothesis, as it is called (see Russell, 1994 for a critique), is taken as evidence for an innate human perceptual ability to recognize emotions. Nearly universal agreement about whether a facial display represents a particular emotion suggests an innate ability of humans to recognize emotions. To the functionalist, the next question is what purpose this serves.

One answer to this comes from Lang's evidence suggesting that emotion is a derivative of motive, based on actor perceptions of how their own desires (and fears) are being met, missed, avoided or approached. For example, when a prospective buyer calls to tell a salesperson s/he would like to buy the salesperson's product, the salesperson feels pleasure and likely smiles. If the call is to tell the salesperson there is a problem or that the sale will not be made, other emotions and probable expressions of emotion occur.

Putting universality together with this «motive readiness» hypothesis helps to explain why universality may occur. Given a recognition of the same motivational meaning of emotional displays by observers, it would make sense to expect that emotive displays are social indicators used by observers to infer whether desires are being met or thwarted and fears approached or avoided (Jones & Rittman, 2002). Some research on brain function supports this notion, as the same areas used to make sense of one's own emotions appear to be used in observing others' emotions (Adolphs, Damasio, Tranel, Cooper, & Damasio, 2000). Thus, for example, a smile signals the approach of something desirable and a frown the approach of something fearful for both the actor who expresses them and the observer who perceives them.

Putting these clues together, it seems quite likely that accurate person perception is based on motive inferences drawn from basic emotional displays. The heuristics and biases that help to explain inaccurate inferences regarding abilities, skills, or other «acquired» proficiencies may therefore not apply when we see emotional displays in others. For emotional displays, we appear to be well-suited to make accurate judgments.

### Hypotheses

We propose a first test of this idea that emotional displays serve a signal function regarding motive. First, we will replicate and extend the finding that emotions can be accurately evaluated. Previous work in this area has typically asked observers to view still photographs of target faces and make judgments about the emotions expressed for each (Russell, 1994). In this study, we had observers view videotapes of targets performing a simple task. Targets were themselves naïve participants, and were asked to indicate the emotions they experienced while performing the task from a list of 27 emotions. Using a Signal Detection paradigm (Swets, 1986), we hypothesized the following:

*Hypothesis 1: Observers will rate emotions experienced by targets with greater than chance accuracy*

Most important to the present study, it was expected that differences in target effort would be correctly noted by observers. Half of the targets received manipulations to increase their motivation levels (i.e. specific, challenging goals and monetary incentives to perform well). Based on the arguments above, we anticipated that observers would be able to correctly judge these differences in motive level in the targets:

*Hypothesis 2: Observers will correctly classify targets in terms of targets' levels of effort directed toward the task.*

Finally, it was expected that motive judgments would be based on emotions observed. Regardless of the accuracy of either of these, it was thought that, at very least, people use emotive expressions of others to infer motive:

*Hypothesis 3: Observer judgments of target effort will be predicted by observer perceptions of target emotion.*

### Methods

The methods used to test our hypotheses relied upon the development of target stimulus materials and a protocol for observer ratings. The stimulus materials, which will be described in detail next, involved the videotaping of 11 students attempting to build a tower under varying goal and incentive conditions. Given the inherent lack of motivation associated with this task, an effort was made to significantly affect motive levels of some of these «target» participants. After selecting four videotapes of targets based on manipulation check and personality indicator information, a second group of 34 participants (observers) observed these four videotapes and provided ratings of emotions expressed and motive level. This second group of «observer» participants will be described subsequent to the stimulus participants.

### Stimulus material

### Participants and materials

Target stimulus participants were 11 introductory psychology students at a large Midwestern state university. Participants signed up to participate in the research for extra credit. There were 5 males and 6 females, with an average age of 25 years.

A tower construction task was used to elicit emotive responses. This task involved using colored wooden blocks, available at most toy stores, to build a tower. The task itself provided some feedback (e.g. when a tower toppled), so no other attempts were made to elicit emotional responses.

A tower construction questionnaire was created to assess, among other things, the participant's effort in performing the task and emotions felt during the task. Responses to this questionnaire served as both manipulation check and accuracy stimuli. Specifically, targets were asked to indicate how much effort they had put into the task and tick emotions experienced while performing the task. Effort self-ratings were used as one basis for selecting among these participants as stimulus material actors.

Stimulus participants also completed an expressivity scale. This self report scale (Gross & John, 1995) is intended to assess people's tendencies toward being more or less emotionally expressive. We administered this to stimulus participants with the possibility in mind that target expressivity might affect the accuracy of observers' judgments of effort and emotional display.

### Procedure

Participants signed up to participate individually at specified times. Each participant was led to a room that had a video camera situated catty-corner to where the participant would be performing the task. The camera was not concealed. The participant was asked to sit at a table where there was a box of assorted blocks. The experimenter read the same script to each participant. Participants were randomly assigned prior to the study to either a high or low motivation level condition. In the high motivation condition, the participant was given a goal to build the tower higher than 2.5 feet and a motivator that, if this goal was met, the participant would be entered into a drawing for a twenty dollar prize. In the low motivation condition, the participant was just asked to build a tower, without mention of a specific, difficult height or any prize for meeting this goal.

Each participant first filled out a consent form, then had seven minutes to perform the tower building task. The experimenter left the room during the task. Once the seven minutes were up, the experimenter reentered the room and measured the tower. Afterwards, the participant was asked to fill out questionnaires and once again the experimenter left the room. Upon completion of the questionnaires, the participants were debriefed and dismissed. All participants were informed about the study and entered in the twenty-dollar prize drawing.

### Stimulus selection

Four videos were selected from the original eleven as stimuli for the second phase of the study. The four videos were matched on motivation condition and expressivity, with gender nested within expressivity (both high self report expressives were female and low self report expressives were male). That is, subjects in the high

motivation condition were used as «high» motivation target stimulus people, and subjects in the low motivation condition were chosen as low motivation target stimulus people. Three stimulus participants were excluded based on incongruity between their self report motivation level and their motivation level condition. That is, these subjects reported low effort when they were in the high motivation level condition or high effort in the low motivation level condition. From the remaining eight people, the highest and lowest on expressivity in each motivation condition were chosen as stimulus targets. It should be noted that the overall t-test for the effort manipulation check item was significant (high motivation  $M=4.17$ ,  $S=.75$ , low motivation level  $M=3.2$ ,  $S=.45$ ,  $t=2.5$ ,  $p<.03$ ,  $df=9$ ). In each of the stimulus motivation conditions, one person was a high expressive individual (both females), and the other low expressive (both males), based on a median split of the expressivity scale. All videotape vignettes were seven minutes in length.

## Experiment

### Participants

Thirty-five students from introductory psychology classes signed up to participate in the final study for course credit. There were 12 males and 23 females.

### Procedure

Upon arrival, participants filled out an informed consent. Participants viewed each of the stimulus videos in a random order assigned to them individually and completed a set of questionnaires about each stimulus participant after viewing each video. Ratings of effort were made for each video, with the statements «This individual tried hard to succeed at this task» (rated on a 6-point scale, 1= strongly disagree, 6= strongly agree) and «To what extent did the individual appear motivated to perform the task well?» (1= not at all, 5= extremely motivated). Once all the videos were viewed, participants also were asked to rank the targets' level of motivation.

## Results

Hypothesis one stated that observers would correctly observe emotions experienced by targets. Accuracy was operationalized as the degree to which observers classified a list of 27 emotions for each of four targets as having occurred or not occurred. That is, stimulus targets' self reports of emotions *experienced* and of personality were used as «true scores» to which observers' checklists of emotions and personality *observed* were compared. A signal detection model (see figure 1) was used, and a  $\chi^2$  comparing

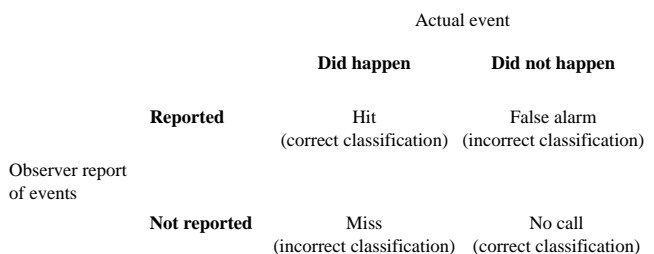


Figure 1. Signal detection model of observer accuracy

random frequencies of hits, false alarms, misses, and «no calls» with the actual frequencies of these same events was computed.

Compared with random classification (27 of each: hits, misses, false alarms, and no calls across 108 observations), observers were quite accurate ( $\chi^2 = 31.76$ ,  $df = 1$ ,  $p < .001$ ). Overall classification accuracy (number of correct observations divided by total number of observations  $M = .77$ ,  $S = .05$ ) and behavioral accuracy (correct observations minus incorrect observations,  $M = 58.57$ ,  $S = 10.65$ ) also indicated a fairly high degree of accuracy. These did not differ significantly depending on target expressivity ( $t = 1.14$ , ns, for classification accuracy;  $t = 1.3$ , ns, for behavioral accuracy).

Results for hypothesis two provided mixed support for the notion that observers are able to distinguish high from low motivation targets. Rankings results were highly supportive. Correct classifications were cases where observers ranked the two high motivation targets first or second and the two low motivation targets third or fourth. Observers correctly classified targets in terms of levels of motivation in 74% of the possible ranking events. Given a random expected value of 34 correct rankings per observer across the four videotapes, the actual number of correct rankings was significantly greater than would have happened by chance alone ( $X^2 = 29.58$ ,  $df = 1$ ,  $p < .001$ ).

Effort ratings, on the other hand, did not provide strong support for this hypothesis. Although all mean rating differences were in the expected direction, individual ratings could not be used in t-tests because of a complete lack of variance in ratings for one of the high motivation targets ( $M = 6.0$ ,  $S = 0$ ). All observers rated this person as highly motivated (6 on a 6-point scale). When ratings were combined for the two high motivation targets ( $M = 5.86$ ,  $S = .59$ ) and compared with combined effort ratings for the two low motivation targets ( $M = 4.5$ ,  $S = 1.74$ ), there was no significant difference ( $t = .74$ , ns), partly because variances for the two groupings in this combined analysis were significantly different ( $F = 2.95$ ,  $p < .05$ ).

Regression analysis was carried out to test the notion that the emotions observers perceived in targets influenced their judgments of target effort (hypothesis 3). For the three targets with variance in effort ratings, a stepwise regression of effort ratings on the emotion checklist yielded significant results. The range of  $R^2$  values (.15 to .24, all  $p < .02$ ) demonstrated a relationship between emotions perceived and effort evaluations. Likewise, motivation ratings were predicted well by the emotion checklist ( $R^2$  range from .22 to .63, all  $p < .01$ ). For high motivation targets, the emotions boredom, disappointment, discomfort, and relaxation were entered as significant predictors (all betas negative). For low motivation targets, negative beta predictors included intimidation, relaxation, and boredom and positive predictor betas were associated with pride, enthusiasm, interest, and happiness.

### Discussion

Initial results provided support for our contention that motive perception is something that even people unacquainted with one another do well. Although effort ratings could not be adequately evaluated to discover whether they were significantly influenced by target motivation manipulations, effort rankings were substantially correct. Emotion checklists were fairly accurate, though not as accurate as has been found in studies looking only at facial displays of emotion. Most importantly, consistent with the notion that emotions are used to inform effort judgments,

regression analyses showed significant relationships between emotion checklist items and effort and motivation ratings. Despite the possible inaccuracy of our rating criteria, it does appear that motive perception is strongly related to emotive perceptions. However, this relationship requires much more elaboration, both theoretically and empirically.

One possible substantive reason for the difference in findings between effort ratings and effort rankings is that there may not have been a great deal of difference in target effort levels. Thus, absolute differences in ranking were more sensitive than the relative differences in ratings. Given more powerful incentives than the temporary «goals and incentives» manipulation in this study, ratings might be more sensitive to differences in effort.

By the same token, this study represented a very rigorous test of the primary hypothesis. First, there probably were only slight differences in effort elicited by the manipulation, since targets themselves only reported a small mean difference (effect size). Second, the observers were given a short time to view targets. Third, targets and observers were completely unacquainted. All of these factors (small observable differences, short viewing time, lack of acquaintance) suggest that the study's results need to be replicated in more ecologically valid circumstances. We suspect that stronger evidence for our central hypothesis will be found outside the laboratory.

This study also represents an initial attempt to evaluate the general hypothesis that emotional displays are used to infer motives. This means that we took several factors for granted in both definition and operation. Chief among these is our narrow definition of motivation in terms of effort *levels*. Since motivation can be described in many ways, including both level and *direction* of effort, this is only a partial definition of the dependent variable. Further work is needed, looking at emotion perception and observer construal of direction of effort.

The model of emotive perception posited here has important value for the understanding of emotional intelligence. Apart from the popular fascination with its measurement and application, an important body of basic theory and research by Salovey, Mayer and their colleagues (Mayer et al., 2004; Brackett & Salovey, 2006) has done much to broaden our understanding of individual differences. The results of this study advance our understanding of two of the most pivotal dimensions of emotional intelligence. Specifically, we focus on the ability to accurately perceive others' emotions and make appropriate inferences regarding them. Our picture, as is often the case in such research, somewhat complicates matters, but we believe may advance our knowledge regarding the realities of emotionally intelligent processes.

More specifically, with respect to the recent controversies regarding emotional intelligence, our results strongly suggest that the second dimension of EI—interpretation of emotional displays—is dependent on the first—accurate perception of emotions. This means that the first dimension may be non-compensatory, such that inability to recognize emotions accurately makes interpretation of underlying motive unlikely to be effective. This is consistent with Mayer and Salovey's notion that alexithymia—the inability to perceive emotion—is an important aspect of emotional intelligence (Salovey & Mayer, 1990).

Several questions were not answered by this research. First, it is unclear how accurate perception of emotion and accurate perception of effort are related. While both were demonstrated here, and regression showed a relationship between evaluations of

each, we did not test the notion that it was emotion perception that affected motive perception directly. In other words, results are only correlational with regard to this question. A more thorough definition of motivation in future research, with control over the emotions expressed, may uncover more about the observed effects in this study.

#### Implications for organizations

While laboratory support for one explanation for differences between field and lab studies of motive perception appears ironic, it also provides an important «ray of hope» for organizational practice. If, in fact, it is the accurate perception of motive that affects long term prediction, then personnel practices may be improved substantially by exploiting this feature. We suggest that

training in one or more areas associated with motive and emotive perception may be a valuable contribution to organizational practices, including customer service and ratings-based selection and performance management systems. In particular, assessment center, interview, and 360-feedback programs may be enhanced by a better understanding of the emotion-motivation «language» on the part of raters.

It may also be important for interpersonal skills training and development of conflict resolution skills to understand emotional messages about motive. For conflict resolution and customer service, it may be that simply asking each other about the motivational sources of emotional displays will prove a valuable tool for resolving conflicts and satisfying customer needs. Elaborating on our understanding of these relationships may be a worthwhile endeavor.

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