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Are Smiles a Sign of Happiness? Gold Medal Winners at the Olympic Games

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All facial behavior displayed by 22 Olympic gold medalists during their awards ceremonies was codified. The awards ceremony contains one stage in which the medalist interacts with others and two noninteractive stages. Observers (including 10 other gold medalists) judged the emotional experience of the gold medalists to be intense happiness throughout the ceremony. However, smiles were frequent only during the interactive stage. As predicted by behavioral ecological theories of facial behavior, happiness was not sufficient for smiling.

Studies on facial expression are of two main types: judgment studies and component studies (Ekman, Friesen, & Ellsworth, 1982). A judgment study is aimed at ascertaining what emotions lay people attribute to particular facial expressions. For example, such studies have found that happiness is universally attributed to smiles (Ekman, 1989). A component study is aimed at determining which facial behaviors are displayed by people who are feeling a specific emotion.

Few component studies have been reported, and most of them are on smiles and happiness.[1] Ekman, Friesen, and Ancoli's (1980) study was a pioneering application of the Facial Action Coding System (FACS; Ekman & Friesen, 1976, 1978), a development of Hjortsjö's coding system (Hjortsjö, 1969), to the facial expressions of participants watching positive or negative films. The authors reported that participants' expressions (e.g., smiling) were congruent with the affective sign of the films they were watching (positive or negative).

An updated version of this experiment (Davidson, Ekman, Saron, Senulis, & Friesen, 1990; Ekman, Davidson, & Friesen, 1990) concluded that the Duchenne smile is the real manifestation of positive emotion and the ultimate discriminative clue for happiness. The Duchenne smile not only involves the apparent oblique stretching of the lip corners by the zygomatic major muscle (AU 12, according to Ekman and Friesen's FACS) but also the lifting of the cheeks and gathering of the skin around the eye, produced by the orbicularis oculi muscle (AU 6).

Whereas Ekman's studies (e.g., Ekman et al., 1980, 1990) excel for their precise descriptions of facial behavior in controlled environments, a critical feature of their design is problematic: the use of films to elicit participants' emotions. A film is a cultural product, a bidimensional representation, full of visual, verbal, and musical conventions that require a complex interpretation by its viewers. Of course, this complexity does not preclude films from producing direct emotional reactions to those stimuli displayed in the film (e.g., people can feel disgust at a gory scene of a horror movie). However, films can also give rise to at least another two different kinds of emotional reaction: (a) an empathic reaction or attribution of emotions to one or several characters, which can involve different and unrelated references to emotions (e.g., while watching a horror movie, people can feel some empathic closeness to victims' pain or fear); (b) a global affective reaction to the movie itself, unrelated to the explicit content of the film (e.g., some people love horror movies and are happy "to be scared": they find these films exciting and interesting).

Ekman et al. (1990) described their films as being able to elicit strong positive and negative emotions (Ekman et al., 1990, p. 345). However, the available data from participants' ratings of their emotional reaction to these films (Davidson et al., 1990, p. 334) suggest that participants' reactions might have been neither strong nor homogeneous.

Empathic reactions. Participants reported pain (e.g., M = 4.50 on a 1-8 scale) on watching the negative films—an implausible physical sensation in themselves, but not in the actors of the film.

Global affective approach. Participants' mean ratings for in-

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[1] Ekman (e.g., Ekman, 1992a, p. 193) has occasionally substituted the term *enjoyment* for *happiness,* but this change does not seem to imply important theoretical modifications of the concept; Ekman seems to use *happiness* and *enjoyment* as interchangeable (e.g., Ekman, 1992b, p. 35).

terest, from 5 to 5.60, and excitement, from 2.15 to 2.73, were as high for positive as for negative films.

Weak direct emotional reactions. Participants did not report clear and intense positive or negative basic emotions: on a scale from 0 to 8, participants' highest mean ratings on the positive films were 6.05 for amusement, 5.60 for interest, and only 4.68 for happiness. The highest ratings on the negative films were for disgust (6.70), interest (5.52), pain (4.50), fear (4.45), anger (3.60), and sadness (3.30).

In summary, these component studies have developed an impressive observational and physiological paraphernalia around the dependent variable (facial behavior), with a surprisingly poor method around the independent variable—the elicitor of those emotions hypothesized to cause the facial behavior. This lack of clear elicitors is a serious flaw that blurs the link between the observed facial expressions and their assumed emotional causes, calling into question the conclusions of these studies.

The Naturalistic Approach to Component Studies

Kraut and Johnston's (1979) studies involved the only alternative approach to component studies in general, and to the study of the relationship between facial expression and happiness in particular. Kraut and Johnston performed a series of field studies on people's facial expression in natural, everyday situations, such as bowling, cheering on their favorite sports team, or greeting other people in public places. The strengths and weaknesses of Kraut and Johnston's method were the reverse of those of the film studies. Kraut and Johnston obtained a sample of participants who were directly exposed to an emotional elicitor. No films, written texts, or any other symbolic convention blurred the participants possible interpretation of the elicitor.

Kraut and Johnston (1979) found that people did not smile during the events that were presumably the cause of their happiness (e.g., bowlers' best rolls, goals for the fans' team, or good weather). Smiles occurred during social interaction (e.g., bowlers' conversations with their friends in the pit, fans' interactions, or greetings in the street).

Nevertheless, Kraut and Johnston's study was carried out in 1979, when Ekman himself had not contemplated the distinction between the Duchenne smile and other kinds of smiles (see Ekman et al., 1980), and no data about these subtle features of smiles are available in their report.

This indetermination is aggravated by the lack of any subjective report on participants' emotional experience during the event. As Kraut and Johnston conceded (1979; p. 1551), they did not know whether all the selected situations had the same emotional meaning for participants, or if their meaning was as emotional as researchers assumed. Even if all their participants were happy, a strike during bowling, sunshine, or witnessing your team score points might not produce extremely intense happiness.

These problems pose a conundrum for the researcher: natural and highly intense emotional elicitors are not feasible in the laboratory, for ethical and practical reasons, whereas field studies have not been able to assess participants' emotional experiences. To make matters worse, recording close-ups of participants' facial expressions in emotional situations is a task that involves formidable practical problems even in the laboratory.

Nevertheless, at least one researcher has been successful at performing more controlled naturalistic component studies capable of providing a precise description of participants' expressions and their relationship to a particular emotion. Camras and colleagues (see Camras, Malatesta, & Izard, 1991) recorded an infant's facial expressions in everyday settings; the infant's facial behavior was analyzed by Izard's AFFEX coding system (Izard, Dougherty, & Hembree, 1983). Camras et al. found that hypothesized expressions of particular negative emotions ocurred in situations that were unlikely to have elicited those emotions. For example, "fear" expressions were observed in circumstances not related to fear, and the "sadness" expression was associated with low-intensity distress or anger (Camras et al., 1991). Camras also performed a judgment study that supported the accuracy of these findings (Camras, Sullivan, & Michel, 1993).

Camras et al.'s (1991) fascinating and unexpected results suggest that researchers on emotional expression should perform more studies in the frame of this new naturalistic approach to component studies that includes a precise description of participants' expressions. The present study was developed, with this goal in mind, as a field study on adults' "happiness" expressions.

Study 1

A recent event in Spain, the Olympic Games, allowed us to perform a study on some athletes' facial expressions at one of the happiest times of their lives: the awarding of gold medals.

Even though the Olympic Games were profusely emotional, most of the situations involved people performing tough physical exercise, which frequently distorted facial expressions. On the podium, winners were at rest, but the situation was as emotional as any other at the games.

Method

Three social conditions. The awards ceremony involved a strikingly precise and uniform routine, which allowed us to compare medalists from different sports in a similar context. This routine included three well-delimited stages that constituted a natural ABA baseline design: (A) waiting behind the podium while the authorities arrived at their positions, with medalists' attention focused on the impending invitation through the loudspeakers to go to their positions on the podium; (B) standing on the podium, interacting with authorities and public, and (C) returning to the noninteractive situation, when the medal winners turned toward the flagpoles and focused their attention on the flags and the national anthem.

Situations A and C involved powerful restrictions of participants' social interaction. In fact, several aspects of the ceremony reinforced this natural manipulation, placing the medalists literally hidden behind the podium in Stage A, and keeping the audience in silence and the medalists turned toward the flag on the top of the podium during Stage C.

The goal of this study was to test the hypothesis that is inferred from Kraut and Johnston's (1979) findings that happiness alone is not sufficient to produce smiles. Rather, happiness produces smiles only during social interaction. The above-described succession of interactive and noninteractive situations allowed us to test this hypothesis with a

precise description of participants' facial behavior and an explicit control of their emotional experience, which was—according to gold medalists' and lay participants' judgments—of intense happiness throughout all three stages of the ceremony.

Participants. Television Española (TVE, the Spanish national broadcasting company) provided us with all the records of awards ceremonies available from its commercial services. Availability of records was determined by the popularity of a particular speciality (e.g., running or gymnastics were more strongly represented than weightlifting or fencing), the presence of Spaniards on the podium (not necessarily as gold medalists), and broadcasting times. Availability of TVE's records was in no way determined by the facial expressions of the medalists. Only gold medalists were considered, in order to avoid frustrated gold medal aspirants among the silver and bronze medalists.

In total, we obtained 47 records. After reviewing Spanish newspapers from July through August 1992, we discarded two gold medalists whose ceremonies took place in peculiar circumstances, one because of political events in her country and the other because of public opposition to his award; three cases that involved sharing the gold; and 20 cases that did not include one or more suitable records of the three ceremonial stages above described.

Finally, 22 participants were selected (14 women and 8 men) from China, former Czechoslovakia, Germany, Greece, Russia, Spain, Switzerland, Tajikistan, Ukraine, the United Kingdom, and the United States of America. This relative cultural variability is an uncommon but desirable feature in this kind of study, insofar as it partially decreases the risk of uniform cultural biases in participants' expressions.[2]

Check on emotional experience. Even though winning a gold medal is obviously one of the happiest times in any sportsman or sportswoman's life, we needed to confirm the emotional meaning of this situation. The actual recorded medalists were unavailable, but we contacted the best available judges to test this assumption: a group of Spanish gold medalists, who rated the emotional content of the three stages of the ceremony.

These gold medalists were 7 women and 3 men (members of the women's field hockey team and of the men's soccer team). Their task consisted of rating their emotional experience at five different crucial moments from the final match (e.g., the home-team goals) and the three above-described stages of the awards ceremony. Situations were presented at random in a booklet, each on a different page that included a brief allusion to the situation to be judged (e.g., "Spain's second goal", "the waiting time before going up to the podium" etc.). The experimenters did not mention the main topic of the study and, in fact, the extra five situations from the match were designed to avoid demand effects.

The gold medalists rated each situation on 6 scales from 0 to 10 (happiness, sadness, anger, fear, disgust, and surprise); there was also a blank scale where they could mention and rate any other relevant term of their choice. We were particularly careful about avoiding unsure judgments of any of the three situations: medalists were all invited to indicate if they were not completely sure about having clear and differentiated memories of their feelings at these specific times. Three medalists (two women and one man) suggested problems in remembering their feelings about some of the three stages of the ceremony, and so their data were not included in the results.

Table 1 shows the remaining 7 medalists' mean ratings for the three stages of the awards ceremony. Mean ratings for happiness were always higher than 9, and no other emotion obtained ratings above 2, which suggests that these situations were judged as being of clear and intense happiness.[3]

Scoring of facial behavior. All the observable facial actions displayed by each participant during the three stages of the ceremony were measured by the FACS (Ekman & Friesen, 1976, 1978). This system distinguishes different facial movements through different action units and allows the observer to codify Duchenne smiles—the expression that, according to Ekman (1992b; see also Ekman et al., 1990), is characteristic of felt happiness. Moreover, other different facial actions were scored, as well as other smiles that were not Duchenne smiles.

The coder (the second author of this article) had specific training in FACS, and her reliability had been checked previously by a standard test designed by Ekman and Friesen. In order to retest the coder's reliability and accuracy, another coder, unaware of our hypotheses—and whose reliability had also been checked by Ekman and Friesen's standard test—coded a random sample of those available sequences in which it was impossible to infer the particular circumstances of the recorded expressions. Ten sequences out of all the suitable records were randomly selected from each stage and then randomly combined in a series of 30 sequences of comparable duration (each sequence lasted a maximum of 3 s and a minimum of 1 s; if the original selected sequence was longer than 3 s, only 3 consecutive seconds of it were randomly selected). Interrater agreement according to Ekman and Friesen criterion—agreements divided by the total number of agreements and disagreements (Ekman & Friesen, 1978)—was .80 across all the FACS categories. In terms of the four categories of facial behaviors discussed in this study, Ekman and Friesen's interrater agreement was .87, and Cohen's kappa was .82 ($z = 8.37$; $p < .001$).

Results

The observed behaviors were divided into four mutually exclusive groups: Duchenne smile, other smiles, neutral faces, and other action units. A *Duchenne smile* included all the expressions that involve the muscular actions of a Duchenne smile.[4] *Other smiles* included all the expressions that could be perceived as any other kind of smile (e.g., smiles produced by only the zygomatic major muscle, as well as expressions in which this muscle was joined by other facial muscles). *Neutral faces* included all the faces with no action units detected. *Other action*

[2] The participants were Tatiana Gutsu (Ukraine), Miriam Blasco (Spain), Gail Devers (the United States of America), Almudena Muñoz (Spain), Li Lu (China), Valentina Yegorova (Russia), Andrey Abduvaliyev (Tajikistan), Elena Romanova (Russia), Jackie Joyner-Kersee (the United States of America), Michael Conley (the United States of America), Sally Gunnell (United Kingdom), Gwen Torrence (the United States of America), Paraskevi Pataulidou (Greece), Robert Zmelic (former Czechoslovakia), Maxim Tarassov (Russia), Alexandra Timoshenko (Ukraine), Marc Rosset (Switzerland), Jan Zelezny (former Czechoslovakia), Dieter Baumann (Germany), Heike Henkel (Germany), Fermin Cacho (Spain), and Andreas Twes (Germany).

[3] With respect to the blank scale in which they were invited to mention and rate any other relevant emotion, medalists mentioned several idiosyncratic terms, with a positive or neutral affective content. In Stage A, one medalist mentioned *plena, llena* ("full"), and another *nerviosismo* (nervousness). In Stage B, two medalists mentioned *satisfacción* (satisfaction), and the following idiosyncratic terms were also mentioned: *único* (unique), *relajo, tranquilidad* (relaxation, peace), *orgullo* (pride), and *sentirse realizado* (to feel a sense of fulfillment). In Stage C, medalists mentioned *un sueño* (a dream), *satisfacción, sentirse realizado, orgullo,* and *emoción* (emotion).

[4] The category *Duchenne smile* was applied when both intense and clear AU 6 and AU 12 were simultaneously observed and no other AU was concurrent (excluding those that involved head and eye movements). Asymmetric actions were not considered as Duchenne smiles.

Table 1
Mean Judgments From Seven Gold Medalists on the Emotion Occurring During Three Stages of the Awards Ceremony

Stage	Happiness	Sadness	Anger	Fear	Disgust	Surprise
Stage A	9.85	0.28	0	0	0.0	1.42
Stage B	9.42	0.0	0	0	0.57	1.42
Stage C	9.28	0.85	0	0	0.0	1.85

Note. Ratings were made on six scales from 0 to 10. Paired-samples t tests comparing all the possible pairs of mean ratings for an emotion by stage (e.g., happiness ratings in Stage A vs. happiness ratings in Stage C) showed no significant difference due to stage.

units included any kinds of expression that do not include the action units involved in the Duchenne smile, or any other kind of smile.

Table 2 shows the total time during which each of the four types of facial behaviors occurred across Stages A, B, and C of the awards ceremony. Altogether, the 22 winners were recorded during 398 s in Stage A; of that time, 11 s included Duchenne smiles (3% out of the total time), and 29 s included other smiles (7%). Out of the 467 s recorded in Stage B, 223 s (48%) included Duchenne smile, and 131 s (28%) included other smiles. In Stage C, 499 s were recorded; 0 s included Duchenne smile, and 14 s (3%) included other smiles.

Within-subject comparisons of the duration of Duchenne smile and other smiles across stages were evident: only four participants briefly displayed Duchenne smiles in Stage A; all the participants displayed this expression during Stage B; and no participants displayed it in Stage C. A paired-samples t test comparing individuals' mean percentages (with each individual's durations equal to 100%) of each facial behavior across the three stages showed no significant differences between Stages A and C for each kind of facial behavior. Significant differences between Stages A and B were found for Duchenne smile, $t(21) = 12.05$, $p < .001$, other smiles, $t(21) = 4.42$, $p < .001$, and other actions, $t(21) = 8.18$, $p < .001$. The comparison of Stages B and C was also significant for Duchenne smiles, $t(21) = 12.13$, $p < .001$, other smiles, $t(21) = 6.14$, $p < .001$, and other actions, $t(21) = 10.83$, $p < .001$.

Considering the duration of smiles in general (Duchenne or not; see Table 2), the differences between the stage that involved social interaction and the other two remain the same: all the participants smiled longer during Stage B, and most of them did not smile at all during Stages A and C.

Table 2
Percentage of Total Time for Each Facial Behavior Across Stages of the Awards Ceremony

Facial behavior	Stage A	Stage B	Stage C
Duchenne smile	2.76	47.75	0.00
Other smiles	7.29	28.05	2.80
Neutral	32.41	7.71	14.43
Other actions	57.54	16.49	82.76

Study 2

A crucial assumption of our study was that our 22 winners experienced intense happiness in all three stages of the ceremony, but we did not have records of each participant's emotional experiences during the recorded situation. Assume, for the sake of argument, that our medalist-judges' experience was idiosyncratic and happier than the common gold medalist's, and that the recorded 22 medalists might not be feeling intense happiness during Stages A and C. This assumption might be reinforced by the considerable number of facial expressions showed by the gold medalists during Stages A and C: these expressions included prototypical expressions of sadness and anger.

Three new tests were aimed at confirming that these gold medalists' experiences were representative of gold medalists' experiences in general.

Medalists' Judgments of Other Medalists

We asked our 10 medalists to judge a video of two gold medalists (unknown to them) in the same noninteractive situation (listening to the national anthem) during the awards ceremony. One model was smiling,[5] while the other one was displaying a prototypical expression of sadness.

According to the typical studies on recognition of emotions, these different models would make judges aware of gold medalists' different emotions. Following the rationale of Camras et al. (1993), we reasoned that, if gold-medalist judges rated these expressions according to the "universal facial expressions" hypothesis (Ekman, 1992b), then the first model would be judged as happy and the second one as sad, irrespective of the situational occurrence. However, if gold-medalist judges rated the two models as happy, it would be clear that their ratings were determined by the features of the situation, and that they did

[5] Only one record, out of the 47 available records of gold medalists on the podium, showed an individual champion displaying a clear Duchenne smile while he was listening to the national anthem: Kevin Curtis Young, from the USA. Young showed AU 6 + 12 (Duchenne smile) while he was apparently speaking with somebody (we edited the video so as not to show him talking, but only the smiling between two utterances). The best available female model was Linda Andersen, from Norway. However, Andersen's action units 6 and 12 (AU 6 + 12) were always mixed with other action units (e.g., AU 1 and 4).

not perceive their experience of happiness, in the noninteractive stages of the ceremony, as idiosyncratic, but as typical of any gold medalist in these circumstances.

Procedure. Judges were the above-mentioned gold medalists. Once the rating of situations was over, they were requested to watch a short video of two gold medalists; the video included no soundtrack, and the context was identical and obvious. Models were medalists who were not familiar to our judges. Women watched two sportswomen and men watched two sportsmen. Duration of models' recorded expressions was equivalent (17 s for each male model, and 30 s for each female model). In both cases (male and female models) one model displayed a smile, and the other a prototypical expression of sadness (AU 11 + 17, or AU 1 + 4 + 11 in terms of the FACS notation).

Results. Once the judges had watched the tape, we asked them to point out what emotion each model was feeling and which of the two models was feeling the most intense emotion. Nine out of the 10 gold medalists answered this part of the questionnaire (6 women and 3 men). All of them judged that the two models were feeling the same emotion; 8 labeled this emotion as *alegría* (the standard translation for *happiness*) and 1 as *tranquilidad* (peace of mind). Interestingly, 7 judges picked out the model who displayed the prototypical expression of sadness as the happiest medalist, 1 judge picked out the model who displayed the prototypical expression of happiness, and another was unable to pick out one particular model as being happier than the other one.

Lay Participants' Judgments

Medalists' judgments of other medalists' emotional experiences might, however, be biased by their own emotional experiences. According to research on the false consensus effect (e.g., Marks & Miller, 1987), people who have previously experienced a situation overestimate the typicality of their own experiences or reactions in that situation. The false consensus effect is, however, minimized when people have had no prior experience with or personal beliefs about the situation (e.g., Hilton, Smith, & Alicke, 1988). We therefore sought to complement the judgments from our gold-medalist judges by replicating the previous study with lay participants, who had not lived through the experience of being on the podium, but who could provide a commonsense judgment on the emotion experienced by gold medalists in that situation.

Procedure. Psychology students (17 men and 15 women) judged the same tapes, following a procedure identical to that followed in the previous study.

Results. As was the case with the nine gold medalists, all of the 32 participants judged the two models as happy. Twenty of the 32 participants judged the medalist who displayed the prototypical expression of sadness as the happiest, 6 chose the medalist who displayed the prototypical expression of happiness, and 6 judged the two medalists as being equally happy.

Judges' Expressions

The medalists who collaborated as judges in the two above-mentioned tests of accuracy were not included as participants. The available TV records of the soccer team did not include close-ups of the players at the awards ceremony, and records of the field hockey players did not include Stage A. This lack of data might hide some idiosyncratic expressive behavior of our gold-medalist judges that could explain why they judged other gold medalists' experiences as happiness at those stages of the ceremony in which Duchenne smiles were not observed.

Procedure and results. In order to rule out this possibility, we analyzed the available records of field hockey players' facial expressions during Stages B and C of the awards ceremony. Table 3 shows durations of the categories Duchenne smile, other smiles, neutral, and other actions through Stages B and C. As we found through the already analyzed gold-medalist participants' expressions, gold-medalist judges displayed Duchenne smiles during Stage B (social interaction), but none displayed Duchenne smiles during Stage C.

A paired-samples t test comparing the individuals' mean percentages (with each individual's durations equal to 100%) of each facial behavior across the two stages showed significant differences for Duchenne smile, $t(5) = 4.24$, $p < .01$.

Discussion. Gold medalists and lay judges attributed the same degree of happiness to any gold medalist on the podium, including those who were not displaying Duchenne smiles. Furthermore, medalist judges were not idiosyncratic in their facial behavior throughout the awards ceremony, as compared with other gold medalists. These results ruled out, to a reasonable degree, any doubts about the emotional experience of gold medalists in all of the three stages of the ceremony.

Conclusions

Happiness was not a sufficient cause of smiling, including Duchenne smiling, and smiles were not a necessary sign of happiness.[6] Confirming Kraut and Johnston's (1979) hypothesis, participants showed Duchenne smiles, and other kinds of smiles, during Stage B of the awards ceremony, when they were interacting with other people. Smiles were, however, scarce or nonexistent in Stages A and C, even though medalists displayed other facial behaviors.

There are three possible explanations for these results. The most feasible one is the behavioral ecology view (Fridlund,

[6] By "necessary" we mean a tested unidirectional causal relationship that excludes other possible causes. By "sufficient" we mean a tested unidirectional causal relationship that does not exclude other possible causes for the same final result, but whose cause always involves this effect. Some causes can be necessary but not sufficient, and vice versa. This study suggests that happiness is not a sufficient cause of smiling, but our findings do not provide any answers about whether happiness is a necessary precondition of spontaneous smiling, and particularly of Duchenne smiles, that is, whether spontaneous smiling can be produced by other emotions than happiness (e.g., by other positive emotions: see Ekman, 1992b). This study also suggests that smiles are not a necessary sign of happiness, that is, that smiling is not the only spontaneous sign of happiness, but it is not aimed at ascertaining whether certain spontaneous smiles, and particularly Duchenne smiles, are a sufficient sign of happiness. In other words, our study is not focused on the debate about the emotional meaning of smiles (see Ekman, 1992b, but also Fridlund, 1994), but on their uniqueness as expressions of happiness.

Table 3
Percentage of Total Time for Judges' Facial Behaviors Across Two Stages of the Awards Ceremony

Facial behavior	Stage B	Stage C
Duchenne smile	61.19	0.00
Other smiles	23.88	23.22
Neutral	00.00	00.00
Other actions	14.92	76.78

1994; Smith, 1977). According to this view, a prototypical expression of emotion does not mark the peak of an emotional experience, but rather the social motives linked to the concomitant social interaction. Thus, as our findings suggest, the expression would be mostly linked to the interactive stages, rather than to the noninteractive one.

A second, alternative explanation might be that the observed patterns of smiling were caused by a specific display rule (Ekman, 1972), according to which one must inhibit any facial activity while honoring the national anthem and flag. This specific rule could inhibit happy participants' facial behavior during Stage C.

The design of the reported study tested this alternative explanation by introducing a first stage (Stage A) that involved neither social interaction nor special ceremonial conventions. Only 4 of the recorded 22 participants displayed Duchenne smiles during Stage A (and in these four segments it was rather clear that participants' gaze was focusing on somebody or something in particular). Furthermore, participants' facial behavior during Stage C was not inhibited at all: only one participant displayed a neutral expression throughout the entire duration of this stage, 14 participants did not display neutral expressions at all, and the recorded facial behaviors included blends of prototypical emotional expressions, expressions of "anger" and of "sadness," and adaptors (nonverbal behaviors of body self-manipulation; Ekman & Friesen, 1969). Such behaviors did not suggest a control or concealment of smiles as a result of a display rule.

A third alternative explanation is that participants were not feeling happiness during Stages A and C: nonsmiling expressions might be due to the experience of other emotions or to the lack of an emotion.

As regards this explanation, common sense suggests that the likelihood of all 22 of our medalists not actually being happy on receiving a gold medal must be low: in fact, the exceptional clarity of the emotional meaning of this situation was the main reason for carrying out this study.

However, it could still be argued that we did not have the participants' own reports on their feelings during the ceremony. Study 2 was aimed at testing this issue; the reports of other gold medalists and lay participants used as judges, and the similarity between gold-medalist judges' and gold-medalist participants' expressions in the awards ceremony leads us to discard this third explanation.[7]

In any case, the present study suggests more questions than answers on how spontaneous expressions of happiness are displayed and recognized in natural settings; it suggests that Duchenne smiles (and smiles in general) are mainly related to social situations (Fridlund, 1994; Kraut & Johnston, 1979), but it also suggests that we know almost nothing about how spontaneous expressions are displayed in everyday life, and how they are recognized in natural settings.

Whereas other fields of research are perhaps able to reproduce "cold" psychological processes in the laboratory, more research on natural settings is needed in order to be sure that our studies in the laboratory are reproducing the "hot" psychological and social processes that cause emotional expressions.

[7] Rosenberg and Ekman (1994) pointed out that retrospective reports are vulnerable to biases and subjective reconstructions. Unfortunately, the research cited by Rosenberg and Ekman (1994) for endorsing this criticism is not focused on unique, intense emotional events, but on mundane, daily interactive episodes. Even though intense subjective and social reconstruction of important emotional episodes exist, no data suggest that these accounts are more unreliable than immediate reports and some experts suggest that memories of intense emotional events might be more reliable than memories of less intense emotions (Rimé, 1995).

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Call for Nominations

The Publications and Communications Board has opened nominations for the editorships of the *Journal of Experimental Psychology: Animal Behavior Processes*, the "Personality Processes and Individual Differences" section of the *Journal of Personality and Social Psychology*, the *Journal of Family Psychology*, *Psychological Assessment*, and *Psychology and Aging* for the years 1998–2003. Stewart H. Hulse, PhD; Russell G. Geen, PhD; Ronald F. Levant, EdD; James N. Butcher, PhD; and Timothy A. Salthouse, PhD, respectively, are the incumbent editors.

Candidates should be members of APA and should be available to start receiving manuscripts in early 1997 to prepare for issues published in 1998. Please note that the P&C Board encourages participation by members of underrepresented groups in the publication process and would particularly welcome such nominees.

To nominate candidates, prepare a statement of one page or less in support of each candidate and send to the attention of the chair of the appropriate search committee. Search committee chairs are

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- Carl E. Thoresen, PhD, for the *Journal of Family Psychology*. Members of the search committee are Arthur M. Bodin, PhD; James H. Bray, PhD; Lucia Gilbert, PhD; John M. Gottman, PhD; and Howard A. Liddle, EdD.
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First review of nominations will begin December 11, 1995.