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More than one kind of happiness: Can we recognize vocal expressions of different positive states?

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Abstract Several theorists have proposed that distinctions are needed between different positive emotional states, and that these discriminations may be particularly useful in the domain of vocal signals (Ekman, 1992b, *Cognition and Emotion, 6*, 169–200; Scherer, 1986, *Psychological Bulletin, 99*, 143–165). We report an investigation into the hypothesis that positive basic emotions have distinct vocal expressions (Ekman, 1992b, *Cognition and Emotion, 6*, 169–200). Non-verbal vocalisations are used that map onto five putative positive emotions: Achievement/Triumph, Amusement, Contentment, Sensual Pleasure, and Relief. Data from categorisation and rating tasks indicate that each vocal expression is accurately categorised and consistently rated as expressing the intended emotion. This pattern is replicated across two language groups. These data, we conclude, provide evidence for the existence of robustly recognisable expressions of distinct positive emotions.

Keywords Emotion · Happiness · Voice

Introduction

The concept of basic emotions identifies a set of emotions that are found in all human cultures, each with a distinct physiological profile and unique facial expression (Ekman

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1992a). These are suggested to have evolved for their adaptive value in mobilising body and brain to deal with fundamental human tasks. Originally proposed by Ekman et al. (1969), anger, fear, disgust, happiness, sadness and surprise were suggested as the basic emotion categories. Much research has since been carried out on different aspects of these basic emotions, confirming them to be qualitatively distinct categories in terms of both psychology and neural mechanisms (e.g., Adolphs et al. 1994; Calder et al. 2003; Ekman et al. 1983; Young et al. 1997).

The valence of the established basic emotions is dominated by negative qualities: there are four negative, one neutral and one positive basic emotion. Likewise, theory and research on the psychology and neuroscience of emotion have been oriented mainly around negative affect (Fredrickson 1998; Berridge 2003). Indeed, it has been suggested that "psychologists have inadvertently marginalized the emotions, such as joy, interest, contentment, and love, that share a pleasant subjective feel" (Fredrickson 1998, p. 300). Although a few specific areas of positive affect (notably laughter and sexual pleasure) have received some attention from affective neuroscience (e.g., Fried et al. 1998; Karama et al. 2002; Rodden et al. 2001), a systematic investigation of a range of signals of positive affect is lacking.

Several theorists have proposed that distinctions are needed between different positive emotional states, and that these discriminations may be particularly useful in the domain of vocal signals. Scherer notes in an early review of research into vocal expressions of emotion that "a comparison of results from different studies is virtually impossible if it is unclear whether ... 'happiness' refers to quiet bliss or bubbling elation" (Scherer 1986, p. 163). More specifically, Ekman (1992b) has suggested that there might be several positive basic emotions that could replace

the umbrella term 'happiness'. He hypothesised that these positive states would be most easily distinguished from vocal expressions and might not be communicated via distinct facial signals. In this paper we report an empirical investigation of Ekman's hypothesis that vocal expressions of several positive emotional states can be reliably identified by naïve listeners.

There is some empirical work suggesting that there may not be one unitary positive emotion category for vocal signals: Participants typically have difficulty identifying vocal expressions of joy/happiness from vocal stimuli, a pattern found across a number of cultures (Scherer et al. 2001). This is in direct contrast to the patterns found for facial expressions of emotions, where it is typical to find higher recognition rates for judgments of happy expressions than other emotions (Ekman 1994; Elfenbein and Ambady 2002). This is consistent with the hypothesis that there may be several positive emotions that share the facial expression of the smile, but possess distinctive vocal expressions (Ekman, 1992b, 2003). Given that previous studies have used a single category of happiness, Ekman's hypothesis would predict high recognition from facial expressions (as the single expression of happiness is unambiguous) but poorly with vocal expressions (as they would be a mixture of different positive emotions thus likely to be poor exemplars of the umbrella term 'happiness').

The need for distinction between different positive emotions is further supported by findings from a study of emotional vocalisations which included one more intense and one less intense form of seven emotions (Banse and Scherer 1996). It was found that unlike all of the other within-emotion pairs (e.g., sadness-despair, anxiety-panic) the two positive emotions (elation and happiness) were virtually never confused with each other, suggesting that what was called elation and happiness may be two distinct emotions rather than two strands of the same emotion, happiness.

The current study examines non-verbal vocal signals of the putative positive emotions Achievement/Triumph, Amusement, Contentment, Sensual Pleasure, and Relief (Ekman, personal communication). Three hypotheses are tested, derived from the basic emotion account: first, the validity of the proposed five positive emotions is tested, by investigating whether naïve subjects can identify vocal expressions of these emotions correctly. Second, the specific ratings patterns of these emotional signals are determined, to establish whether each stimulus type is rated most highly when rated on the scale of its own emotion. This pattern would indicate that the expressions are perceived to express the intended emotion more strongly than any of the other emotions, as would be predicted by the basic emotion account. Third, these experiments were

employed in two European countries in order to quantify the reliability of the findings across two linguistically distinct groups. According to the basic emotion perspective, emotional expressions are constant across cultural and linguistic groups, and no difference would be predicted between the groups.

Within this report we will not be testing whether the five putative positive emotions constitute basic emotions per se (for a discussion of this issue see Ekman 1992a). Rather we aim to establish whether the empirical data are compatible with a basic emotion framework, in terms of the different states having, for example, distinct recognisable signals.

Method

Stimulus preparation and pilot

The non-verbal vocal expressions of emotion were collected from two male and two female native British English speakers. None of these speakers were trained actors. Speakers were recorded in an anechoic chamber (a soundproof room with no reverberation) and were presented with appropriate scenarios for each emotion label (see Appendix A). These scenarios were composed by the experimenters and aimed to describe situations that would elicit each of the relevant emotions. No explicit guidance was given as to the precise sort of sounds the speakers should generate and the speakers were not given exemplars to mimic (to avoid artifactual stimulus consistency). Speakers were asked to produce a range of sounds for each emotion. Most importantly, they were instructed not to produce 'verbal' items (e.g., 'phew!', 'yippee!'). Each speaker produced at least 15 sounds per category. The resultant 240 sounds were digitised at 32 kHz.

All the stimuli were then piloted on 10 participants, who performed a forced-choice task that was procedurally identical to the main study (see below). This method was used to identify and remove the stimuli that were least well recognised; many such stimuli were due to poor production, as the speakers often found it difficult initially to produce some classes of stimuli on command (e.g., sensual pleasure), and also spent some time trying different sounds for other conditions (e.g., achievement/triumph). The pre-selection of stimuli based on the results of pilot tests is commonly performed in emotional expression studies (e.g., Banse and Scherer 1996; Schröder 2003) to avoid experimenter bias that would arise from a more subjective stimulus selection procedure. A test set was chosen on the basis of the recognition scores for each stimulus in the pilot testing. To aim for even stimulus recognition standard, 16 tokens were chosen for each category, with an average inter-judge agreement of 78% across all categories. All

speakers were represented in each set of stimuli for each emotion, with the exception of male speaker 2 for sensual pleasure. Examples of the stimuli can be found at www.sophiescott.co.uk.

Participants

Twenty British English speaking participants from London, UK (10 male, mean age 28.2 years) and 20 Swedish participants from Stockholm, Sweden (10 male, mean age 39.5 years) were tested in their respective languages. Due to a technical problem, one Swedish participant did not complete one of the rating tasks (for the sensual pleasure scale). Sweden was chosen for the pragmatic reason that the first author is a bilingual Swedish-English speaker.

Design & procedure

Categorisation task

The forced-choice categorisation task consisted of assigning a label to each emotional sound. Participants chose one category among the 5 response options (achievement/ triumph, amusement, contentment, sensual pleasure, and relief). All of the labels were visible throughout testing. Each label was introduced alongside a brief emotion scenario (see Appendix A) in the instruction phase, and the response options were presented in alphabetical order. The labels in Swedish were: achievement/triumph—prestation, amusement—munterhet, contentment—nöjd, pleasure— njutning, relief—lättnad, valence—negativitet–positivitet, arousal—energi (minimal–maximal).

Rating tasks

Each rating task consisted of judging the extent to which each stimulus expressed the given dimension on a 7-step scale, with 1 denoting the minimum and 7 the maximum. There were five emotional rating tasks, one for each positive emotion. In addition, scales for arousal (minimal– maximal), and valence (negative–positive) were included, as these properties are thought to be important for the perception of emotional signals (e.g., Russell 1980).

Testing

All participants carried out the categorisation task first, and then completed the rating tasks in a random order. Each stimulus was played through headphones from a lap top computer using the Psyscope program (Cohen et al. 1993). The response was given as a key press on the numbered keys, with each of the numbers 1–5 representing each of the emotion labels in the categorisation task, and using the

numbers 1–7 in the rating tasks. In the categorisation task, the labels were accompanied by the emotion scenarios to aid understanding. The response options were visible in alphabetical order on the screen, and the labels and scenarios were available on a sheet of paper in front of the participant throughout the testing session. These scenarios gave an example of a situation eliciting that emotion, and were the same sentences as those used to elicit the stimuli (see Appendix A). These sentences were also used as examples in the rating tasks for the scales based on those emotions. Two contrasting scenarios were given each for arousal and valence, e.g., minimally aroused and maximally aroused, as the absence as well as presence of these features is distinctive. Having rated all of the stimuli on one scale, the participant then rated all of the stimuli on the next scale, thus hearing all of the stimuli a total of eight times, once for each of the seven rating tasks and once in the categorisation task. Within each task, the 80 (16 for each emotion) stimuli were played in a random order.

Results

The categorisation data—testing the validity of the proposed five positive emotions

Firstly, the performance of the British sample was examined. The British listeners categorised the positive emotion sounds accurately (see Table 1A), that is, for each stimulus type the most frequent response was the appropriate category. Due to technical problems there was a small number of missing data points across all participants (18 responses

Table 1 Categorisation of positive emotion vocalisations by British (A) and Swedish (B) participants (%)

Stimulus type	Response				
	Achievement	Amusement	Content	Pleasure	Relief
A	England (n = 20)				
Achievement	**88.4**	4.7	1.9	1.9	3.2
Amusement	1.9	**90.4**	1.6	3.9	2.3
Contentment	7.9	5.0	**52.4**	25.2	9.5
Pleasure	0.3	0.4	29.9	**61.6**	7.9
Relief	0.3	0.3	10.1	5.3	**83.9**
B	Sweden (n = 20)				
Achievement	**70.9**	14.1	4.5	1.9	8.8
Amusement	2.5	**80.6**	4.1	5.3	7.2
Contentment	8.8	2.8	**47.8**	26.9	12.5
Pleasure	0.9	1.3	32.8	**56.9**	8.1
Relief	5.3	0.3	13.1	13.1	**67.8**

Correct categorisations are given in bold type; horizontal rows add to 100

Table 2 Hu scores for British, Swedish, and all participants (0 = chance, 1 = perfect performance)

	British (n = 20)	Swedish (n = 20)	All (n = 40)
Achievement	.80 (0.17)	.62 (0.31)	.71 (0.26)
Amusement	.82 (0.14)	.69 (0.19)	.75 (0.18)
Contentment	.30 (0.15)	.26 (0.20)	.28 (0.18)
Pleasure	.41 (0.15)	.33 (0.14)	.37 (0.15)
Relief	.67 (0.15)	.47 (0.22)	.57 (0.21)

Standard deviations in brackets

missing). Proportions of correct categorisations for the British participants ranged between 52.4% (contentment) and 90.4% (amusement). There was some systematic confusion between the categories contentment and sensual pleasure, with over 29% of sensual pleasure sounds being categorised as contentment, and participants categorising 25% of contentment sounds as sensual pleasure.

Unbiased hit rates, "Hu" were computed for the classification data (Wagner 1993), with a score of zero denoting chance performance and one being perfect performance. Performance for the British participants ranged between 0.30 for contentment sounds, to 0.82 for amusement sounds (see Table 2). Using t-tests, the Hu scores were tested against the calculated chance scores (see Wagner 1993) for each stimulus category. For each emotion, performance was significantly better than chance ($t_{(19)} = 16.8$ for achievement, 19.8

for amusement, 10.3 for contentment, 12.3 for pleasure, and 20.3 for relief, all $P < .001$, respectively). This shows that for every stimulus category, listeners were significantly better than chance at classifying the sounds.

The rating data—is each stimulus type rated most highly when rated on its own scale?

On each scale, the British participants rated the correct emotion highest, with the exception of contentment sounds (see Table 3A). These ratings were tested with a repeated measures Analysis of Variance (ANOVA) for each emotional rating scale, and the use of planned comparisons. Every ANOVA was significant ($F_{(4,76)} = 75.2$ for achievement/triumph, 87.0 for amusement, 8.9 for contentment, 7.2 for sensual pleasure and 13.6 for relief, all $P < .0001$), evidence that for each of the rating scales, participants' ratings varied across stimulus types. To test whether the "correct" stimulus type for each scale was significantly more highly rated than the mean of the other emotional classes, planned comparisons were performed for each ANOVA. These were significant for each emotional rating scale ($t_{(19)} = 17.7$ for achievement/triumph, 11.7 for amusement, 2.3 for contentment, 3.8 for sensual pleasure and 3.4 for relief, all $P < .05$).

In addition, we examined whether each stimulus type was rated highest when rated on it's own scale, using t-tests

Table 3 Ratings of positive emotion vocalisations by British (A), Swedish (B), and all (C) participants, (min = 1, max = 7)

Stimulus type	Response						
	Ach	Amu	Cont	Pleasure	Relief	Arousal	Valence
A	England (n = 20)						
Ach	**6.4 (1.1)**	4.3 (1.9)	4.3 (1.8)	4.0 (2.0)	5.0 (1.7)	5.5 (1.7)	6.3 (0.9)
Amu	4.0 (1.6)	**5.9 (1.0)**	4.0 (1.5)	4.2 (1.7)	3.8 (1.8)	4.6 (1.6)	5.6 (1.1)
Cont	3.2 (1.7)	2.4 (1.3)	**4.7 (1.9)**	4.2 (2.0)	3.5 (1.8)	3.3 (1.7)	4.2 (1.6)
Ple	3.1 (1.6)	2.6 (1.4)	5.1 (1.6)	**5.1 (1.6)**	3.5 (1.7)	3.6 (1.8)	4.7 (1.5)
Relief	2.9 (1.4)	2.0 (1.0)	3.5 (1.6)	3.1 (1.5)	**5.2 (1.7)**	2.6 (1.3)	3.5 (1.4)
B	Sweden (n = 20)						
Ach	**6.0 (1.2)**	5.2 (1.6)	4.8 (1.8)	3.5 (2.1)	5.3 (1.7)	5.9 (1.3)	5.9 (1.2)
Amu	3.4 (1.9)	**5.6 (1.2)**	4.7 (1.6)	4.0 (1.6)	4.3 (1.8)	4.8 (1.3)	5.6 (1.2)
Cont	2.6 (1.5)	2.5 (1.3)	**4.6 (1.8)**	4.6 (1.7)	3.2 (1.7)	2.7 (1.2)	4.4 (1.5)
Ple	2.3 (1.4)	2.7 (1.4)	5.0 (1.6)	**5.7 (1.3)**	3.4 (1.7)	2.5 (1.2)	4.6 (1.6)
Relief	2.4 (1.4)	1.9 (1.0)	3.2 (1.5)	3.6 (1.7)	**4.9 (1.9)**	2.2 (1.1)	3.5 (1.6)
C	All (n = 40)						
Ach	**6.2 (1.1)**	4.8 (1.8)	4.5 (1.8)	3.8 (2.1)	5.1 (1.7)	5.7 (1.5)	6.1 (1.1)
Amu	3.7 (1.8)	**5.8 (1.1)**	4.4 (1.6)	4.1 (1.7)	4.0 (1.8)	4.7 (1.4)	5.6 (1.1)
Cont	2.9 (1.6)	2.4 (1.3)	**4.7 (1.9)**	4.3 (1.9)	3.3 (1.7)	3.0 (1.5)	4.3 (1.5)
Ple	2.7 (1.5)	2.6 (1.4)	5.0 (1.6)	**5.4 (1.5)**	3.5 (1.7)	3.0 (1.6)	4.6 (1.5)
Relief	2.6 (1.4)	1.9 (1.0)	3.3 (1.5)	3.4 (1.6)	**5.1 (1.8)**	2.4 (1.2)	3.5 (1.5)

Ach = Achievement/Triumph, Amu = Amusement, Cont = Contentment, Ple = Sensual Pleasure. Standard deviations in brackets. Ratings of stimuli from scale's own category in bold

comparing the ratings on its own scale to the mean of the other scales. For each stimulus type, the *t*-test was significant ($t_{(19)}$ = 7.9 for achievement/triumph, 6.0 for amusement, 8.5 for contentment, 6.0 for sensual pleasure and 9.8 for relief, all $P < .0001$). This indicates that for each stimulus type, the stimuli were rated higher on their own scale than on the other scales.

ANOVAs were also performed on the ratings for arousal and valence (see Fig. 1). The results indicated that there was significant variation across both scales with emotional stimulus condition ($F_{(4,76)}$ = 19.8 for arousal and 61.9 for

valence, both $P < .0001$). No prior hypotheses existed about these patterns, so no planned comparisons were performed. Descriptively, the valence and arousal ratings were highest for achievement/triumph, also high for amusement sounds and lowest for relief.

Comparing British and Swedish participants

The pattern of performance was broadly similar for the Swedish as compared to the British participants in terms of both the categorisation and rating data. The Swedish

Fig. 1 Ratings of positive emotional non-verbal sounds by British and Swedish participants on the achievement (**A**), amusement (**B**), contentment (**C**), sensual pleasure (**D**), relief (**E**), arousal (**F**), and valence (**G**) scales. Error bars show standard errors
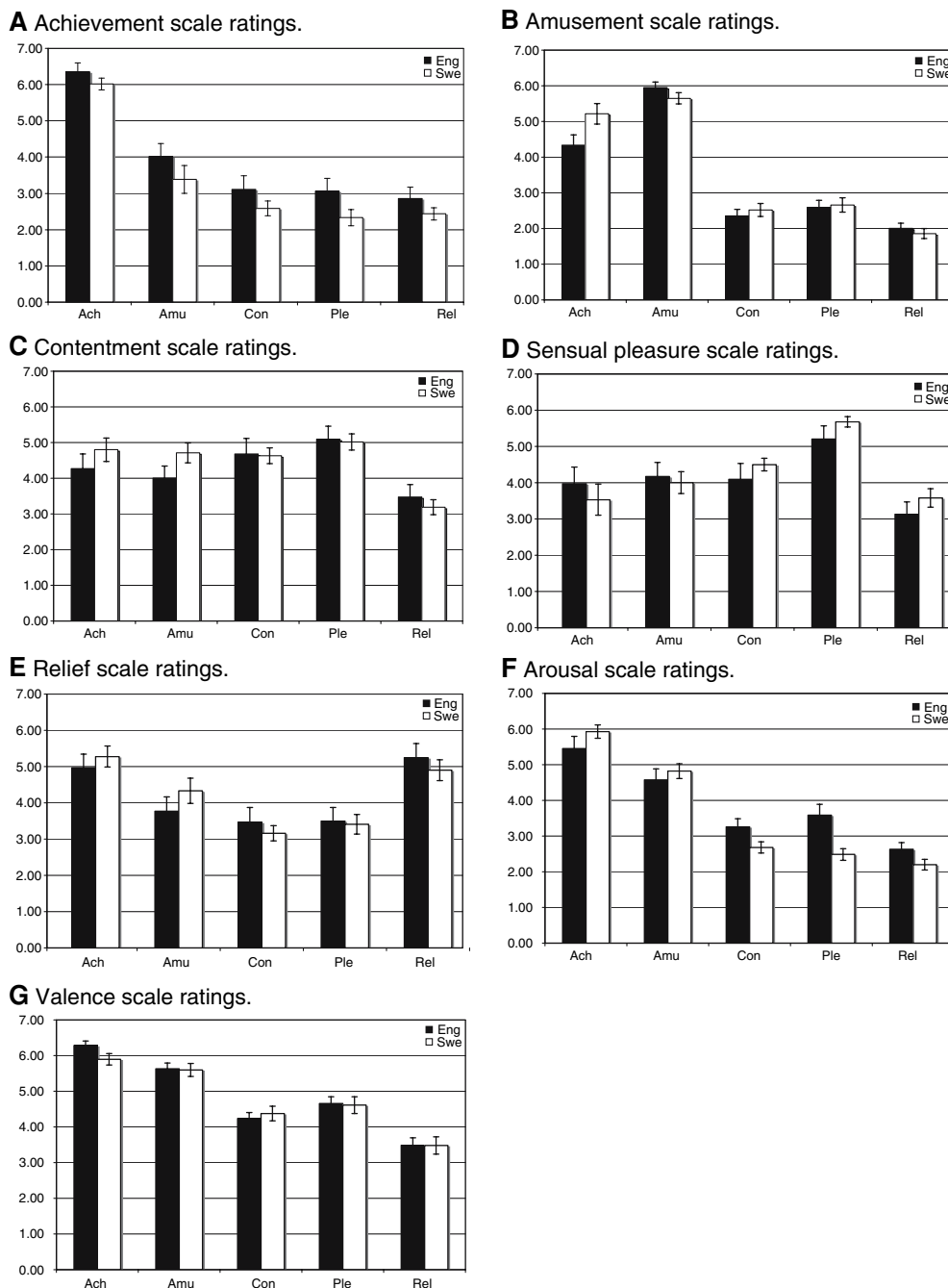
listeners categorised the positive emotion sounds accurately (see Table 1B). Due to technical problems there was a small number of missing data points (6 missing responses). Proportions of correct categorisations ranged between 47.8% (contentment) and 80.6% (amusement). As in the British sample, there was some systematic confusion between the categories contentment and sensual pleasure, with over 32% of sensual pleasure sounds being categorised as contentment, and 26% of contentment sounds as sensual pleasure.

As for the British data, Hu scores were computed for the classification data (Wagner 1993). Performance for the Swedish participants ranged between .26 for contentment sounds, to .69 for amusement sounds (see Table 2). T-tests were employed to compare performance to chance for each stimulus category. For each emotion, performance was significantly better than chance ($t_{(19)} = 8.9$ for achievement, 14.1 for amusement, 5.9 for contentment, 11.5 for pleasure, and 10.2 for relief, all $P < .001$, respectively). This shows that for every stimulus category, listeners were significantly better than chance at classifying the sounds.

In terms of the rating data, the pattern was highly similar to that of the British sample. On each scale, the Swedish participants rated the correct class of positive emotion sound highest, with the exception of contentment and relief sounds (see Table 3B). When rated for contentment, sounds of sensual pleasure, achievement/triumph and amusement were rated higher than contentment sounds. The Swedish participants rated achievement/triumph sounds as higher on the relief scale than the relief sounds. As before, the ratings were tested with repeated measures ANOVA for each emotional rating condition and the use of planned comparisons. As for the British participants, every ANOVA was significant ($F_{(4,76)} = 69.8$ for achievement/triumph, 148.5 for amusement, 11.8 for contentment, 14.1 for sensual pleasure and 16.4 for relief, all $P < .0001$), and the planned comparisons were significant for each emotional rating scale, except for the ratings on the contentment scale ($t_{(19)} = 13.5$ for achievement/triumph, 12.1 for amusement, 5.6 for sensual pleasure and 2.0 for relief, all $P < .01$, and $t_{(18)} = 6.3$ for sensual pleasure, all $P < .0001$).

As was the case for the British sample, the stimuli were rated higher on their own scale than on the other scales, as tested with t-tests for each stimulus type ($t_{(19)} = 4.5$ for achievement/triumph, 5.6 for amusement, 5.3 for contentment, 7.8 for relief, and $t_{(18)} = 9.1$ for sensual pleasure, all $P < .0001$). Similarly to the British sample, ratings for arousal and valence were highest for achievement/triumph, also high for amusement sounds and lowest for relief, and there was significant variation in the ratings between

stimulus types ($F_{(4,76)} = 160.4$ for arousal and 40.0 for valence, both $P < .0001$).

To compare performance on the categorisation task between the British and Swedish participants, an ANOVA was carried out with the categorisation scores. Language group was a between-groups factor, and emotion category a within-subject factor. There was a main effect of emotion ($F_{(1,38)} = 15.5$, $P < .001$), indicating that some types of stimuli were more easily identified than others. There was also a main effect of language group ($F_{(1,38)} = 8.3$, $P < .01$), reflecting the somewhat lower recognition rates in the Swedish sample (see Table 1A and B). There was no significant interaction between the variables.

An ANOVA was carried out on the rating scores from the two language groups (see Fig. 1). The language group was a between-group factor, and stimulus type and rating scale were within-subject factors. For the rating scores there was no main effect of language group, but main effects of stimulus type ($F_{(4,148)} = 103.3$, $P < .0001$) and of scale ($F_{(6,222)} = 26.3$, $P < .0001$) were found. There was no interaction between language group and stimulus type, or between language group and rating. There was a significant interaction between scale and stimulus type ($F_{(24,888)} = 52.5$, $P < .0001$), reflecting the fact that stimuli from the different stimulus types were rated differently on the scales. There was also a significant 3-way interaction between the group, scale and stimulus type ($F_{(24,888)} = 2.5$, $P < .0001$). In the absence of a significant main effect of language group, or a two-way interaction between language group and another factor, this complex interaction is hard to interpret. Direct comparisons (using t-tests) of the ratings of the stimuli by each group revealed only one significant difference—the Swedish participants rated the pleasure sounds more highly on the pleasure scale than the British ($P = .049$).

Discussion

This study shows that participants categorise and rate nonverbal vocal expressions of positive emotions consistently, providing initial support for the hypothesis of a set of distinct vocal expressions for positive emotions (Ekman 1992b). Not only were listeners able to identify emotional sounds at a level that reliably exceeded chance, but they also rated each class of positive emotion highest on its own scale. This pattern of findings is consistent with the basic emotion account, but may also be consistent with a number of alternative models.

Clearly, the basic emotion argument would be weakened by large inter-language group differences: Crucially, the

two language groups tested showed very similar response patterns. However, they did differ in their ability to correctly categorise the stimuli, with the accuracy of the Swedish group being lower. This kind of cultural advantage for listeners who are from the same culture as the stimulus producers has been reported in several meta-analyses (Elfenbein and Ambady 2002; Juslin and Laukka 2003), and has been proposed to be the result of subtle cross-cultural differences in affective communication (Elfenbein and Ambady 2003). However, since this study did not include production as well as decoding in both cultures, the implications of this study for the issue of cross-cultural differences on emotion communication are limited (Matsumoto 2002). The data from this study do however demonstrate that listeners from two language groups could recognise vocal expressions of different positive states at rates that are significantly above chance.

It is noteworthy that the data from both the categorisation and rating tasks suggest contentment to be the least convincing of the positive emotions. It is possible that this emotion reflects a subset of sensual pleasure, and does not constitute a separate emotion category. In addition, this weakness could be due to contentment being an emotion of relatively low intensity; a previous study has found that vocal emotions of stronger emotion intensity are easier to decode than those of weaker emotion intensity (Juslin and Laukka 2001). This experiment did not directly study the perceived intensity of the stimuli, but contentment was rated as being relatively low in arousal, which could be a related feature.

Could the consistency in the participants' responses have arisen solely from an original bias in the way the expressions were elicited? This is unlikely, as the vocal expressions themselves were not instructed or copied, and there was substantial variation in the vocal expressions that were generated. Future work could include stimuli produced in several countries to examine differences in production of emotional vocalisations.

In summary, this experiment has established that non-verbal expressions of five positive emotions can be reliably recognised. Expressions of achievement/triumph, amusement, contentment, sensual pleasure, and relief could be reliably recognised and rated from non-verbal vocal signals. The high consistency across the two linguistic groups supports the notion that these are basic emotions in the sense described by Ekman (1992a, b), rather than culturally determined constructs. However, future work should attempt to replicate these findings in a more distinct, preferably non-literate, cultural environment. In sum, this study strongly suggests both that happiness may be fractionated into positive basic emotions, and that these states are reliably communicated via the human voice using non-verbal signals.

Appendix A

Scenarios for emotions and dimensions.

Scenarios for putative positive emotions, and the dimensions arousal and valence .

Emotion	Scenario
Achievement/ Triumph	You get a phone call offering you a job you really want
Amusement	You are being tickled and find it really funny
Contentment	You are sitting on the beach watching the sunset
Pleasure	Your boyfriend/girlfriend is touching you in a sensual way
Relief	You thought you had lost your keys but find them again
Arousal	Minimum: You are feeling sleepy
	Maximum: You are very awake and alert
Valence	Positive: You are having an ecstatic experience
	Negative: You are experiencing trauma or extreme fear

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