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Eliciting positive, negative and mixed emotional states: A film library for affective scientists

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We describe the creation of a film library designed for researchers interested in positive (amusing), negative (repulsive), mixed (amusing and repulsive) and neutral emotional states. Three hundred 20- to 33-second film clips videotaped by amateurs were selected from video-hosting websites and screened in laboratory studies by 75 female participants on self-reported amusement and repulsion (Experiments 1 and 2). On the basis of pre-defined cut-off values, 51 positive, 39 negative, 59 mixed and 50 neutral film clips were selected. These film clips were then presented to 411 male and female participants in a large online study to identify film clips that reliably induced the target emotions (Experiment 3). Depending on the goal of the study, researchers may choose positive, negative, mixed or neutral emotional film clips on the basis of Experiments 1 and 2 or Experiment 3 ratings.

Keywords: Mixed emotions; Film clips; Film library; Amusement; Disgust.

There has been growing interest in mixed emotions over the past two decades (e.g., Aaker, Drolet, & Griffin, 2008; Kreibig, Samson, & Gross, 2013; Larsen, McGraw, & Cacioppo, 2001; Russell & Carroll, 1999; Williams & Aaker, 2002). Although it remains unclear how common mixed emotions are (cf. Carrera & Oceja, 2007; Larsen et al., 2001; Russell & Carroll, 1999; Schimmack, 2001), there is evidence that, at least under some circumstances, positive and negative emotions can occur more or less simultaneously (Larsen & McGraw, 2011; Larsen et al., 2001; Madrigal & Bee, 2005; Schimmack, 2005).

Different stimuli have been used to induce mixed emotions in the laboratory, such as recalling naturally occurring situations, fictitious press advertisements in written form or excerpts from motion pictures (e.g., Carrera & Oceja, 2007; Ghosh, Chakraborty, Acharya, Konar, & Panigrahi, 2009; Gross & Levenson, 1995; Hemenover & Schimmack, 2007; Hui, Fok, & Bond, 2009; Larsen & McGraw, 2011; Williams & Aaker, 2002). However, these stimuli typically have been (1) limited in number and/or (2) not naturalistic (e.g., scenes from motion pictures). These limitations of existing stimuli motivated us to develop a library of film

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clips drawn from the Internet that would reliably elicit mixed emotional states.

In emotion research, film clips have a long history of eliciting emotions in the laboratory. Film clips are a convenient method of standardised emotion induction and can elicit intense emotions in viewers (Rottenberg, Ray, & Gross, 2007). A number of emotion film libraries have been created that allow researchers to select film clips, which have been empirically validated for inducing a specific target emotion (e.g., Gross & Levenson, 1995; Hagemann et al., 1999; Hewig et al., 2005). Some libraries also allow users to assemble abstract audio and video input to create original clips that can be used to elicit emotions in viewers (Buyukbas & Yuksel, 2011). However, very few libraries provide data on the multiplicity of emotions elicited by a film stimulus (e.g., Schaefer, Nils, Sanchez, & Philippot, 2010) and none are specifically aimed at eliciting mixed emotions. Moreover, film libraries typically use clips from motion pictures, which are heavily edited and often lack realism. Amateur video footage, in contrast, is an excellent alternative to motion pictures as a way to present more realistic emotion-inducing content. Knautz and Stock (2011), for example, presented a system for emotional video retrieval from YouTube by user voting and thus identified 20 videos, which elicited basic emotions or a neutral state.

The present research aimed at building a film library of positive (predominantly humorous/amusing), negative (predominantly repulsive/disgusting), mixed (positive *and* negative) and neutral film clips. This is not limited to but may be of particular relevance to research on humour because amusement-provoking situations and stimuli are not always benevolent and harmless, but can be at times even aggressive and harmful (Ruch, 2007; Samson & Meyer, 2010). Over the past two decades, several theories have attempted to capture the interplay between positive (e.g., benevolent, harmless) and negative (e.g., aggressive, harmful) stimulus characteristics, and positive (humour appreciation) and negative (aversion) emotional responses in the context of humour (Zillmann & Cantor, 1976; see Ferguson & Ford, 2008, for a review). One of the most recent humour theories is the benign violation theory (McGraw & Warren, 2010), which claims that humour occurs only when a violation (of an expectation or a belief) occurs in a situation that is perceived to be benign and non-threatening. Several studies examined the association between aggression/cruelty and humour, and found both a linear relationship (McCauley, Woods, Coolidge, & Kulick, 1983) and an inverted-U-shaped function (e.g., Herzog & Anderson, 2000). Research on more negative types of humour that induce amusement and aversion and studies that aimed at examining other mixed emotional states (e.g., combination of happiness and sadness) have been done in the past using cartoons (Samson & Meyer, 2010), music (Hunter, Schellenberg, & Schimmack, 2008) and film clips (Larsen & McGraw, 2011). However, there is no stimulus library that provides humour researchers, or affective scientists in general, with a stimulus set that reliably induces positive, negative and mixed emotional states.

We sought to identify stimuli that depicted real-life experiences without the fictitious character of movies or plays. Having research participants suspend their disbelief and accept a stimulus as real is essential for successfully inducing strong emotions (Rottenberg et al., 2007). This is especially difficult if it is obvious that the source of the stimulus material is a movie with actors, special effects and intensive editing. In contrast, YouTube and similar video sharing websites present an excellent source of amateur recordings of real-life events that can elicit close-to-reality experiences, evoking strong emotions.

To identify film clips that would elicit positive, negative, mixed and neutral states, we conducted three experiments. First, we presented a large number of positive, negative and mixed film clips to female participants who rated the film clips on amusement and repulsion. Second, we presented neutral film clips along with representative positive and negative film clips to female participants who rated the film clips on amusement and repulsion, as well as neutrality, boredom, arousal and disgust. Third, on the basis of the results of the first two experiments, we presented a subset of these film

clips to a larger, more representative community sample including both genders in an online study. In this experiment, participants rated positive (love and pride) and negative (fear, anger and sadness) emotions, as well as arousal, valence and neutrality. Based on findings from these three experiments, we selected the most promising film clips for each category for future research.

EXPERIMENT 1: INITIAL DEFINITION OF THE FILM LIBRARY

The aim of the first experiment was to identify positive, negative and mixed film clips. Data collection was carried out in three separate studies, but results are presented for all three studies together.

Method

Participants

A total of 52 female participants from two West coast Universities (age: M = 21.86, SD = 4.80, ranging from 18 to 33 years) viewed the film clips. Written informed consent was obtained from every participant prior to the experiment.[1]

Stimulus material

Four hundred and eighty-five film clips were drawn from video sharing websites[2] that were identified as potentially suitable for the film library. Film clips were evaluated on the following criteria: agreement of at least three (out of four) emotion researchers on the target emotion, filmed by amateurs, portraying a real-life occurrence (not performed by actors), 20–33 seconds duration and generally free of extraneous components (written comments, sound overlays, mostly free of foreign language). Two hundred and forty-four film clips were identified that met these criteria.[3] When necessary, film clips were edited to remove extraneous information or adjust the overall length. A representative positive film clip features a baby dancing to music with everyone laughing. A representative negative film clip features a skater who breaks his arm after a skateboard stunt on a rail. A representative mixed film clip features a bride who is texting during her marriage ceremony.

Procedure

Three studies were conducted in order to validate these 244 film clips.[4] Of these, 47 film clips were potentially positive (amusing), 53 film clips were

[1] In Study 1A, two sets of film clips were presented to 16 female participants (5 Caucasian, 4 Asian-American and 2 Hispanic participants and 5 declined to answer; mean age: 25.33 years, SD = 4.22, ranging from 18 to 33). In Study 1B, film clips were presented to 17 female participants, 2 of whom were excluded due to technical difficulty and non-compliance (6 Caucasian, 8 Asian-American and 3 African-American participants; mean age: 19.52 years, SD = 1.46, ranging from 18 to 23). In Study 1C, film clips were presented to 19 female participants. Two were excluded due to non-compliance (9 were Caucasian, 5 Hispanic, 1 African-American, 1 Asian-American and 3 chose other; mean age: 19.86 years (SD = 2.00, ranging from 18 to 25).

[2] United States Copyright Law covers video footage posted on video hosting sites, from amateur to professional work. YouTube film clips can be utilized legally for the purposes of research, criticism or for other scholarly means through the doctrine of 'fair use' (US Copyright Law, title XVII, § 107).

[3] From these 485 film clips, 193 were identified for Study 1A (of which 85 were presented to participants), 179 were identified for Study 1B (of which 86 were presented to participants) and 113 were identified for Study 1C (of which 73 were presented to participants).

[4] In Study 1A, 85 films were examined (19 potentially positive, 19 potentially negative and 47 potentially mixed). To avoid fatigue, 50 clips were rated by 9 participants, and the other 35 clips were rated by 7 participants. Each group of films had the same portion of film clips from all three categories. In Study 1B, 86 film clips (13 potentially positive, 15 potentially negative, and 58 potentially mixed) were presented to the participants in two sets. While participants viewed both sets, the order of the sets was randomized to avoid a potential order effect. Set A comprised of 44 film clips (7 potentially positive, 7 potentially negative, and 30 potentially mixed) and set B comprised of 42 film clips (6 potentially positive, 8 potentially negative, and 28 potentially mixed). In Study 1C, 73 (15 potentially positive, 19 potentially negative, and 39 potentially mixed) were presented in one set.

potentially negative (repulsive) and 144 film clips were potentially mixed (amusing and repulsive).

In each of the three studies, the film clips were presented in a randomised order and were rated on amusement and repulsion on a 6-point scale (1 = not at all amusing/repulsive, 6 = very amusing/repulsive).[5] The amusement scale was defined as feeling amused, exhilarated, delighted or pleased (additional synonyms: mirth, cheerfulness and funniness). The repulsion scale was defined as feeling repelled, displeased or repulsed (additional synonyms: disgust, resentment, aversion and dislike).

On the basis of the amusement and repulsion ratings, a mixed feelings (MF) coefficient (see Hemenover & Schimmack, 2007; Schaefer et al., 2010; Schimmack, 2001) was calculated. MF (I[MF] = *minimum*[I[AMU],I[REP]]) quantifies the intensity of mixed feelings as the shared minimal coactivation of amusement and repulsion (see Kreibig et al., 2013).

Results

Selection criteria

A priori cut-off scores were used to identify film clips for each category (see Kreibig et al., 2013). Selection criteria for amusing film clips were an average amusement score of ≥3 and repulsion score of ≤2; for repulsive film clips an average repulsion score of ≥3 and amusement score of ≤2; and for mixed film clips an average amusement score of > 2 and repulsion score of > 2. One hundred and forty-nine film clips (51 positive, 39 negative and 59 mixed) met these criteria and thus were included in our film's data-set (see Figure 1).

Characterising the selected film clips

A one-way analysis of variance (ANOVA) showed that the three film categories differed significantly from each other on amusement ($M_{positive}$ = 3.72, SD = 0.56; M_{mixed} = 2.49, SD = 0.32; $M_{negative}$ = 1.47, SD = 0.27; $F(2, 148) = 339.28$, $p < .001$), repulsion ($M_{positive}$ = 1.34, SD = 0.28; M_{mixed} = 2.45, SD = 0.34; $M_{negative}$ = 3.62, SD = 0.57; $F(2, 148) = 369.39$, $p < .001$), and MF coefficient ($M_{positive}$ = 1.28, SD = 0.21; M_{mixed} = 1.65, SD = 0.23; $M_{negative}$ = 1.35, SD = 0.21; $F(2, 148) = 45.14$, $p < .001$). Post-hoc analyses revealed that all film categories differed significantly on amusement, repulsion and MF ($p < .001$), except for the pair of positive vs. negative film clips which did not differ regarding the MF coefficient ($t(88) = -1.49$, *ns.*).

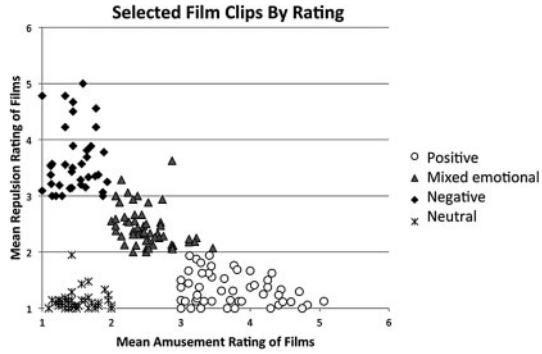

Figure 1. *Selected positive, negative and mixed film clips from Experiment 1, and selected neutral film clips from Experiment 2.*

Discussion

In the first experiment, we identified 149 film clips that either elicited positive, negative or mixed states. However, since it is often of interest to include emotionally neutral film clips in research studies, we aimed to identify those in a subsequent experiment.

EXPERIMENT 2: IDENTIFYING NEUTRAL FILM CLIPS FOR THE FILM CLIP LIBRARY

Experiment 2 aimed at identifying neutral film clips for the film clip library.

[5] Study 1A used a 5-point scale from 1 to 5, whereas all subsequent studies used a 6-point rating scale from 1 to 6. Ratings of Study 1A were transformed onto a 6-point scale. Transformation to map the 5-point scale (x) to a 6-point scale (x'): $x' = ((x - x\_min) / (x\_max - x\_min)) \times (x'\_max - x'\_min) + x'\_min$.

Table 1. *Selected neutral film clips and the positive and negative film clips in Experiment 2*

Film category (N)	*Amusement* M (SD)	*Repulsion* M (SD)	*MF* M (SD)	*Neutrality* M (SD)	*Boredom* M (SD)	*Arousal* M (SD)	*Disgust* M (SD)
Positive (10)	4.61 (0.39)	1.16 (0.22)	1.13 (0.16)	2.85 (0.27)	2.02 (0.23)	1.89 (0.17)	1.07 (0.11)
Negative (10)	2.80 (0.28)	3.79 (0.45)	2.15 (0.22)	2.29 (0.31)	2.04 (0.33)	2.33 (0.08)	3.47 (0.62)
Neutral (50)	1.50 (0.25)	1.12 (0.16)	1.03 (0.04)	5.03 (0.20)	4.65 (0.38)	1.16 (0.13)	1.09 (0.17)

Note: The 10 positive, 10 negative and 50 neutral film clips met inclusion criteria applied for Experiment 1 and 2.

Method

Participants

Film clips were presented to 23 female participants (age: M = 19.6, SD = 1.71, ranging from 18 to 24 years) from two West coast universities. One participant was excluded due to technical problems. Of the 22 remaining participants, 13 were Caucasian, 3 Mexican, 1 Hispanic, 1 Asian and 4 declined to answer. Written informed consent was obtained from every participant prior to the experiment.

Stimulus materials

Out of 85 potentially neutral film clips drawn from video sharing websites, 56 films were identified to be potentially neutral by at least three of four researchers. The same criteria as in Experiment 1 were applied. A representative neutral film clip features a woman who explains how to make a pillowcase.

In order to provide the participants a range of emotions as anchors, we presented an additional subsample of 10 positive and 10 negative film clips,[6] which were randomly drawn from Experiment 1.

Procedure

The film clips were presented in a randomised order and were rated on amusement, repulsion, neutrality, boredom, arousal and disgust on 6-point scales, from 1 (not very) to 6 (very strong). Disgust was included to test whether participants perceived the concepts of repulsion and disgust similarly. Neutrality, boredom and arousal were included to test whether the selected neutral film clips were indeed rated as more neutral and boring, and less arousing than emotional film clips.

Results

Selection criteria

Fifty film clips were identified as neutral with the selection criteria of amusement and repulsion scores of ≤ 2 (see Figure 1).

Characterising the neutral film clips

Descriptive statistics for the selected 50 neutral film clips and the 10 positive and 10 negative film clips can be found in Table 1.

A one-way ANOVA showed that the three film categories differed significantly in amusement ($F(2, 69) = 554.26$, $p < .001$). Single comparisons revealed that all film clip categories differed from each other ($p < .001$). A one-way ANOVA showed that the three film categories differed significantly in repulsion ($F(2, 69) = 580.41$, $p < .001$) and disgust ($F(2, 69) = 327.07$, $p < .001$). Single comparisons revealed that positive and neutral film clips did not differ in repulsion and disgust, but negative film clips had higher repulsion and disgust scores than positive and neutral film clips (ps $< .001$). A correlational analysis revealed that the terms repulsion and disgust were used interchangeably ($r(68) = .99$, $p < .001$).

[6] For the final film selection, ratings of these non-neutral films in Experiment 2 were not taken into account because these films had already been validated in Experiment 1 in which they met the inclusion criteria.

One-way ANOVAs indicated that the three film categories differed significantly in neutrality ($F(2, 69) = 847.86$, $p < .001$), boredom ($F(2, 69) = 384.94$, $p < .001$), and arousal ($F(2, 69) = 288.20$, $p < .001$). Single comparisons revealed that all the film clips differed significantly from each other ($p < .001$, except for boredom for positive vs. negative film clips: $t(18) = -0.15$, $p = .88$) with neutral film clips being the most neutrally rated, boring and least arousing.

Discussion

Fifty neutral film clips were identified in Experiment 2 which can be characterised as inducing low levels of amusement, repulsion/disgust and arousal, and high levels of neutrality and boredom. In total, then, across Experiments 1 and 2, we successfully identified 199 film clips that either elicited positive, negative, mixed or neutral emotional states.

However, a few limitations need to be addressed. First, in both experiments, we included a rather small and homogeneous sample (female students with a limited age range). A more representative diverse community sample should be considered to validate the stimuli.

Second, only a very narrow range of emotion ratings was used to characterise the film clips. A broader range of emotions would better characterise the film clip library and demonstrate emotion specificity of the film clip categories.

EXPERIMENT 3: A BROADER VALIDATION SAMPLE

To overcome the limitations of Experiments 1 and 2 and to better characterise the film clips, the aim of this third experiment was to examine a broader range of emotional ratings in a bigger and more representative community sample including both male and female participants. Besides adding valence, arousal and neutrality, we included a broader range of positively valenced (amusement, pride and love) and negatively valenced (repulsion, sadness, anger and fear) ratings to better characterise the film clip library consisting of positive, negative, mixed and neutral film clips. Finally, on the basis of the same cut-off scores as applied in Experiments 1 and 2, we aimed at selecting the most promising film clips in the whole sample, but also for men and women separately (see Supplementary Material I), to induce positive, negative, mixed and neutral emotional states.

Method

Participants

In total, 166 male (40.4%) and 245 female (59.6%) participants (age: $M = 38.51$, $SD = 12.86$, ranging from 18 to 82 years) rated the film clips. Their ethnicity was as follows: 77.6% were Caucasian, 3.6% Asian-American, 6.3% Hispanic, 9.2% African-American and 3.2% other. A total of 15.6% participants had obtained a graduate degree, 35.8% a bachelor's degree, 16.5% an associate's degree, 7.8% a technical certificate and 24.3% a high school degree or below. A total of 62.5% were currently employed fulltime, 17.3% part-time or hourly employed, 17% unemployed, 8% enrolled as students and 53.8% had been unemployed in the past five years.

Participants were recruited all over the USA from a crowdsourcing web service, Amazon Mechanical Turk (Buhrmester, Kwang, & Gosling, 2011). Candidates were only allowed to participate if they were shown to have reliable past participation on the website (approval rate > 90% and more than 1000 hits). Participants were compensated with $2 for their time. Three other participants volunteered their time and were recruited through word of mouth at a West coast university. Four hundred and fifty-nine participants completed the online survey, but only 411 passed all four attention checks and were included for the analyses.

Stimuli

In total, 199 film clips (selected on the basis of the first two experiments) were presented to the

participants (51 positive, 39 negative, 59 mixed and 50 neutral film clips). Film clips were presented so as to minimise order effects while maximising the number of participants who viewed each film clip. The film clips were divided into two groups that each contained four subsets of film clips. With eight subsets in total, each subset had 25 film clips with the exception of one that had 24 film clips. Participants were randomly assigned to view one subset from each group allowing each participant to rate 49 or 50 film clips. Each subset consisted of positive, negative, mixed and neutral film clips. To minimise order effects, film clips in each subset were randomly arranged with the constraint that no two film clips from the same category were shown in a row.

Procedure

Participants completed the survey online through a link that was provided to them. All participants gave informed consent. Participants provided demographic information (gender, age, ethnicity, education) at the beginning of the study. Then, participants were instructed that they were expected to devote around 60 continuous minutes to complete the study without interruption. Participants rated film clips on self-reported valence on a scale from 1 (very negative) to 6 (very positive) as well as arousal, amusement, love, pride, repulsion, fear, anger, sadness and neutrality on a scale from 1 (not at all) to 6 (very strong). For each rating, synonyms were presented to the participant (valence: from unhappy, annoyed, unsatisfied, to happy, pleased, satisfied; arousal: stimulated, excited or wide-awake; amusement: exhilarated, mirthful or cheerful; love: affectionate or appreciative; pride: honoured, confident or dignified; anger: annoyed, irritated or resentful; fear: worried or uneasy; repulsion: repelled, disgusted or discomfort; sadness: grief, down-hearted or blue; neutral: absent of emotions). They also rated the film clips on compassion, which was not included for the selection of the film clips. Lastly, participants reported whether they had seen the film clip before. Four attention checks were presented in the online survey [e.g., 'Please select very strong on the scale for this one question that does not measure how you feel right now' from 1 (*not at all*) to 6 (*very strong*)].

Results

Preliminary analyses

Participants reported that they had on average previously seen 3.6% (SD = 6.56) of the film clips. Because the number of selected film clips (see next section) did not differ noticeably when only unfamiliar film clips were considered (one more positive and three fewer mixed film clips were selected if all film clip ratings were taken into account), we elected to keep all film clip ratings for the statistical analyses.

We examined gender and age effects for averages over all film clips. One-way ANOVAs showed the following gender differences: Men rated the film clips higher on amusement (M_{males} = 2.56, SD = .73, M_{females} = 2.37, SD = .71, $F(1, 410) = 6.77$, p = .01) and neutrality (M_{males} = 2.75, SD = .94, M_{females} = 2.53, SD = .82, $F(1, 410) = 6.22$, p = .01) and lower on fear (M_{males} = 1.74, SD = .64, M_{females} = 1.91, SD = .65, $F(1, 410) = 6.88$, $p <$ .01), compared to women. In addition, MF was higher for men than for women (M_{males} = 1.42, SD = .45, M_{females} = 1.25, SD = .30, $F(1, 410)$ = 20.02, $p < .001$).

With respect to age effects, correlations revealed that with increasing age, there was decreased amusement ($r(411) = -.18$, $p < .001$) and valence ($r(411) = -.10$, $p < .05$), as well as increased arousal ($r(411) = .18$, $p < .001$), fear ($r(411) = .12$, $p = .01$) and sadness ($r(411) = .15$, $p < .01$) over all film clips. In addition, with increasing age, MF was lower ($r(411) = -.11$, $p < .05$).

Due to modest gender and age differences, we decided to primarily focus on the whole sample for the selection of the film clips. However, we present more detailed analyses on gender differences in film clips selected for both males and females separately, as well as age effects for the whole sample in the Supplementary Material I. In addition, we analysed emotion specificity and the emotion profiles of the film clip categories for each selection for men and women separately. Should

researchers wish to exclusively focus on either men or women, this provides the most effective film clips to select from.

Selection of film clips

By applying the same cut-off scores for amusement and repulsion as described in Experiments 1 and 2, we selected positive, negative, mixed and neutral film clips for the whole sample, as well as for men and women separately. Figure 2 shows all 199 film clips for the whole sample. Compared to Experiments 1 and 2, it is striking that overall the film clips seem to have been perceived as more amusing and less repulsive. As a consequence, fewer negative and fewer mixed film clips were identified using the same cut-off scores.

For the whole sample (N = 411), 55 film clips were identified as positive, 9 as negative, 22 as mixed and 47 as neutral. Since some film clips were categorised in different film clip categories on the basis of the ratings of Experiments 1 and 2 and Experiment 3, 44 positive, 8 negative, 18 mixed and 45 neutral film clips were identified as eliciting the targeted emotion pattern in all three experiments (whole sample). Depending on the target population in future studies, researchers may choose from Experiments 1 and 2, Experiment 3 or a combination thereof (or even apply their own cut-off scores to select stimuli).

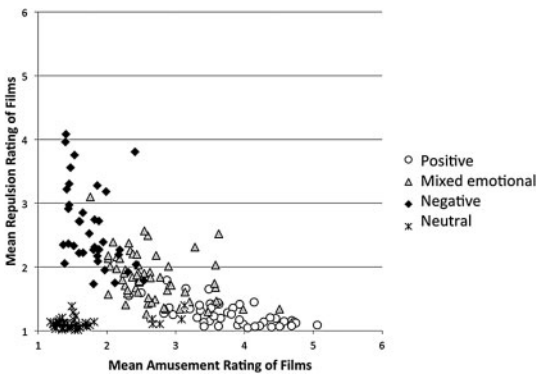

Figure 2. *Positive, negative, mixed and neutral film clips from Experiment 3 (whole sample:* N = *411; categorisation based on Experiments 1 and 2).*

For example, if the target population includes both men and women in an online study and researchers want to use film clips that are effective for both genders, they may choose film clips that were selected on the basis of the whole sample in Experiment 3. However, if researchers want to present film clips that are effective for female participants in the laboratory, they may choose from Experiment 1 and 2 (see for example, Kreibig et al., 2013). If researchers wish to make a more conservative selection of the film clips that are effective in laboratory and online studies across both genders and various age ranges, we suggest they choose from 41 positive, 4 negative, 6 mixed and 45 neutral film clips as these met cut-off criteria based on Experiments 1 and 2, and based on both genders and on male and female participants separately in Experiment 3 (see Supplementary Material I).

Characterisation of selected film clip categories

To more fully characterise the film clips that met inclusion criteria based on the whole sample (N = 411; i.e., 55 positive, 9 negative, 22 mixed and 47 neutral film clips), repeated-measures ANOVAs with Greenhouse-Geisser corrections with eight repeated factors for the emotion ratings (amusement, love, pride, repulsion, fear, anger, sadness, and neutrality) were used to analyse the emotion profiles within each category and whether each category induced the target emotions (emotion specificity; see Table 2).

For the positive film clip category, the emotional profile differed significantly (F(1.91, 103.17) = 238.02, p < .001). Bonferroni corrected post-hoc tests revealed that amusement was highest, confirming that our positive film clips induced the targeted emotion most strongly, followed by love and pride that also differed significantly from all other emotion ratings. Repulsion, fear, anger, and sadness were lowest, and did not differ significantly from each other, but from all other ratings.

For the negative film category, the emotional profile differed significantly (F(2.05, 16.40) = 45.88, p < .001). Bonferroni corrected post-hoc tests

Table 2. *Ratings for selected film clips in Experiment 3 (whole sample:* N = *411)*

Film category (N)	*Valence* M (SD)	*Arousal* M (SD)	*Amusement* M (SD)	*Love* M (SD)	*Pride* M (SD)	*Repulsion* M (SD)	*Fear* M (SD)	*Anger* M (SD)	*Sadness* M (SD)	*Neutrality* M (SD)	*MF* M (SD)
Positive (55)	4.18 (0.55)	2.34 (0.29)	3.82 (0.54)	2.55 (0.80)	1.83 (0.42)	1.28 (0.18)	1.34 (0.35)	1.23 (0.14)	1.28 (0.25)	2.12 (0.39)	1.28 (0.18)
Negative (9)	1.93 (0.28)	2.69 (0.35)	1.59 (0.22)	1.67 (0.17)	1.27 (0.08)	3.49 (0.36)	3.21 (0.68)	2.26 (0.43)	2.69 (0.35)	1.68 (0.23)	1.59 (0.22)
Mixed (22)	2.73 (0.34)	2.30 (0.27)	2.49 (0.47)	1.74 (0.26)	1.34 (0.09)	2.29 (0.38)	2.23 (0.57)	2.01 (0.65)	2.00 (0.45)	1.91 (0.20)	2.20 (0.17)
Neutral (47)	3.25 (0.21)	1.44 (0.19)	1.46 (0.18)	1.42 (0.16)	1.40 (0.15)	1.14 (0.17)	1.17 (0.25)	1.15 (0.07)	1.12 (0.15)	4.44 (0.60)	1.14 (0.17)

revealed that repulsion and fear were highest, but did not differ significantly from each other. Repulsion differed significantly from all other ratings (except of fear), but fear did not differ from anger and sadness. Love was rated at a comparable level as anger, amusement, and neutrality. Pride was lowest and differed from all other emotion ratings.

For the mixed category, the emotional profile differed significantly ($F(2.62, 55.01) = 15.99$, $p < .001$). Bonferroni corrected post-hoc tests revealed that, most importantly, amusement and repulsion were highest and induced to a comparable degree. In addition, the other negative emotions, fear, anger, and sadness did not differ significantly from amusement scores and fear did not differ significantly from repulsion, but anger and sadness were significantly lower than repulsion. Pride was lowest and differed from all other emotions, followed by love, which did not differ significantly from anger, sadness, and neutrality. Neutrality did also not differ from anger and sadness.

For the neutral film category, the emotional profile differed significantly ($F(1.39, 64.12) = 774.49$, $p < .001$). Neutrality ratings were significantly higher than all other ratings. Positive emotional ratings were slightly higher than negative emotional ratings. Amusement, love, and pride did not differ significantly from each other, as well as all the negative emotions did not differ significantly from each other.

Discussion

The aim of the third experiment was to validate the film clip library in a bigger and more representative community sample and to better characterise the film clips by adding a broader range of emotional ratings. We found that the participants from the online study rated the film clips in general less negatively than in the first two experiments, which resulted in fewer film clips that met inclusion criteria for the mixed and negative film clip category. Based on the whole sample of Experiment 3, we identified 55 positive, 9 negative, 22 mixed and 47 neutral film clips that induce the targeted emotions. Forty-four positive, 8 negative, 18 mixed and 45 neutral film clips were overlapping with the

categorisation of Experiments 1 and 2. These may be considered as the most reliable film clips to induce the target emotions in a variety of settings. Differences between the experiments may be due to a broader age range, a more representative sample and including both genders. In addition, exposure to the Internet including video sharing websites may have played a role as well. It seems to matter whether stimuli are presented in a laboratory study or whether the study takes place rather anonymously over the Internet, as people may be less sensitive in the latter. The third experiment helped to validate the film clips and to provide future researchers additional information to guide their selection of the film clips from this library for their own projects.

An important finding of Experiment 3 was that our positive (and also mixed) film clip category induced mainly amusement, but not love and pride. However, the negative emotions induced by mixed and negative film clips were not limited to repulsion. Repulsion was highly co-activated with fear, and on a lower level also with anger and sadness. We therefore found emotion specificity for amusement, but not for repulsion, which seems to be co-activated most strongly with fear. This may well be related to the nature of the mixed and negative film clips, which often portray potentially dangerous situations in which more or less painful accidents occur.

Because there were few gender differences before selecting the film clips based on pre-defined cut-off scores, we focused mainly on the characterisation of the film clips that seem to be effective for both genders. Selecting the film clips based on the whole sample should be appropriate for most studies. However, should researchers decide to focus on one gender only, they have the possibility to select film clips on the basis of gender specific cut-offs. In the Supplementary Material I, we further analysed gender differences for those film clips that induced the target emotions in both male and female participants. It is remarkable that there are still some gender differences, even if only those film clips were taken into account that met cut-off criteria for both genders. The mixed film clips are perceived more positively by males, and more negatively (but not higher on repulsion) by females. However, males and females had comparable MF coefficients.

Although not consistent for all film clip categories and all ratings, increasing age was associated with more arousal and less positive ratings coupled with more negative ratings of the film clips (see Supplementary Material I). As a result, participants with increasing age experienced less mixed emotions while watching mixed film clips. This seems to be in contrast with studies documenting more mixed emotions experienced in daily life (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000; Carstensen et al., 2000), but may be due to the nature of stimuli and type of assessment (emotion induction by using film clips vs. assessing emotions experienced in daily lives) and the emotion in question (e.g., amusement vs. other positive emotions such as contentment). However, to better understand age and possibly also cohort effects in the mixed stimuli of this film library, further studies are warranted.

GENERAL DISCUSSION

Given increased interest in mixed emotions, it would be helpful to have a validated set of film clips that can be used to induce mixed emotional states. We successfully identified a large group of positive and neutral film clips, a medium-sized group of mixed film clips and a smaller group of negative film clips that induce the target emotions in both a laboratory setting (women only) and online. These film clips have been carefully selected based on participants' ratings and pre-defined cut-off values. The film library draws on amusement on the one hand and a blend of negative emotions (mainly characterised by repulsion and fear) on the other hand as exemplary mixed emotional states. These film clips all reflect naturalistic experiences through amateur film-capture, rather than scripted motion picture representation.

Intensity and mixed emotional states

It is striking that the mixed emotional film clips seem to evoke only moderate positive and negative emotional states. Very few film clips were identified

that simultaneously induced positive and negative emotions to a strong degree (see Figures 1 and 2). However, this might be a characteristic of mixed emotions (Schimmack, 2005). There is already some evidence that the intensity of a mixed emotion is associated with individual differences in emotion expression, not just aspects of the simultaneous emotional experience itself (Hui et al., 2009; Rafaeli, Rogers, & Revelle, 2007). Other studies have posited cultural differences in mixed emotional experience. Williams and Aaker (2002) found that those who have more difficulty accepting dual emotions, typically Anglo-Americans, feel a stronger sense of conflict over mixed emotional experiences. Over time the intensity of the mixed emotions are underestimated to reduce this conflict (Aaker et al., 2008). Discomfort with duality may also play a part in the lack of high ratings of amusement and repulsion of the mixed film clips. As presented in the Supplementary Material I in more detail, there are a few gender and age effects, that may be examined more closely in future studies along with other individual difference measures.

User's manual

In Table 3, each of the 199 film clips is listed with name, duration of the film clip in seconds, a short description of the film, ratings based on the whole sample of Experiment 3, as well as into which category the film clip was selected based on Experiments 1 and 2, Experiment 3 (whole sample, men only and women only).

In addition, the file 'Mixed emotions film library.xlsx' (Supplementary Material II)—which is also available at http://spl.stanford.edu/resources.html—lists the following for each film clip: (1) Name of the film clip preceded by 'pos' for the positive category, 'mix' for the mixed category, 'neg' for the negative category, and 'neu' for the neutral film clip category (on the basis of Experiments 1 and 2); (2) film duration in seconds; (3) a one-sentence film description; (4) gender of main actor (male, female, animal, or unclear); (5) predominant age group (infant, child, youth, middle age, or old age); (6) presence of animals; (7) presence of infant; (8) involvement of sports; (9) setting in a private or public space; (10) number of individuals in the clip (including people and animals): single, two to five people, small group, large group; (11) language information: (a) no English words/music, or mute, (b) contains single utterances or music, (c) contains dialogue in the background but not relevant to understand what is happening in the film clip, and (d) English dialogue, probably not suitable for non-native English speakers (it was also marked in which film clips there was a foreign language); Experiments 1 and 2: (12) Experiment 1 (Studies 1A–C) and Experiment 2: in which the clip was validated; means for (13) amusement; (14) repulsion; and (15) MF coefficient. For the neutral film clips, we additionally provide means for (16) neutrality, (17) boredom, (18) arousal, and (19) disgust as derived from Experiment 2. Experiment 3: ratings for whole sample: (20) valence; (21) arousal; (22) amusement; (23) love; (24) pride; (25) repulsion; (26) fear; (27) anger; (28) sadness; (29) neutral; (30) MF; same ratings for men only: (31–41), as well as women: (42–52). Finally, categorisation to positive (pos), mixed (mix), negative (neg) and neutral (neu) film clips for (53) Experiment 1 and 2; (54) Experiment 3 whole sample; (55) Experiment 3 males; (56) and Experiment 3 females; (57) overlap between selected film clips of Experiments 1 and 2 and Experiment 3 (whole sample); (58) overlap between selected stimuli of Experiments 1 and 2 with selected stimuli based on gender specific cut-offs in Experiment 3.

Depending on the aim of a research study as well as the targeted population, we recommend choosing from those film clips that induced the targeted emotions in the laboratory and/or online experiments. Forty-four positive, 8 negative, 18 mixed and 45 neutral film clips seem to work equally well in both settings. The most conservative selection would be the 41 positive, 4 negative, 6 mixed and 45 neutral film clips that work in both populations, and for men and women in the same way. However, for some studies that need more frequent repetitions of stimuli in one category depending on study design and measurements (e.g., examining neural or psychophysiological correlates), researchers may want to select more film clips for the mixed and negative film clip category. We encourage future users of this film clip library to apply their own selection criteria based

Table 3. Characterisation of the 199 film clips presented in Experiment 3 with name, duration in seconds, a short description, ratings on the basis of the whole sample of Experiment 3 and selection on the basis of Experiment 1 and 2 and Experiment 3 (all participants were $N = 411$, men only, women only

			Ratings (Experiment 3, N = *411)*											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (*N = *411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
pos_babybitesbrosfinger	27	Baby bites his brother's finger	4.82	2.18	4.69	3.80	2.38	1.16	1.09	1.08	1.16	1.93	0.28	pos	pos	pos	pos
pos_babycontrolscheers	20	Mother prompting baby to put hands in air at which point an entire crowd puts hands in air and cheers after baby does it	5.32	2.75	5.06	4.10	3.08	1.09	1.08	1.09	1.06	1.81	0.27	pos	pos	pos	pos
pos_babydance50cent	26	Baby dances to 50 Cent music	4.54	2.37	4.14	3.09	2.10	1.45	1.13	1.37	1.25	1.91	0.27	pos	pos	pos	pos
pos_babydancebeyonce	30	Baby standing in front of television dancing to a Beyonce music video while parents laugh in background	4.98	2.76	4.72	3.58	2.46	1.14	1.14	1.06	1.07	1.53	0.26	pos	pos	pos	pos
pos_babydancingtornb	29	Little boy is dancing to RnB music at a wedding	4.96	2.32	4.45	3.21	2.06	1.19	1.09	1.23	1.15	1.92	0.28	pos	pos	pos	pos
pos_babydancingtotechno	29	Baby is dancing to techno music	4.90	2.70	4.69	3.51	2.43	1.11	1.09	1.13	1.13	1.83	0.27	pos	pos	pos	pos
pos_babydoesntlovehisdaddy	26	Baby shakes his head when his Dad asks him whether he loves him	4.29	1.88	3.62	3.03	1.95	1.07	1.04	1.09	1.11	2.26	0.25	pos	pos	pos	pos
pos_babyeatslemon	30	Baby grimaces when he is eating a lemon	4.28	2.38	3.93	3.03	1.89	1.42	1.24	1.37	1.30	1.79	0.28	pos	pos	pos	pos
pos_babyevileye	21	Baby in high chair makes evil look at everyone and starts laughing only to do it again	5.01	2.32	4.75	3.58	2.45	1.12	1.07	1.07	1.07	1.60	0.26	pos	pos	pos	pos
pos_babyfailshulahoop	30	Baby tries to hula hoop without the hula hoop—just wiggles hips around while everyone laughs	5.03	2.77	4.68	3.69	2.63	1.08	1.08	1.11	1.13	1.98	0.27	pos	pos	pos	pos

Table 3 (*Continued*)

			Ratings (Experiment 3, N = *411)*											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (N = 411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
pos_babyscaredbyhisownflatulence	21	Baby begins to cry because it got scared of its own flatulence	3.98	1.98	3.49	2.88	1.66	1.29	1.12	1.14	1.33	1.95	0.29	pos	pos	pos	pos
pos_babyshiccupandlaugh	29	Twin babies sitting on a couch with one laughing each time the other hiccups	4.53	2.13	3.65	3.17	1.96	1.20	1.11	1.18	1.07	2.25	0.25	pos	pos	pos	pos
pos_babysinginghealtheworld	31	Young girl is singing Heal the World in the car	4.25	2.25	3.75	3.08	2.27	1.28	1.06	1.40	1.11	1.78	0.27	pos	pos	pos	pos
pos_babywithpregnancytest	33	Young boy wants to find out what a pregnancy test is	4.00	1.93	3.36	2.70	1.84	1.32	1.07	1.21	1.16	2.63	0.29	pos	pos	pos	pos
pos_beatboxbabydance	29	Baby is dancing to his father is beat boxing	4.56	2.14	3.90	3.17	2.08	1.09	1.07	1.14	1.06	2.14	0.25	pos	pos	pos	pos
pos_boyhitshimselfinhead	23	Boy gets frustrated when he cannot complete a skateboard trick and goes to slam board on ground only to have it bounce back and hit him in face	3.06	1.99	2.87	1.41	1.33	1.79	1.55	1.60	1.48	2.20	0.31	pos		pos	mix
pos_boysmashestvwhenbowlingwithwii	25	Boy smashes the TV when he is playing bowling on the Wii	3.00	1.87	2.91	1.43	1.18	1.36	1.39	1.42	1.88	2.34	0.30	pos		pos	
pos_bridefallsinwater	28	Best man steps up to give groom ring during wedding ceremony but slips and pushes bride and priest into a pool	3.53	2.93	3.50	2.45	1.59	1.42	1.79	1.38	2.13	1.98	0.30	pos	pos	pos	pos
pos_bridelaughingduringvows	30	Bride has a laughing fit during wedding vow	4.65	2.62	4.39	3.26	1.96	1.06	1.05	1.08	1.10	1.94	0.26	pos	pos	pos	pos

Table 3 (*Continued*)

			Ratings (Experiment 3, N = *411)*											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (*N = *411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
pos_bridethrowsflowersatbridesmaid	29	Bride throws flowers and accidentally hits a bridesmaid	3.88	2.26	3.49	1.88	1.48	1.15	1.23	1.21	1.16	2.51	0.28	pos	pos	pos	pos
pos_catsucklesair	30	Cat suckles air	4.85	2.25	4.52	2.77	1.72	1.08	1.04	1.05	1.03	1.95	0.27	pos	pos	pos	pos
pos_cliffdiverfailsfaceflop	23	Cliff diver fails and bellyflops	3.08	2.22	2.32	1.70	1.40	1.55	2.13	1.33	1.65	2.45	0.29	pos			
pos_cookiebaby	30	Baby does not love his mother unless she gives him a cookie	4.48	2.05	3.98	3.33	1.99	1.11	1.04	1.17	1.13	2.01	0.26	pos	pos	pos	pos
pos_dancingaccidentkick	29	Dancing girl kicks lamp and knocks down everything on her desk	3.89	2.77	3.83	1.81	1.63	1.36	1.43	1.30	1.27	2.00	0.28	pos	pos	pos	pos
pos_doorfallsongirl	22	Closet door falls on young girl	3.32	2.08	2.83	2.06	1.33	1.27	1.86	1.25	1.56	2.09	0.29	pos		pos	
pos_escalatorspinning	27	Young man is spinning on an escalator	4.35	2.28	4.28	1.77	1.56	1.14	1.29	1.15	1.11	2.42	0.25	pos	pos	pos	pos
pos_failtreadmilldance	30	Man jumps on treadmill while singing and dancing not knowing it was turned on and falls/is spun around	3.74	2.27	3.63	1.56	1.22	1.42	1.27	1.25	1.15	2.27	0.29	pos	pos	pos	pos
pos_girlbackflipshitsTV	22	Girl tries to back flip off her bed but lands against the dresser causing the TV to fall on her head	2.95	2.39	2.50	1.52	1.31	1.59	2.21	1.35	1.51	2.28	0.30	pos		pos	
pos_girlhitsherheadbowling	25	Girl shoots a strike and in celebration goes running out onto bowling lane subsequently slipping and hitting her head as everyone laughs	3.76	2.25	3.56	1.92	1.58	1.23	1.41	1.16	1.40	2.00	0.30	pos	pos	pos	pos

Table 3 (*Continued*)

			Ratings (Experiment 3, N = 411)											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (N = 411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
pos_girlthrownintobasketballhoop	25	Girl is thrown into a basketball hoop	3.97	2.83	3.57	1.96	2.09	1.41	2.24	1.44	1.24	1.77	0.26	pos	pos	pos	pos
pos_golferhitsbackpack	28	Golfer hits his backpack down the chasm	3.60	2.15	2.96	1.64	1.32	1.25	1.58	1.23	1.25	2.53	0.27	pos		pos	
pos_guyjumpsintofrozenwater	30	Young man jumps into frozen water	3.35	2.39	3.15	1.67	1.49	1.66	1.77	1.39	1.54	1.92	0.32	pos	pos	pos	
pos_guyrunsintocamera	21	Young man runs into camera and hits his face when entering the arena	3.39	2.22	3.10	1.65	1.34	1.37	1.59	1.35	1.53	2.33	0.32	pos	pos	pos	
pos_guysfailtolaunchacanou	20	Canoe sinks when young man fails to launch it	3.62	2.19	3.31	1.58	1.43	1.20	1.65	1.20	1.19	2.38	0.25	pos	pos	pos	pos
pos_guyswakeupfriendbyscreaming	30	Young men wake up their friend by screaming	3.60	2.38	3.35	1.80	1.40	1.40	1.38	1.59	1.33	2.06	0.28	pos	pos	pos	pos
pos_lambcantfindowner	31	Lamb running back and forth across rooms while owner looks on with video camera	4.60	2.56	4.05	2.83	1.68	1.05	1.05	1.08	1.08	2.25	0.27	pos	pos	pos	pos
pos_mancrashesintoglassdoor	23	Man misses exit and crashes into glass door	3.73	2.28	3.52	1.46	1.30	1.36	1.28	1.26	1.35	2.41	0.32	pos	pos	pos	pos
pos_mangetshurttubing	30	Man tubing through a flooded neighbourhood crashes into a tree	3.75	2.57	3.61	1.55	1.40	1.44	2.10	1.33	1.33	1.97	0.29	pos	pos	pos	pos
pos_musiciansplaytomanonphone	28	Quintet plays music to man on the phone	4.56	2.38	4.22	2.26	2.03	1.08	1.10	1.24	1.03	1.96	0.27	pos	pos	pos	pos
pos_pandasneezesalot	30	Group of pandas with one who cannot stop sneezing	4.68	2.75	4.15	3.37	2.02	1.07	1.12	1.09	1.19	1.78	0.27	pos	pos	pos	pos
pos_parachutehitsman	20	Parachute hits singing man	3.56	2.27	3.15	1.62	1.32	1.34	1.72	1.20	1.48	2.30	0.33	pos	pos	pos	pos

Table 3 (*Continued*)

			Ratings (Experiment 3, N = *411)*											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (N = 411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
pos_reportergetshit	29	Reporter giving report in snow is hit and flipped in the air by people on snow tube	3.43	2.51	3.20	1.63	1.39	1.34	1.96	1.19	1.62	1.94	0.26	pos	pos	pos	pos
pos_sheepattacksman	21	Sheep attacks man from behind	3.92	2.12	3.81	1.78	1.35	1.26	1.31	1.25	1.23	2.16	0.30	pos	pos	pos	pos
pos_singerfails	21	Singer is holding his microphone the wrong way	3.74	1.90	2.64	1.52	1.40	1.17	1.05	1.12	1.08	3.37	0.28	pos			
pos_singingdog	29	Dog is singing to melody from iPad	4.94	2.83	4.57	3.39	2.24	1.15	1.14	1.19	1.15	1.78	0.29	pos	pos	pos	pos
pos_skiercrashintosnow	29	Skier crashes headlong into snow	4.01	2.20	3.41	1.82	1.53	1.13	1.23	1.16	1.11	2.25	0.23	pos	pos	pos	pos
pos_smartbabywithpacifier	30	Baby found smart way to keep her pacifier in mouth	4.63	1.83	3.41	3.43	2.14	1.07	1.03	1.09	1.13	2.33	0.27	pos	pos		pos
pos_thirstybabydrink	27	Baby tries to drink from a garden hose	5.08	2.53	4.51	3.60	2.12	1.07	1.08	1.06	1.06	1.92	0.27	pos	pos	pos	pos
pos_weddingphotographerfails	29	Wedding photographer falls into fountain	4.31	2.53	4.37	2.44	1.63	1.20	1.26	1.25	1.85	2.06	0.30	pos	pos	pos	pos
pos_womanlosesherdressbycardrivingaway	23	Woman loses her dress by car driving away	4.15	2.39	3.92	2.12	1.51	1.17	1.26	1.13	1.19	1.99	0.26	pos	pos	pos	pos
pos_womanruinsweddingwithpole	21	Woman dancing on a pole ruins wedding by pulling down the party tent	3.52	2.24	3.48	1.72	1.28	1.65	1.33	1.51	1.47	1.92	0.32	pos	pos	pos	pos
mix_babybiteswoman	30	Woman holding baby while baby continuously pulls woman's face close to bite it	4.47	2.33	3.98	3.17	2.11	1.34	1.21	1.17	1.14	1.78	0.28	mix	pos	pos	pos
mix_babydancing	28	Baby dancing to Beyonce	4.69	2.19	4.51	3.41	2.43	1.34	1.08	1.15	1.15	1.91	0.31	mix	pos	pos	pos
mix_babyhangsfromswing	21	Baby is hanging from a swing at home	3.50	2.59	3.20	3.50	1.93	1.45	2.71	1.68	2.13	1.95	0.31	mix	pos	pos	pos
mix_backfliphitsceiling	25	Boy doing backflip in living room hits ceiling with his feet, hunches over in pain	2.87	2.05	2.42	1.42	1.20	1.67	1.81	1.34	1.52	2.20	0.30	mix			

Table 3 (*Continued*)

			Ratings (Experiment 3, N = *411)*											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (N = 411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
mix_backflipoffaswing	22	Boy back flips off a swing	2.70	2.01	2.14	1.60	1.35	1.97	2.25	1.42	1.65	2.07	0.31	mix			
mix_basketballtrampoline	30	Boy jumping on trampoline tries to dunk basketball and instead dunks his leg	2.50	2.13	2.34	1.76	1.44	2.25	2.42	1.80	2.30	1.58	0.33	mix	mix	mix	
mix_bikesplitafterjumpofframp	20	Bike splits after a jump off a ramp	2.61	2.48	2.14	1.73	1.40	2.15	2.64	1.59	2.21	2.13	0.31	mix	mix	mix	
mix_boogieboardbackfire	28	Young man gets hurt when boogie board cord pulls back	3.00	1.95	2.54	1.44	1.16	1.90	1.59	1.34	1.50	2.36	0.33	mix			
mix_boycrashesintopole	24	Little boy on bicycle crashes into a telephone pole	2.31	2.17	2.02	2.13	1.37	2.13	2.52	1.95	2.29	1.57	0.31	mix	mix	mix	
mix_boyfailstreadmill	23	Drunken young man falls on his face on treadmill.	2.80	1.97	2.72	1.47	1.40	2.18	1.78	1.58	1.56	2.07	0.36	mix	mix	pos	mix
mix_boyfaintsatwedding	24	Boy faints at wedding and falls down stairs	2.88	2.50	2.30	2.28	1.44	1.59	2.61	1.27	2.38	1.99	0.28	mix			
mix_boyfallsoffdivingboard	27	Man showing crowd how to jump off diving board but slips onto back and bounces into water	3.02	2.24	2.70	1.57	1.24	1.49	1.88	1.26	1.48	2.09	0.28	mix		pos	
mix_boyhitbyplaygroundspringhorse	24	Boy gets hit by a playground spring horse	2.56	2.01	2.38	1.43	1.24	2.21	1.69	1.80	1.54	2.13	0.34	mix	mix	mix	mix
mix_breakdanceheadbutt	27	Two young men headbutt themselves during breakdance	3.21	1.98	2.88	1.82	1.39	1.63	1.58	1.29	1.49	2.09	0.31	mix		pos	
mix_breakdancekickscat	25	Break dancer kicks his cat	2.62	2.78	2.60	2.01	1.34	2.49	2.60	2.42	2.62	1.61	0.32	mix	mix	mix	mix
mix_bridelosesteethdrinking	20	Bride loses her teeth during drinking	3.63	2.01	3.58	2.16	1.38	2.03	1.17	1.14	1.44	2.18	0.38	mix	mix	mix	pos
mix_bridetextingduringmarriage	29	Bride is texting during marriage ceremony	2.69	1.83	2.54	1.43	1.33	2.56	1.26	2.78	1.78	2.25	0.36	mix	mix	mix	mix
mix_bungeejumpaccidentmiscalculationl	28	Bungee jumper touches water	3.29	2.38	2.91	1.65	1.48	1.72	2.42	1.42	1.41	1.99	0.36	mix		pos	

Table 3 (*Continued*)

			Ratings (Experiment 3, N = *411)*											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (N = 411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
mix_carhandstand	25	Young man breaks car window by doing a handstand on the trunk	2.82	2.36	2.63	1.56	1.30	1.92	1.74	1.71	1.68	2.23	0.32	mix		pos	mix
mix_cranedrops	30	Group of workers lifting a large supply of goods to a rooftop as people look on, accidently drop the pack of goods onto a car—worker runs away	2.35	2.56	2.09	1.43	1.08	2.39	2.81	2.41	2.34	1.95	0.31	mix	mix	mix	mix
mix_dancersbreaktable	23	Women dances on a table and breaks it	3.54	2.37	3.06	1.90	1.44	1.34	1.71	1.23	1.49	2.26	0.31	mix	pos	pos	
mix_daughterhitwithball	27	Mother hits daughter with a ball	2.80	2.10	2.43	2.37	1.37	2.20	1.90	2.45	2.09	1.75	0.32	mix	mix	mix	mix
mix_facekick	28	Boy kicks his friend in face	2.56	2.56	2.32	1.57	1.40	2.38	1.98	2.45	1.67	2.10	0.31	mix	mix	mix	
mix_fatboyhurdles	23	Overweight young man falls over hurdles	3.37	2.14	2.86	1.95	1.59	1.34	1.31	1.32	1.88	2.05	0.29	mix		pos	
mix_girlfallsdownstairs	30	Girl in container gets pushed on stairs and lands on face while friends laugh	3.04	2.52	2.47	1.58	1.21	1.76	1.98	1.62	1.44	2.19	0.32	mix			
mix_girlfallsoffmerrygoround	22	Girl falls off fast rotating merry-go-round	2.84	2.08	2.26	2.07	1.30	1.71	2.30	1.66	2.04	1.95	0.30	mix			
mix_girlgetshitinfacebyexerciseball	22	Girl gets hit in her face with a basketball	3.22	2.16	2.60	1.81	1.42	1.42	1.41	1.53	1.41	2.39	0.30	mix			
mix_girlknockoutatplayground	21	Girl gets kicked in her face at the playground	2.81	1.96	2.37	1.64	1.19	1.84	1.78	1.58	1.53	2.11	0.29	mix			
mix_girlsfallontreadmill	29	One girl running on treadmill while another sheepishly steps on only to fall and get slammed against wall	3.50	2.11	2.83	1.56	1.32	1.36	1.56	1.34	1.22	2.61	0.29	mix		pos	
mix_girlslipsinmud	20	Girl slips in mud when she is trying to jump over a gap	2.92	2.13	2.45	1.72	1.31	1.60	2.06	1.33	1.58	1.91	0.30	mix			

Table 3 (*Continued*)

			Ratings (Experiment 3, N = *411)*											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (N = 411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
mix_girlwalkintoapole	25	Girl walks into a pole after conversation with young men in a car	2.39	2.13	1.76	1.56	1.28	3.10	1.57	2.93	2.02	2.25	0.31	mix	neg	mix	neg
mix_guybreaksglasscopyingbutt	24	Man breaks glass of photocopier when he is copying his butt	3.27	2.10	3.63	1.41	1.30	2.52	1.35	1.80	1.23	1.87	0.45	mix	mix	pos	mix
mix_guyhitsinfacewithamedicineball	23	Young man hits himself in the face with a medicine ball	3.29	2.08	2.58	1.45	1.40	1.26	1.41	1.23	1.26	2.87	0.29	mix			
mix_guyongymnasticsparallelbars	23	Young man on gymnastic parallel bars hurts himself in groin area	3.87	2.01	3.59	2.00	1.83	1.46	1.42	1.21	1.54	2.74	0.34	mix	pos	pos	pos
mix_headhitsbackboard	23	Young man hits his face on the back board of a basketball hoop	3.59	2.26	3.58	1.87	1.51	1.68	1.58	1.13	1.62	2.37	0.30	mix	pos	pos	pos
mix_horsegrabsgirl	26	Horse grabs girl sitting on another horse	3.15	2.33	2.89	1.68	1.34	2.01	2.23	1.45	1.63	1.81	0.34	mix	mix	pos	mix
mix_karatekickwrongtarget	32	Young man kicks wrong target in karate	2.75	2.52	2.23	1.60	1.36	1.80	2.40	1.58	2.01	2.05	0.32	mix			neu
mix_kidonskateboardfalls	30	Boy riding skateboard on treadmill falls and while holding onto handles has pants stripped off by treadmill	3.72	2.41	3.56	1.77	1.44	1.74	1.64	1.56	1.52	2.16	0.37	mix	pos	pos	pos
mix_kidsbaseballaccident	21	Young boy smashes baseball into opponent's face	2.73	2.42	2.25	1.76	1.42	1.90	2.88	1.22	2.43	1.72	0.27	mix			
mix_kidsslingshotfail	24	Young boy hurts himself with a sling shot	2.83	1.86	2.30	1.69	1.30	1.63	1.77	1.36	1.68	2.24	0.30	mix			neu
mix_kungfuhitsself	22	Kung fu man hits himself	3.15	2.21	2.65	1.48	1.37	1.44	1.69	1.23	1.32	2.61	0.32	mix		pos	

Table 3 (*Continued*)

			Ratings (Experiment 3, N = *411)*											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (N = 411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
mix_littleboyfallsoffswingset	24	Little boy falls off swing set	2.57	2.31	2.02	1.72	1.31	2.18	2.66	2.14	2.13	2.06	0.36	mix	mix	mix	neu
mix_mandropsdog	26	Man drops his dog as it starts to pee	3.30	2.11	3.28	1.84	1.45	2.31	1.57	1.65	1.61	1.91	0.41	mix	mix	mix	mix
mix_manhitbynunchuck	22	Manplaying with a nun-chuck accidently hits himself in a sensitive area and then slips on skateboard behind him while friends laugh	3.36	1.98	3.13	1.42	1.29	1.61	1.58	1.30	1.44	2.13	0.33	mix	pos	pos	
mix_manropeswingfail	22	Man swings off boat by rope and instead of jumping into water swings into side of boat	2.78	2.35	2.46	1.55	1.29	1.91	2.00	1.43	1.68	2.13	0.32	mix			
mix_minigolfhitwoman	22	Mini-golf ball hits woman on a bike	2.94	2.08	2.27	1.78	1.29	1.95	1.91	2.10	1.84	2.23	0.33	mix		mix	
mix_painfulslingshotfail	29	Slingshot pulls back and hurts man in abdomen	3.24	2.05	2.60	1.39	1.27	1.52	1.70	1.14	1.48	2.51	0.28	mix			
mix_pentrickelectricity	29	Man performs a trick with pens and destroys lamp	3.72	2.56	3.47	1.72	1.50	1.30	1.83	1.16	1.36	2.03	0.29	mix	pos	pos	pos
mix_pogostickbackflip	24	Boy on pogo stick hurts himself in groin area after backflip	2.89	2.49	2.46	1.48	1.30	1.80	1.92	1.42	1.57	2.35	0.32	mix			
mix_segwayfaceplant	21	Woman on Segway falls on her face	3.08	2.48	2.94	1.75	1.31	1.71	2.16	1.50	1.85	1.93	0.34	mix		pos	
mix_singingwomanfallsofftable	21	Singing woman falls off the table	2.85	2.45	2.77	1.62	1.22	1.84	2.39	1.39	2.01	1.76	0.30	mix			
mix_skaterslamsintominivan	22	Skateboarder riding down a road crashes into a minivan	2.70	2.32	2.05	1.56	1.36	2.01	2.90	1.56	1.92	2.00	0.33	mix	mix	mix	neu
mix_skiaccident	24	Man skiing in competition hits marker and hits himself in sensitive area	2.94	2.25	2.46	1.81	1.56	2.03	2.00	1.32	1.88	1.82	0.33	mix	mix	mix	

Table 3 (*Continued*)

			Ratings (Experiment 3, N = *411)*											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (N = 411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
mix_soccerballhitsface	30	Boy gets hit in face by soccer ball	2.54	2.50	2.19	1.79	1.30	2.13	2.39	2.26	2.27	1.85	0.34	mix	mix	mix	neu
mix_stiltscrashintocar	26	Young man on stilts crashes into car	2.97	2.26	2.63	1.45	1.31	1.83	2.11	1.54	1.55	2.08	0.29	mix		mix	
mix_tripleflipfaceplant	24	Young boy attempting a triple flip ends with face in sand	2.92	2.16	2.47	1.42	1.25	1.78	1.89	1.43	1.51	2.40	0.32	mix			
mix_weddingcakedropdown	23	Woman slips and drops wedding cake	2.95	2.27	2.27	1.79	1.39	1.41	1.58	1.43	2.33	2.11	0.31	mix			
mix_wrestlingmovefail	25	Young man performing a wrestling move gets hit in the head by a ladder	2.75	2.29	2.44	1.40	1.22	1.87	1.93	1.79	1.46	2.38	0.35	mix			
mix_ziplinebreak	30	Young man falls from breaking zipline over the creek	2.84	2.01	2.02	1.47	1.19	1.57	2.17	1.31	1.62	2.27	0.28	mix		neu	
neu_airport2	30	Train arrives in the station	3.06	1.31	1.31	1.22	1.23	1.05	1.15	1.16	1.09	4.60	0.25	neu	neu	neu	neu
neu_assembly	26	Worker sorts packages on an assembly line	3.04	1.28	1.31	1.26	1.47	1.10	1.10	1.14	1.10	4.97	0.26	neu	neu	neu	neu
neu_attheplayground	22	Father and daughter swinging	4.39	1.54	3.08	3.42	2.65	1.18	1.21	1.24	1.25	3.40	0.28	neu	pos		pos
neu_bakingbread	30	Man showing how to make bread	4.38	2.08	2.77	2.33	2.27	1.11	1.09	1.13	1.12	4.29	0.27	neu			
neu_bart	31	People waiting in the BART train station	3.15	1.32	1.31	1.34	1.28	1.13	1.13	1.13	1.09	4.70	0.27	neu	neu	neu	neu
neu_boydrinkingtea	31	Boy drinking tea	3.01	1.21	1.22	1.23	1.18	1.11	1.09	1.21	1.04	4.97	0.26	neu	neu	neu	neu
neu_broadway	24	People walking on Broadway, next to the street	3.43	1.43	1.56	1.37	1.49	1.08	1.16	1.08	1.08	4.66	0.26	neu	neu	neu	neu
neu_bycicleushhour1a	20	People cycle on the street fast	3.86	2.06	2.66	1.91	1.82	1.11	1.32	1.13	1.10	3.79	0.27	neu			
neu_bycicleushhour2	20	People cycle on the street	3.40	1.36	1.44	1.48	1.34	1.04	1.07	1.12	1.04	4.67	0.26	neu	neu	neu	neu
neu_cablecar	23	Shouting out of a cable car	3.21	1.42	1.37	1.31	1.35	1.13	1.17	1.13	1.10	4.85	0.27	neu	neu	neu	neu

Table 3 (*Continued*)

			Ratings (Experiment 3, N = *411)*											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (N = 411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
neu_cafe	22	Man sitting in a cafe and watching the people on the street	3.29	1.22	1.35	1.20	1.24	1.02	1.05	1.09	1.00	4.96	0.26	neu	neu	neu	neu
neu_centralstationNY	22	View over Grand Central Station in NY	3.36	1.53	1.49	1.47	1.52	1.12	1.14	1.10	1.14	4.67	0.27	neu	neu	neu	neu
neu_cityinthenight	20	Walking on a street at night	3.09	1.30	1.35	1.25	1.27	1.04	1.08	1.11	1.06	4.55	0.25	neu	neu	neu	neu
neu_denvertrain	25	Going by train	3.28	1.52	1.38	1.22	1.21	1.11	1.26	1.08	1.08	4.51	0.27	neu	neu	neu	neu
neu_diving	23	Three people diving in a pool	3.35	1.28	1.59	1.35	1.23	1.06	1.11	1.07	1.03	4.64	0.26	neu	neu	neu	neu
neu_divingII	25	Diving practice in a pool	3.58	1.49	1.69	1.51	1.51	1.13	1.26	1.08	1.08	4.61	0.28	neu	neu	neu	neu
neu_eatingpizza	23	Girls eating pizza	3.20	1.38	1.51	1.50	1.27	1.29	1.02	1.22	1.03	3.94	0.27	neu	neu	neu	neu
neu_eatingwithchopsticks	29	Mother explaining to her children how to use chopsticks	3.29	1.52	1.42	1.35	1.41	1.12	1.06	1.10	1.08	4.69	0.27	neu	neu	neu	neu
neu_familyeatingpizza	21	Family eating pizza	3.90	1.78	3.13	2.29	1.99	1.40	1.17	1.32	1.16	3.94	0.34	neu	pos	pos	pos
neu_girlsbrushingteeth	21	Two girls brushing their teeth	3.23	1.39	1.49	1.37	1.34	1.38	1.06	1.19	1.06	4.56	0.27	neu	neu	neu	neu
neu_grout	27	Man explaining how to clean grout	3.41	1.27	1.44	1.35	1.38	1.07	1.03	1.17	1.06	4.63	0.26	neu	neu	neu	neu
neu_hairwashing	26	Man is washing the hair of a woman	3.17	1.35	1.25	1.30	1.29	1.03	1.06	1.08	1.03	4.76	0.26	neu	neu	neu	neu
neu_hikinginwood	26	Man explaining his hiking plans	3.28	1.43	1.55	1.35	1.38	1.23	1.17	1.31	1.19	4.77	0.30	neu	neu	neu	neu
neu_indiandance	21	Native Americans before dancing	3.98	1.92	2.66	2.38	2.62	1.18	1.16	1.18	1.37	3.85	0.26	neu			
neu_inthekitchen	26	Preparing a meal	3.37	1.26	1.28	1.22	1.21	1.13	1.09	1.08	1.03	4.81	0.26	neu	neu	neu	neu
neu_inthekitchenII	30	Man baking bread	3.42	1.51	1.42	1.36	1.43	1.05	1.07	1.12	1.07	4.62	0.27	neu	neu	neu	neu
neu_knit	27	Woman explaining how to knit	3.42	1.50	1.71	1.68	1.67	1.07	1.06	1.13	1.08	4.45	0.27	neu	neu	neu	neu
neu_knitting	32	Watching how to knit	3.52	1.52	1.60	1.70	1.69	1.05	1.08	1.05	1.11	3.82	0.23	neu	neu	neu	neu
neu_mall	20	People sitting in some restaurants in a mall	3.35	1.36	1.47	1.53	1.38	1.04	1.03	1.13	1.10	4.43	0.26	neu	neu	neu	neu

Table 3 (*Continued*)

			Ratings (Experiment 3, N = *411)*											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (N = 411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
neu_manridinghorse	21	Man riding a horse	3.51	1.50	1.81	1.61	1.63	1.14	1.21	1.13	1.19	4.23	0.26	neu	neu	neu	neu
neu_museum	24	People waiting in a visitor centre	3.06	1.42	1.31	1.29	1.23	1.18	1.21	1.29	1.21	4.82	0.29	neu	neu	neu	neu
neu_nystreet	29	Street in NYC	3.05	1.55	1.30	1.26	1.24	1.15	1.47	1.09	1.14	4.18	0.24	neu	neu	neu	neu
neu_origami4	32	Woman makes origami	3.39	1.38	1.61	1.51	1.45	1.05	1.10	1.18	1.09	4.24	0.25	neu	neu	neu	neu
neu_pancakesII	28	Woman preparing pancakes	3.46	1.40	1.54	1.50	1.57	1.10	1.06	1.12	1.10	4.48	0.27	neu	neu	neu	neu
neu_pillow	30	Woman explaining how to make a pillowcase	3.38	1.57	1.53	1.46	1.48	1.17	1.11	1.24	1.21	4.78	0.29	neu	neu	neu	neu
neu_plantingaveggiegarden	29	Man planting seeds	3.45	1.46	1.54	1.55	1.70	1.01	1.01	1.05	1.08	4.16	0.23	neu	neu	neu	neu
neu_ridinghorse	31	Woman explaining how to ride a horse	3.44	1.68	1.68	1.78	1.67	1.08	1.11	1.18	1.11	3.80	0.25	neu	neu	neu	neu
neu_ridinginthetube1	21	People riding in the tube	3.07	1.35	1.32	1.39	1.41	1.13	1.20	1.27	1.13	4.75	0.26	neu	neu	neu	neu
neu_ridinginthetube2	24	People riding in the tube	3.19	1.35	1.30	1.32	1.28	1.12	1.26	1.19	1.10	4.72	0.29	neu	neu	neu	neu
neu_sanfran	28	Crowded street in San Francisco	2.91	1.34	1.24	1.29	1.26	1.08	1.11	1.11	1.10	4.71	0.23	neu	neu	neu	neu
neu_scrapbook	23	Girl showing her scrapbook collection	3.42	1.32	1.47	1.68	1.52	1.05	1.03	1.15	1.03	4.43	0.25	neu	neu	neu	neu
neu_sittingonthesofa	30	Couple sitting on the sofa an working with the computer	2.89	1.31	1.23	1.32	1.30	1.10	1.10	1.28	1.08	4.87	0.26	neu	neu	neu	neu
neu_snow	23	Man is shovelling snow	3.23	1.44	1.35	1.39	1.36	1.20	1.40	1.16	1.23	4.46	0.30	neu	neu	neu	neu
neu_swimlaps	27	Man swimming in the pool	3.23	1.30	1.38	1.46	1.56	1.03	1.04	1.10	1.08	4.52	0.23	neu	neu	neu	neu
neu_tea	31	Man explaining how to make green tea	3.08	1.23	1.25	1.23	1.22	1.06	1.03	1.12	1.05	4.70	0.25	neu	neu	neu	neu
neu_treadmill	30	Man explaining how to use a treadmill	3.17	1.32	1.18	1.34	1.41	1.14	1.10	1.27	1.14	4.82	0.26	neu	neu	neu	neu
neu_vangoghmuseum	20	Halls in the Van Gogh Museum	3.28	1.52	1.38	1.44	1.44	1.12	1.17	1.10	1.11	4.86	0.29	neu	neu	neu	neu
neu_walkingthroughdesert	33	Family walking through the desert	3.47	1.38	1.58	1.74	1.48	1.01	1.05	1.05	1.03	4.10	0.23	neu	neu	neu	neu
neu_walkthroughdusseldorf	26	Walking through the streets at night	3.29	1.69	1.75	1.42	1.35	1.09	1.11	1.09	1.02	4.21	0.25	neu	neu	neu	neu
neu_winterwood	25	Winter landscape	3.70	1.58	1.69	1.85	1.76	1.12	1.14	1.21	1.12	3.81	0.26	neu	neu	neu	neu

Table 3 (*Continued*)

			Ratings (Experiment 3, N = *411)*											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (N = 411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
neg_armbentfromskateboard	22	Young man skateboarding down stairs breaks his arm	2.10	2.09	1.65	1.80	1.42	2.85	2.45	1.54	2.59	1.56	0.33	neg		mix	
neg_backfliphittinghead	24	Boy does back flip off vending machine and hits face on concrete	2.21	2.70	1.99	1.96	1.36	3.18	3.42	2.10	2.86	1.71	0.37	neg	neg	mix	neg
neg_bikefalloffcliff	21	Mountain biker slips and falls down a cliff	1.99	2.91	1.44	1.70	1.27	2.37	3.92	1.60	2.84	1.64	0.28	neg			
neg_bikeintowall	21	Young man on BMX crashes into the wall	2.14	2.22	1.74	1.64	1.33	2.52	2.50	1.71	2.20	1.92	0.31	neg			
neg_bmxfaceplant	26	Young man hits his face after BMX jump	2.17	1.93	1.59	1.77	1.40	2.22	2.38	1.44	2.22	1.93	0.28	neg			
neg_boybreakswristbiking	23	Boy riding bike does not make jump and flies forward to ground—lays in fetal position in pain	2.39	2.26	1.88	1.89	1.37	2.28	2.80	1.67	2.38	2.06	0.33	neg		mix	
neg_boyfaceplants	24	Boy rides skateboard off cabinet onto lower surface lands wrong onto head and flips over	2.26	2.00	1.65	1.49	1.26	2.22	2.61	1.65	1.88	2.04	0.29	neg		mix	
neg_boyfallsontrafficpole	22	Boy is trying to balance from one to the next pole, slips, and hits it with his hips	2.14	2.58	1.86	1.59	1.34	3.28	2.94	1.77	2.32	1.52	0.35	neg	neg	mix	neg
neg_boygetshitbycar	20	Boy sitting in car jumps out only to be hit by a car in the next lane mid-jump	1.60	2.54	1.53	1.56	1.10	3.75	3.60	2.62	3.15	1.48	0.32	neg	neg	mix	neg
neg_boylandsonhead	28	Boy attempts gymnastics routine by flipping in the air, but lands on head	2.88	2.52	2.31	2.04	1.67	1.92	2.66	1.29	2.00	2.02	0.31	neg			

Table 3 (*Continued*)

			Ratings (Experiment 3, N = *411)*											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (*N = *411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
neg_breakdancerkickskid	27	Man break dancing for a crowd accidently kicks a small child who walked up to him during performance	2.17	2.81	1.88	2.01	1.38	2.27	3.43	2.33	2.96	1.58	0.30	neg		mix	
neg_brokeankleskating	30	Boy jumps down flight of stairs on skateboard and breaks ankle—shows him in hospital with the bone deformed	1.69	2.78	1.40	1.79	1.27	3.96	3.24	1.86	2.66	1.50	0.32	neg	neg	neg	neg
neg_brokenlegskating	30	Boy falls off skateboard and lands on leg—yells in pain	1.96	2.42	1.59	1.47	1.25	2.72	2.70	1.64	2.19	1.75	0.30	neg			
neg_bullattacksrodeo	26	Man riding bull falls off and gets trampled	2.22	2.80	1.88	1.72	1.39	2.72	3.63	2.04	2.54	1.82	0.32	neg			
neg_bullhurtsman	30	Man on bull gets thrown around—flops like a rag doll	1.97	2.70	1.44	1.60	1.36	2.91	3.57	2.39	2.72	1.55	0.31	neg		neg	
neg_bullthrowandtrample	21	Bull throws and tramples torero	2.03	2.92	1.45	1.48	1.29	3.30	3.61	2.60	2.95	1.65	0.31	neg	neg	neg	neg
neg_bullwrongtarget	23	Bull tramples spectator	2.41	2.27	1.88	1.54	1.31	2.27	2.74	1.86	2.07	1.73	0.31	neg			
neg_carhitsskater	22	Boy on roller skates makes big jump down	1.98	2.89	1.61	1.68	1.27	2.71	3.88	2.15	2.29	1.65	0.30	neg			
neg_clifjumpaccident	23	Guys jumping off cliff into water—one hits head against cliff mid-jump	2.79	2.12	2.12	1.66	1.31	1.75	2.66	1.41	1.67	2.14	0.32	neg		mix	
neg_crocbitesman	28	Man demonstrating daredevil trick in front of crowd sticks arm in crocodile's mouth and gets bitten—runs off with bleeding arm	1.77	2.99	1.47	1.51	1.23	3.56	3.59	2.60	2.81	1.73	0.33	neg	neg	neg	neg

Table 3 (*Continued*)

			Ratings (Experiment 3, N = *411)*											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (N = 411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
neg_failedpainfulbackflip	20	Boy doing backflips in gymnasium does not turn in time and falls face/ neck first	3.06	2.39	2.54	1.91	1.37	1.79	2.34	1.31	1.99	2.05	0.35	neg		pos	
neg_fatboyrollercoaster	31	Boy on roller coaster begins slipping from roller coaster constraints screaming while his mother laughs	2.61	2.87	2.42	1.87	1.34	2.04	3.12	1.83	2.04	1.90	0.33	neg	mix		mix
neg_girlfallsridingskateboardbehindcar	24	Girl riding skateboard by a rope fixed on a car falls off	2.63	2.52	2.17	1.69	1.30	2.19	2.90	1.83	2.14	1.92	0.32	neg	mix	mix	
neg_guygetshitinfacewithabaseball	25	Pitcher gets hit in face with a baseball at baseball game	2.36	2.73	1.39	1.67	1.36	2.06	3.19	1.54	2.57	1.75	0.29	neg			neu
neg_guyridesbikedownstairs	31	Young man riding bike down stairs falls over	2.62	2.31	2.19	1.72	1.31	2.27	2.65	1.84	2.00	1.94	0.36	neg	mix	mix	
neg_gymnasticshitshead	28	Gymnast lands on his neck after jumping off single bar	2.54	2.60	1.86	1.87	1.59	2.17	3.17	1.40	2.71	1.69	0.27	neg		mix	
neg_gymnastmakesacrackingmistake	22	Gymnast lands on his neck after failed double backflip	2.65	2.21	1.97	1.61	1.36	1.95	2.30	1.23	1.63	1.96	0.31	neg	neu		neu
neg_horribleskiaccident	23	Skier loses control at ski race	2.09	2.81	1.37	1.74	1.28	2.35	3.33	1.42	2.82	1.71	0.29	neg			
neg_horseattacksman	26	Horse jumping on and biting man in street while other people try to stop it, throw rocks at it. Man takes off running	2.54	2.69	1.94	1.69	1.35	2.39	3.06	1.99	2.30	1.74	0.34	neg		mix	
neg_horsekicksface	28	Man whipping horse gets kicked in the face and thrown backwards	2.35	2.49	2.41	1.63	1.24	3.81	2.46	4.24	3.25	1.54	0.42	neg	mix	mix	mix

Table 3 (*Continued*)

			Ratings (Experiment 3, N = *411)*											*Categorisation*			
Name	*Film duration (in seconds)*	*Description*	*Valence*	*Arousal*	*Amusement*	*Love*	*Pride*	*Repulsion*	*Fear*	*Anger*	*Sadness*	*Neutrality*	*MF*	*Exp. 1 and 2*	*Exp. 3 (N = 411)*	*Exp. 3 (men)*	*Exp. 3 (women)*
neg_kidbikesofftruck	29	Young boy bikes off truck and falls down	2.24	2.32	1.82	1.42	1.15	2.74	2.55	2.33	2.29	1.84	0.29	neg		mix	
neg_manbreakslegfighting	27	Boxer breaks his leg in fight	2.28	2.51	1.45	1.38	1.21	2.97	2.62	1.68	2.08	2.40	0.30	neg			neg
neg_motorcyclejumperfinishesshort	28	Motorcyclist falls off his motorcycle after jumping on a ramp	2.19	2.88	1.52	1.88	1.33	2.33	3.41	1.64	2.59	1.73	0.33	neg			
neg_parcouraccident	24	Young man falls on bar after jump from a playground house	2.30	2.39	1.81	1.53	1.24	2.27	2.69	1.55	2.04	1.80	0.28	neg			
neg_postwalkfall	20	Boy trying to jump from one to the next pole, slips, and hits his head	2.35	2.32	1.82	1.47	1.21	2.31	2.52	1.69	1.90	1.93	0.29	neg			
neg_skaterfallsbreakswrist	30	Boy riding skateboard down stairs falls hard on hand, sits up cradling wrist which is disfigured	1.82	2.30	1.42	1.84	1.33	3.22	3.08	1.87	2.49	1.59	0.29	neg	neg		neg
neg_skatersnapshisarm	28	Skater breaks his arm after skateboard stunt on a rail	1.68	3.23	1.41	1.74	1.25	4.08	3.81	1.94	2.92	1.66	0.34	neg	neg	neg	neg
neg_snowboardercrashes	20	Person riding snowboard falls and hits face on metal pole	2.70	2.13	1.81	1.43	1.22	1.73	2.25	1.24	1.94	2.10	0.26	neg	neu		neu
neg_tablebackflip	20	Young man smashes his face on the table when he is doing a backflip	2.33	2.20	1.87	1.42	1.19	2.09	2.04	1.52	1.76	2.12	0.29	neg		mix	

Note: Naming of the film clips according to classification in Experiment 1 and 2.

on their studies' needs. In general, more film clips are effective in female students in a laboratory setting, than in a general community sample in an online experiment. This is partly due to the differences in the samples, but also to the settings. Although we propose to possibly use for future studies the strongest film clips of the library, we would like to mention that even film clips that did not meet inclusion criteria for mixed film clips in Experiment 3 (but in Experiments 1 and 2) were successfully used in laboratory studies to induce mixed emotional states (see Kreibig, Samson, & Gross, in press; Kreibig et al., 2013).

Limitations

It is important to note several limitations of the current study. First, the film clips are validated for English speakers only since all participants spoke English as a first language. Our film clips will need to be validated if used in studies with participants who do not speak English as a first language. Some of the clips contain English dialogue and may need to be translated or omitted for studies with non-English speaking participants (see language information provided for each film clip in the file 'Mixed emotions film library.xlsx').

Another limitation is that the current study asked for feeling ratings after the presentation of each film clip. Future studies should consider using online assessment of emotional feelings. One such approach is the use of rating dials, which allows a participant to rate the experience of emotion as it changes during a task (e.g., Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005). Button systems could also be utilised, which rate the experience and duration of affect through the use of two buttons, one for positive and one for negative emotions, and let participants select both buttons at once to express mixed emotions (Larsen, McGraw, Mellers, & Cacioppo, 2004). It is also possible to maintain the use of post viewing ratings through the use of the Analogical Emotional Scale (AES; Carrera & Oceja, 2007). Such approaches would shed light on the temporal course of the mixed emotions and might help to reveal whether mixed emotions were actually simultaneous or merely sequential.

Finally, the current study only focused on one specific type of mixed emotions including amusement and repulsion. However, other mixed emotions exist that are of potential interest for researchers (e.g., happy/sad, afraid/curious). Whereas the current study did not calculate measures for other mixed emotions, it can serve as a guide for how to establish a comparable film library with other types of mixed emotions.

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Supplementary material

Supplementary content is available via the 'Supplementary' tab on the article's online page (http://dx.doi.org/10.1080/02699931.2015.1031089).

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