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The emotional movie database (EMDB): an expanded toolkit for emotion research

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Abstract

Emotion-eliciting film clips are widely used in psychological, neuroscientific, and affective computing research as standardized stimuli for the study of emotional responses. The Emotional Movie Database (EMDB) was originally developed to provide silent film clips for emotion research; however, limitations in stimulus diversity motivated its expansion. The present study extends the EMDB by introducing four additional emotional categories—social exclusion, social inclusion, unpleasant landscapes, and extreme sports—together with an expanded set of neutral film clips. Two complementary validation experiments were conducted. Experiment 1 (laboratory-based; $n=117$) assessed social exclusion, social inclusion, unpleasant landscapes, and extreme sports clips, whereas Experiment 2 (web-based; $n=128$) evaluated social exclusion, social inclusion, and newly recorded neutral clips. Participants rated each clip on valence, arousal, and dominance using the Self-Assessment Manikin (SAM) and reported the discrete emotions experienced. The results provide descriptive normative data for the newly added categories. Social exclusion clips were associated with negative valence ($M=2.16$, $SD=1.07$) and moderate-to-high arousal ($M=5.97$, $SD=2.06$), whereas social inclusion clips showed positive valence ($M=7.17$, $SD=0.92$) and moderate arousal ($M=4.68$, $SD=1.72$). Unpleasant landscape clips were rated as negatively valenced ($M=2.77$, $SD=0.99$) with relatively low arousal ($M=4.53$, $SD=2.01$). Extreme sports clips showed positive valence ($M=6.25$, $SD=1.12$) and intermediate arousal ($M=5.34$, $SD=1.95$). Newly recorded neutral clips consistently elicited near-neutral valence ($M=5.11$, $SD=0.42$) and low arousal ($M=2.31$, $SD=1.36$), supporting their use as baseline control stimuli. This work provides initial validation evidence and descriptive norms for an expanded set of EMDB film clips, broadening the affective space covered by the database and supporting its use in experimental research on emotion across laboratory-based and online settings.

Keywords Emotional movie database · EMDB · Social inclusion · Social exclusion · Neutral films clips · Extreme sports · Pollution · Neutral film clips

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Introduction

Despite the availability of several validated emotion-eliciting databases, important methodological gaps remain, particularly the limited availability of high-arousal stimuli outside horror or erotic contexts, the underrepresentation of intermediate-arousal clips, and the scarcity of robust neutral baselines. Experimental research on emotion relies heavily on standardized stimuli capable of reliably eliciting distinct affective states. In psychology, neuroscience, and affective computing, such stimuli are essential for ensuring experimental control and comparability when investigating emotional processes related to mental health, decision-making, and human–computer interaction. Although several validated emotion-inducing stimulus databases are available, their usefulness is constrained by how comprehensively they represent the affective space, underscoring the need for continuous refinement and expansion.

There are already a considerable number of emotional datasets freely available to research scientists composed of different stimuli, such as pictures (Dan-Glauser & Scherer, 2011; Lang et al., 1999; Marchewka et al., 2014), sounds (Redondo et al., 2008), words (Lang et al., 1999; Soares et al., 2012; Warriner et al., 2013), music (Aljanaki et al., 2017; Eerola & Vuoskoski, 2011), film clips (Gross & Levenson, 1995; Schaefer et al., 2010), among others. However, these databases need to be constantly updated in order to provide researchers with more stimuli from the already existing categories or by adding newer categories, thus expanding their potential usefulness.

One of those databases is the emotional movie database (EMDB) (Carvalho et al., 2012). The EMDB was originally constructed to provide researchers with soundless film clips that could be used to elicit emotions. The expanded EMDB follows the same design principle by using silent film clips; however, the present validation was conducted in a predominantly Portuguese sample, and cross-cultural validity of the new categories is not claimed at this stage.

Film clips, typically short excerpts from full-length films, are particularly effective in eliciting sustained emotional responses at both subjective and physiological levels (Gross & Levenson, 1995). For instance, previous comprehensive meta-analyses of experimental studies on emotion have shown that film clips are powerful stimuli for eliciting both positive emotions and specific negative emotional states (Forgas, 1994; Gerrards-Hesse et al., 1994; Jallais & Gilet, 2010; Schaefer et al., 2010). In particular, film clips are easily standardized, involve no deceptive manipulation, enhance stimulus vividness, and represent dynamic stimuli with relatively high ecological validity (Jallais & Gilet, 2010; Samson et al., 2016; Schaefer et al., 2010; Strohminger et al., 2016; Uhrig et al., 2016). As such, films can depict complex social interactions and offer relatively high ecological validity compared with static stimuli (Schaefer et al., 2010; Samson et al., 2016).

The EMDB was created in 2011 and has been extensively used worldwide (Carvalho et al., 2012). The main objective of this work was to create an emotional dataset that could be used across cultures. However, the videos were validated for the Portuguese population without any auditory content, so they could be adapted by adding any language or by superimposing an auditory task to the film clips (Carvalho et al., 2011). The assessment of the emotional clips was based on a dimensional approach to emotional stimuli (valence, arousal, dominance). Thus, the self-report rating of a total of 113 healthy volunteers was assessed and resulted in an assessment of a total of 52 film clips to elicit emotional states from different quadrants of affective space and across 5 emotional categories: high arousing film clips (horror and erotic), low arousing film clips (social positive, social negative, and scenery) and neutral (object manipulation).

Prior research utilizing the EMDB has proven the database's efficacy in investigating attention-emotion interactions within cognitively challenging environments. Carvalho et al. (2011) investigated the psychophysiological correlates of sexually and non-sexually motivated attention to EMDB video clips during a demanding task. Their findings indicated that emotionally significant stimuli, especially those with motivational relevance, might impair task performance and alter autonomic responses, underscoring the sensitivity of EMDB clips in provoking affective states even in dual-task contexts. The current work enhances the EMDB by incorporating new emotional categories aimed at addressing deficiencies in affective diversity and arousal intensity, providing a more robust and complete instrument for future emotion research.

Although the EMDB is grounded in a dimensional model of emotion, discrete-emotion film databases are reviewed for contextual comparison, as they represent complementary approaches to emotion elicitation and have informed stimulus selection, validation procedures, and reporting practices in the field. Several databases of emotion-eliciting film clips have been developed over time, differing in their theoretical orientation (dimensional vs. discrete), stimulus characteristics (e.g., audio-visual vs. silent), validation samples, and coverage of the affective space. An early and influential example is the database developed by Gross and Levenson (1995), which systematically categorized film clips according to the discrete emotions they reliably elicited, such as sadness, anger, fear, and happiness. This work established important methodological standards for the use of dynamic, ecologically valid stimuli in emotion research. Subsequent extensions, such as the addition of further clips by Rottenberg et al. (2007), broadened its applicability. To

date, the Gross and Levenson database remains one of the most widely used resources for eliciting discrete emotional responses in both laboratory and online studies, underscoring its lasting relevance while also highlighting ongoing limitations in affective coverage that motivate further database development.

Schaefer et al. (2010) previously created a comprehensive database of emotion-eliciting films that have been widely used in psychological research. Their work provided a significant tool for assessing the emotional impact of various film stimuli. Building on this foundational research, Jenkins and Andrewes (2012) developed an emotional movie database consisting of 60 film clips validated by 109 volunteers aged between 18 and 88 years. These clips were designed to elicit five target emotions: amusement, disgust, fear, happiness, and sadness, as well as a neutral emotional state. However, the database proved less effective in consistently eliciting anger. Notably, results from their study highlighted differences in emotional responses between age groups, showing that older participants (aged 46 to 88 years) reported higher levels of arousal in response to both positive and negative stimuli compared to younger participants (aged 18 to 45 years). This finding suggests that emotional arousal may increase with age, adding an important dimension to emotion research across the lifespan. Together, these databases contribute significantly to the field by offering reliable tools for studying emotion elicitation and age-related emotional differences in a standardized and ecologically valid manner. Later, Gabert-Quillen et al. (2015) created and validated film clips in a sample of 304 undergraduate students to evoke 9 discrete emotions: amusement, anger, calmness, disgust, excitement, fear, happiness, sadness, and surprise.

Additionally, other researchers have developed emotional film databases that consider cultural specificities often overlooked in existing datasets. For example, Deng et al. (2017) created a standardized emotional film database specifically for Asian cultures, comprising 64 film clips that 110 volunteers evaluated. These clips successfully elicited eight emotions: fear, disgust, anger, sadness, neutrality, surprise, amusement, and pleasure. Along with subjective assessments of valence, arousal, and dominance, physiological responses such as heart rate and respiration rate were also measured for each film clip, offering a comprehensive tool for emotion research in Asian populations. Together, these databases differ substantially in stimulus modality, emotion models, and coverage of the affective space, but converge in their limited representation of intermediate-arousal stimuli, high-arousal positive contexts, and robust neutral baselines.

Despite the availability of several film-clip databases, including the EMDB, important limitations remain in the range of emotional states these tools can reliably elicit. While the original EMDB effectively covered positive and negative valence and included both high- and low-arousal stimuli, high-arousal clips outside horror or erotic contexts were underrepresented. In addition, relatively few stimuli elicited intermediate levels of arousal, which are critical for mapping the full affective space. The limited availability of neutral film clips further constrained the use of the database in designs requiring robust emotional baselines and balanced comparisons between emotional and non-emotional conditions.

Therefore, the primary objective of the present study was to evaluate the emotional impact of five newly developed film clip categories within the EMDB: social exclusion, social inclusion, unpleasant landscapes, extreme sports, and neutral stimuli. Accordingly, the focus of the present work is on stimulus development and affective characterization rather than theoretical adjudication between emotion models. To this end, two validation experiments were conducted. In addition, a secondary and explicitly exploratory objective was to examine the consistency of affective ratings across laboratory-based and web-based assessment contexts for a subset of categories (social exclusion, social inclusion, and neutral clips). This comparison was not intended to test systematic differences between assessment settings, but rather to assess the robustness and generalizability of EMDB ratings across commonly used experimental environments. Experiment 1, a lab-based assessment ($n = 117$), tested the effects of social exclusion, social inclusion, unpleasant landscapes, and extreme sports clips. Experiment 2, an online assessment ($n = 128$), focused on social exclusion, social inclusion, and newly recorded neutral clips. The development and validation of these stimuli were grounded in the Motivational Attention Model (Bradley & Lang, 1994), which emphasizes the role of valence and arousal in guiding emotional attention and physiological responses. Across both experiments, participants rated the clips using the Self-Assessment Manikin (SAM), yielding descriptive affective ratings of valence, arousal, and dominance for each category.

By expanding the EMDB to cover a broader and more balanced spectrum of the affective space—including previously underrepresented states such as emotionally neutral and positively valenced, high-arousal stimuli—this study provides researchers with a theoretically grounded, empirically validated, and freely accessible tool. Specifically, the expanded EMDB comprises five film-clip categories accompanied by descriptive ratings of valence, arousal, and dominance derived from both laboratory-based and web-based samples, and is available for research use under controlled access procedures. The updated EMDB supports various applications in psychology, neuroscience, and affective computing, offering enhanced ecological validity and

Table 1 Sociodemographic characteristics of participants

Characteristics	Lab-based assessment		Web-based assessment	
	n	%	*n*	%
Sex				
Female	93	79.5	95	74.2
Male	24	20.5	33	25.8
Nationality				
Portuguese	93	100	108	84.4
Others	–	–	20	15.6
Marital status				
Single	–	–	118	93.7
Cohabiting	–	–	3	2.3
Married	–	–	6	4.8
Divorced	–	–	1	0.8
Education				
Middle School	–	–	1	0.8
High School	93	100	93	72.7
Higher Education	–	–	34	26.6
Occupation	–	–	102	79.7
Student	93	100		
Worker student	–	–	7	5.5
Employed	–	–	19	14.8

$N = 245$ ($n = 117$ for Lab-based assessment; $n = 128$ for Web-based assessment). Lab-based assessment participants were on average 21.10 years old ($SD = 4.40$); and Web-based assessment participants were on average 22.86 years old ($SD = 7.50$)

versatility for studying emotion in controlled laboratory and real-world settings Table 1.

Methods

Study design and overview

The study comprised a stimulus development and selection phase followed by two independent validation experiments. In Phase 1, candidate film clips were selected and screened through an expert review process to ensure emotional clarity and category consistency. Experiment 1 involved a laboratory-based validation of emotional film clips, whereas Experiment 2 consisted of a web-based validation using a subset of categories and newly recorded neutral stimuli. Figure 1 provides an overview of the study design and workflow.

The assessment protocol used in this study was similar to that described by Carvalho et al. (2012). The emotional categories included in the expanded database were grounded in the two-dimensional affective model proposed by Bradley and Lang, encompassing valence (pleasant–unpleasant) and arousal (low–high). For each emotional category derived from commercial films, 10 clips were selected following expert pre-evaluation to ensure homogeneous valence and arousal profiles within categories. In addition, a set of neutral clips recorded by the research team was included; this neutral category comprised 13 clips. Together, these categories extend the range of emotional content available in the EMDB and are described as follows:

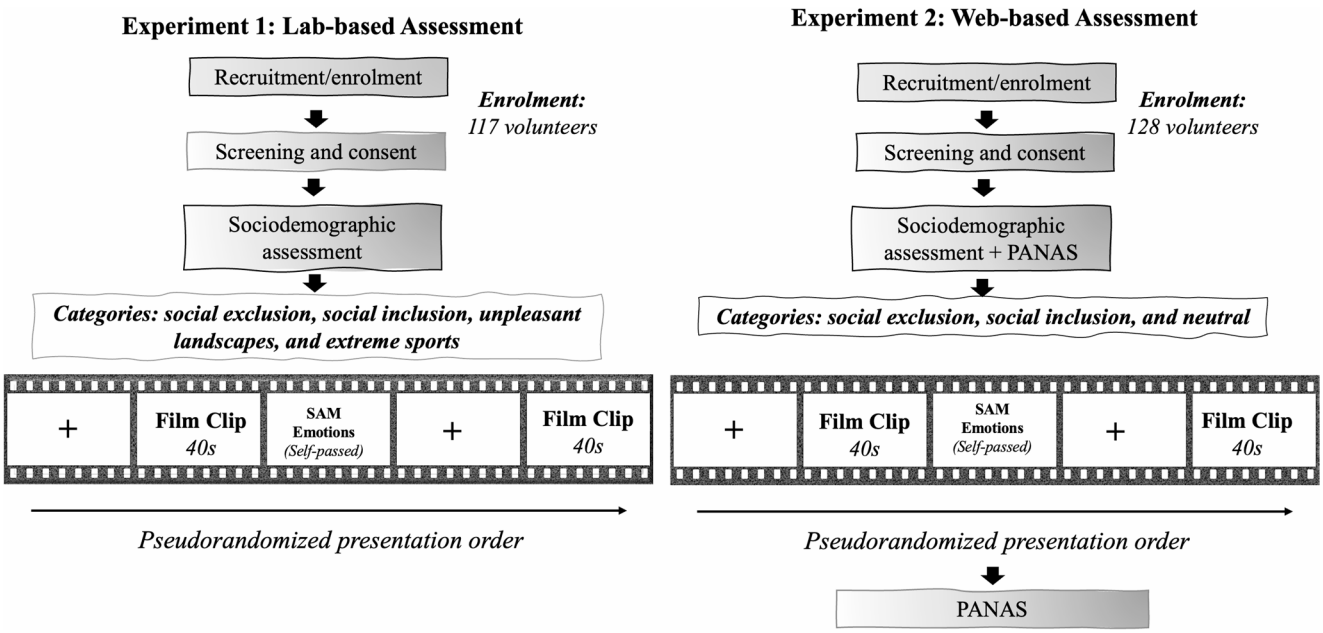

Fig. 1 Schematic representation of the study design. Experiment 1 depicts the laboratory-based validation of the new EMDB categories (social exclusion, social inclusion, unpleasant landscapes, and extreme sports), with film clips presented in a pseudorandomized order organized into four blocks of 10 clips. Experiment 2 depicts the web-based validation of a subset of EMDB categories (social exclusion, social inclusion, and neutral clips). PANAS, positive and negative affect schedule; SAM, self-assessment manikin

Social excluzsion

The social exclusion category refers to film clips depicting instances of social discrimination, marginalization, or social disadvantage in social interaction. The clips in this category showcase situations involving conflict between individuals, including scenes of racism, bullying, and social tension. These emotionally charged scenarios are designed to evoke feelings of exclusion and isolation. For detailed descriptions of each film clip, please refer to Table 2.

Social inclusion

The social inclusion film clips portray scenarios where individuals are integrated into groups and participate in social activities without experiencing any form of discrimination. These clips highlight moments where individuals, especially those at a disadvantage, experience improved abilities, opportunities, and dignity. The emotional content in this category is designed to reflect positive social interactions and inclusivity. For a detailed description of each film clip, please refer to Table 2.

Unpleasant landscapes

The unpleasant landscapes film clips depict scenes where natural environments have been negatively altered, such as by pollution. Similar to the "scenery" category of the original EMDB, which was rated as pleasant and low-arousing, these clips do not feature any animals or humans. Instead, they focus solely on the degradation of natural landscapes to evoke discomfort or unease. For detailed descriptions of each film clip in this category, please refer to Table 2.

Extreme sports

The extreme sports film clips depict real athletes engaging in action sports that are commonly perceived as involving elevated levels of physical challenge and risk, such as high speed, altitude, or complex motor demands. These stimuli were selected to represent contexts typically associated with heightened emotional activation, although the degree and nature of the affective responses elicited may vary across viewers. Unlike the social inclusion and social exclusion clips, which involve acted interpersonal scenarios, the extreme sports clips feature non-acted performances by professional or highly skilled athletes. Positive valence ratings observed for this category may reflect different experiential processes, including vicarious thrill, admiration of athletic skill, or aesthetic enjoyment of performance. For detailed descriptions of each film clip in this category, please refer to Table 2.

Neutral

The neutral film clips were recorded by the research team and, similar to the neutral category in the EMDB (Carvalho et al., 2012), they do not elicit strong appetitive or defensive motivations. These clips typically depict scenarios like object manipulation or simple games without featuring human or animal faces. The purpose of these clips is to provide emotionally neutral content, free from emotionally charged stimuli. For detailed descriptions of each film clip in this category, please refer to Table 2.

Stimulus development and selection (phase 1)

This phase focused on the selection, editing, and preliminary screening of film clips for inclusion in the expanded Emotional Movie Database, prior to validation with participant samples.

Expert review procedure

After defining the thematic categories (social inclusion, social exclusion, unpleasant landscapes, and extreme sports), two members of the research team selected and edited 60 film clips from a pool of 130 commercial films. In addition, 10 neutral film clips were recorded by the project team. All clips had a fixed duration of 40 s and were presented without audio.

The resulting set of clips was independently evaluated by 20 researchers with expertise in psychology and emotion research using the Self-Assessment Manikin (SAM). Researchers provided ratings of valence (1 = very unpleasant to 9 = very pleasant, with neutral ratings centered around 5) and arousal (1 = very low arousal to 9 = very high arousal). This expert evaluation served as a preliminary screening step prior to participant-based validation.

Based on these ratings, 40 film clips (10 per category) were retained, while 20 clips were excluded due to high variability in SAM scores across reviewers. Selection criteria

Table 2 Positive and negative affect

Affect	Web-based assessment				df	t	*p*	Cohen's d
	Pre-test		Post-test					
	M	SD	M	SD				
Positive	26.24	8.11	22.54	8.22	124	-7.59	$p < .001$	−0.45
Negative	14.03	5.85	15.34	6.49	124	2.28	0.024	0.21

emphasized (1) stability of the emotional context throughout the clip and (2) consistency of hedonic valence across the full 40-second duration, such that each clip predominantly elicited positive, negative, or neutral affect without simultaneously evoking mixed emotional states. Selected clips were further edited to ensure consistency in acting and emotional content. With the exception of the neutral and scenery-related categories, all clips depicted human presence and social interactions.

Inclusion and exclusion criteria

Based on the expert review, 40 film clips (10 per category) were retained for validation, whereas 20 clips were excluded due to high variability in Self-Assessment Manikin (SAM) ratings. High variability was defined as marked disagreement among reviewers regarding the emotional valence and/or arousal elicited by a given clip, indicating insufficient emotional consistency for inclusion.

Inclusion criteria required (1) stability of the emotional context throughout the entire 40-second clip and (2) consistency of hedonic valence, such that each clip predominantly elicited positive, negative, or neutral affect without simultaneously evoking mixed emotional states. Clips meeting these criteria were further edited, when necessary, to ensure consistency in acting and emotional content. With the exception of the neutral and scenery-related categories, all retained clips depicted human presence and social interactions.

This phase was designed as a preliminary screening step to refine the stimulus set prior to participant-based validation rather than as a formal reliability assessment; accordingly, inter-rater reliability coefficients were not computed at this stage.

Experiment 1: lab-based validation

Participants

A total of 117 healthy volunteers participated in the laboratory-based validation experiment. Participants were undergraduate students recruited from the university community. The mean age of the sample was 21.10 years ($SD = 4.40$), and the sample was predominantly female (79.5%).

Sample size was determined pragmatically based on feasibility and consistency with prior emotional film database validation studies (e.g., Carvalho et al., 2012; Gabert-Quillen et al., 2015), rather than through a formal a priori power analysis. The primary objective of the present work was not hypothesis testing at the individual level, but the derivation of stable descriptive estimates (means and dispersion) of emotional ratings for each stimulus. In this context, sample sizes comparable to or larger than those used in previous film database validation studies are considered appropriate for characterizing affective space and supporting comparisons between stimulus categories.

All participants provided written informed consent prior to participation and received course credit or equivalent academic compensation for their involvement.

Stimuli

The laboratory-based validation included 40 film clips selected during Phase 1, comprising four emotional categories: social exclusion, social inclusion, unpleasant landscapes, and extreme sports (10 clips per category). All clips had a fixed duration of 40 s and were presented without audio. The stimuli were displayed in a standardized format and resolution across all experimental sessions to ensure consistency of visual presentation.

Procedure

Data collection took place in a controlled laboratory setting across multiple group sessions. Participants were seated in a semicircular arrangement at an approximate 90° angle facing a projection screen, under standardized lighting conditions. Film clips were presented using a projector, with a maximum display size of approximately 1.5 m in width and 1.2 m in height.

Participants viewed a total of 40 film clips, presented in four pseudorandomized blocks of 10 clips each. Each clip was shown once and immediately followed by self-report ratings. Prior to the experimental session, participants were informed that some clips could be emotionally uncomfortable and that they could withdraw at any time without penalty. All scenarios depicted in the clips were performed by actors. A team of trained psychologists was present throughout the sessions to provide support if needed; however, no participant withdrew or reported excessive discomfort.

Before the main task, participants received standardized instructions on how to complete the ratings and were asked to focus on how each clip made them feel at the moment of viewing, rather than on their general mood or on how they believed they should feel.

Following each clip, participants completed the Self-Assessment Manikin (SAM) to rate valence, arousal, and dominance. Participants were then asked to select up to three emotion labels that best characterized their immediate emotional response to the clip, allowing for the possibility of mixed or complex emotional experiences. Emotion-label data were summarized descriptively at the clip level as percentages, reflecting the proportion of participants endorsing each label. Because participants could select more than one

label per clip, percentages do not sum to 100% and represent relative frequency of endorsement rather than exclusive categorization.

Measures

Emotional responses were assessed using the Self-Assessment Manikin (SAM), a nonverbal pictorial scale measuring valence, arousal, and dominance on 9-point Likert-type dimensions (Bradley & Lang, 1994; Lang et al., 2008). Valence reflected the subjective pleasantness–unpleasantness of the emotional experience, whereas arousal reflected the perceived intensity of emotional activation. Dominance reflected the perceived control during stimulus exposure. Higher dominance scores reflect a greater subjective sense of control over the emotional experience, whereas lower scores indicate feeling overwhelmed or dominated by the stimulus, consistent with the original SAM framework. No physiological measures of arousal were collected.

After each clip, participants also selected up to three emotion labels from a predefined list (Happy, Sad, Anger, Fear, Aversion, Surprise, Neutral, Supportive, Compassion, Envy, Love, Longing, Guilt, Pity, Shame, Jealousy, Embarrassment) to indicate the emotions elicited by the stimulus. The set of emotion categories was intentionally broad to capture both basic affective states and more complex or socially oriented emotions elicited by cinematic stimuli.

The emotion labels were selected to include both commonly studied basic affective states (e.g., happiness, sadness, fear, anger) and more socially oriented or complex emotions (e.g., compassion, guilt, shame) that are frequently elicited by film stimuli.

Additional control questions assessed prior familiarity with the clip (e.g., whether participants had previously watched the movie) and attentional engagement (e.g., whether they had looked away or closed their eyes during presentation). Clips recognized by 30% or more of participants were evaluated for potential exclusion from the final database, with the final decision informed by both the recognition rate and the clip's representativeness within its intended emotional category. This approach allowed us to balance control over stimulus familiarity with the preservation of category integrity, avoiding the removal of clips that were central to the emotional construct despite higher recognition levels.

Experiment 2: web-based validation

Participants

A total of 128 healthy volunteers participated in the web-based validation experiment. Participants were recruited online and completed the study remotely. The mean age of the sample was 22.86 years ($SD = 7.50$), and the sample was predominantly female (74.2%). The majority of participants were Portuguese nationals (84.4%), single (93.7%), and students (79.7%), with most having completed high school education (72.7%). In addition to sociodemographic variables (marital status, education level, and occupational status), baseline affective state was assessed using the Positive and Negative Affect Schedule (PANAS) and is reported descriptively in Table 1.

The web-based sample size followed the same pragmatic rationale adopted in Experiment 1, ensuring consistency with previous EMDB validation studies and sufficient stability of affective ratings at the stimulus and category levels.

All participants provided informed consent electronically prior to participation. Detailed demographic characteristics of the web-based sample are presented in Table 1.

Stimuli

The web-based validation included a subset of the Emotional Movie Database comprising 20 previously selected film clips (10 social exclusion and 10 social inclusion) and 10 newly recorded neutral clips. All clips had a fixed duration of 40 s, were presented without audio, and were displayed in color, consistent with the original EMDB design and the laboratory-based experiment.

To reduce participant burden and fatigue, the stimulus set was divided into two presentation lists (Presentation A and Presentation B), each containing 18 emotional film clips and one training clip unrelated to the EMDB.

Stimulus files were standardized prior to deployment. Although display resolution could vary depending on participants' devices in the web-based context, participants were instructed to complete the task using a computer in a distraction-free environment.

Procedure

The web-based assessment was conducted using the Google Forms platform. Prior to completing the online assessment, participants attended a brief training session conducted via the Zoom videoconferencing platform. This session was used exclusively to explain the study procedures and rating instructions and to ensure that participants understood how to evaluate the film clips.

During the Zoom training session, participants received a standardized explanation of the task and were shown a 40-second training film clip. They were instructed to attend carefully to the entire clip and to rate it in terms of valence, arousal, dominance, and elicited emotions, following the same criteria used in the main task. This training clip was

not part of the EMDB stimulus set and was used solely for familiarization with the rating procedure.

After the training session, participants accessed the study link and completed the assessment independently via Google Forms. They first completed an online informed consent form and a sociodemographic questionnaire, followed by a baseline assessment of affective state using the PANAS.

Participants were then assigned to one of two stimulus lists (Presentation A or Presentation B), with film clips presented sequentially. After each clip, participants completed the self-report measures before proceeding to the next stimulus.

Data collection occurred across four online data-collection waves administered via Google Forms, involving between 20 and 62 participants per wave. The total duration of the procedure was approximately 60 min. Participants completed the task remotely, primarily at home, and most commonly using a computer.

Measures

Emotional responses were assessed using the SAM, which measured valence, arousal, and dominance on 9-point pictorial scales, consistent with the dimensional model of emotion (Bradley & Lang, 1994; Lang et al., 2008). As in Experiment 1, no objective or physiological measures of arousal were collected.

In addition, participants completed the PANAS before and after the EMDB task to assess baseline and post-task affective state. The PANAS consists of 20 items, rated on a 5-point Likert scale ranging from 1 (very slightly or not at all) to 5 (extremely).

Following each film clip, participants selected up to three emotion labels from the same predefined list used in the laboratory-based experiment, ensuring consistency in emotion categorization across validation contexts.

Internal consistency and inter-rater reliability coefficients were not computed, as the goal of the database is stimulus validation and characterization of affective responses at the clip and category levels, rather than scale construction or psychometric measurement.

Data processing and statistical analysis

Descriptive analyses were conducted to characterize the position of the stimuli within the affective space. For each film clip, participant-level ratings were first averaged to obtain clip-level means. These clip-level means were then used to compute category-level grand means for valence, arousal, and dominance.

Inferential analyses were primarily conducted at the participant level using a general linear model framework. Separate within-subject repeated-measures analyses of variance (ANOVAs) were performed to examine differences in valence, arousal, and dominance across emotional categories. For the laboratory-based assessment, the within-subject factor comprised four levels (Social Exclusion, Unpleasant Landscapes, Extreme Sports, and Social Inclusion). For the web-based assessment, analyses included three levels (Neutral, Social Exclusion, and Social Inclusion).

For all repeated-measures ANOVAs, Mauchly's test was used to assess the assumption of sphericity. When this assumption was violated ($p < .05$), degrees of freedom were corrected using the Greenhouse–Geisser correction, and corrected F-values are reported. Effect sizes were estimated using partial eta squared (η^2_p). Post hoc pairwise comparisons were conducted using Bonferroni correction to control the familywise error rate, applied separately within each family of comparisons arising from a given repeated-measures ANOVA.

Changes in Positive and Negative Affect Schedule (PANAS) scores from pre- to post-session were assessed using paired-samples t-tests. Comparisons between laboratory-based and web-based assessments for overlapping categories (Social Exclusion and Social Inclusion) were conducted at the clip level, with each clip's mean rating treated as the unit of analysis. Independent-samples t-tests were used for these comparisons, and Welch's correction was applied when homogeneity of variance was violated, resulting in non-integer degrees of freedom.

To account for multiple comparisons across individual film clips, p-values were adjusted using the Bonferroni correction. Results were considered statistically significant when adjusted p-values were below the 0.05 threshold. Effect sizes for t-tests were reported using Cohen's d. All statistical analyses were performed using IBM SPSS Statistics (version 23; IBM Corp.) and RStudio (version 2025.5.0.496).

Ethics approval and informed consent

The study received prior approval from the local ethics review board, the *Subcomissão de Ética para as Ciências Sociais e Humanas da Universidade do Minho* (reference nº SECSH 028/2017), and was conducted in accordance with the Declaration of Helsinki. All participants provided written informed consent prior to participation.

Transparency and openness

This study followed the American Psychological Association's Transparency and Openness Promotion (TOP)

Guidelines. All measures, materials, and procedures are described in detail in the manuscript. The complete set of film clips from the expanded Emotional Movie Database (EMDB) is available for scientific research purposes upon request and signature of a user agreement. Interested researchers may contact the authors via EMDB@psi.uminho.pt and/or sandrarc@psi.uminho.pt to obtain access.

The study was not preregistered. Data sharing is subject to ethical constraints due to the inclusion of identifiable audiovisual stimuli; however, summary statistics are available from the authors upon reasonable request. No custom or automated data-analysis scripts were used beyond the standard statistical procedures described in the manuscript. The study adheres to Journal Article Reporting Standards (JARS) to support transparency and reproducibility.

Reliability and agreement metrics

To further characterize the stability and agreement of affective ratings at the clip and category levels, reliability and agreement metrics were calculated for all affective categories across both experiments (see Table S1). Inter-rater reliability, assessed via Intraclass Correlation Coefficients (ICC; average measures, two-way mixed, absolute agreement), was excellent for nearly all categories. In the lab-based group, ICCs ranged from 0.878 to 0.970 across all dimensions. Similarly, in the web-based group, ICCs for the categories Social Exclusion and Social Inclusion ranged from 0.863 to 0.950. All reliability and agreement metrics were computed at the clip level, using mean ratings per clip as the unit of analysis.

Internal stability was further confirmed using split-half reliability (Spearman-Brown coefficients), with values consistently ranging between 0.868 and 0.974 for the experimental stimuli. The only exception to this pattern was observed in the web-based Neutral category for valence (ICC = 0.470; Spearman-Brown = 0.621). This lower reliability for neutral valence is expected and has been consistently reported in affective norms studies, reflecting restricted variance and the inherent subjective ambiguity of non-emotional stimuli (Grühn & Scheibe, 2008; Libkuman et al., 2007).

Agreement between lab-based and web-based ratings for the overlapping categories (Social Exclusion and Social Inclusion) was examined using Pearson correlations computed separately for each category and affective dimension. For Social Exclusion, strong positive correlations were observed for valence ($r = .81$, $p = .005$) and arousal ($r = .92$, $p < .001$). Similarly, for Social Inclusion, strong positive correlations emerged for valence ($r = .77$, $p = .009$) and arousal ($r = .74$, $p = .014$). These findings indicate that the relative ordering of clips on the core affective dimensions (valence and arousal) was largely consistent across assessment settings. In contrast, dominance ratings were not significantly correlated across settings (Social Exclusion: $r = .25$, $p = .551$; Social Inclusion: $r = -.35$, $p = .323$), suggesting lower cross-setting agreement for this dimension.

Results

Positive and negative affect

Paired-samples t-tests were performed to evaluate changes in positive and negative affect (PANAS) before and after the experiment in the web-based group. Participants showed a significant decrease in positive affect from pre ($M = 26.24$, $SD = 8.11$) to post ($M = 22.54$, $SD = 8.22$) experiment ($t(124) = -7.59$, $p < .001$, $d = -0.45$), and a significant increase in negative affect from pre ($M = 14.03$, $SD = 5.85$) to post ($M = 15.34$, $SD = 6.49$) experiment ($t(124) = -2.28$, $p < .05$, $d = 0.21$).

Affective ratings

Table 3 describes each film clip and the corresponding valence, arousal, and dominance ratings. Ratings are presented separately for male and female participants, together with the percentage of participants who reported recognizing each clip.

The ratings are reported for all clips retained in the final dataset following the predefined recognition criteria. Although one clip exceeded the 30% recognition threshold, it was retained due to its representativeness of the target emotional category and is explicitly identified in the Results and Supplementary Materials.

The scores for valence, arousal, and dominance were assessed using the Self-Assessment Manikin (SAM; Bradley & Lang, 1994). The paper-and-pencil version of the SAM used graphical figures for each film clip, with participants rating each dimension on a 9-point Likert scale (see Lang et al., 2008 for a detailed review). Higher dominance scores reflect a greater subjective sense of control over the emotional experience, whereas lower scores indicate feeling overwhelmed or dominated by the stimulus. Figure 2 illustrates the distribution of ratings for valence, arousal, and dominance, suggesting that the selected film categories occupy distinct sub-quadrants of the affective space (pleasure, valence, and arousal) for both male and female participants.

Before data analysis, participants' familiarity with each film was examined. Although one clip was recognized by more than 30% of participants (46.9%), it was retained in the analyses due to its representativeness of the target emotional

Table 3 Descriptive statistics for each film clip by emotional category and experimental condition

Film clip Category		Name	Clip description	Valence mean (*SD*)					Arousal mean (*SD*)					Dominance mean (*SD*)				
				Overall	Lab-based validation		Web-based validation		Overall	Lab-based validation		Web-based validation		Overall	Lab-based validation		Web-based validation	
					Men	Women	Men	Women		Men	Women	Men	Women		Men	Women	Men	Women
Neutral	6,002	Big triangles (n=104)	Moving big, coloured paper triangles	5.14 (0.76)	–	–	5.19 (0.85)	5.13 (0.73)	1.85 (1.52)	–	–	1.65 (1.36)	1.91 (1.57)	7.65 (2.26)	–	–	8.08 (1.67)	7.51 (2.42)
	6,003	Highlighters	Moving highlighters of different colours	4.89 (1.10)	–	–	4.73 (1.22)	4.95 (1.06)	2.39 (2.05)	–	–	2.15 (2.01)	2.47 (2.06)	7.09 (2.43)	–	–	7.58 (2.40)	6.92 (2.43)
	6,004	Squares	Moving coloured paper squares	4.90 (0.94)	–	–	4.73 (0.92)	4.96 (0.95)	2.01 (1.83)	–	–	1.69 (1.57)	2.12 (1.91)	7.38 (2.57)	–	–	8.27 (1.76)	7.08 (2.73)
	6,005	Cups	Moving coloured cups	5.11 (1.00)	–	–	4.88 (0.99)	5.18 (1.00)	2.15 (1.85)	–	–	1.96 (1.80)	2.22 (1.88)	7.32 (2.40)	–	–	8.00 (1.92)	7.09 (2.51)
	6,006	Painting	Painting a leaf	5.33 (1.33)	–	–	5.23 (1.03)	5.36 (1.41)	2.66 (1.93)	–	–	2.65 (2.15)	2.67 (1.87)	7.05 (2.28)	–	–	7.62 (2.10)	6.86 (2.32)
	6,007	Labyrinths	Solving three different mazes	5.73 (1.14)	–	–	5.35 (0.69)	5.86 (1.24)	2.71 (2.06)	–	–	1.96 (1.76)	2.96 (2.10)	7.10 (2.27)	–	–	7.50 (2.18)	6.96 (2.29)
	6,008	Bouncing ball (n=111)	Bouncing ball slowly moving in the hall	5.18 (1.33)	–	–	5.45 (0.91)	5.09 (1.44)	2.61 (2.04)	–	–	2.59 (1.96)	2.62 (2.08)	6.81 (2.59)	–	–	7.52 (2.03)	6.56 (2.73)
	6,009	Small triangles	Moving small, coloured paper triangles	5.19 (0.95)	–	–	5.17 (0.81)	5.20 (1.00)	2.14 (1.88)	–	–	1.93 (1.73)	2.22 (1.93)	7.21 (2.56)	–	–	8.07 (1.89)	6.90 (2.71)
	6,010	Wood doll	Handling a small wooden puppet	4.98 (0.73)	–	–	4.97 (0.50)	4.99 (0.79)	2.13 (1.68)	–	–	2.00 (1.69)	2.17 (1.68)	7.34 (2.44)	–	–	7.45 (2.32)	7.30 (2.49)
	6,011	Gait	Gait in different shoes/sleepers	5.06 (0.91)	–	–	5.07 (0.70)	5.06 (0.97)	2.19 (1.74)	–	–	2.21 (1.90)	2.18 (1.69)	7.19 (2.57)	–	–	7.79 (2.18)	6.98 (2.67)
	6,012	Cutlery	Putting cutlery in a tray	5.03 (0.97)	–	–	4.83 (0.76)	5.10 (1.03)	2.50 (1.84)	–	–	2.21 (1.66)	2.61 (1.90)	6.94 (2.54)	–	–	7.21 (2.50)	6.84 (2.57)
	6,013	Trapezoids	Moving coloured paper trapezoids	5.11 (0.62)	–	–	5.10 (0.56)	5.11 (0.65)	1.96 (1.60)	–	–	1.72 (1.36)	2.05 (1.68)	7.52 (2.26)	–	–	8.14 (1.66)	7.30 (2.40)
	6,014	Napkins	Moving triangular, square, and rectangular napkins	4.91 (0.94)	–	–	5.10 (0.56)	4.84 (1.04)	2.23 (1.99)	–	–	2.00 (1.90)	2.32 (2.32)	7.06 (2.67)	–	–	7.66 (2.22)	6.85 (2.79)

Table 3 continue

Film clip Category		Name	Clip description	Valence mean (*SD*)					Arousal mean (*SD*)					Dominance mean (*SD*)				
				Overall	Lab-based validation		Web-based validation		Overall	Lab-based validation		Web-based validation		Overall	Lab-based validation		Web-based validation	
					Men	Women	Men	Women		Men	Women	Men	Women		Men	Women	Men	Women
Social exclusion	7,000	American yearbook (*n*=228)	Teenage boy abused by a group of young people on the street	1.97 (1.36)	2.46 (1.10)	1.78 (1.13)	2.41 (1.50)	1.89 (1.55)	6.21 (2.27)	5.37 (2.28)	6.43 (2.19)	5.21 (2.61)	6.57 (2.09)	4.37 (2.58)	4.79 (2.36)	4.32 (2.49)	5.34 (2.68)	3.95 (2.64)
	7,001	Bang Bang You're dead	Teenage boy attacked by a group of young people in the toilet at the school	1.85 (1.40)	2.42 (1.21)	1.83 (1.40)	2.10 (1.63)	1.62 (1.33)	6.61 (2.20)	5.83 (2.53)	6.65 (2.24)	6.28 (2.45)	6.93 (1.92)	4.11 (2.54)	4.88 (2.59)	4.30 (2.58)	4.34 (2.61)	3.57 (2.39)
	7,002	Kidulthood	Teenage girl beaten up in the classroom by other classmates	2.17 (1.53)	2.38 (1.35)	2.13 (1.26)	2.59 (1.99)	2.00 (1.65)	5.99 (2.29)	5.58 (2.67)	6.03 (2.32)	5.66 (2.54)	6.18 (2.06)	4.62 (2.46)	5.17 (2.79)	4.72 (2.34)	5.21 (2.47)	4.15 (2.44)
	7,003	Klass	Teenage boy humiliated in locker room	2.05 (1.38)	2.75 (1.33)	2.02 (1.29)	2.38 (1.37)	1.76 (1.41)	6.02 (2.36)	5.46 (2.65)	5.95 (2.39)	5.48 (2.61)	6.45 (2.10)	4.46 (2.44)	5.08 (2.57)	4.58 (2.33)	4.79 (2.69)	4.02 (2.40)
	7,004	Little boy	Little boy attacked by a group of older children and dragged into the dustbin on the street	2.28 (1.47)	2.50 (1.22)	2.24 (1.44)	2.34 (1.37)	2.23 (1.61)	5.68 (2.40)	5.29 (2.49)	5.91 (2.32)	4.90 (2.50)	5.78 (2.37)	4.77 (2.51)	5.21 (2.52)	4.39 (2.34)	5.59 (2.64)	4.83 (2.60)
	7,005	Social exclusion, source YouTube (*n*=221)	Schoolmates bully a little boy	2.36 (1.52)	2.42 (1.35)	2.20 (1.47)	2.69 (1.76)	2.42 (1.55)	5.77 (2.36)	5.42 (2.84)	5.90 (2.25)	4.85 (2.81)	6.04 (2.12)	4.72 (2.52)	5.54 (2.72)	4.46 (2.26)	5.54 (3.05)	4.50 (2.50)
	7,006	Bullying the guest	Teenage boy assaulted in the school hallway by a group of students	2.46 (1.38)	2.75 (1.19)	2.33 (1.32)	2.69 (1.54)	2.44 (1.45)	5.56 (2.25)	5.17 (2.55)	5.63 (2.14)	4.73 (2.82)	5.86 (2.02)	4.76 (2.43)	5.25 (2.63)	4.39 (2.22)	6.15 (2.65)	4.60 (2.41)
	7,007	Girl Fight (2011)	Young woman filmed while being assaulted in a house	2.14 (1.53)	2.63 (1.38)	1.90 (1.21)	2.54 (1.63)	2.13 (1.81)	6.13 (2.21)	5.50 (2.55)	6.29 (2.26)	5.08 (2.47)	6.47 (1.80)	4.67 (2.54)	5.33 (2.67)	4.63 (2.51)	5.54 (2.66)	4.21 (2.40)
	7,008	Tormented	Teenage boy attacked in the sports court	2.38 (1.58)	2.96 (1.30)	2.22 (1.50)	2.65 (1.55)	2.32 (1.72)	5.70 (2.42)	5.21 (2.40)	5.83 (2.22)	4.27 (2.74)	6.18 (2.38)	4.76 (2.56)	5.04 (2.87)	4.45 (2.32)	6.23 (2.70)	4.55 (2.58)
	7,009	Movie Unknown	Homeless humiliated on the street	1.92 (1.23)	2.17 (1.24)	1.96 (1.31)	2.27 (1.73)	1.68 (0.83)	6.40 (2.21)	6.29 (2.24)	6.31 (2.33)	5.73 (2.44)	6.77 (1.93)	4.40 (2.51)	5.08 (2.70)	4.44 (2.47)	5.42 (2.52)	3.81 (2.37)

Table 3 continue

Film clip Category		Name	Clip description	Valence mean (*SD*)					Arousal mean (*SD*)					Dominance mean (*SD*)				
				Overall	Lab-based validation		Web-based validation		Overall	Lab-based validation		Web-based validation		Overall	Lab-based validation		Web-based validation	
					Men	Women	Men	Women		Men	Women	Men	Women		Men	Women	Men	Women
Unpleasant landscapes	8,000	Baraka (1992) 2160p 4k	Houses and residents of a favela living in inadequate conditions 1	2.55 (1.45)	2.83 (1.27)	2.47 (1.49)	–	–	4.81 (2.37)	4.46 (2.73)	4.90 (2.28)	–	–	4.38 (2.55)	5.17 (2.85)	4.17 (2.43)	–	–
	8,001	Baraka (1992) 2160p 4k	Children and adults searching for objects in the trash	2.83 (1.37)	3.00 (1.38)	2.78 (1.37)	–	–	4.38 (2.41)	4.04 (2.63)	4.47 (2.36)	–	–	4.48 (2.59)	5.33 (2.82)	4.26 (2.49)	–	–
	8,002	HUMAN Extended version VOL.1	People searching for objects in the trash	2.74 (1.35)	3.29 (1.33)	2.60 (1.33)	–	–	4.42 (2.23)	3.63 (2.37)	4.62 (2.16)	–	–	4.65 (2.62)	5.50 (2.90)	4.43 (2.51)	–	–
	8,003	How plastic destroying the environment and human health - Sky News	Plastic pollution on the beach	2.52 (1.32)	2.92 (1.21)	2.42 (1.34)	–	–	4.85 (2.4)	3.88 (2.27)	5.10 (2.38)	–	–	4.43 (2.64)	5.50 (3.00)	4.15 (2.48)	–	–
	8,004	How plastic destroying the environment and human health - Sky News	People cleaning up pollution on the beach	3.07 (1.31)	3.21 (1.41)	3.03 (1.29)	–	–	4.03 (2.04)	3.79 (2.23)	4.10 (2.00)	–	–	4.55 (2.46)	5.63 (2.78)	4.27 (2.30)	–	–
	8,005	HUMAN Extended version VOL.1	Pollution on the beach and near the favela	2.89 (1.37)	3.17 (1.17)	2.82 (1.41)	–	–	4.48 (2.28)	3.79 (2.25)	4.66 (2.26)	–	–	4.59 (2.44)	5.25 (2.63)	4.42 (2.37)	–	–
	8,006	Baraka (1992) 2160p 4k	Homeless adults and children on the street	2.09 (1.33)	2.63 (1.28)	1.96 (1.31)	–	–	5.22 (2.43)	4.50 (2.70)	5.41 (2.33)	–	–	4.43 (2.62)	5.50 (3.05)	4.15 (2.44)	–	–
	8,007	Samsara (2011)	Street vendors with poor conditions; and children and adults looking for valuables in the trash	2.70 (1.33)	2.96 (1.30)	2.63 (1.34)	–	–	4.69 (2.41)	4.00 (2.55)	4.87 (2.36)	–	–	4.38 (2.52)	5.17 (2.99)	4.18 (2.36)	–	–
	8,008	Samsara (2011)	Houses and residents of a favela with inadequate conditions 2	2.79 (1.3)	3.08 (1.18)	2.72 (1.32)	–	–	4.40 (2.22)	3.88 (2.68)	4.54 (2.08)	–	–	4.36 (2.53)	5.21 (3.13)	4.14 (2.33)	–	–
	8,009	Baraka (1992) 2160p 4k	Houses of a favela with inadequate conditions	3.46 (1.23)	3.58 (1.10)	3.43 (1.26)	–	–	4.04 (2.18)	3.75 (2.31)	4.12 (2.16)	–	–	4.60 (2.49)	5.08 (2.92)	4.47 (2.37)	–	–

Table 3 continue

Film clip Category		Name	Clip description	Valence mean (*SD*)					Arousal mean (*SD*)					Dominance mean (*SD*)				
				Overall	Lab-based validation		Web-based validation		Overall	Lab-based validation		Web-based validation		Overall	Lab-based validation		Web-based validation	
					Men	Women	Men	Women		Men	Women	Men	Women		Men	Women	Men	Women
Extreme sports	9,000	Dan Atherton Sends It Down the Hardline MTB Track	Downhill with Dan Atherton	5.85 (1.48)	6.08 (1.61)	5.80 (1.45)	–	–	5.32 (2.38)	5.25 (2.58)	5.33 (2.34)	–	–	4.98 (2.58)	5.13 (2.88)	4.95 (2.51)	–	–
	9,001	GoPro: Carson Storch's GIANT 360 Drop at Red Bull Rampage 2016	Downhill with Carson Storch	5.80 (1.63)	5.96 (1.78)	5.76 (1.59)	–	–	5.76 (2.31)	5.33 (2.81)	5.87 (2.17)	–	–	5.09 (2.3)	5.13 (2.71)	5.09 (2.20)	–	–
	9,002	Kenny Belaey's Balance	Kenny Belaey Rides Bike Across Slackline	6.02 (1.82)	6.29 (1.90)	5.95 (1.80)	–	–	6.35 (2.29)	5.83 (2.84)	6.48 (2.13)	–	–	4.98 (2.43)	4.50 (2.84)	5.11 (2.31)	–	–
	9,003	GoPro Awards: Base Jump	Parachute jump from the cliff	6.37 (1.47)	6.29 (1.43)	6.39 (1.48)	–	–	4.89 (2.4)	4.50 (2.96)	4.99 (2.24)	–	–	5.39 (2.69)	5.08 (3.28)	5.47 (2.54)	–	–
	9,004	GoPro Awards: Speedflying Through Fog with Jamie Lee	Speedflying along the cliff	6.09 (1.39)	6.50 (1.35)	5.99 (1.39)	–	–	5.12 (2.42)	5.67 (2.70)	4.98 (2.33)	–	–	5.09 (2.45)	4.88 (2.85)	5.15 (2.35)	–	–
	9,005	GoPro Awards: Wing-suit Flight Between Skyscrapers with Brandon Mikesell	Wingsuit 1	6.51 (1.51)	6.42 (1.64)	6.54 (1.48)	–	–	5.28 (2.55)	4.92 (3.13)	5.38 (2.39)	–	–	5.27 (2.56)	5.54 (2.99)	5.20 (2.44)	–	–
	9,006	GoPro: 2500 m Chamonix Wingsuit Flight	Wingsuit 2	5.94 (1.35)	6.08 (1.53)	5.90 (1.30)	–	–	4.71 (2.36)	5.08 (2.84)	4.61 (2.23)	–	–	4.96 (2.58)	5.17 (2.97)	4.90 (2.48)	–	–
	9,007	Skydive Dubai - May 2011	Dubay sky jumping	6.59 (1.45)	6.25 (1.51)	6.68 (1.43)	–	–	5.45 (2.46)	4.88 (2.92)	5.60 (2.31)	–	–	5.09 (2.53)	5.58 (3.13)	4.97 (2.35)	–	–
	9,008	Extreme sports, source YouTube	Skying	6.09 (1.42)	6.50 (1.56)	5.99 (1.37)	–	–	5.12 (2.35)	5.04 (2.73)	5.14 (2.25)	–	–	5.20 (2.56)	4.67 (3.13)	5.33 (2.40)	–	–
	9,009	GoPro: End-less Barrels - GoPro of the Winter 2013-14 powered by Surfline	Surfing	7.19 (1.52)	7.17 (1.44)	7.19 (1.55)	–	–	5.40 (2.37)	5.04 (2.63)	5.49 (2.31)	–	–	5.37 (2.63)	5.25 (3.00)	5.40 (2.54)	–	–

Table 3 continue

Film clip Category		Name	Clip description	Valence mean (*SD*)					Arousal mean (*SD*)					Dominance mean (*SD*)				
				Overall	Lab-based validation		Web-based validation		Overall	Lab-based validation		Web-based validation		Overall	Lab-based validation		Web-based validation	
					Men	Women	Men	Women		Men	Women	Men	Women		Men	Women	Men	Women
Social inclusion	10,000	Qu'est-ce qu'on a (encore) fait au bon Dieu? (*n*=228)	Laure Verneuil-Koffi is accompanied down the aisle by her father and father-in-law	7.50 (1.64)	7.21 (1.50)	7.88 (1.07)	6.38 (1.90)	7.54 (1.93)	5.10 (2.18)	4.42 (2.48)	5.45 (1.86)	4.03 (2.43)	5.27 (2.21)	5.61 (2.47)	5.38 (3.05)	5.55 (2.38)	6.38 (2.60)	5.49 (2.34)
	10,001	Café de Flore	Moment of complicity between mother and child	7.72 (1.30)	7.42 (1.47)	7.83 (1.09)	7.31 (1.56)	7.83 (1.35)	5.08 (2.45)	5.00 (2.67)	5.53 (2.24)	4.34 (2.86)	4.87 (2.40)	5.53 (2.49)	5.21 (2.99)	5.51 (2.34)	6.48 (2.47)	5.32 (2.45)
	10,002	Music Within	Two friends skating, one in a wheelchair	7.07 (1.47)	6.71 (1.37)	7.14 (1.41)	6.83 (1.67)	7.20 (1.49)	4.74 (2.19)	4.38 (2.52)	4.81 (1.96)	4.10 (2.37)	5.00 (2.27)	5.54 (2.38)	5.67 (2.63)	5.26 (2.31)	6.10 (2.61)	5.61 (2.23)
	10,003	Soul Surfer	Bethany Hamilton surfs for the first time after losing an arm	7.36 (1.53)	7.00 (1.29)	7.56 (1.22)	7.10 (1.57)	7.34 (1.85)	5.27 (2.38)	4.71 (2.73)	5.37 (2.09)	4.62 (2.74)	5.56 (2.41)	5.40 (2.55)	5.25 (2.86)	5.18 (2.38)	5.96 (2.97)	5.49 (2.49)
	10,004	The Brooke Ellison Story (*n*=221)	A woman in a wheelchair dancing with the man she loves	7.05 (1.43)	6.92 (1.25)	7.14 (1.35)	6.38 (1.58)	7.19 (1.50)	4.48 (2.38)	4.29 (2.27)	7.14 (1.35)	3.54 (2.67)	4.38 (2.34)	5.57 (2.47)	5.38 (2.52)	5.15 (2.48)	6.73 (2.69)	5.76 (2.26)
	10,005	Os colegas	A woman dancing with her friends in her wedding party	6.87 (1.48)	6.58 (1.61)	7.06 (1.22)	5.73 (1.78)	7.10 (1.45)	4.27 (2.27)	3.96 (2.65)	4.63 (2.11)	3.46 (2.45)	4.21 (2.22)	5.83 (2.45)	5.04 (3.07)	5.23 (2.36)	6.92 (1.85)	6.44 (2.27)
	10,006	Miracle in 34th street	Little girl meets Santa Claus	7.62 (1.42)	7.29 (1.43)	7.73 (1.43)	7.08 (1.47)	7.76 (1.36)	4.59 (2.43)	4.50 (2.78)	5.02 (2.17)	3.35 (2.50)	4.51 (2.48)	5.81 (2.49)	5.46 (2.86)	5.58 (2.34)	6.54 (2.52)	5.96 (2.53)
	10,007	This is us	While the rest of the family is asleep, a mother and a child are confiding	6.64 (1.57)	6.08 (1.28)	6.35 (1.61)	6.38 (1.44)	7.23 (1.50)	3.54 (2.22)	3.38 (2.41)	3.65 (2.09)	3.08 (2.47)	3.62 (2.25)	5.73 (2.7)	5.58 (2.96)	5.19 (2.84)	6.81 (2.48)	6.06 (2.38)
	10,008	Praying with Lior	Lior is very happy at his bar mitzvah	7.16 (1.46)	6.75 (1.33)	7.41 (1.24)	6.65 (1.38)	7.15 (1.71)	4.41 (2.30)	4.17 (2.82)	4.55 (2.09)	4.00 (2.50)	4.46 (2.32)	5.65 (2.53)	5.42 (3.19)	5.18 (2.32)	6.73 (2.54)	5.92 (2.44)
	10,009	Titans (*n*=228)	A group of young men of an American football team celebrate	6.56 (1.33)	6.42 (1.41)	6.47 (1.29)	6.28 (1.22)	6.79 (1.36)	4.20 (2.22)	3.88 (2.03)	3.65 (2.16)	4.31 (2.25)	4.54 (2.31)	5.64 (2.55)	5.54 (2.90)	5.16 (2.76)	6.90 (1.93)	5.77 (2.26)

Sex-stratified values are provided for descriptive transparency only. All primary analyses and recommended affective ratings are based on pooled sample data. Given the reduced size of the male subsample, sex-specific values should be interpreted cautiously and are not intended as independent normative references

category and the absence of excessive recognition across the remaining stimuli (for complete results, see Supplementary Material, Table S1). Table 3 provides a descriptive overview of each film clip, followed by affective ratings of valence, arousal, and dominance. Mean ratings are first presented for the total sample, and subsequently stratified by sex within the laboratory-based and web-based assessment groups.

Figure 3 depicts the distribution of all EMDB film categories within the affective space, where valence (x-axis) and arousal (y-axis) are the primary emotional dimensions. Every point shows the grand mean, or average ratings of ten film clips per category, therefore providing a whole picture of the emotional orientation of every category.

Lab-based assessment group

Social exclusion

This category triggered low levels of valence, and anger (36.4%), sadness (26.3%) and aversion (11.4%) were the emotions that better represented what participants felt with these clips (Figs. 3 and 4; for complete data, see Supplementary Material, Table S2). The arousal results demonstrated moderate agitation, and the dominance results indicated that participants felt slightly dominated by these categories.

Social inclusion

The results indicated higher valence scores when compared to the previous categories, and the emotions most frequently used to represent the films were happiness (40.4%), love (28.5%) and compassion (12.6%) (Figs. 3 and 4; Table S2). Arousal ratings indicated moderate emotional activation, and dominance ratings suggested a moderate-to-high sense of subjective control during film viewing.

Unpleasant landscape

These films caused low valence levels, and the most frequently chosen emotions were sadness (36.2%), compassion (12.9%) and, solidarity (10.5%), pity (10.5%) (Figs. 3 and 4; Table S2). The arousal results showed moderate agitation, and the dominance results displayed that participants felt slightly dominated by these films.

Extreme sports

The results showed higher valence scores when compared to the previous categories, and the emotions most frequently used to represent the films were fear (29.3%), happiness (26.2%), and surprise (16.3%) (Figs. 3 and 4; Table S2). Arousal ratings indicated moderate emotional activation, and dominance ratings were relatively high, indicating greater subjective control during stimulus viewing while watching these films.

Web-based assessment group

Social exclusion

The results of these films showed low levels of valence, and more than 33% of participants chose anger as the emotion that better represented what they felt with these clips (Fig. 4; Table S2). Arousal ratings indicated moderate emotional activation, while dominance ratings suggested a slightly reduced sense of subjective control.

Social inclusion

The films displayed higher valence scores compared to the other categories; the emotions most frequently used to represent the films were happiness (37.5%), love (25%), and compassion (16.65%) (Figs. 3 and 4; Table S2). The arousal dimension showed moderate agitation, and the dominance results indicated that participants did not feel dominated or domineering by these films.

Neutral

The valence results demonstrated a neutral state after the films, and 74.6% of participants chose this emotional state to represent better what they felt with each clip. Additionally, around 10% of participants reported positive emotions, specifically happiness (6.6%) and surprise (3.9%) (Figs. 3 and 4; for complete data, see Supplementary Material, Table S2). The arousal results indicated low activation after the film clips, and the dominance results showed that participants mostly felt dominant after watching the films.

Differences between lab-based and web-based groups

Social exclusion

The lab-based group scored higher in terms of valence (total: $M=2.16$, $SD=1.07$) and dominance (total: $M=4.61$, $SD=2.09$) on most social exclusion films compared to the web-based group (total valence: $M=2.11$, $SD=1.13$; total dominance: $M=4.55$, $SD=2.08$). On the other hand, the web-based group showed higher levels of arousal

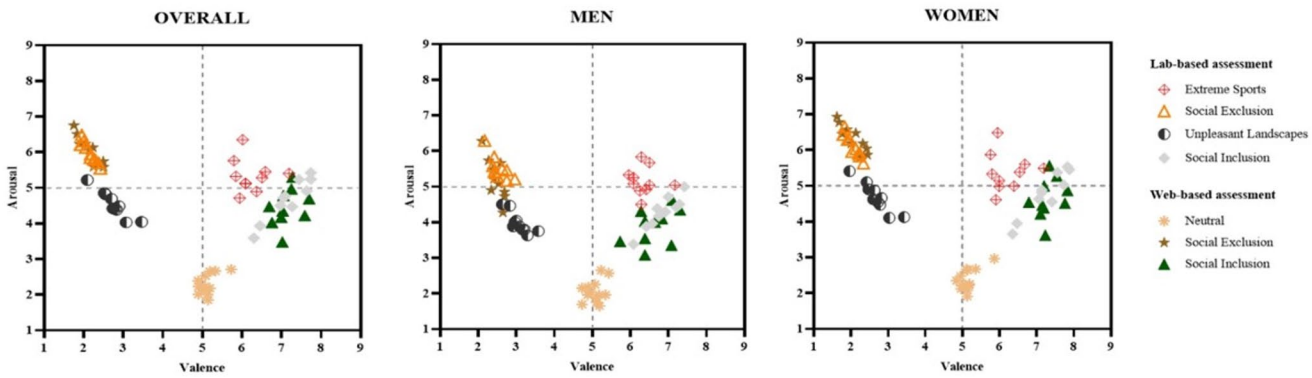

Fig. 2 Distribution of film categories in the affective space across overall, male, and female participants. This figure presents the distribution of valence (x-axis) and arousal (y-axis) ratings for the film clips in the lab-based and web-based assessments. The three scatter plots represent ratings for all participants (left), men (middle), and women (right)

(total: $M=6.11$, $SD=1.89$) than the lab-based group (total: $M=5.97$, $SD=2.07$). Despite these differences, the results were not statistically significant for any clip (Table 4).

Despite these differences, the results were not statistically significant for any clip (total valence: $t(24) = 0.37$, $p > .05$; total arousal: $t(24) = -0.55$, $p > .05$; total dominance: $t(24) = 0.18$, $p > .05$).

Social inclusion

The lab-based group demonstrated higher mean scores on valence (total: $M=7.17$, $SD=0.92$) and arousal (total: $M=4.68$, $SD=1.72$) in the social inclusion category compared to the web-based group (total valence: $M=7.14$, $SD = 0.92$; total arousal: $M=5.53$, $SD=1.81$). Furthermore, the web-based group had high dominance scores (total:

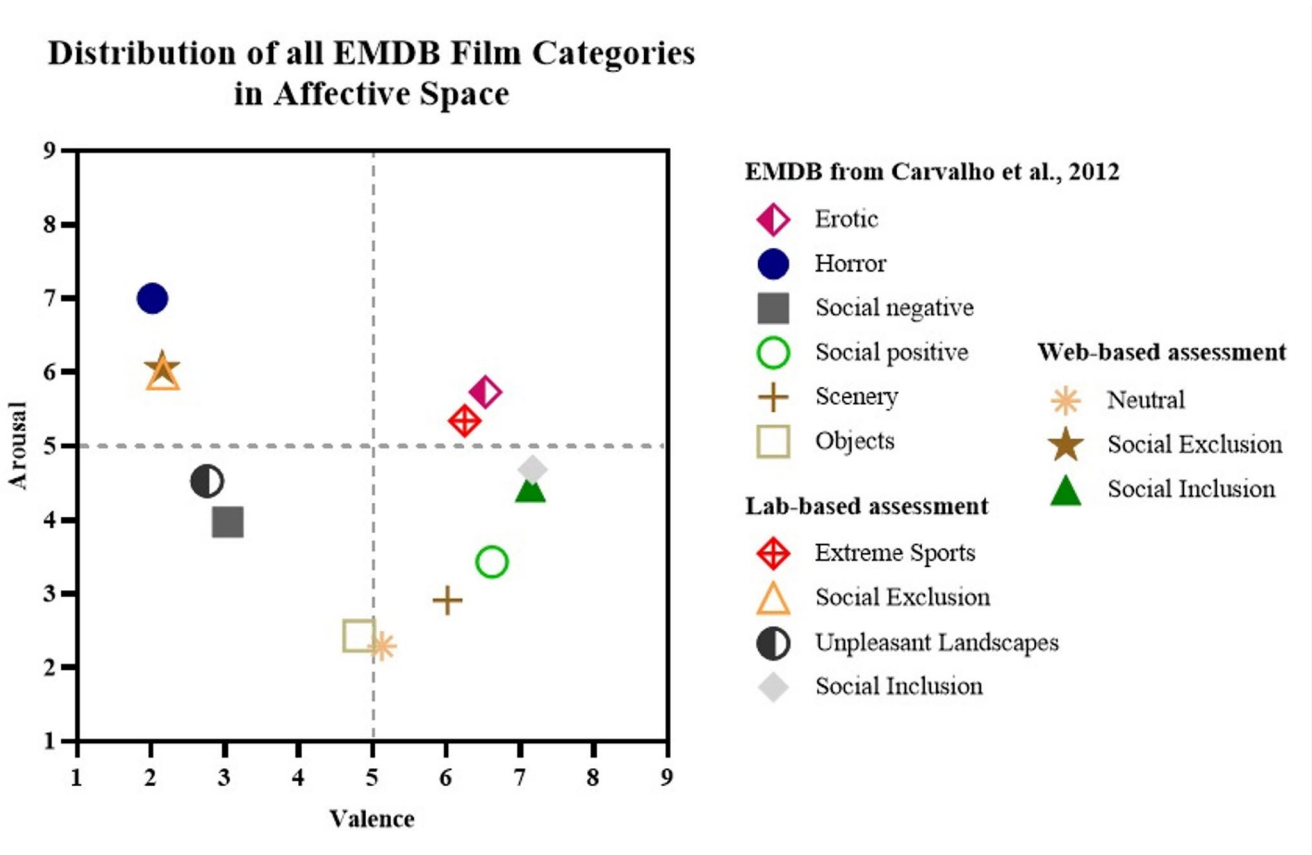

Fig. 3 Distribution of All EMDB film categories in affective space. This figure illustrates the distribution of all emotional movie database (EMDB) film categories in the affective space, plotted along two dimensions: valence (x-axis) and arousal (y-axis)

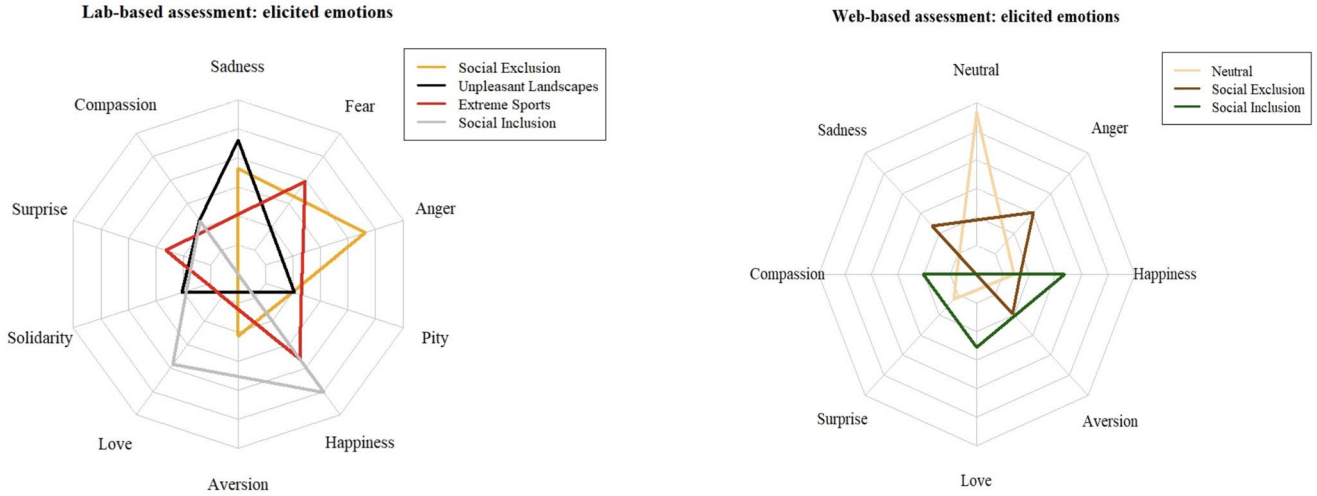

Fig. 4 Elicited emotions in lab-based (left) and web-based (right) assessments. This figure presents radar plots illustrating the intensity of elicited emotions in the lab-based (left) and web-based (right) assessments. Each axis represents a different reported emotion: anger, happiness, sadness, compassion, fear, aversion, love, and surprise. The plotted lines indicate the percentage of participants who reported experiencing each emotion in response to the film clips. Values range from 0% (center of the plot) to 50% (outermost edge), with increasing intensity moving outward

M=5.89, SD=1.82) relative to the lab-based group (total: M=5.32, SD=2.07) (Table 4).

Specifically, differences in valence were statistically significant for the films 10,000 (lab-based group: M=7.74, SD=1.20; web-based group: M=7.23, SD=1.98; t(179.04)=2.33, p <.05) and 10,007 (lab-based group: M=6.30, SD=1.54; web-based group: M=7.02, SD=1.53; t(22) = −3.48, p <.01), whereas differences in arousal were statistically significant for the films 10,001 (lab-based group: M=5.42, SD=2.33; web-based group: M=4.73, SD=2.53; t(23)=2.14, p <.05) and 10,006 (lab-based group: M=4.91, SD=2.31; web-based group: M=4.22, SD=2.52; t(22)=2.13, p <.05). Additionally, results were statistically significant for the total dominance (t(24) = −2.32., p <.05) and for films 10,004 (lab-based group: M=5.20, SD=2.48; web-based group: M=6.00, SD=2.40; t(22) = −2.44, p <.05), 10,005 (lab-based group: M=5.19, SD=2.51; web-based group: M=6.56, SD=2.17; t(22) = −4.32, p <.001), 10,007 (lab-based group: M=5.27, SD=2.86; web-based group: M=6.25, SD=2.42; t(22) = −2.73, p <.01), 10,008 (lab-based group: M=5.23, SD=2.51; web-based group: M=6.13, SD=2.48; t(22) = −2.66, p <.01), and 10,009 (lab-based group: M=5.24, SD=2.78; web-based group: M=6.06, SD=2.23; t(220.01) = −2.48, p <.05). After Bonferroni correction, group differences remained significant for valence ratings in Clip 10,007 and dominance ratings in Clip 10,005 (adjusted p =.036 and 0.001, respectively).

Figure 2 shows the mean ratings of valence and arousal for each film. The results suggest that each category occupies a distinct quadrant of the affective space. This pattern was consistent when the results were divided by sex (Fig. 3).

Category comparison

The overall means for each film category in all dimensions were calculated to analyze the differences in valence, arousal, and dominance scores between categories (Tables 5 and 6).

Lab-based assessment group

Valence effects

A one-way repeated-measures ANOVA showed a significant effect of film category on valence scores, F(1.48, 171.95)=645.16, p <.001, η^2_p=0.848. On average, the values of valence were lower in the social exclusion (M=2.16, SD=1.07) and unpleasant landscape (M=2.77, SD = 0.99) categories, and higher in the extreme sports (M=6.25, SD=1.12) and social inclusion (M=7.17, SD = 0.92) films. Post hoc comparisons showed that valence ratings for Social Exclusion were lower than for Unpleasant Landscapes (Social Exclusion − Unpleasant Landscapes = −0.61, 95% CI [−0.77, −0.44]), Extreme Sports (Social Exclusion − Extreme Sports = −4.09, 95% CI [−4.53, −3.65]), and Social Inclusion (Social Exclusion − Social Inclusion = −5.01, 95% CI [−5.44, −4.58]); all differences were statistically significant (p <.001). Similarly, the differences between the unpleasant landscape and extreme sports

Table 4 Comparison of self-assessment ratings between lab-based and web-based assessments for social exclusion and social inclusion clips

Film clip	Category	Lab-based assessment group			Web-based assessment group			Valence					Arousal					Dominance				
		Valence M (SD)	Arousal M (SD)	Dominance M (SD)	Valence M (SD)	Arousal M (SD)	Dominance M (SD)	df	t	*p*	p_adjust	Cohen's d	df	t	*p*	p_adjust	Cohen's d	df	t	*p*	p_adjust	Cohen's d
Social exclusion	7,000 (*n*=228)	1.92 (1.15)	6.21 (2.24)	4.42 (2.46)	2.03 (1.55)	6.22 (2.30)	4.32 (2.71)	203.13	0.57	0.567	1.00	0.08	224.55	0.01	0.993	1.00	0.00	221.27	-0.30	0.763	1.00	−0.04
	7,001	1.95 (1.38)	6.48 (2.31)	4.42 (2.58)	1.75 (1.42)	6.76 (2.08)	3.77 (2.46)	224.31	-1.08	0.280	1.00	0.14	225.31	-0.96	0.340	1.00	0.13	225.99	-1.93	0.055	1.00	−0.26
	7,002	2.18 (1.28)	5.94 (2.39)	4.81 (2.43)	2.15 (1.75)	6.05 (2.19)	4.42 (2.48)	200.42	−0.13	0.897	1.00	−0.02	225.75	0.35	0.730	1.00	0.05	224.85	-1.19	0.234	1.00	−0.16
	7,003	2.17 (1.33)	5.85 (2.44)	4.68 (2.38)	1.92 (1.42)	6.22 (2.27)	4.23 (2.49)	222.76	-1.38	0.169	1.00	−0.18	225.92	1.13	0.261	1.00	0.15	223.82	-1.42	0.157	1.00	−0.19
	7,004	2.29 (1.40)	5.79 (2.36)	4.56 (2.39)	2.26 (1.54)	5.55 (2.43)	5.03 (2.62)	220.94	-0.15	0.881	1.00	−0.20	224.53	-0.75	0.456	1.00	−0.10	221.40	1.42	0.157	1.00	0.19
	7,005 (*n*=221)	2.25 (1.44)	5.80 (2.38)	4.68 (2.39)	2.49 (1.60)	5.74 (2.36)	4.76 (2.67)	208.84	1.18	0.241	1.00	0.16	216.43	-0.20	0.844	1.00	−0.03	208.18	0.22	0.825	1.00	0.03
	7,006	2.42 (1.30)	5.54 (2.22)	4.56 (2.32)	2.50 (1.47)	5.58 (2.29)	4.99 (2.55)	207.33	0.43	0.667	1.00	0.06	214.34	0.13	0.900	1.00	0.02	209.66	1.29	0.197	1.00	0.18
	7,007	2.05 (1.27)	6.13 (2.34)	4.78 (2.55)	2.23 (1.77)	6.13 (2.07)	4.54 (2.52)	184.75	0.86	0.393	1.00	0.12	218.99	−0.01	0.991	1.00	0.00	216.48	−0.70	0.485	1.00	−0.09
	7,008	2.37 (1.48)	5.70 (2.26)	4.57 (2.44)	2.40 (1.68)	5.70 (2.60)	4.97 (2.70)	206.91	0.17	0.866	1.00	0.02	205.84	0.00	0.997	1.00	0.00	209.01	1.15	0.253	1.00	0.16
	7,009	2.00 (1.29)	6.31 (2.30)	4.57 (2.52)	1.83 (1.14)	6.51 (2.11)	4.21 (2.50)	219.00	-1.06	0.293	1.00	−0.14	218.80	0.68	0.497	1.00	0.09	216.38	-1.07	0.287	1.00	0.14
	Total	2.16 (1.07)	5.97 (2.07)	4.61 (2.09)	2.11 (1.13)	6.11 (1.89)	4.56 (2.08)	242.64	-0.38	0.708	1.00	−0.05	235.51	0.55	0.583	1.00	0.07	240.94	0.18	0.861	1.00	0.02
Social inclusion	10,000 (*n*=228)	7.74 (1.20)	5.24 (2.04)	5.51 (2.51)	7.23 (1.98)	4.95 (2.32)	5.72 (2.43)	179.04	-2.33	0.021	1.00	−0.31	218.67	-1.01	0.313	1.00	−0.14	225.93	0.64	0.526	1.00	0.08
	10,001	7.74 (1.18)	5.42 (2.33)	5.44 (2.48)	7.69 (1.42)	4.73 (2.53)	5.62 (2.50)	214.44	-0.29	0.774	1.00	−0.04	222.09	-2.14	0.034	1.00	−0.28	225.14	0.54	0.592	1.00	0.07
	10,002	7.05 (1.41)	4.72 (2.08)	5.34 (2.38)	7.10 (1.54)	4.77 (2.32)	5.74 (2.37)	221.37	0.24	0.807	1.00	0.03	220.38	0.16	0.870	1.00	0.02	225.43	1.26	0.208	1.00	0.17
	10,003	7.44 (1.25)	5.23 (2.24)	5.20 (2.48)	7.28 (1.77)	5.32 (2.52)	5.61 (2.62)	196.52	−0.81	0.420	1.00	−0.11	219.64	0.27	0.790	1.00	0.04	223.34	1.23	0.219	1.00	0.16
	10,004 (*n*=221)	7.09 (1.33)	4.76 (2.30)	5.20 (2.48)	6.99 (1.55)	4.17 (2.44)	6.00 (2.40)	204.05	-0.53	0.596	1.00	−0.07	212.22	-1.84	0.068	1.00	−0.25	217.31	2.45	0.015	0.912	0.33
	10,005	6.97 (1.32)	4.50 (2.23)	5.19 (2.51)	6.76 (1.64)	4.02 (2.29)	6.56 (2.17)	197.54	-1.02	0.308	1.00	−0.14	214.53	-1.56	0.120	1.00	−0.21	218.87	4.35	$p < .001$	0.582	0.58
	10,006	7.64 (1.44)	4.91 (2.31)	5.56 (2.44)	7.59 (1.41)	4.22 (2.52)	6.11 (2.52)	216.75	-0.28	0.777	1.00	−0.04	209.97	-2.12	0.035	1.00	−0.29	214.08	1.64	0.102	1.00	0.22
	10,007	6.30 (1.54)	3.59 (2.15)	5.27 (2.86)	7.02 (1.53)	3.48 (2.31)	6.25 (2.42)	216.52	3.48	$p < .001$	0.036	0.47	211.52	−0.36	0.718	1.00	−0.05	218.50	2.75	$p < .01$	0.384	0.37
	10,008	7.27 (1.28)	4.47 (2.25)	5.23 (2.51)	7.03 (1.64)	4.35 (2.36)	6.13 (2.48)	193.97	-1.23	0.222	1.00	0.17	213.25	−0.40	0.691	1.00	−0.05	216.55	2.66	$p < .01$	0.503	0.36
	10,009 (*n*=228)	6.46 (1.31)	3.93 (2.13)	5.24 (2.78)	6.66 (1.34)	4.48 (2.28)	6.06 (2.23)	224.76	1.12	0.265	1.00	0.15	222.63	1.87	0.064	1.00	0.25	220.01	2.48	0.014	0.844	0.33
	Total	7.17 (0.92)	4.68 (1.72)	5.32 (2.07)	7.14 (1.13)	4.53 (1.81)	5.89 (1.82)	239.56	-0.25	0.803	1.00	−0.03	242.59	-0.66	0.512	1.00	−0.08	232.19	2.31	0.022	0.132	0.20

Values represent participant-level means (*M*) and standard deviations (*SD*) for each film clip within the laboratory-based ($n = 117$) and web-based ($n = 128$) samples. Independent-samples comparisons between laboratory-based and web-based assessments were conducted at the participant level. When the assumption of homogeneity of variance was violated, Welch's t-tests were applied, resulting in non-integer degrees of freedom. Bonferroni-adjusted p-values (p_adjust) are reported to control for multiple comparisons

(−3.48, 95% *CI* [−3.92, −3.04]) and social inclusion films (−4.41, 95% *CI* [−4.83, −3.98]) were statistically significant (p <.001). The difference between the extreme sports and social inclusion films (−0.93, 95% *CI* [−1.16, −0.69]) was also statistically significant (p <.001) (Table 5).

Arousal effects

The results of the one-way repeated-measures ANOVA showed a significant effect of film category on arousal scores, $F(2.26, 262.55) = 38.30$, p <.001, $\eta^2_p = 0.248$. In general, the social exclusion (M=5.97, SD=2.06) and extreme sports (M=5.34, SD=1.95) categories showed higher arousal scores compared with the unpleasant landscape (M=4.53, SD=2.01) and social inclusion (M=4.68, SD=1.72) categories. Post hoc comparisons demonstrated that the differences between the social exclusion and unpleasant landscape (1.44 95% *CI* [1.11, 1.78]), extreme sports (0.63 95% *CI* [0.14, 1.13]) and social inclusion films (1.30 95% *CI* [0.90, 1.70]) were statistically significant (p <.01). Likewise, the differences between the unpleasant landscape and extreme sports films (−0.81 95% *CI* [−1.30, −0.32]), as well as between the extreme sports and social inclusion films (0.66 95% *CI* [0.30, 1.03]) were statistically significant (p <.01) (Table 5). On the other hand, the difference in arousal scores between the unpleasant landscape and social inclusion categories was not statistically significant (p >.05).

Dominance effects

A one-way repeated-measures ANOVA indicated a significant effect of film categories on dominance scores, $F(2.33, 269.75) = 11.74$, p <.001, $\eta^2_p = 0.092$. The results showed that the social exclusion (M=4.61, SD=2.09) and unpleasant landscape (M=4.48, SD=2.21) categories presented lower scores than the extreme sports (M=5.14, SD=2.08) and social inclusion (M=5.32, SD=2.07) films. Post hoc comparisons revealed statistically significant differences (p <.05) between the social exclusion and extreme sports (−0.54, 95% *CI* [−1.06, −0.01]) and the social inclusion films (−0.71, 95% *CI* [−1.26, −0.17]). In the same way, the differences between the unpleasant landscapes and extreme sports (−0.66, 95% *CI* [−1.10, −0.22]) and social inclusion films (−0.83, 95% *CI* [−1.23, −0.44]) were statistically significant (p <.01) (Table 5). On the contrary, the differences in dominance scores between the social exclusion and unpleasant landscape categories and between extreme sports and social inclusion films were not significant (p >.01).

Web-based assessment group

Valence effects

A one-way repeated-measures ANOVA analysis demonstrated a significant effect of film categories on valence scores, F (1.22, 155.24) = 724.52, p <.001, $\eta^2_p = 0.851$. Results showed that the social inclusion (M=7.14, SD=1.13) category presented higher valence scores than neutral (M=5.11, SD=0.42) and social exclusion (M=2.11, SD=1.13) films. Post hoc comparisons showed that the differences between the neutral and social exclusion (3.00, 95% *CI* [2.74, 3.26]) and social inclusion films (−2.03, 95% *CI* [−2.28, −1.79]) were statistically significant (p <.001). Likewise, the difference between the social exclusion and social inclusion (−5.03, 95% *CI* [−5.47, −4.60]) categories was statistically significant (p <.001) (Table 6).

Arousal effects

A one-way repeated-measures ANOVA showed a significant effect of film categories on arousal scores, $F(1.65, 209.12) = 297.13$, p <.001, $\eta^2_p = 0.701$. On average, the values of arousal were lower in the neutral (M=2.31, SD=1.36) and social inclusion (M=4.53, SD=1.81) categories when compared with social exclusion (M=6.11, SD=1.89) films. Post hoc comparisons indicated that the differences between the neutral and social exclusion (−3.80, 95% *CI* [−4.25, −3.35]) and social inclusion (−2.21, 95% *CI* [−2.60, −1.83]) categories were statistically significant (p <.001). Additionally, the difference between the social exclusion and social inclusion (−1.59, 95% *CI* [−1.87, −1.29]) categories was also statistically significant (p <.001) (Table 6).

Dominance effects

The one-way repeated-measures ANOVA analysis indicated a significant effect of film categories on dominance scores, $F(1.48, 188.33) = 85.27$, p <.001, $\eta^2_p = 0.402$. In general, the neutral category (M=7.21, SD=1.94) showed higher dominance scores than the social exclusion (M=4.56, SD=2.08) and social inclusion (M=5.89, SD=1.82) films. Post hoc comparisons showed that the differences between the neutral and social exclusion (2.65, 95% *CI* [2.03, 3.27]) and social inclusion (1.32, 95% *CI* [0.88, 1.76]) categories were statistically significant (p <.001). Similarly, the difference between the social exclusion and social inclusion films (−1.34, 95% *CI* [−1.72, −0.95]) was statistically significant (p <.001) (Table 6).

Table 5 Descriptive statistics for emotional ratings by film category

Valence	M	SEM	95% CI		Arousal	M	SEM	95% CI		Dominance	M	SEM	95% CI	
			LB	UB				LB	UB				LB	UB
Social Exclusion	2.16	0.10	1.96	2.36	Social Exclusion	5.97	0.19	5.60	6.35	Social Exclusion	4.61	0.19	4.22	4.99
Unpleasant Landscapes	2.77	0.09	2.58	2.95	Unpleasant Landscapes	4.53	0.19	4.17	4.90	Unpleasant Landscapes	4.48	0.20	4.08	4.89
Extreme Sports	6.25	0.10	6.04	6.45	Extreme Sports	5.34	0.18	4.98	5.70	Extreme Sports	5.14	0.19	4.76	5.53
Social Inclusion	7.17	0.09	7.00	7.34	Social Inclusion	4.68	0.16	4.36	4.99	Social Inclusion	5.32	0.19	4.94	5.70

CI, Confidence Interval; LB, Lower Bound; SEM, Standard Error of the Mean; UB, Upper Bound

Discussion

This study expanded the EMDB by introducing five new emotional categories, social exclusion, social inclusion, unpleasant landscapes, extreme sports, and neutral film clips, thereby addressing key limitations of the original database. Specifically, the expanded EMDB increases coverage of intermediate arousal states and substantially improves the availability of well-characterized neutral baseline stimuli, both of which are essential for experimental designs in affective science.

Beyond cataloguing new stimuli, the present work provides researchers with validated film sets that occupy distinct and theoretically meaningful regions of the affective space defined by valence, arousal, and dominance. Across both laboratory-based and web-based assessments, the newly introduced categories showed coherent emotional profiles, supporting their suitability for experimental manipulation of social, environmental, and motivational emotional contexts.

The expanded EMDB also moves beyond traditional emotion elicitation domains (e.g., fear- or erotically driven arousal) by incorporating socially grounded and ecologically relevant emotional experiences, such as social inclusion/exclusion and environmental degradation. This broader affective coverage enables researchers to select stimuli that more precisely match specific theoretical models and research questions, including studies on social emotion, emotion regulation, moral emotions, and contextualized affective processing.

At the same time, the distribution of stimuli within the affective space highlights remaining gaps. In particular, high-arousal positive stimuli remain underrepresented. In the present dataset, extreme sports and other positively valenced clips were rated as only moderately arousing, with mean arousal values typically ranging between 5 and 6 on the SAM scale. This pattern mirrors limitations observed in other emotion-elicitation databases and likely reflects practical constraints related to stimulus duration, absence of auditory information, and ethical considerations in stimulus selection.

Thus, while the newly added categories substantially broaden the emotional range of the EMDB, future extensions would benefit from the inclusion of high-arousal positive stimuli. Addressing this gap would further enhance the utility of the database for studies specifically targeting intense positive activation, motivational engagement, and approach-related affective processes.

Lab-based assessment

The laboratory-based validation provides evidence that the newly introduced categories occupy distinct and theoretically

Table 6 Descriptive statistics for emotional ratings in web-based assessment

Valence	M	SEM	95% CI		Arousal	M	SEM	95% CI		Dominance	M	SEM	95% CI	
			LB	UB				LB	UB				LB	UB
Neutral	5.11	0.04	5.03	5.18	Neutral	2.32	0.12	2.08	2.55	Neutral	7.21	0.17	6.87	7.55
Social Exclusion	2.11	0.10	1.91	2.31	Social Exclusion	6.11	0.17	5.78	6.45	Social Exclusion	4.56	0.18	4.20	4.93
Social Inclusion	7.14	0.10	6.94	7.34	Social Inclusion	4.53	0.16	4.21	4.85	Social Inclusion	5.90	0.16	5.58	6.21

CI confidence interval, LB lower bound, SEM standard error of the mean, UB upper bound

meaningful regions of the affective space. Social exclusion clips consistently elicited negatively valenced states characterized by moderate arousal and reduced dominance, supporting their suitability for experimental paradigms targeting social threat, rejection, and conflict-related affect. This profile aligns with classic emotion-elicitation findings showing that social exclusion reliably induces negative affect without necessarily producing extreme arousal levels (Gross & Levenson, 1995), reinforcing the ecological and construct validity of this category.

In contrast, social inclusion clips were associated with high valence, moderate arousal, and relatively preserved dominance, reflecting emotionally positive experiences marked by affiliation and social bonding. These characteristics make the social inclusion category particularly suitable for studies examining affiliative emotions, social reward, and positive interpersonal contexts. Consistent with prior work, pleasant social interactions elicited positive affect without overwhelming arousal, supporting their use in controlled experimental settings (Schaefer et al., 2010).

Extreme sports clips occupied an intermediate position within the affective space, combining positive valence with moderate arousal and mixed discrete emotional labels (e.g., fear, happiness, surprise). This configuration is characterized by positive valence combined with moderate arousal and a mixed pattern of discrete emotion labels. Rather than eliciting uniformly high arousal, these clips occupy an intermediate position in the affective space and may be useful for studies examining motivational engagement, approach–avoidance processes, and mixed affective states.

Unpleasant landscape clips were characterized by low valence and moderate arousal, predominantly associated with sadness and compassion. This affective profile suggests that these stimuli effectively capture emotionally negative but non-threatening environmental contexts, making them appropriate for research on moral emotions, environmental concern, and affective responses to degradation or social injustice. The relatively subdued arousal levels are consistent with prior findings indicating that environmental distress tends to evoke concern and sadness rather than intense physiological activation (Deng et al., 2017; Ulrich, 1983).

Taken together, the laboratory-based results indicate that the new categories do not merely replicate existing emotional classes but instead provide differentiated stimulus sets that can be strategically selected to target specific affective processes, including social evaluation, affiliation, motivational engagement, and environmentally induced negative affect.

Web-based assessment

In the web-based assessment, social exclusion clips were characterized by low valence and moderate arousal and were most frequently labeled as anger, with secondary endorsements of sadness and compassion. Dominance ratings were slightly higher in the web-based group than in the laboratory-based group. One possible interpretation is that contextual characteristics of online testing, such as greater autonomy and self-paced task engagement, may be associated with higher perceived control during emotional evaluation (Betella & Verschure, 2016). Differences in dominance ratings between laboratory-based and web-based assessments may reflect contextual characteristics of the testing environment rather than systematic modality effects. Laboratory settings typically afford higher experimental control and reduced distraction, which have been associated with stronger emotional engagement during film-based emotion elicitation (Carvalho et al., 2012). In contrast, web-based assessments, while methodologically robust, may involve greater variability in attentional focus and situational context, potentially influencing subjective evaluations of control or dominance during emotional experience (Buchanan & Scofield, 2018; Crump et al., 2013).

For the social inclusion clips, participants in both lab and web-based groups reported happiness with high valence and moderate arousal. However, web-based participants reported feeling more dominant, likely due to the self-paced nature of the online environment, where participants feel more in control of their emotional experience. Gabert-Quillen et al. (2015) found that web-based participants tend to report higher levels of emotional regulation, as the absence of a researcher mitigates social pressure.

In contrast to previous emotional databases, such as Gross and Levenson (1995) and Rottenberg et al. (2007), which focused on eliciting intense emotions, this study introduced a wider spectrum of emotional states, from high to intermediate arousal across positive and negative contexts. This expanded approach is comparable to Jenkins and Andrewes (2012), who used video snippets to evoke specific emotions in a diverse sample. The new categories offer a more comprehensive range of emotional stimuli, making the EMDB more versatile for studying emotional responses across different contexts.

The neutral clips successfully delivered emotionally neutral content, as participants indicated neutral emotional states and low arousal. This confirms their function as baseline stimuli, crucial for contrasting emotional and non-emotional responses. These findings correspond with Gross and Levenson (1995), who underscored the necessity of neutral stimuli in emotion research, and Schaefer et al. (2010), who illustrated that well-crafted neutral films create emotional balance, facilitating precise comparisons.

Lab-base vs. web-based assessments: social exclusion and social inclusion

Although laboratory-based assessments provide maximal experimental control and standardization, web-based procedures offer enhanced ecological validity by enabling participants to complete tasks in their natural environments, despite reduced standardization.

Comparisons between laboratory-based and web-based assessments in the present study were not designed to test causal effects of assessment context. Accordingly, any observed differences should be interpreted cautiously and considered exploratory rather than indicative of systematic modality effects.

Across both assessment settings, the affective profiles of social exclusion and social inclusion clips were largely preserved. In particular, valence and arousal ratings showed a high degree of consistency between laboratory-based and web-based validations, providing indirect evidence of cross-context robustness at the clip level. This stability supports the use of these stimuli in both controlled laboratory experiments and large-scale online studies.

Robust comparability between laboratory and web-based samples was demonstrated only for the social exclusion and social inclusion categories, which were included in both validation phases. Categories available in a single modality only (unpleasant landscapes and extreme sports in the lab; neutral clips online) should therefore be interpreted strictly within the context of their respective validation setting.

Minor discrepancies emerged primarily for dominance ratings, especially within the social inclusion category. Such variability is consistent with prior norming research indicating that dominance judgments are more sensitive to contextual and situational factors related to perceived control during emotional evaluation (Betella & Verschure, 2016). Importantly, these differences do not undermine the validity of the categories but highlight the need for caution when interpreting dominance as a context-invariant dimension.

Higher dominance ratings observed in the web-based sample may potentially reflect greater perceived autonomy in the self-paced online format; however, alternative explanations—including platform effects, device variability, or sample differences—cannot be excluded. These mechanisms require direct empirical testing.

From a practical perspective, the availability of both laboratory-based and web-based norms enhances the flexibility of the EMDB. Researchers can select stimuli according to methodological constraints and research goals, relying with greater confidence on valence and arousal norms, while

considering dominance ratings in light of the assessment context.

More broadly, the present findings underscore the value of continuously updating emotion-elicitation databases to reflect diverse emotional experiences and cultural contexts. Recent efforts such as the EGEFILM database (İyilikci et al., 2024) illustrate how culturally grounded validation can enrich affective resources. Continued cross-context and cross-cultural extensions of the EMDB will further strengthen its applicability across populations, paradigms, and theoretical frameworks.

Finally, although the present study was not intended as a psychometric validation at the individual level, the observed stability of affective ratings—particularly for valence and arousal—supports the use of the EMDB as a normative stimulus database. As expected in affective norming studies, lower agreement for dominance and reduced reliability for neutral valence likely reflect contextual sensitivity and restricted variance, respectively. Future extensions may explicitly quantify inter-rater agreement and cross-sample stability across independent laboratories or cultural settings, especially for applications focused on individual-difference modeling.

These EMDB clips are particularly suitable for studies of discrete emotional states and their differentiation from neutral baselines. They facilitate research on emotion regulation, affective priming, and basic emotion theory, especially within social and interpersonal emotion contexts. Regarding methodological applications, the clips are appropriate for behavioral, psychophysiological, and self-report emotion studies. Pilot testing is recommended for clinical populations, given validation in healthy samples only. Relative to Gross and Levenson (1995) clips (shorter duration, broader emotional range) and EGEFILM (with longer feature films), EMDB provides intermediate-length (40s) clips optimized for social emotions with well-defined categorical structure, serving as a complement to rather than replacement for existing resources. All clips, ratings, and selection guidelines will be publicly accessible via OSF (link provided upon acceptance) under a Creative Commons license, ensuring complete transparency and reproducibility.

Sex-stratified descriptive values are provided for transparency only. The present study was not designed or powered to test sex differences, and no inferential analyses were conducted for this purpose. Accordingly, all recommended affective ratings are based on pooled sample data, and sex-matched stimulus selection is neither required nor advised when using the EMDB.

Limitations

Some limitations should be considered when interpreting the present findings and using the expanded EMDB.

The participant samples were predominantly composed of Portuguese-speaking, highly educated young adults, with a marked overrepresentation of female participants. This composition limits direct inferences about developmental or lifespan differences and warrants caution when generalizing these descriptive ratings to more gender-balanced samples, older adults, clinical populations, or non-Western cultural contexts. Although the EMDB is intended as a broadly applicable research tool, cross-cultural validation of the newly introduced categories has not yet been conducted. Future validation studies should therefore prioritize more diverse samples, including cross-cultural, clinical, and lifespan-focused cohorts, to strengthen the generalizability and utility of the database.

Several stimulus-related constraints should also be acknowledged. All film clips had a fixed duration of 40 s, selected to balance emotional engagement with participant burden and experimental feasibility. However, this duration may limit the elicitation of more complex, escalating, or sustained emotional responses relative to longer or multi-scene stimuli. Subsequent research could address this limitation by developing variants of existing clips with different durations or narrative structures. In addition, all clips were presented without audio, consistent with the original EMDB design and intended to maximize flexibility for experimental manipulation. Nevertheless, the absence of auditory information may reduce emotional intensity for certain categories and constrains direct comparability with audiovisual emotion databases. Future extensions may benefit from systematically evaluating audiovisual versions of selected clips.

Recognition and familiarity effects also warrant consideration. Although recognition thresholds were applied during stimulus selection, some clips exceeded moderate familiarity levels and were retained due to their representativeness of the target emotional category. Familiarity was not explicitly modeled as a predictor of affective responses, and residual familiarity effects cannot be excluded. Future validation efforts could more directly examine familiarity as a moderating factor or provide alternative low-recognition clips within each category.

A further limitation concerns the exclusive reliance on subjective self-report measures to assess emotional responses. In line with the dimensional model of emotion

proposed by Lang and Bradley, arousal in the present study reflects the subjective intensity of emotional activation rather than direct physiological arousal (Bradley & Lang, 1994; Lang et al., 2008). Although the Self-Assessment Manikin is widely used and well validated, self-reported ratings may be influenced by individual differences in introspective ability, interpretation of scale anchors, and limited sensitivity to rapid emotional fluctuations. The absence of physiological indices (e.g., autonomic or neurophysiological measures) precludes inferences about underlying biological activation and highlights the value of multimodal validation approaches in future EMDB extensions. Moreover, laboratory-based assessments were conducted in group settings, which may have introduced social desirability or attentional effects not present in individual testing environments.

Design-related limitations should also be noted. Not all emotional categories were evaluated in both laboratory-based and web-based environments, which precludes direct cross-modality comparisons for all stimulus sets. In addition, the two validation phases differed in testing context and technical platform, with laboratory assessments conducted under controlled conditions and web-based assessments administered remotely. Platform-related factors—such as device variability, screen size, and environmental distractions—were not systematically controlled in the online assessment and may have contributed to variability in subjective ratings, particularly for dominance. Future studies should aim to validate all categories across both modalities using harmonized platforms and procedures to allow more comprehensive modality comparisons.

Finally, the present validation relied exclusively on self-report measures. In the absence of psychophysiological indices, alternative affective mechanisms underlying the observed rating patterns—such as distinctions between vicarious thrill and aesthetic enjoyment in extreme sports clips, or contemplative versus disengaged responses to unpleasant landscapes—cannot be conclusively determined. Incorporating autonomic or neural measures in future validation studies would allow a more precise characterization of the affective processes elicited by these stimuli.

In addition, although film clips were presented in pseudorandomized blocks to reduce systematic order effects, residual emotional activation from preceding stimuli cannot be fully excluded. Such carryover or "emotion inertia" effects may have influenced subsequent ratings, particularly for dimensions sensitive to contextual and temporal factors. Future studies could further address this issue by implementing longer inter-stimulus intervals, counterbalanced presentation orders, or analytical strategies that explicitly model sequential emotional effects.

Future directions

The present expansion of the EMDB substantially broadens coverage of the affective space, increasing its applicability across experimental paradigms and theoretical frameworks in emotion research. At the same time, the current distribution of stimuli highlights clear directions for future development.

A primary priority concerns the limited representation of high-arousal positive stimuli. As observed in the present dataset, even positively valenced categories such as extreme sports elicited only moderate arousal. Future extensions would benefit from the systematic inclusion of stimuli capable of reliably inducing high-arousal positive states, thereby improving balance across the affective space and supporting research focused on intense motivational and regulatory processes.

Further development of the EMDB may also involve the inclusion of more fine-grained emotional categories and the examination of individual-difference factors that shape affective responses, such as age, cultural background, or trait-level emotion regulation. Such efforts would enhance the generalizability and interpretability of normative ratings across populations.

Finally, future validation studies may extend beyond self-report by integrating physiological or behavioral indices of emotional responding. Combining subjective ratings with autonomic, facial, or neural measures would strengthen the multimodal characterization of stimuli and further increase the value of the EMDB as a resource for affective neuroscience and experimental psychology. Overall, these directions emphasize incremental, theory-driven expansion rather than wholesale methodological change, ensuring that the EMDB remains a reliable, flexible, and methodologically grounded tool for emotion research.

Conclusion

This study extends the EMDB by introducing new emotional categories that address previously identified gaps, particularly regarding intermediate arousal levels and neutral baseline stimuli. By expanding the range of validated film clips, the updated EMDB provides researchers with a broader and more flexible set of stimuli for examining emotional processes across diverse experimental contexts.

The use of both laboratory-based and web-based validation procedures offers converging descriptive evidence for the consistency of affective profiles at the clip level, supporting their initial applicability across different assessment

settings. Rather than constituting a finalized validation, these additions contribute initial normative data that may inform stimulus selection in both basic and applied psychological research. Continued, targeted expansion and independent validation efforts will be essential to further establish the scope, generalizability, and methodological value of the EMDB for contemporary emotion science.

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Declarations

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