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*Review Article*

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# Universal Emotions Research 2024-2025: A Narrative Review

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**ABSTRACT**

In this review on universal emotions, brief summaries are given on studies published in 2024–2025. In this current literature, happiness is noted to be elicited by physical activity and involves the orbitofrontal cortex. Surprise reportedly enhances memory but only if it's a plausible surprise. For sadness, the right temporal and left superior frontal areas have been notably more active. The neural responses of fear have varied by the different video clips of spiders, heights and social threats. Humor is ideal for managing fear in terms of their different neural chemistry and physiological effects. Anger is reciprocally related to anxiety and mediates the relationship between strain and aggression. Disgust is the last emotion that is recognized across development and is evoked by ancient threats like body waste products and worms, while fear is elicited by modern threats like electricity and car accidents. Disgust is, surprisingly, more resistant to extinction than fear. Most of the studies in this literature are focused on situations that evoke a particular emotion. Emotions have rarely been compared for their different elicitors and different effects. And cross-cultural comparisons are also missing from this literature, possibly because these emotions have been considered universal.

The universal emotions that are thought to be experienced across cultures include happiness, surprise, sadness, fear, anger and disgust. This narrative review is focused on those and summarizes 26 papers that were derived from a search on PubMed and PsycINFO using the terms emotions and the years 2024-2025. Exclusion criteria for this review included papers on proposed protocols, case studies and non-English language papers. The publications are focused on specific emotions including happiness, surprise, sadness, fear, anger and disgust. Although some researchers have compared a few emotions, 6 papers are focused on happiness (or unhappiness), 2 on surprise, 1 on sadness, 3 on fear, 6 on anger and 8 on disgust.

Emotions

Emotions have been defined as physical and mental states associated with thoughts, feelings, behavioral and neurophysiological responses that vary on a continuum of feeling positive to negative [1,2]. They are often communicated via facial expressions that are thought to be understood cross-culturally. Those that are considered universal emotions include happiness, surprise, sadness, fear, anger and disgust. Surprisingly, two-thirds of these emotions would be considered negative. This distribution is reflected in the current literature which features more studies on negative emotions except for sadness and fear. Fewer studies may be focused on sadness because researchers have come to label that emotional experience as depression. Similarly, fear may be receiving less attention as it is often referred to as anxiety. Other terms have been used for the basic emotions such as joy and well-being for happiness and awe for surprise, although anger and disgust have remained as exclusive terms for those negative emotions. Some researchers have compared multiple emotions, for example, sadness and fear. But most have focused on one emotion (see table 1).

**Table 1: Emotions**

| Emotions | First Authors |
|---|---|
| Happiness | Xu, Li, Liu, Zhu, Zhong, Choi |
| Surprise | Noordewier, deBruine |
| Sadness | Proverbio |
| Fear | Wang, Aktura, Hye-Knudson |
| Anger | Segel-Karpas, Lee, Wen, Manfredi, Wagner, Pop |
| Disgust | Landova, Lamond, Saluja, Riddell, Olatuni, MJimenez-Ros, Matson, Mitchell |

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**Happiness**

Some of the literature on happiness is, surprisingly, focused on unhappiness. Exceptions are studies on various elicitors of happiness and effects of happiness. Examples of elicitors are psychological traditionality, marital status and physical activity. Not surprisingly, the effects of happiness that have appeared in this literature are positive and the effects of unhappiness are negative. The positive effects of happiness have included enhanced cognitive function and cardiovascular health. Suicidality appeared as the negative effect of unhappiness.

In the study on psychological traditionality, it was compared to psychological modernity for their effects on happiness in Chinese students (N=450) [3]. Psychological traditionality led to positive emotions, less negative emotions and greater social well-being. In contrast, psychological modernity led to negative emotions and to negative relationships. These results might relate to Chinese people generally having great respect for traditions.

Physical activity has led to happiness in what was called a "chain mediating role of exercise attitudes and sleep qualities" by its authors [4]. In this study, students from four universities in China responded to a survey (N=1308). The chain mediation path had physical activity leading to a positive exercise attitude which, in turn, led to better sleep quality and, in turn, to happiness. This path may have resulted from activity increasing serotonin levels which contribute to well-being and positive mood states (and decreasing depression) [5]. Physical activity has also been noted to reduce stress and enhance sleep quality [5].

In a study on the relationship between marital status and happiness during the COVID-19 pandemic, the National Social Life, Health and Aging Project data were analyzed for this relationship (N = 2622) [6]. No differences were noted for happiness among unmarried versus married people when that analysis was corrected for pre- pandemic happiness. Not surprisingly, pre-pandemic happiness was greater for married people. But both married and unmarried people were unhappy during the pandemic. The pandemic lessened happiness in other COVID-19 samples as well [7].

The positive effects of happiness in this literature have included both enhanced cognitive function and cardiovascular health. In the research on cognitive function, the UK Biobank database (N=17,885 40-to-70-years old) was analyzed for the relationship between happiness and cognitive function [8]. Greater happiness led to greater speed and visuospatial memory but not more complex processes such as reasoning. And the association between happiness and cognitive function was not predictive of the rate of cognitive decline. The positive effects of happiness on cognitive function may relate to enhanced attentiveness. The rate of cognitive decline may be affected by genetic factors independent of happiness.

Happiness or well-being has also been a contributor to cardiovascular health based on data from the UK biobank study (N= 121,317) [9]. Greater well-being was related to greater health behavior and less inflammatory markers. Greater well-being led to a better lifestyle and less inflammatory markers led to less cardiovascular disease.

More depressing data come from a study entitled "Happiness and its association with suicide ideation and attempts in Korea" [10]. The title of this paper is misleading as in this sample (N= 214,070), unhappiness, not happiness, was related to suicidal ideation. And this association was noted across gender and age. The association was stronger for younger adults, especially in the groups of women 20 to 39 and 40 to 59. Socio-environmental factors were noted for the 40 to 59-year-old group and health-related factors for those who were 60 years and older.

**Surprise**

Surprisingly, the surprise emotion has received very little attention in this literature. Generally, it has been considered a positive emotion and has been linked with awe and interest as well as curiosity, which are also considered as relatively positive and have been labeled "epistemic emotions". In a recent review paper, these four emotions were associated with arousal, high coping potential and approach behavior [11]. Surprise was associated with both exceeded and disconfirmed expectancies. In a paper entitled "The interactive effects of surprise and plausibility on memory", only surprise that was plausible led to greater recall [12]. Surprise that is implausible probably gets cognitively discounted. Surprise may have received less attention in this literature because it's a fleeting emotion that is often inconsequential.

**Sadness**

Sadness has also received very little attention in this literature, possibly because researchers have frequently referred to sadness as depression or depressive symptoms. In research entitled "Neural correlates of recalled sadness, joy, and fear states: a source reconstruction EEG study". event related potentials were monitored in adults (N = 30) [13]. A common emotional circuit was noted as well as distinct brain regions that were specifically active during recollection of different states. The right temporal and left superior frontal regions were more active for sadness. The right orbitofrontal cortex was activated for happy states and the left limbic region was activated for fear. It is not surprising that distinct brain regions were activated during different emotions, especially during extremely positive and extremely negative emotions like joy and fear. It would be interesting to know if there was a temporal sequence of the common emotional circuit being activated as the participants were searching memory for a specific state and when that state was recalled, the emotion-specific brain region was activated.

**Fear**

Most of the fear studies in the current literature have focused on the neural activity of mice responding to fear stimuli. However, there are a few studies that have focused on different elicitors of fear in humans and one study on humor as a way of managing fear.

In a study entitled "Neural predictors of fear depend on the situation", adults were shown video clips of heights, spiders, and social threats (N=21) [14]. As might be expected, the different stimuli were accompanied by activity in different parts of the brain.

In a study on the aftermath of an earthquake, adults who had experienced the Turkey earthquake of 2023 (N= 322) were given

the Death Anxiety Scale [15]. Those who had high scores on that scale had experienced a relationship with a person under the rubble, a financial loss and sleep problems. Women and married individuals had greater fear of death. Not surprisingly, having a family member under the rubble and experiencing financial loss predicted sleep problems.

In a more positive paper entitled "First they scream, then they laugh: the cognitive intersections of humor and fear", the authors referred to fear and humor as opposite states [16]. They suggested that humor derives from play. In terms of their different neurochemistry and physiological effects, humor was considered ideal for managing fear.

**Anger**

The current literature on anger is mostly focused on its relationships with anxiety and aggression. In a study entitled "Anger and anxiety in older adults: a cross-lagged examination", the adults participated in two waves over a four-year period (N=6,852) [17]. Anger suppression and expression predicted anxiety symptoms and anxiety reciprocally predicted anger suppression and expression. Anxiety in this case may have been fear-related as anger often results from fear and has been considered a coping mechanism for fear.

In research that addressed the General Strain Theory on the mediating role of anger for the relationship between strain and violent behavior, strain was said to involve parental abuse, academic strain and negative relations with teachers (N=3,120) [18]. The researchers' data confirmed that strain led to anger which led to violent behavior. A link between anger and reactive aggression has also been mediated by anger rumination in research on Chinese adolescents (N= 177) [19].

Anger has also been studied together with fear and sadness (N=339 women and 99 men) [20]. In this study, the salient findings were a significant correlation between sadness and fear and no sex differences for anger or fear.

In a paper entitled, "Anger and suicidality in veterans: Impact of post separation time and combat", veterans from the Iraq and Afghanistan wars were participants (N= 2,580) [21]. Not surprisingly, more combat time led to greater anger/hostility and suicidality. Also not surprisingly, anger decreased with greater post separation time.

In a meta-analysis of 81 studies, positive associations were noted between anger and avoidance, rumination and suppression [22]. Negative associations were also noted between anger and acceptance and reappraisal. The authors referred to anger as "maladaptive emotion regulation".

**Disgust**

The research on disgust in this current literature has been focused on the elicitors of disgust, on related psychological conditions, and on the longer time to extinguish the disgust experience versus the experience of other emotions. In this current literature, disgust has been compared to other primary emotions including fear, anger and happiness. In a comparison between disgust, fear and anger, 60 vignettes of those emotions were presented [23]. The strongest disgust response was to "ancient threats" including body waste products and worms as well as pandemic disgust vignettes. In contrast, the strongest fear responses were triggered by "modern threats" including electricity and car accidents.

In a survey study on disgust (N=216 adults), most disgust experiences derived from exposure to disease/pathogen stimuli [24]. The proximal senses including smell, taste and touch were the senses that were the most involved in the disgust experiences.

In a paper entitled "Facial disgust in response to touches, smells, and tastes", adults' facial responses to touches, smells and tastes were videotaped and EMG (electromyography assessing muscle activity) was recorded for the different stimuli [25]. Facial action units coded from the videotapes suggested chemosensory and tactile stimuli elicited the different facial expressions. But a nose wrinkle and upper lip raise were also noted following the stimulation of each of the senses. The authors concluded that "disgust serves to defend the body from the entry of toxins and disease".

In a meta-analysis on 129 studies (N =31,101 two-to-twelve-year-old children), disgust and fear expressions were the most difficult to recognize across the age groups and happiness was the easiest emotion to recognize [26]. These data are not surprising given that children are more frequently exposed to happy than disgusting and fearful situations.

Disgust has been related to psychological disorders including OCD (obsessive compulsive disorder) and PTSD (post-traumatic stress disorder). In a longitudinal study entitled "Examining reciprocal relations between disgust proneness and OCD symptoms, adults (N=307) were seen at four time points at one-month intervals [27]. A cross-lagged analysis revealed that disgust predicted OCD symptoms, but not OCD washing symptoms. In contrast, OCD washing symptoms were predictive of disgust proneness.

In a paper entitled "Disgust and other negative emotions in the relationship between mental contamination and PTSD: A systematic review", 20 studies were reviewed [28]. Disgust sensitivity was associated with mental contamination (internal filthiness associated with contamination obsessions) and severity of PTSD symptoms. Mental contamination was associated with all types of trauma, but especially sexual trauma.

The differential fading of disgust and fear reactions has been researched in two studies [29]. After experiencing these emotions in study one (N=471 adults), the memory of them was assessed three months later in study two (N=160 adults), which was a smaller sample due to attrition. Fear faded to a greater degree than disgust in this longitudinal study.

In a meta-analytic review of 28 laboratory paradigms (N=14 for disgust and 14 for fear), disgust was related to OCD, PTSD and phobias [30]. Extinction was slower for the disgust emotion than the fear emotion. Disgust has also been notably more resistant to PTSD treatment.

**Methodological Limitations of this Literature**

Several methodological limitations can be noted for this literature. The number of studies have differed for different emotions. Very

few studies have appeared in the current literature, for example, on sad and surprise emotions. Those terms, sad and surprise, have been synonymous with depression and awe, suggesting that more recent literature on sadness and surprise might be found when entering those additional search terms.

Some emotions, for example, happiness have simply been studied via surveys or vignettes or rely on memories and others via physiological methods like EMG (electromyography) responses to disgust in the laboratory. Disgust stimuli like smells, tastes and touches can be more readily delivered in the laboratory than happy stimuli. And delivering sad or fearful stimuli would be unethical and would not receive IRB (institutional review board) approval.

A few researchers have compared emotions, as, for example, in the study on age-related effects, but most research groups have studied a single emotion. Some emotions have been studied for their elicitors while others have been researched for their effects. Rarely have both elicitors and effects of emotions been researched in the same study.

Some emotions may be fleeting, like surprise and fear, while others may be sustained like sadness and anger and difficult to extinguish like disgust. Very few studies have addressed the short-term or sustained effects of these emotions. Most were focused on the elicitors or effects of emotions. And several feelings that are commonly experienced and might be considered emotions like loneliness, anxiety, worry, and stress have not been labeled basic or universal emotions.

Despite these limitations, the current literature on emotions has continued to be interesting and informative. More research might be conducted in laboratories to include videotaped and coded facial responses, EMG and fMRI which have rarely appeared in this literature possibly because of limited funding for these relatively expensive measures. These studies have, nonetheless, advanced our understanding of these important, widely experienced emotions.

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