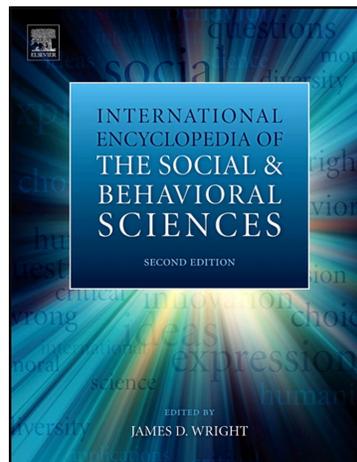


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Abstract

Disgust appears to be a universal and basic emotion, perhaps unique to humans. It has become a center of interest in recent research, including psychological, philosophical, evolutionary, and neural perspectives. On the output side, it is characterized by a withdrawal response, a physiological concomitant of nausea, and a distinct facial expression, focused around the nose and mouth. This output system seems to have been relatively constant across time and cultures. However, there has been a major elaboration of elicitors and meanings in cultural evolution, perhaps by a process of preadaptation. Disgust may have originated as a food rejection response in animals, based on taste or smell. However, in humans, the food rejection response is transformed into a rejection based upon the nature or origin of a food, rather than its sensory properties. Disgusting potential foods have contaminating properties; when they contact an acceptable food, they render that food unacceptable. The offensiveness of certain foods expands to the offensiveness of any reminders of the animal nature of humans, especially death and its odor of decay. Further expansions include interpersonal disgust; direct or indirect contact with undesirable people or simply strangers, and moral disgust, directed at certain types of moral violations. An alternative recent view categorizes disgust elicitors, based on evolutionary considerations, into pathogen avoidance, avoidance of certain sexual contacts, and avoidance of a wide range of moral violations. The elicitors and meanings of disgust vary across time and culture, with interpersonal and moral disgust expressed particularly prominently in Hindu India. Disgust has been transformed, in human cultural evolution, into an emotion that promotes withdrawal from a wide range of culturally unacceptable entities; it is a major force in socialization, and may have become a guardian of the 'soul,' as well as the body.

Disgust appears as a fundamental emotion in sources as different as ancient Hindu texts and Darwin's (1965/1872) *The Expression of the Emotions in Man and Animals*. Although usually listed as one of six basic emotions in modern psychology texts, disgust was virtually unexplored until the last 20 years. In the last 20 years, disgust has received much attention in psychology and other disciplines; there were only a few books ever written about disgust before 2010; at least five have appeared since 2010 (note particularly Herz, 2011; Kelly, 2011).

Darwin defined disgust as referring to "something revolting, primarily in relation to the sense of taste, as actually perceived or vividly imagined; and secondarily to anything that causes a similar feeling, through the sense of smell, touch and even of eyesight" (p. 253). In the classic psychoanalytic treatment of disgust, Andras Angyal (1941) claimed that "disgust is a specific reaction toward the waste products of the human and animal body" (p. 395). Angyal related the strength of disgust to the degree of intimacy of contact, with the mouth as the most sensitive focus. Sylvan Tomkins (1963) has offered the more general contention that disgust is "recruited to defend the self against psychic incorporation or any increase in intimacy with a repellent object" (p. 233). Derivative of Angyal's definition, Rozin and Fallon (1987, p. 23) expand on Angyal's definition, and define disgust as: "Revulsion at the prospect of (oral) incorporation of an offensive object. The offensive objects are contaminants; that is, if they even briefly contact an acceptable food, they tend to render that food unacceptable." Disgust is related to pollution, as used in the anthropological literature. In particular, Mary Douglas' (1966) view of polluting meaning matter out of place has direct relevance to disgust.

Most scholars recognize a special relation between disgust and ingestion: the facial expression of disgust represents an oral and nasal 'rejection,' the word 'disgust' in English and some

other languages means 'bad taste,' and nausea, the physiological signature of disgust, is directly related to, and inhibitory of, ingestion.

However, it is also clear that, cross-culturally, the emotion of disgust is elicited by a wide range of elicitors, most of which have nothing to do with food. The history and trajectory of disgust, from a food-related emotion to a much more general emotion, is the central concern of this article.

Disgust as an Emotion

Disgust is the only basic emotion that is specifically related to a motivation (hunger) and to a particular bodily location (mouth). Along with other basic emotions, as described by Paul Ekman (1992), disgust has a characteristic behavior (withdrawal), physiological state (nausea), and facial expression (see also Izard, 1971). The facial expression centers on the mouth and nose, and is characterized principally by a wrinkling of the nose, a raising of the upper lip, and a gape. There are also characteristic bodily gestures. The mental or feeling component of disgust is often described as revulsion.

The Meaning of Disgust

Rozin et al. (1993, 2008), based on surveys in Japan and the United States, designate nine domains of disgust: certain foods or potential foods, body products, animals, sexual behaviors, contact with death or corpses, violations of the exterior envelope of the body (including gore and deformity), poor hygiene, interpersonal contamination (direct or indirect contact with unsavory human beings), and certain moral offenses. A more recent formulation by Tybur and colleagues, based in part on

evolutionary considerations, organizes the wide range of disgust elicitors into three groups, pathogen avoidance (which includes potentially all of the previously listed elicitors except sexual and moral), sexual violations, and moral violations (Tybur et al., 2013). Disgust has to do with offensive things; these are wide in range, but exclude many other types of negative events, such as pain, and those that elicit the emotions of fear, sadness, and anger.

Rozin et al. (1993, 2008) propose that disgust originated in animals as a response to distasteful food, and others have added to this origin a set of adaptations to avoidance of pathogens. These authors hold that in cultural evolution, the output side of disgust (expression, physiology, behavior) remained relatively constant, but the range of elicitors and meanings expanded dramatically. The meaning of disgust became offensiveness to the self or soul, rather than bad taste, its origin. Indeed, it was proposed that, in humans, distasteful items do not elicit the full emotion of disgust. The expansion of elicitors and meanings in cultural evolution was attributed to the process of preadaptation; use of a mechanism evolved in one system for a novel use in another system. For example, the mouth, and in particular the teeth and tongue, evolved for processing food, but these structures were co-opted in human evolution for use in speech articulation. The expansion of the meanings of disgust is proposed to have occurred in four stages.

Core Disgust

Core disgust, the initial form of disgust, and the form that appears first in children, has to do with food, but primarily the nature and origin of the food, rather than its taste (Rozin and Fallon, 1987). Core disgust has three components: (1) a sense of oral incorporation (and hence a linkage with food or eating); (2) a sense of offensiveness; and (3) contamination potency. The mouth is the principal route of entry of material things into the body; such things may be essential for life, but may also be very harmful. Disgust has to do with the harmful side, the risks of ingestion. The threat of oral incorporation is illustrated by a widespread belief that "You are what you eat." As others (e.g., Tybur et al., 2013; Oaten et al., 2009; Schaller and Park, 2011) have noted, many of the features of core (and much of animal reminder) disgust can be understood as adaptations to avoidance of pathogens.

Almost all elicitors of core disgust are potential foods that are whole animals, or animal body parts or body products. The great majority of food taboos concern animals and their products, and in most cultures the great majority of animals as potential foods are considered disgusting.

The contamination response (e.g., the rejection of a potential food if it even briefly contacted a disgusting entity) appears to be powerful and universal among adults, and is a defining feature of disgust. It is an example of the sympathetic magical law of contagion, which essentially holds that "once in contact, always in contact" (Rozin and Nemeroff, 1990). It has an obvious adaptive value as part of a pathogen avoidance system.

Animal Reminder Disgust

Common elicitors of disgust include inappropriate sex, poor hygiene, death, and violations of the ideal body envelope (e.g.,

gore, deformity, obesity). Contact with death and the odor of death (decay) are potent elicitors of disgust. Individuals who score high on disgust sensitivity also score higher on a fear of death scale.

The centrality of death in disgust suggests a more general construal of disgust. Disgust may be understood as a defense against a universal fear of death. Ernst Becker has argued that the most important threat to the psyche is the certainty of death. Human beings are the only organisms that know they will die. Disgust, as a withdrawal system, may help to suppress thoughts or experiences that suggest human mortality.

More generally, anything that reminds us that we are animals may disgust us (Rozin and Fallon, 1987). Disgust serves to 'humanize' our animal bodies. Eating, excretion, sex, soiling of the body surface, soft viscera within the body envelope, and death are all properties that humans share with animals. Cultures typically have extensive rules about these matters, including a wide range of prohibitions. People who ignore these prescriptions are reviled as disgusting and animal-like. This conception of disgust links it to the concern of humans, frequently cited by anthropologists, to distinguish themselves from animals. It has recently been suggested that the wide range of core and animal-reminder elicitors (and interpersonal disgust) can be grouped into one larger category, as a pathogen avoidance system (Tybur et al., 2013).

Interpersonal and Moral Disgust

Across cultures, there is a sense of disgust at touching most people who are not intimates, of making indirect contact with them, such as by wearing their clothing. Most other persons are contaminating, in this sense, and this sensitivity can serve to reinforce social boundaries (or as a pathogen avoidance mechanism). Cultures differ in degree of this sensitivity; it is particularly high in Hindu India, where it serves as an important means of maintaining caste distinctions.

In many, if not all languages, the word for 'disgust' is applied to certain moral violations, and the contamination property of disgust is also extended to the perpetrators of such immoral acts. It is possible that disgust functions, along with anger and contempt, as a basic moral emotion involved in expressing moral outrage at the actions of another. Richard Shweder et al. (1997) identify three types of moral codes that occur in cultures around the world. Violation of the community code, having to do with issues of hierarchy and duty, may map on to the emotion of contempt. Violations of the autonomy code deal with rights and justice, and may be associated with anger. The third code, divinity, focuses on the self as a spiritual entity and seeks to protect that entity from degrading or polluting acts. Disgust may be the emotion that is evoked when the divinity code is violated (Rozin et al., 1999). A more modern formulation of disgust categorizes the interpersonal and moral elicitors of disgust into two categories, sexual (mate selection) and generally moral (including potentially all moral violations) (Tybur et al., 2013). There is certainly evidence that Americans apply the word 'disgusting' to a wide range of moral violations; the question is whether this is a metaphoric and very general use of the word, or implies a specific link between disgust and a wide range of moral violations.

Development of Disgust

Distaste, the origin of disgust, is present at birth, as in the innate rejection by neonates of bitter substances. Disgust, with contamination sensitivity as a defining feature, first appears in North American children at about 4 or 5 years of age. Disgust, as opposed to distaste, seems to be uniquely human, and is entirely or primarily a product of culture. The contamination response, also uniquely human, is probably, in origin, a means of protection from microbial contamination; however, it is acquired. Even feces, surely a source of such contamination and a universal disgust substance among human adults, are not rejected by infants. Toilet training may well be the first disgust-generating experience for humans, but the means by which strong negative affect becomes associated with feces is unknown, as is the way that disgust 'spreads' to a wider range of elicitors. Presumably, parental reactions to disgusting things play a central role in the development of disgust. There is evidence for family resemblance in disgust sensitivity. Although the evidence is not yet strong, it appears that core (or pathogen) disgust appears before the other types of disgust.

Disgust, History and Culture

Across cultures and history, the expression of disgust seems to vary rather little, while the elicitors and meanings vary widely. It seems that disgust was relatively infrequent and limited to a narrow range of elicitors in medieval Europe. The full scope of disgust in Western history, and its flowering as both an emotion of sensibility to the animal nature of humans and a marker of immorality is presented in [William Miller's \(1997\) *Anatomy of Disgust*](#).

Many cultures show specific attractions to entities that most other cultures find disgusting. For example, particular spoiled foods (e.g., cheese for the French, fermented fish sauce for Southeast Asians) are highly desired in particular cultures, and there are major differences in the sexual practices and contact with the dead across cultures.

The largest historical and cultural variation in disgust is probably associated with interpersonal and moral disgust. For example, disgust seems to center more on interpersonal and moral matters for Hindu Indians than it does for Americans.

Individual Differences

Results from a standardized test of disgust sensitivity, applied in Japan and the United States, indicate that sensitivity is somewhat higher in females and people of lesser education or lower social class ([Haidt et al., 1994](#); [Olatunji et al., 2007](#)). A more recent measure of individual differences in disgust has been developed by [Tybur et al. \(2009\)](#). As well, disgust has been implicated in two clinical phenomena: phobias and obsessive compulsive disorder.

Neural Correlates of Disgust

There has been extensive recent work on the neural basis or correlates of disgust. Evidence suggests that an area activated

when disgust is experienced is the insula, the area with linkages to the olfactory system. There is also some evidence for common activation of brain areas in response to elicitors as different as core (pathogen-linked) entities and moral violations.

Disgust and Related Emotions

Fear and disgust share a behavioral component, withdrawal based on a threat. Anger and sociomoral disgust share the appraisal of moral condemnation and the common facial gesture of raised upper lip. Contempt shares the appraisal that someone is base and inferior to oneself, but has a complex and rich set of connotations. Shame has been described as disgust turned inward, a judgment that the self is disgusting. It is not clear what emotion is 'opposite' to disgust, but perhaps love is the closest opposite.

Disgust and the Arts

Disgusting images appear frequently in visual art. Disgust is also a focus of humor, at least in Western culture, and plays a particularly central role in children's humor. Disgust appears to be attractive in situations where it is contained and not too threatening; in this regard, our enjoyment of disgust may be related to our enjoyment of horror movies, sad movies, and amusement park rides. All of these proclivities seem to be uniquely human. In general, disgust plays a major role in socialization and the sensibilities it promotes are at the heart of what it means to be human and to be civilized.

See also: Affect-Regulation Motivation; Avoidance and Approach Motivation: A Brief History; Control Behavior: Psychological Perspectives; Decision Making: Nonrational Theories; Emotion and Expression; Flow in Motivational Psychology; Gender and Academic Motivation; Health Self-Regulation, Motivational and Volitional Aspects of; Interest, Psychology of; Motivation and Actions, Psychology of; Motivation in Australian Aboriginal Populations; Optimism and Pessimism; Passion and Motivation; Personal Projects; Personality and Adaptive Behaviors; Self and Emotional Development in Adulthood and Later Life; Self-Regulation in Adulthood; Successful Aging in Western Societies: The 'Selection, Optimization, and Compensation' Model; Temperament and Motivation.

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