Creepiness and the Uncanny

Jens Kjeldgaard-Christiansen and Mathias Clasen
AARHUS UNIVERSITY

ABSTRACT: To feel nervously and apprehensively "creeped out" is a familiar emotional state, but its cause—what makes something or someone "creepy"—is poorly understood. A recent evolutionary account of creepiness suggests that the emotion arises from a perceived "ambiguity about the presence of threat" (McAndrew and Koehnke 10). However, not all ambiguous threats are perceived as creepy. This article argues that specifically creepy threats arise from disrupted mentalization, by which is meant difficulties in apprehending the mind of another being in such a way as to make that being seem threateningly unpredictable. The authors propose that this explanation of creepiness also explains "the uncanny," a concept that is closely related to creepiness and to which a much older and larger research literature attaches. Finally, it is suggested that the present account can make sense of some iconically creepy figures of horror fictions, including zombies, ghosts, and ominously unhuman children.

KEYWORDS: creepiness, the uncanny, uncanny valley, theory of mind, mind perception, mind reading, horror

By its lexical derivations, the concept of creepiness describes either a threateningly "creepy" object or, via the nervous and uncertain apprehension of such an object, the emotion of being "creeped out" (Merriam-Webster). What kinds of things and situations make people feel this way, and what does that tell us about the nature and function of this emotion?

Psychologists have only very recently begun to conduct empirical investigations into creepiness (McAndrew and Koehnke; Watt et al.). Francis McAndrew and Sara Koehnke's 2016 evolutionary account of creepiness, presented as part of their questionnaire study about the characteristics of creepy people and activities, proposes that the emotion always arises

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from a "perceived ambiguity about the presence of threat" (10). To feel creeped out, therefore, is to feel "anxiety aroused by the ambiguity of whether there is something to fear or not and/or by the ambiguity of the precise nature of the threat (e.g., sexual, physical violence, contamination, etc.) that might be present." This felt sense of creepiness "could be adaptive if it facilitates our ability to maintain vigilance during periods of uncertainty." The human capacity to experience creepiness may therefore have evolved to prepare the organism for action in the face of a potential threat to its safety.

In this article, we will take up McAndrew and Koehnke's suggestion but propose a critical amendment to it: The type of ambiguous threat that characterizes creepiness is always the product of *disrupted mentalization*, by which we mean difficulties in apprehending the mental activity of another being in such a way as to make that being seem threateningly unpredictable. Our proposal thus grounds creepiness in "theory of mind," the adaptive human capacity to infer the mental states of other beings in order to understand and predict their behavior (Premack and Woodruff). This proposal refines McAndrew and Koehnke's account, which cannot explain why only some kinds of ambiguous threat are creepy. For example, the coughing of a stranger could represent an ambiguous threat of infection, but that would hardly be a creepy threat. However, if that same stranger had uncaringly coughed into the faces of other people, that might well be perceived as creepy. One would quickly start to wonder what could be going on in the head of such a person and what else they might get up to. Our account of creepiness also integrates theoretical proposals and empirical findings about "the uncanny," a term that is often used synonymously with creepiness and to which a much larger and older research literature attaches. We aim by this integration to synthesize McAndrew and Koehnke's account of creepiness and Kurt Gray and Daniel Wegner's proposal that uncanny feelings arise from perceiving mind in mindless things or failing to perceive mind in beings that have minds. The label of *uncanny* may sometimes be used to distinguish these from other experiences of creepiness, but our account explains why they are nonetheless experiences *of creepiness*.

In their foundational writings on the uncanny, Ernst Jentsch (in 1906) and Sigmund Freud (in 1919) emphasized its imaginative expressions in common superstitions and speculative fictions. Equally, the experience of creepiness is commonly imaginative; it causes us to jump at suggestive shadows and posit the illusory agency of horrible beings. Some of its most recognizable sources, moreover, are also imaginative tropes of the horror genre: dark and dilapidated mansions, ghosts, demons, and various forms of psychological and physical aberration. These fictional creeps exert a powerful influence on the common understanding of the emotion and its causes. For example, at least as of writing this article, a Google Images search on "creepy" mostly turns up images of bizarrely unhuman faces and creatures that seem—and in some cases are—straight out of a horror film. This imaginative side of creepiness will be a second point of integration for our account, which extends its proposals to explain some iconically creepy figures of horror fiction, including zombies, ghosts, and ominously unhuman children.

CREEPINESS AND THE UNCANNY

McAndrew and Koehnke's questionnaire study asked 1,341 primarily North American respondents to identify personal and behavioral traits that are typically found in creepy people. Responses indicated that creepy people tend to be male; act strangely, such as by exhibiting unusual body language or avoiding eye contact; have an abnormal appearance; and show signs of inappropriate personal or sexual interest in the perceiver. Participants also indicated agreement or disagreement with different statements about the nature of creepy people. Creepy people are judged to be unpredictable and disinclined to follow the rules of society, and their creepiness is perceived to reside in their personalities and not just in their overt behavior (Figure 1). Another part of the questionnaire had respondents identify creepy occupations and hobbies. Creepy occupations typically revolve around death or unusual sexual behavior. They include funeral director and sex-shop owner, but also professional clowns. Creepy hobbies often involve collecting things, especially dead animals or body parts, as well as various types of "watching"

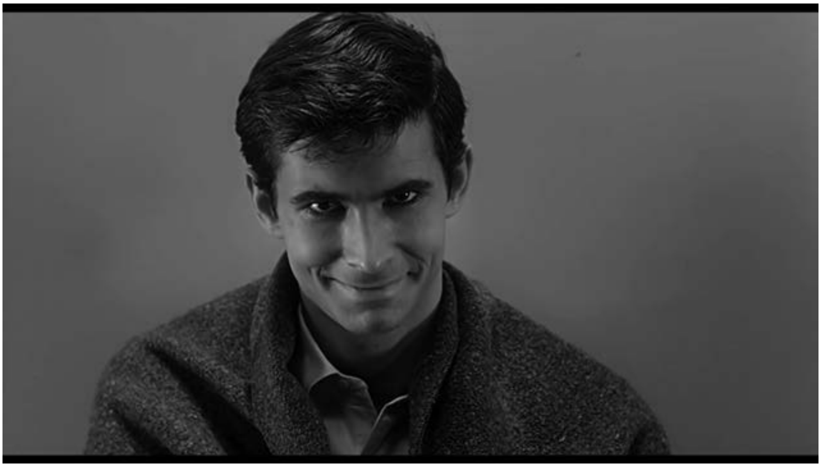

Figure 1 · The creepy smile of the character Norman Bates from Hitchcock's 1960 horror film *Psycho*. The smile appears on his face as he is sitting alone in a jail cell after having been charged with murder. It conveys that socioemotional aberrancy which appears to be characteristic of at least some creepy people (McAndrew and Koehnke). Reproduced under fair use.

and voyeurism, especially when directed at children. Later research has emphasized that people perceived as creepy are also likely to be disheveled and unhygienic as well as untrustworthy and unattractive (Watt et al.). In addition, creepiness is ascribed to technologies that violate people's privacy (e.g., Shklovski et al.; Langer and König), and those who experience creepiness most often and keenly tend to be discomfited by ambiguity: They strive for security and clarity in their relations with others and with the world in general (Doyle et al.).

These findings appear to support the suggestion that the experience of creepiness is a response to ambiguity about the presence of a threat. In particular, the various counter-normative behaviors, interests, and appearances judged to be creepy may be seen to indicate that someone does not play by the social rules and is therefore unpredictable and potentially threatening (McAndrew and Koehnke 14; see also Shaw ch. 3). Having made this point, McAndrew and Koehnke do not go so far as to suggest that violations of social norms explain all or even most cases of personal creepiness, and they propose no way of distinguishing the types of threat that give rise to creepiness from those that do not. In a recent study, McAndrew suggests that the types of threat that make *places* creepy consist in “combinations of features that humans have evolved to regard with caution, either because such features were associated with the presence of predators or other natural hazards, or because they confront us with limited sensory information and a lack of freedom of movement and control which would impair our ability to deal with an emergent threat” (48). However, this is still an unspecific suggestion that does not readily translate into a claim about the characteristics of creepy people or creepiness in general.

McAndrew and Koehnke’s identification of creepiness with threatening uncertainty goes against a much older tradition that identifies creepiness, or at least an exemplary kind of creepiness, with categorical ambiguities, as in being unable to tell whether an object is dead or alive, human or nonhuman. This tradition started in 1906 with German psychiatrist Ernst Jentsch’s exploration of “the uncanny,” a term that is commonly taken to be synonymous with creepiness or at least closely related to it. The German term is *Unheimlich* (literally “un-homely”). The translation of that term into the English *uncanny* has often been questioned, with commentators suggesting that *creepiness*, in its modern sense, would be a better alternative (e.g., Kotsko 5). As philosopher David Livingstone Smith points out,

> The English word does not quite capture the state of mind that Jentsch is gesturing towards. Something “uncanny” can be simply odd or astonishing—even enjoyably fascinating, as is exemplified by open-mouthed wonder at the “uncanny” feats of a champion athlete. But Jentsch is clearly talking about a *disturbing* quality of experience, one that sends chills down your spine and makes your blood run cold. To find a good English equivalent, just ask yourself how uncanny things such as wax figures in a dimly lit room strike you. One word that is likely to come to mind is “creepy.” Uncanny things are creepy things, and the state of mind that they produce is the state of mind of being “creeped out.” (*Making Monsters* 244)

Jentsch discussed the uncanny as always involving some form of "psychic uncertainty": a failure clearly to perceive or understand what one encounters in the world (9). He went on to suggest that uncanny experiences are at least typically caused by "doubt as to whether an apparently living being really is animate and, conversely, doubt as to whether a lifeless object may not in fact be animate—and more precisely, when this doubt only makes itself felt obscurely in one's consciousness" (14). Accordingly, "the horror of which a dead body (especially a human one), a death's head, skeletons, and similar things cause can also be explained to a great extent by the fact that thoughts of latent animatedness always lie so close to these things" (15).

Freud took up this suggestion in his 1919 article "The Uncanny." Although a good number of his own observations concerned impressions of ambiguous animacy, Freud proposed instead that uncanniness arises "when repressed childhood complexes have been revived by some impression, or when primitive beliefs that have been *surmounted* appear to be once again confirmed" (155, emphasis in original). The latter mechanism subsumes Jentsch's thesis by explaining the uncanniness of ambiguous animacy in terms of the seeming confirmation of a primitive belief—especially, that disembodied spirits can cause otherwise dead things to come alive (141, 154–55). The former mechanism would account for other cases of uncanniness. For example, uncanniness felt in response to severed limbs could be explained by a castration complex in that the severed limb is symbolic of a penis. Freud related these mechanisms to many other examples of uncanniness, such as ghosts, madness, and déjà vu.

In the middle decades of the twentieth century, Jentsch's proposal was overshadowed by Freud's psychoanalytic alternative. However, while Freud perceptively identified many different kinds of uncanniness, he failed to produce an empirically testable account of the uncanny, and there is little sense in trying to construct such an account based on his highly dubious psychoanalytic premises (for critiques, see Cioffi; Erwin). Something like Jentsch's proposal resurfaced in Masahiro Mori's 1970 exposition of the "uncanny valley" and, via Mary Douglas's 1966 anthropological studies on "impure" category violations in different cultures, in Noël Carroll's 1990 theory of the monstrous. Carroll argued that horror monsters are creatures that combine incongruous and sometimes fully contradictory categorizations—the zombie is often described as the "living dead"—and thereby constitute an uncanny threat (ch. 4). We will come back to this proposal.

Mori's concept of the uncanny valley refers to the unattractive and anxiety-provoking nature of nonhuman things that appear almost fully human, such as a human-like wax figure, robot, or video game character (Figure 2). As a roboticist, his specific hypothesis was that perceptions of incomplete physical humanness in a robot gives rise to uncomfortably uncanny feelings in the observer, which then cause ratings of the robot's attractiveness or pleasantness to plummet into a metaphorical "valley." Mori also discussed the *movement* of robots, which can become "uncanny" or indeed "creepy" (as per the article's recent translation into English, reviewed and authorized by Mori) in too closely mirroring the organic and coordinated movement of willful human agency. He therefore recommended that roboticists employ "nonhuman designs . . . to which people can relate comfortably" (100).

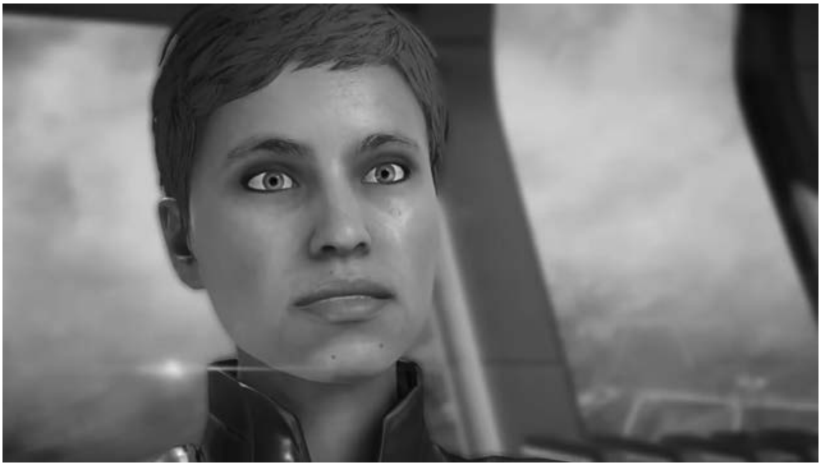

Figure 2 · A character from the video game *Mass Effect: Andromeda* (Bioware). Early critiques of the game took note of its characters' creepily lifeless faces. A software patch was quickly released which added "a new eye shader that goes a long ways towards humanising its humanoid cast" (Matulef). Reproduced under fair use.

Ambiguous *animacy* a la Jentsch continues to receive interest as the ground of uncanny experiences (Tomlinson; MacDorman and Ishiguro; Smith, *Making Monsters*), but Mori's focus on ambiguous *humanness* has been more influential and productive of empirical research, which has largely supported his explanation (Seyama and Nagayama; Kätsyri et al.). Mori's uncanny valley has been especially productive of research in the fields of social robotics and human–computer interaction (HCI), in which researchers investigate where and how human-looking mechanical robots and virtual characters make people uncomfortable (Bartneck et al.; MacDorman et al.; Tinwell et al.). A famous example concerns the characters of the animated film *Polar Express* (Zemeckis), which creeped out audiences by their strangely unhuman faces and facial expressions (Geller). Researchers in the HCI tradition have also extended Jentsch's and Mori's ideas to account for the "creepiness" of novel technologies that invade people's privacy and could be used to exploit sensitive personal information. An example is "personalized analytics . . . predicting whether there is a pregnant person in a household and when the person will give birth" in order to provide targeted offers of baby products (Langer and König 2; see also Cumbley and Church; Tene and Polonetsky). The link that is drawn from such technologies to categorical ambiguity is that the technologies give rise to "situations that are hard to judge and in which people do not really know how to behave" (Langer and König 1), which seems tenuous. If there is a categorical ambiguity here at all, it is very abstract.

David Livingstone Smith ("A Theory"; see also *Making Monsters* ch. 12) has evaluated McAndrew and Koehnke's "Threat Ambiguity Theory" (TAT) of creepiness against "Categorical Ambiguity Theory" (CAT), which, in some form or another, remains the most widely cited explanation for uncanny experiences. According to Smith, TAT does a reasonable job of explaining personal creepiness, which has so far been the theory's main and limited focus. But it does not do so well when it comes to explaining the central cases of the CAT literature, such as the creepiness of a humanoid robot that would not seem to pose any immediate danger to the observer. He therefore comes down on the side of CAT, which "covers most, if not all, of the phenomena that TAT explains plus a great deal more" ("A Theory"). He gives two examples. First, TAT supposes that "a [creepy] profession involving corpses . . . arouses the suspicion that such people might be dangerous—a hypothesis that, on the face of it, does not seem plausible." Smith goes on to suggest that the creepiness of funeral directors and other corpse-handlers is ably explained by CAT: "Corpses are experienced as Unheimlich because we tend to see them simultaneously as persons (the 'dear departed') and as cold slabs of inanimate flesh. It might be that funeral directors are sometimes regarded as creepy because they have been polluted by contact with the Unheimlich dead" ("A Theory"). To us, however, Smith's explanation seems no more plausible "on the face of it" than the TAT proposal. Worse, the explanation is not even based on a categorical ambiguity—the funeral director is definitely alive—but appeals instead to some unspecified "pollutive" process whereby creepiness can spread from one object to another. Smith's second example is clowns, whose creepiness TAT might ascribe to their facial inscrutability and behavioral unpredictability (Watt et al. 59). However, "like waxwork figures and humanoid robots, clowns have attributes that belie their humanity. People wearing masks—especially full-faced masks with a fixed facial expression—are often seen as creepy for much the same reason" (Smith, "A Theory"). This second example does appear to propose a CAT-based explanation in that clowns' make-up or masks make them look unhuman. But that explanation is not *obviously* better than the TAT-based alternative.

It is true that CAT appears to handle some types of creepiness better than TAT, but the converse is also true. Unlike TAT, CAT cannot account for why, for example, sexual interest and dishevelment are so strongly associated with creepiness. There is no categorical difficulty here: Lascivious or dirty people are unambiguously human, and so is that shady person who seems to be trailing you. Likewise, it is not at all clear that the mentally ill are seen as unhuman, but it is clear that they are commonly stigmatized as unreliable and a potentially violent threat (Rüsch et al.), and this may be what explains their perceived creepiness (Watt et al. 64).

CAT cannot swallow TAT, then, but TAT may yet be able to explain the findings that are typically cited in favor of CAT.

CREEPINESS AS DISRUPTED MENTALIZATION

We propose that creepiness is caused by disrupted mentalization, that is, by threatening difficulties in apprehending other minds. For example, being followed at night is a typical case of creepiness, and the threat that it represents arises from uncertainty about the follower's motives and desires: *What reason could that person possibly have for following me here, at this hour?*

We believe that McAndrew and Koehnke's findings about creepy people and activities are specifically suggestive of psychological abnormalities that disrupt mentalization. Indeed, whenever McAndrew and Koehnke do attempt to link a behavior or personal characteristic judged to be creepy with a specific kind of threat, they either state or seem to imply some kind of psychological aberration. For example, the creepiness of unwanted sexual attention, which is felt most strongly by females, is explained by the fact that females "are simply at greater risk of sexual assault and have potentially greater costs associated with it than males" (14). This implies that unwanted and inappropriate sexual attention is interpreted as a possible sign that someone may be desirous of and contemplating rape. Likewise,

> while they may not be overtly threatening, individuals who display unusual patterns of nonverbal behavior (Leander et al.), odd emotional responses (Szczurek et al.), or highly distinctive physical characteristics are outside of the norm, and by definition unpredictable. This may activate our "creepiness detector" and increase our vigilance as we try to discern if there is in fact something to fear or not from the person in question. (14)

It is well to remember here that participants in McAndrew and Koehnke's study were only asked to *associate* creepiness with personal characteristics that may not always and in all circumstances be creepy (12). (Specifically, participants were asked to indicate the likelihood that someone described by a trusted friend as "creepy" would display different behaviors and physical characteristics.) A dirty worker at a construction site is unlikely to be seen as creepy by virtue of being dirty, but a dirty guest at a fine dinner party would be failing to conform to explicit or implicit social rules and might well be considered creepy: *Why does he think he can come here looking like that? Is something wrong with him?* These personal characteristics may therefore not be inherently creepy. Our account suggests that each characteristic will be perceived as creepy only insofar as it is interpreted as a sign or expression of psychological aberration.

Creepiness as disrupted mentalization may also explain Watt et al.'s finding that the creepiness of others is typically "read off" their *eyes*, which are famously expressive of mental states in humans. They evolved to be so by the generation of many small muscles in the eye and brow regions, which allow for emotionally diagnostic variation in facial expressivity, as well as by the legible contrast between the white sclera and darker iris and pupil, which allows for continual tracking of someone's attention and interest (Emery). Psychoanalytic writings on the uncanny have also noted a link to eyes and abnormal ocular expressivity (Rahimi) going back even to Freud's original speculations about the uncanny (136–40). So has the CAT tradition, in which several studies find that bizarrely unhuman eyes on a human or human-like object seem especially uncanny, over and above other ambiguously human features (Seyama and Nagayama; MacDorman et al., Study 4; Schein and Gray). It may therefore be that someone's abnormal eyes and eye contact make their emotional and cognitive states particularly difficult to ascertain, wherefore they become creepily unpredictable.

Relatedly, our account also makes sense of the creepiness of masks, which Smith suggests derives from their power to "belie" the wearer's "humanity" ("A Theory"). However, mask wearers do not seem unhuman to us, and we know of no psychological evidence that they are generally perceived in this way. Another possibility is that masks hide facial expressions and thereby prevent us from reading the intentions and emotions of another person (Clasen ch. 3). Especially creepy masks may also represent a facial expression that activates perplexing or misleading inferences about the masked individual's mental states (Figure 3). This expressive obfuscation is presumably done knowingly—in donning a mask, one is aware of preventing others from reading one's emotions and intentions—wherefore there is even more reason to be on guard.

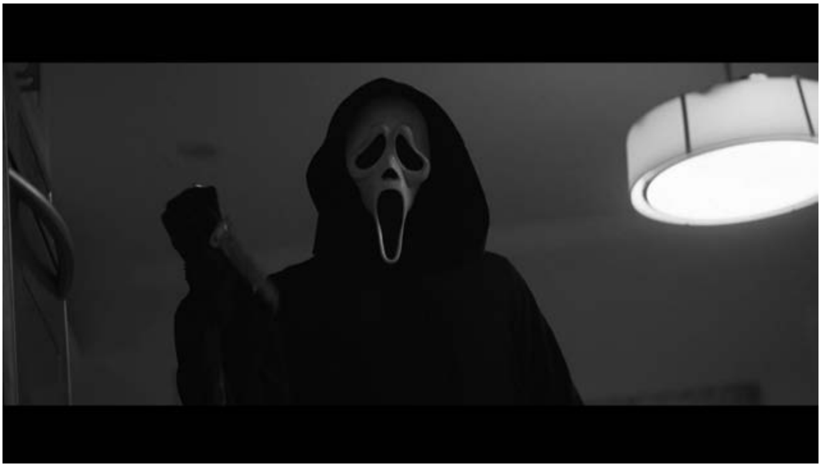

Figure 3 · Ghostface from the *Scream* horror slasher franchise, here depicted in *Scream* (Bettinelli-Olpin and Gillett). The killer wears a mask with distortedly human-like features, which contort into a Munchian scream. The killer's true feelings are hidden. Reproduced under fair use.

We further agree with McAndrew that places, like persons, can be creepy, *but they are always creepy by virtue of inviting ambiguous and unnerving inferences about the presence or designs of intentional agents*. This seems most obviously true of places that are thought to be haunted by ghosts or revenants as these beings are conceived as disembodied minds with strange and nefarious motives. It may also be true of other creepy places, such as "deep narrow canyons [and] dark urban alleys" (49). These places are creepy because, to invert Appleton's adaptationist characterization of places that feel inviting and hospitable to humans, *you can be seen without being able to see*—there is an unnerving sense that you might be being watched, and that someone could be lying in wait around the corner. McAndrew suggests that such creepy places may activate an evolved "agent detection mechanism" that primes humans to scan their environments for live dangers, making us jump at shadows (50; see also Barrett). We agree also on this point but would add that the kinds of agents that make places creepy (as opposed to simply scary) are not nonhuman animals, or predators, or even those predators which have posed a significant danger to humans throughout our evolutionary history, such as snakes (Öhman and Mineka, "Malicious Serpent"). Rather, and as McAndrew's examples consistently show, they are preeminently mentalistic agents, such as other humans, and often also imaginative ones, such as ghosts, spirits, and demons.

Disrupted mentalization may also explain so-called creepy technologies. An example is "a situation where a person having problems with their TV calls their friend for help. Shortly after making the phone call, the person is contacted by the TV's producing company offering help with the TV. However, the user has no idea how the company knew there was an issue with the TV" (Langer and König 2). A historical case is "Girls Around Me," a banned 2012 mobile phone app that "mapped and disclosed the location and information of 'girls' around each user who checked-in through their social networks in that user's vicinity" (Tene and Polonetsky 62). In both cases, the creepiness may not arise from the technology per se but from such aberrant desires and intentions as might motivate its innovation and use. For example, an early write-up of Girls Around Me judged it to be "a way for guys to creep on nearby girls who have failed to lock down their info" (Coldewey). This would explain why these technologies are frequently described as creepy or uncanny despite the theoretical difficulty, noted above, that these technologies do not really seem categorically ambiguous.

How would we deal with those cases that provide the strongest and most frequently cited evidence for CAT as opposed to TAT? CAT certainly agrees with TAT that uncanny experiences involve anxiety, which implies the perception of some kind of threat, whether concretely physical or abstractly cognitive. And the CAT tradition has in fact gone so far as to associate creepiness with difficulties in apprehending and attributing mental states. Jentsch states that "a characteristic wariness" is felt in response to "unusual people, who think otherwise, act differently, and feel otherwise than the majority" (10). He goes on to discuss the mentally ill, who "make a quite decidedly uncanny impression on most people" (14). Moreover, "another important factor in the origin of the uncanny is the natural tendency of man to infer, in a kind of naive analogy with his own animatedness, that things in the external world are also animate or, perhaps more correctly, are animate in the same way [as him]." This specifically human mode of animation is understood to involve humanly "psychical processes" (13–14). Freud, too, noted a link: "The analysis of cases of the uncanny has led us back to the old *animistic* view of the universe, a view characterized by the idea that the world was peopled with human spirits" (147, emphasis in original). This "animistic view" was his main and recurrent example of a "primitive belief" supposedly reasserting itself.

We want to raise this odd association to the status of a general explanation. The paradigmatic examples of categorical ambiguity that have interested the CAT tradition can also be explained as cases of disrupted mentalization—in most cases, of finding mental life where it should not be or of failing to find it where it should be. By this suggestion, we integrate the proposal, by Kurt Gray and Daniel Wegner, that the uncanny valley "stems from general cognitive expectations about what should or should not have a mind" (127). For example, a human-like mannequin looks like the kind of thing that should have thoughts and feelings and yet it does not. Gray and Wegner found empirical support for this proposal in a series of studies showing that machines can become uncanny, even in the absence of any physical resemblance to humans, by the ascription to them of human-like mental capacities (see also Ciechanowski et al.), and that humans can become uncanny when they are perceived as being devoid of conscious experience. It therefore appears that the unnatural presence and absence of mind alike can cause creepiness.

Gray and Wegner's proposal can be extended to also account for the creepiness of things that seem to blur the line between the dead and the living. Such would be the uncanniness, according to Freud, of "severed limbs, a severed head, a hand detached from the arm . . . feet that dance by themselves . . . especially when they are credited, as in the last instance, with independent activity" (150). These things might not be creepy merely by virtue of being ambiguously alive, but by virtue of being ambiguously alive *with inferred mental activity*. (Would a severed hand that simply pulses or twitches organically be as creepy as one that appears to be reaching for something?) Freud also notes the prototypical creepiness of "the false semblance of death" and "the raising of the dead," which may arise because we perceive mindful activity in such movements while recognizing that dead people should literally lose their minds (153). An oft-cited example by Jentsch is that of “a tree trunk [that] suddenly began to move” and whose “energy can have either a *psychical* or mechanical origin” (11, emphasis added). “As long as the doubt as to the nature of [this] movement lasts, and with it the obscurity of its cause, a feeling of terror persists in the person concerned” (11). Jentsch describes the tree trunk’s apparent movement as an ambiguity of animacy, but his formulation casts this perceived animacy as a form of mental actuation.

Of course, one tends to perceive mind in living as opposed to dead things (the categorical boundary emphasized by Jentsch) and in human as opposed to nonhuman beings (the categorical boundary emphasized by Mori). This means that each of the examples just given of disrupted mentalization could, by either categorical concomitant, be seen to support traditional formulations of CAT over our alternative account. However, it is important to see that the correlation between mind on the one hand and humanness and livingness on the other hand is not merely incidental. Rather, the possession of mind goes a long way toward *defining* livingness in the common understanding, as we will shortly discuss, and the attribution of humanness to some entity *implies* an attribution of mind as humans are thinking and feeling creatures. Accordingly, empirical studies have found that the human-like appearance or behavior of a nonhuman entity, such as a robot, causes observers to attribute human-like mental states to that entity (Kiesler et al.; Looser and Wheatley). Indeed, humans are “prototypical mind-havers” (Waytz et al. 384)—we naturally and effortlessly ascribe mind to other humans—wherefore ambiguous cues to humanness will also be ambiguous cues to mentalization.

The equating of life with mental activity helps to explain why many cultures and languages construe animacy as “a matter of gradience” (Yamamoto, *Agency* 36). Humans are felt to be more fully alive than so-called higher animals, such as primates and canines, which, in turn, are more fully alive than lower animals, such as insects, which are more fully alive than plants. An important principle on which life is so graded is the degree to which each entity is “spirited,” that is, imbued with a conscious mental life and guided by its own reason (Dahl; Yamamoto, *Animacy*). In one form or another, this intuition is also a core tenet of philosophical and theological movements dating back at least to the Classical period of ancient Greece—see for example Aristotle's conception of the life-giving soul in *De Anima* (c. 350 BC). More recently, the equating of life with mentalistic activity found expression in the early-modern debates between the "vitalists" and the "mechanists," with vitalists defending the traditional view that life could only be explained by the living organism's possession of immaterial energies, commonly souls (Myers). As late as 1931, an authoritative history of biology concluded that "the last of the biological theories leaves us where the first started, in the presence of a power called life or psyche which is not only of its own kind but unique in each and all of its exhibitions" (quoted in Dawkins 90). Today, even, if someone were to assert that computers or robots are not "truly alive," it is quite intuitive to interpret that as a claim about the machines' lack of mental activity.

Such links between mentality on the one hand and livingness and humanness on the other hand explain why it seems initially difficult to compare the explanatory power of our account to a CAT-based alternative. It seems difficult because mind-having creatures are necessarily alive and paradigmatically human, wherefore doubts concerning the presence or absence of mind can be translated into doubts about these related terms. However, these conceptual overlaps do not add up to an equivalence, and several considerations favor our explanation while disfavoring traditional formulations of CAT. First, our account does not only explain the cases of creepiness that provide the strongest evidence for CAT, but also the cases that provide the strongest evidence for TAT. Second, our account explains why it is the categorical ambiguities of livingness and humanness in particular that have been singled out by previous research in the CAT tradition. They are singled out because they ascribe mind to things, and because they sometimes do so in ways that violate our expectations and convictions. Finally, and as we will now go on to discuss, even in cases where CAT does seem to explain a general *type* of creepiness, our account does a better job of explaining particular *tokens* of that type, such as any particular illustration of the uncanny valley that one is likely to find on the web or in a journal article.

The uncanny valley is typically illustrated by means of pictures of human-like wax figures and robots. Very rarely are these figures shown top-to-bottom. It is much more common to show just the face, and to show the face *en face* (e.g., Figure 2). (Readers may confirm this for themselves by doing a Google Images search on "uncanny valley," which, like "creepy," will mostly turn up images of strangely unhuman faces staring directly into the camera). Why? If what makes these figures uncanny is best described as their perceived unhumanness in general, then that could just as well have been illustrated by an unhuman neck, chest, leg, or foot. However, if what makes them uncanny is the specific impression of *psychological* unhumanness, then this mode of illustration, which offers maximal legibility of psychologically expressive facial features, is exactly what one should expect to find. To be sure, then, we agree with CAT that the wax figure is creepy because it instills doubts about the humanness of the target, but the specific aspect of humanness that is called into question is a human-like mental life.

A similar argument applies to creepy representations of ambiguous animacy. Noël Carroll discusses the iconically creepy case of zombies, which "blur the distinction between living and dead" (43). But this conventional characterization is in a sense misleading. The modern prototype of a zombie—the lumbering, sore-covered menace of *Night of the Living Dead* (Romero)—is clearly and unambiguously alive. It is a self-sustaining and mobile biological organism with a taste for human flesh, and that is why one ought to fear it. Perhaps the zombie could be seen to be not fully or naturally alive by its occult reanimation, but that does not explain the creepiness of zombies in films like *28 Days Later* (Boyle) and *The Crazies* (Eisner), which have never been dead and whose zombification is represented as being naturalistically pathological rather than occult. The sense in which these and other zombies really do seem to be undead concerns their drastically diminished mental life, of which very little that is human remains, and it may be this psychological aberrancy that makes this fictional figure so creepy. There is empirical evidence for such an effect, as Gray and Wegner found that describing a person as having a severely diminished capacity for experience makes them creepy (Experiment 3).

Freud noted about the uncanny in fiction that it "actually deserves to be considered separately" (155). This is because the maker of fiction can "intensify and multiply this effect far beyond what is possible in real life; in his stories he can make things happen that one would never, or only rarely, experience in real life" (157). Freud was surely right that imaginative horror furnishes *degrees* of creepiness scarcely found in real life; yet imaginative creeps may only intensify the same basic causes of creepiness that are found in reality. This principle of intensification appears to be generally true of imaginative scares in horror media, which frighten us through the creative exploitation and exaggeration of our species's most deep-seated fears (Clasen). For example, the fearsomeness of the genre's super-predators, such as the giant monster from *Cloverfield* (Reeves) or the arachnoid form of Clown Pennywise in *It* (King), may derive from their bodily exaggeration of dangerous animals—in these cases, reptiles and venomous spiders. Humans evolved to fear such zoological threats (Öhman; Öhman and Mineka, "Fears"), and our creepiness response may have similarly evolved to instill adaptive vigilance in the face of threats perceived in a failure to come to terms with other minds. We will develop this proposal in the concluding remarks of this article.

Our account of creepiness suggests that the creepy tropes of imaginative horror fiction will disrupt the audience's mentalization through creative representations of psychological aberration. A formalistic example from horror films is the intentionalistic and voyeristic suggestibility of dynamic eye-level camera movement toward and around vulnerable characters. Consider this device as it is used in the creepy opening scene of *Halloween* (Carpenter), which has been well described by Jody Pennington:

> The petting escapades of Judith Myers (Sandy Johnson) and her boyfriend (David Kyle) are seen by lurking eyes [the audience's point of view] peering through a window. After an upstairs bedroom window goes dark, the unknown voyeur moves into the house, a hand seen reaching out and taking a large knife from a kitchen drawer. Pausing as the boyfriend leaves, the voyeur

> continues upstairs, putting on a Halloween mask, and entering Judith's room. She is seen topless in her underwear brushing her hair, the shot matted to indicate the mask, a perspective enhanced by the sound of breathing, an audio motif that recurs throughout the film. (55)

The "lurking eyes" turn out to be those of Michael Myers (Figure 4), a murderous psychopath who is at this point just a child and who goes on to stab Judith—his own sister, as it transpires—to death. Myers's psychological aberrancy is signaled by his voyeurism, which seems sexually charged by his apparent interest in the young couple's exploits. And one can only speculate as to his reasons for putting on the mask, which does nothing to hide his identity from his sister.

We believe our account can make sense of some otherwise puzzling tropes of horror by showing that they disrupt the audience's mentalization

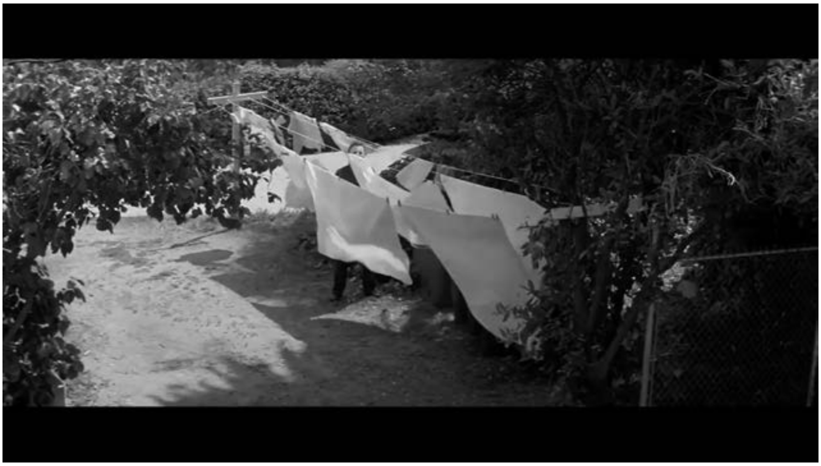

Figure 4 · From her first-floor window, *Halloween* protagonist Laurie Strode spots Michael Myers, now an adult, staring at her. The horror trope of intent and motionless staring may derive its creepiness from the suggestion of psychological aberrancy. It is difficult to determine what kind of mentality would cause a character to stare in this way. At the same time, the fact that Myers stares at the protagonist makes it clear that his inscrutable motives concern her in particular, and that is understandably disconcerting. Reproduced under fair use.

in threatening ways. For example, naturalistic horror films like *Psycho* (Hitchcock) may emphasize the killer's socioemotional deviancy, such as by having him smile in a situation that should be frightening and stressful (Figure 1) or speak in an unfeeling and matter-of-factly tone of voice about his gruesome actions, as is done by the cannibalistic killer Hannibal in *The Silence of the Lambs* (Demme). Smiles and monotone speech are not normally unsettling, but they become so when circumstances make them seem socially and emotionally "off" and therefore diagnostic of a warped mentality.

Supernatural horror relies on even more basic depictions of psychological abnormality, such as in questioning whether human-like beings have a human-like mental life at all. Zombies answer to this description. So does the horror trope of the "Creepy Child," whose lifeless body language and empty stare creep out viewers of films like *The Shining* (Kubrick) or *Ring* (Nakata). In real life, children are paradigms of experience and expressivity: They are perceived to sense and feel more intensely than adults (Gray et al.), and expected to express that rich inner life through their lively behaviors and vocalizations. By marked contrast, the vacant expressions and monotonous voices of *The Shining*'s Grady Twins, who may be the most infamous "Creepy Children" in all of horror, communicate a profound deficiency of experience and emotion that seems especially disconcerting in children. The film may call into question the animacy or humanness of these children, but this ambiguity is made intuitive and appreciable by their socioemotional aberrancy. Similarly, the girl-killer Sadako from *Ring* is almost fully expressionless. Her movement is stiffly mechanical yet searchingly purposeful, and her long, black hair falls forward to obscure her face. When late into the film a single eye of hers finally peeks out from between two heavy locks of hair, her upper eyelid is raised so high as to expose the gaping socket behind it while her indistinguishably black iris and pupil peer down in front of her. This horrid stare diagnoses in her a mentality that is deeply aberrant and perhaps fully incomprehensible. It exaggerates that expression of sociomoral abnormality which makes people creepy in real life (McAndrew and Koehnke).

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> Why were we equipped with this eerie sensation? Is it essential for human beings? I have not yet considered these questions deeply, but I have no doubt it is an integral part of our instinct for self-preservation. (Mori 100)

It is a difficulty for the recent empirical research on "creepiness" that it cannot distinguish the kinds of ambiguous threat that produce creepiness from those that do not. And it is a difficulty for the CAT-based literature on "the uncanny" that it has not been able to explain why ambiguous livingness and humanness in particular are uncanny while other categorical ambiguities are not, as well as why beings and behaviors that are not categorically ambiguous can induce uncanny feelings. We hope to resolve these difficulties with our revised version of McAndrew and Koehnke's evolutionary theory of creepiness, which has identified creepiness with a "perceived ambiguity about the presence of threat" (10). By adding the qualification that the perceived threat will always arise from disrupted mentalization, our proposal winnows out those cases of ambiguous threats that are not perceived as creepy while also explaining why uncanny ambiguities of livingness and humanness give rise to similar experiential qualities.

This last contention—that the terms *creepiness* and *the uncanny* refer to similar phenomena—might still be doubted. Despite what we have said, could these terms and their associated research traditions not be picking out very different types of experience that therefore require separate explanations? To wit, a distinctive experience of creepiness could arise from disrupted inferences about mental contents, as in the case of a social deviant, whereas a distinctive experience of uncanniness could arise from disrupted inferences about the presence or absence of mental life, as with a human-like wax figure.

We believe that we have provided just one explanation for a single if complex psychological phenomenon, and we tie the explanatory knot at the level of evolved psychological mechanism. If creepiness and the uncanny arise from difficulties in apprehending the contents or existence of other minds, then that grounds both in theory of mind, that is, the psychological capacity to conceive of mental states and to ascribe them to other beings (Premack and Woodruff; Wellman).

Theory of mind likely evolved "as an adaptive response to increasingly complex primate social interaction" (Brüne and Brüne-Cohrs 437). Humans, especially, rely on theory of mind in their dealings with conspecifics and other living things, to the extent that some of its more advanced uses, such as in cognitive empathy (A. Smith), shared intentionality (Tomasello and Carpenter), and imitative learning (Tomasello et al.), are commonly posited as evolutionary hallmarks of humanity (e.g., Henrich). Pertinently, theory of mind denotes a capacity to apprehend mentality in general and not a limited ability to "reason about" mental states, as it is sometimes misleadingly put (Premack and Woodruff 515). That its different uses rely on the same neuropsychological architecture—believed to reside in the brain's "default mode network" (J. Carroll)—is supported by empirical research on autistic individuals, which shows that while milder degrees of autism involve challenges in recognizing and reasoning about mental states in others, the severely autistic may not be able to attribute basic forms of mentality at all (Baron-Cohen; Hoogenhout and Malcolm-Smith; but see Gernsbacher and Yergeau). Conceptually, even, a dissociation seems difficult. What would it mean to ascribe mind to some agent if not in the form of (the capacity for) contentful mental states, such as beliefs and desires about objects and states of affairs in the world?

The fact that autistic individuals have problems in apprehending mentality suggests a simple test of the present account of creepiness: Autistic individuals should not be as easily creeped out as non-autistic individuals; or at least their creepiness response should be very differently calibrated from that of non-autistic individuals. Anecdotal evidence provides some initial support for this hypothesis. For example, one autistic rape victim notes about the seemingly trustworthy perpetrator that "I [didn't] get the warning signs. I don't feel the creepiness" (ABC News). Such a limited capacity to detect threatening social cues is believed to be one reason why autistic individuals are especially prone to different kinds of social exploitation (Fisher et al.). In addition, recent empirical studies show that autistic individuals experience the uncanny valley effect only to a diminished degree (Ueyama; Feng et al.; see also Schein and Gray). This lack of a response suggests that the uncanny valley represents a disruptive psychological inference that may escape individuals with a compromised theory of mind.

There is then good reason to suppose that an integrated and adaptive human capacity to apprehend mentality subtends our abilities to infer the existence and the qualities of mental states in other beings. Such mentalization, when threateningly disrupted, causes creepiness. If so, then that explains why similarly creepy feelings are associated with perceiving a human-like robot and believing that the person sitting next to you is acting very strangely. And it explains why the literatures on "creepiness" and "the uncanny" so frequently use these terms interchangeably, as well as why the CAT and TAT traditions so persistently invoke each other's examples and try to account for the same types of experience. They do so because they both concern themselves with difficulties in apprehending other minds.

Finally, grounding creepiness in theory of mind makes adaptive sense of the threat that is always felt to be present in creepy experiences. The threat is that of being unable to tell *what* or even *if* another being desires, feels, believes, and intends. These difficulties confound explanatory and predictive applications of theory of mind so that one cannot know what to expect from the being in question. The being could represent an opportunity or a risk, be friendly or hostile, and this counteradaptive "uncertainty" (Freud 153), or "unpredictability" (Watt et al. 58), or "ambiguity" (McAndrew and Koehnke 10), or "disorientation" (Jentsch 10) explains why creepy experiences are felt to be threatening. It would also explain why humans, who depend so deeply and pervasively on being able to read others' minds, have the capacity for these experiences at all.

JENS KJELDGAARD-CHRISTIANSEN is a postdoctoral researcher in the Department of English at Aarhus University, Denmark. His research focuses on the heroes and villains of popular culture, as well as on how media users relate morally and emotionally to media contents. His work appears in journals such as *Poetics, Projections*, and *The Journal of Popular Culture* (jkc@cc.au.dk).

MATHIAS CLASEN is an associate professor of literature and media in the Department of English at Aarhus University, Denmark, and director of the Recreational Fear Lab (www.fear.au.dk). His research focuses on horror across media, and he has developed a biocultural framework for the analysis of scary entertainment. He is the author of *Why Horror Seduces* (OUP, 2017) and *A Very Nervous Person's Guide to Horror Movies* (OUP, 2021) (mc@cc.au.dk).

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