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Blushing—another evolutionary enigma

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Figure 1. Cover of Charles Darwin's *The Expression of the Emotions in*

Blushing is a reddening of the skin of the face caused by dilation of the facial blood vessels which become engorged with blood, usually due to embarrassment or shame.¹ The origin of blushing has long been an 'evolutionary enigma'. It bothered Darwin for most of his working life because this trait was yet another factor that differentiated humans from our putative closest relatives, the apes.² And it is yet another trait that is unique to humans—no evidence exists that any animal blushes. In Darwin's words, "Blushing is the most peculiar and the most human of all expressions."³ He also concluded that some animals may appear to blush, but their reaction is very different than blushing.

Darwin recorded his first notes on blushing as early as 1838, writing he believed that "dark-skinned people surely blush just as Europeans do, and that animals do not." He was certain that he had seen a Tierra del Fuego woman blush when he visited

Man and Animals. Darwin devoted the entirety of chapter 13 to the subject of blushing.

their country during his five-year voyage on the *Beagle*.⁴

Darwin devoted an entire chapter to blushing in his book, *The Expression of the Emotions in Man*

and *Animals* (figure 1). He concluded blushing was a uniquely human characteristic that appeared to defy evolution for several reasons. These reasons include that no one had been able to explain *why* something like blushing, which most often does not help—and may even hurt—the blusher, would evolve. In contrast to most emotional responses, blushing is not a conscious behaviour. As Darwin acknowledged, we cannot cause a blush.³ Rather, it is produced by the autonomic nervous system, “which is completely beyond our control”.¹

“The prevailing view in Darwin’s time was that the blush was part of God’s design to expose human shame”.⁴ Since Darwin rejected that explanation, he attempted to produce another reason, but, in the end, failed. This failure was a concern to Darwin because he correctly concluded that “The tendency to blush is inherited.” Thus, it could not be explained away due to learning.⁵



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Evolutionary explanations

The obvious question for evolutionists is: What specific evolutionary advantage does blushing confer to the person that blushes? One explanation is closed off by the fact that blushing is largely invisible among dark-skinned people, consequently ruling “it out as an effective sexual signal.”⁴ Another issue the evolutionary view does not explain is that some people blush very easily; others blush far less often, or not at all. To formulate an evolutionary explanation, Darwin surveyed his “friends and correspondents about this ‘most peculiar and most human of all expressions’”, asking such questions as “whether children blush, and if they do, but not from birth, at what age do they start.”⁴ He even asked some of his correspondents if blind persons blush. From this research, Darwin concluded, after an examination of persons “in whom scar tissue or albinism allowed the coloration to show through” that “blushing was not dependent on skin colour”.⁶

From his studies, Darwin also observed that the *appearance* of a blush is usually confined to the face and neck, but the person blushing may *feel* as if his entire body is blushing.⁷ An example is

"... the thigh of an aroused nymph [a very sensitive, gentle person] might well become *flushed* owing to a similar effect of increased blood flow through her capillaries, but this has a physiological, rather than [a] mental, cause, and so is not a *blush* [emphases in original]." ⁸

After Darwin's research was completed, he

"... concluded that blushing arises from the human 'habit of thinking what others think of us.' It was not a result he was especially happy about, as it emphasized the uniqueness of human consciousness over our evolutionary connection with other species." ⁸

Modern research

Darwin's theory did explain several observations, including "why infants do not blush, but children do; why the mentally retarded seldom blush, but blind people do; why we tend not to blush when we are on our own, but can nevertheless blush at an embarrassing memory." ⁸ However, what Darwin's explanation did not achieve "was to explain why we find blushing so attractive in others, which, for Darwin, interested as he was in the mechanisms and effects of reproduction, was surely the point." ⁸ These questions have been answered by research which refers to the cheeks as "the part of the face that is most likely to expose one's true feelings because emotional feelings are prominently displayed there." ⁹

At the physiological level, blushing can be understood as the release of *adrenaline* in response to an emotional trigger. The *adrenaline* causes the dilation of the capillaries that carry blood to the body, including the skin. The increased blood brought closer to the skin surface is what causes the blush. ¹⁰

Blushing has both positive and negative psychological effects. Specifically,

"... the *positive* side of your blush is that you are communicating something important about what you feel. Blushing is an *honest* response ... because it is a distinct signal of sincere regret; it signals to others that you acknowledge your shame, mishap, or social wrongdoing, and in doing so, it promotes trust and positive judgments by observers [emphases in original]." ¹¹

This research has shown that although "Darwin attributed no adaptive function to the blush (and by implication, embarrassment)", he was wrong. ¹² Psychological research on subjects has concluded that embarrassment caused by blushing "serves an appeasement function and is

used creatively in complex social interactions” to facilitate producing trust, forgiveness, and succorance.¹²

Conclusions

Scientists today can accurately “measure facial capillary blood flow, and even the temperature of rosy cheeks, but are still not much closer to an answer” to both the problem of why people blush and its possible evolutionary origins.⁸ Part of the problem in answering this question is the “extreme subtlety and complexity of the nervous control of [facial] expressions”, including blushing.¹³ In summary, the best explanation for a blush is the view that prevailed in Darwin’s time, namely it is part of God’s design to help communicate one’s emotions to others, including shame. The psychological research reviewed above supports this conclusion.

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