

NOTE: This is a pre-production version of the chapter, the final published version may vary

*Title:* Steps Toward an Interdisciplinary Anthropology of Mind and Emotion: Intersections  
Between Evolutionary and Psychological Anthropologies

*Authors:* Theodore Samore & Daniel M.T. Fessler

Accepted for inclusion in *The Cambridge Handbook of Psychological Anthropology*, Edward D.  
Lowe, Editor.

# 1 **Introduction**

2           In the U.S., anthropology departments are often partitioned along disciplinary lines, with  
3 marked divisions being common between evolutionary and psychological anthropologies. This is  
4 unfortunate, as key insights and developments—both theoretical and methodological—ought to  
5 be shared across subdisciplines. Given that many evolutionary anthropologists have in common  
6 with their colleagues in psychological anthropology an interest in the relationship between mind  
7 and culture, there is opportunity for greater dialogue between these subfields. Being evolutionary  
8 anthropologists ourselves, we are primarily able to speak to the question of what evolutionary  
9 approaches can offer psychological anthropology, rather than the reverse. The somewhat  
10 unidirectional flavor of this chapter thus reflects the parochial nature of our own expertise, as  
11 well as the likely audience of this Handbook, rather than any undervaluation of bidirectional  
12 exchange. Indeed, we believe that evolutionary anthropology—and the evolutionary social  
13 sciences more broadly—would benefit enormously from incorporating many of the important  
14 contributions developed in psychological anthropology. We look forward to those future  
15 conversations.

16           Before describing some of the insights an evolutionary outlook has to offer psychological  
17 anthropology, we must first locate our viewpoint within the broader evolutionary social sciences.  
18 We subscribe to an evolutionary perspective that places emphasis on a) humans as a culture-  
19 dependent species, possessing a suite of biologically-evolved adaptations for both acquiring  
20 culture and enacting encultured lives (Fessler, 2006; Richerson & Boyd, 2008); b) the  
21 significance of variation within and across cultures and contexts (Apicella & H.C. Barrett, 2016;  
22 Kline et al., 2018); c) the importance of ontogeny, and the role of culture in shaping the  
23 environments and contexts to which those developmental processes respond, as well as the

24 impact of historical processes and institutions on human behavior and its evolution (Barrett  
25 2015; Fuentes 2017); and d) avoiding reducing all human behavior to a framework focused  
26 solely on individual biological fitness.

27         We acknowledge the accuracy of many of the criticisms of the evolutionary social  
28 sciences—particularly of evolutionary psychology—leveled by other anthropologists. As  
29 anthropologists practicing an evolutionary approach to human psychology, our perspectives are a  
30 minority view within evolutionary psychology as a whole, and we are painfully aware of the  
31 ethnocentric and culture-bound views of some in the field. Communicating a broader, more  
32 culturally inclusive perspective throughout the evolutionary social sciences is an important  
33 ongoing enterprise (see H.C. Barrett, 2021; Broesch et al., 2020; Clancy & Davis, 2019).

34         As in psychological anthropology, with its wide array of perspectives on the human  
35 mind, the evolutionary social sciences are comprised of a set of topics rather than a uniform set  
36 of theories. We thus do not claim to represent the entirety of the evolutionary social sciences; it  
37 is a heterogenous field (Laland *et al.* 2011), and approaches vary on the role of culture and social  
38 construction in shaping human behavior, psychological diversity, and the existence of human  
39 universals. We fall on the end of the disciplinary spectrum that gives substantial weight to the  
40 role of, and feedback dynamics between, culture and institutions, developmental processes, and  
41 individual agency in shaping the mind. In contrast, we are not as closely related to the version(s)  
42 of the evolutionary social sciences associated with canonical evolutionary psychology, as these  
43 approaches are at times ethnocentric; often overly focused on identifying human universals; and  
44 insufficiently engaged with culture and human diversity. At the worst end (from both scientific  
45 and moral perspectives) of the spectrum, such approaches can be outright biologically  
46 determinist – even eugenicist – in outlook.

47           Returning to the central question of points of contact between the evolutionary social  
48 sciences and psychological anthropology, a wholistic anthropological approach ought to address  
49 the human mind through multiple avenues, across multiple axes of differentiation. Behavior can  
50 be studied across a wide range of nesting scales, from large-scale group dynamics to richly  
51 particular person-centered perspectives. As the scale of analysis changes, so does the  
52 generalizability or specificity of the explanations accompanying it. However, rather than taking a  
53 hierarchical perspective on the relative merits of these modes of knowledge production, we see  
54 them as complementary. Likewise, we can contrast temporal levels of analysis, from  
55 phylogenetic to historical to contemporary timeframes, each of which speaks to important  
56 aspects of human psychology across time and geographical space. While recognizing that  
57 evolutionary approaches are not always appropriate for every level or every mode of analysis, we  
58 nonetheless believe they can provide a useful means of making connections between levels. For  
59 example, evolutionary approaches connect population-level phenomena and individual-level  
60 behaviors by providing a unified theory of causal mechanisms linking those different levels. At  
61 still more granular scales, an evolutionary approach decomposes psychological features into  
62 constituent explanations (Scott-Phillips et al., 2011), from ultimate evolutionary function or  
63 adaptive significance at either the biological or cultural level (or, at the very least, determining if  
64 there is one) to proximate mechanisms by which those traits are effected, as well as the  
65 ontogenetic processes that both shape those traits across development, and lead to substantial  
66 diversity across individuals, contexts, and groups. Importantly, consonant with their roots in the  
67 fields of evolutionary biology and experimental psychology, theories in the evolutionary social  
68 sciences are structured so as to be disconfirmable, and are subjected to hypothesis testing. The  
69 resulting models of mind and culture therefore often stand on quite firm empirical foundations.

70 An exhaustive overview of evolutionary approaches to human psychology in an  
71 anthropological context would exceed the bounds of a single book chapter, hence we do not  
72 attempt it here. Rather, in what follows, by focusing on a small number of examples, we hope to  
73 illustrate the utility of a closer relationship between psychological anthropology and the  
74 evolutionary social sciences.

75 Given the two fields' shared interest in understanding the effects of cultural variation on  
76 human minds, we begin with an overview of the human capacity for culture. Using this as a  
77 theoretical foundation, we then discuss emotions in light of both culture and evolved psychology.  
78 Commensurate with the longstanding importance of emotions in evolutionary and psychological  
79 anthropologies, we think this topic holds considerable potential for intellectual exchange  
80 between the fields. We explore how evolutionary perspectives on emotion articulate with debates  
81 about universalist versus cultural constructivist positions. Specifically, because an evolutionary  
82 perspective entails attending to the design features that constitute emotions, it addresses in a  
83 systematic fashion what aspects of emotion are uniform across cultures, what varies, and why  
84 such variation occurs. In turn, attending to those design features can generate novel predictions  
85 and insights in both quantitative and qualitative research.

86

## 87 **Cultural information and individual minds**

88 Before focusing on the study of emotion, it is useful to briefly outline an evolutionary  
89 perspective on culture and cultural variation, providing a foundation for understanding cultural  
90 universality and variation in emotion through the lens of functional design. Drawing on much  
91 prior work, we define *culture* as socially transmitted information that is shared by some or all of  
92 the members of the group, where that information can manifest in direct communication,

93 behavior, practices, artifacts, or institutions. Both cultural and non-cultural information is held in  
94 the *mind*, which we define as the complete set of an individual's internal mechanisms that  
95 acquire, process, and retain information, including mechanisms that motivate behavior, as well as  
96 those constellations of processing and motivating mechanisms that, being relatively consistent in  
97 their output over time, constitute what is typically thought of as *personality*.

98         The ability to acquire and transmit information between individuals has been  
99 progressively fitness-enhancing over the course of hominin evolution, creating a positive  
100 feedback process linking ever-increasingly valuable cultural information with greater and greater  
101 psychological capacities for culture. Through non-genetic evolutionary processes (Claidière *et al.*  
102 2014), cultures change over time, constituted by norms and practices that can confer benefits in  
103 local social and ecological environments, and promote cooperation and coordination among  
104 ingroup members (Boyd *et al.*, 2011; Richerson *et al.*, 2016). For example, cultural evolution can  
105 favor food preparation practices that neutralize toxins in local food sources (Langlie 2021);  
106 useful technologies (Richerson & Boyd, 2008); locally relevant ecological knowledge; and  
107 norms that signal group membership in the context of cooperation and conflict (McElreath *et al.*,  
108 2003).

109         Within such a snowballing information environment, natural selection acting on  
110 individuals correspondingly favored cognitive and emotional attributes that enabled them to  
111 maximally take advantage of available cultural information (Fessler, 2006a). Critically, humans  
112 inherit not just genes, but also cultural information, developmental niches, and epigenomes.  
113 What are termed *dual-inheritance theories* have been highly successful in explaining many  
114 superordinate phenomena regarding human evolution (see Mesoudi, 2016). This includes  
115 understanding why the capacity for social learning and cultural transmission evolved in the first

116 place; why humans are generally highly cooperative; modes of cultural transmission; recurrent  
117 design features in cultural systems; and the co-evolutionary dynamics between cultural and  
118 biological evolution.

119         Yet, this is also an incomplete portrait. While dual-inheritance theories and their largely  
120 top-down evolutionary perspective on fitness and evolution play a significant role in explaining  
121 human psychology, they are also highly abstracted relative to the kind of in-depth, context-  
122 specific research conducted in psychological anthropology—investigations that are vital for  
123 understanding humans and human variation. Cultural processes are more complex than their  
124 fitness outcomes at the individual and group levels. The human capacities for cultural and  
125 developmental flexibility are themselves, via virtuous cycles, agents of evolutionary change and  
126 niche construction, creating unique histories, institutions, memories, and socio-relational  
127 constructions that do not exist only as products of evolutionary selective forces (Fuentes 2016).  
128 This in turn contributes to the profound individual and cultural variation observed across  
129 humankind. A complete evolutionary theory, including one that can explain variation in  
130 emotions across societies, needs to bridge between these different levels more fully. We offer  
131 several possibilities using a cultural evolutionary lens.

132         First, culture does not solely exert a top-down influence on individuals within a social  
133 milieu. Instead, people are part of a generative process that contributes to cultural systems.  
134 Concordantly, *cultural attraction theory* argues that cultural information is reconstructed and  
135 transformed within the minds of every individual who possess that information (Scott-Phillips et  
136 al., 2018). As a result, culture does not sit externally outside mind, but is instead collectively  
137 instantiated by individuals who have partially overlapping, partially varying conceptualizations  
138 of cultural information. Critically, the features of an individual mind determine how a given

139 piece of socially transmitted information is received and processed, including whether it is  
140 accepted, retained or transformed, and transmitted to others. In any informational environment,  
141 there is variation in the fit between ideas and features of minds, such that, as Lévi-Strauss  
142 (1963:89) put it, some ideas are “good to think”, and other ideas less so. When that fit is high,  
143 and is consistent across individuals, an idea will both spread more rapidly in a population and  
144 persist more extensively relative to other ideas. Features of minds that cause the success of some  
145 ideas relative to others are termed *cultural attractors*. Both universal features of human  
146 psychology and parochial configurations produced by culturally patterned socialization and  
147 enculturation can constitute cultural attractors—indeed, cultural attraction can result in mutually  
148 reinforcing cycles whereby particular features of a social environment in turn generate new  
149 basins of cultural attraction. In the context of features of the mind such as emotions, these path-  
150 dependent processes may lead to culturally unique phenomenological constellations that are  
151 nevertheless arrived at via cultural evolutionary forces interacting with individual minds.  
152 Cultural attraction theory thus provides a formal basis for understanding the success or failure of  
153 information in a marketplace of ideas held by individual minds.

154         As our earlier reference to Lévi-Strauss suggests, cultural attraction theory parallels in  
155 some respects, and diverges from in others, bottom-up concepts developed in psychological  
156 anthropology regarding the ways in which individual minds instantiate, create, modify, and  
157 transmit the contents of culture. Theodore Schwartz (1978) conceptualized the *idioverse* as the  
158 individual’s portion of culture – or, more formally, the sum set of cultural constructs that exist  
159 within an individual. As in cultural attraction theory, idioverse theory recognizes the  
160 transformations made on shared cultural packets by individual minds. However, in contrast to  
161 theories of cultural evolution, Schwartz views these packets as constituting, rather than



162 interacting with, personality itself. Adopting a more explicitly informational approach, cognitive  
163 anthropologists such as Roy D'Andrade (e.g., 1995) have focused on *schemas*, cultural packets  
164 conceptualized as transmittable cognitive programs that are executed by individual minds (see  
165 Bennardo and de Munck, this volume). From a cultural evolutionary perspective, such execution  
166 is in part a function of the goodness-of-fit between a given cultural schema and the mind, both in  
167 terms of the human mind's largely invariant information-processing capacities and  
168 characteristics, and in terms of the congruence between a given schema and the individual's  
169 repertoire of previously acquired schemas.

170         Psychological anthropologists such as Schwartz and D'Andrade implicitly presume both  
171 a panhuman evolved psychology and an iterated process whereby, through interactions with  
172 minds, the information prevalent in a population evolves. However, because such theories  
173 specify neither the detailed architecture of the mind nor the competitive dynamics that  
174 characterize the marketplace of ideas, they are largely unable to explain both how cultural  
175 constellations that are functional in a given social and physical ecology arise, and why cultural  
176 universals exist. In contrast, by formalizing why some ideas are "good to think", cultural  
177 attraction theory can in part explain how personal experiences, relational models, ways of  
178 knowing, etc. shape cultural evolution given the transformation being applied by individual  
179 minds. Further, it provides a systematic framework for predicting when cultural concepts are  
180 more likely to be relatively uniform across individuals either within or across societies. Within-  
181 society uniformities owe to the goodness of fit of a given idea (and thus its competitive  
182 advantage relative to alternative ideas) with regard to both broadly shared cultural schemas and  
183 similarities in developmental experience deriving from cultural factors, the result being a more-  
184 or-less integrated ethos (compare with Spiro, 1997). At the same time, uniformities across

185 societies owe in part to the goodness of fit with panhuman features of our species' biologically-  
186 evolved psychology. Along the latter lines, cultural attraction theory illuminates why certain  
187 cultural concepts repeatedly arise. For example, the ubiquitous features of rituals across cultures  
188 (Boyer & Liénard 2006; Fessler 2006a), the centrality of meat in food taboos (Fessler &  
189 Navarrete, 2003), the predominance of information regarding hazards in stories and supernatural  
190 beliefs (Fessler et al., 2014), and core structural features of supernatural beliefs themselves  
191 (Boyer 2001) are all potentially partially explicable using this framework. Such topics converge  
192 with those commonly studied in psychological anthropology, presenting an opportunity for  
193 greater contact and cross-pollination.

194         Turning now specifically to the topic of emotions, evolutionary perspectives on culture  
195 can provide a systematic framework for understanding the interaction between emotions and  
196 culture, and how that relationship can vary across contexts. For example, information is more  
197 likely to be culturally transmitted when it is emotionally salient, for instance if it elicits disgust  
198 (Eriksson & Coultas 2014; Heath *et al.* 2001). Further, coupled with an adaptationist view on the  
199 function of emotions, understanding the constraints on cultural evolution illuminates why certain  
200 features and constellations of emotions reliably emerge across cultures. Below, leveraging the  
201 foundation provided by evolutionary approaches, we explore how an evolutionary perspective  
202 can productively contribute to a psychological anthropology of emotion. Because emotion is  
203 itself too broad a category for a single chapter, we will focus on anger and disgust as particularly  
204 illuminative in this regard.

205

206 **A middle-ground perspective on the universality and cultural construction of**  
207 **emotions**

208           In the past, evolutionary or biological perspectives on emotion have often been construed  
209 as inherently in opposition to cultural and social constructivist models (e.g. Averill, 1980; Prinz,  
210 2004), such that emotions are viewed either as universal and invariant across cultures, or as  
211 culturally constructed and incommensurate across cultural contexts (Barrett 2006; Lindquist  
212 2013). This is a false dichotomy. Cultural variation in emotions—as well as their important  
213 social relational and communicative components—is highly compatible with an evolutionary  
214 approach that identifies both a) specific biologically evolved adaptive functions, and b) recurrent  
215 ranges of developmental outcomes in response to particular environments (H. C. Barrett, 2015;  
216 Fessler, 2006a). Further, as noted above, the human mind centrally includes mechanisms that  
217 evolved biologically for the purpose of acquiring cultural information—including its effect on  
218 how we experience and make sense of ourselves, our motivational systems, and our emotions.  
219 Cultural variation and adaptive function are compatible and interdependent in their shaping of  
220 human emotions. Indeed, cultural evolutionary and extended evolutionary synthesis models  
221 anticipate both variation in emotions across cultures, and important social relational components  
222 that can be quite divorced from any recurrent adaptive challenge characteristic of the deep  
223 evolutionary past. By recognizing that felt emotions are the product of the intersection of a  
224 panhuman biologically-evolved affective architecture and the meaning-making contextual and  
225 self-reflective schemas internalized via the culture-acquisition machinery (D’Andrade, 1995;  
226 Fessler, 2007), an evolutionary approach provides a formal basis for the important insights of  
227 psychological anthropologists who first theorized the intertwining of cultural and biological  
228 dynamics in shaping emotions (e.g. Levy, 1984; Lindholm, 2005).

229           In regard to perspectives on emotion within the evolutionary social sciences, we  
230 acknowledge that there is a failure to reckon with the profound effect of culture on emotions in a

231 great deal of contemporary evolutionary social science research, as well as quasi-evolutionary  
232 conventional psychology (as exemplified by work in the tradition of Ekman and Friesen [1971]).  
233 Further, evolutionary social scientists frequently make the mistake of confusing parochial lexical  
234 emotion terms with the actual psychological entity (Fiske 2020). At the same time, we hold that  
235 the extreme cultural constructivist tenet that emotions are unbounded and incommensurate across  
236 cultural and individual contexts is untenable given voluminous evidence supporting the core  
237 principle of an evolutionary approach to psychology, namely, that i) the species-typical  
238 architecture of the mind consists of a complex compilation of mechanisms, many of which  
239 evolved to address particular categories of adaptive challenges (Tooby & Cosmides 2008), where  
240 ii) evolved mechanisms were produced through the gradual modification of attributes shared  
241 with other primates (such as emotions related to complex social lives), with other mammals  
242 (such as emotions related to parenting), and even with all vertebrates (such as emotions related to  
243 physical danger) (Fessler & Gervais, 2010).

244         In regard to a relativistic perspective, cultural variation does not imply  
245 incommensurability across humans. Researchers have found that purportedly culturally unique  
246 emotions can be understood across cultural contexts, even when folk-linguistic terms for the  
247 emotion are absent (Breugelmans & Poortinga 2007; Sauter *et al.* 2011). For example, Doi  
248 (1971) proposed that the Japanese emotion term *amae* (positive responses to invoking indulgent  
249 dependency within a relationship) is culturally unique. However, cross-cultural research reveals  
250 that although the emotion of *amae* is experienced differentially across cultures—particularly in  
251 the extent to which it is positively or negatively valenced—it can nonetheless be elicited among  
252 individuals who do not possess a folk-term for it (Niiya *et al.* 2006), i.e., despite cultural  
253 differences in whether the emotion is hyper- or hypocognized (Levy, 1984). Consistent with a

254 middle-ground perspective, across cultures, emotions such as *amae* exist on a continuum of  
255 salience, emphasis, and accessibility between those possibilities. Further, cultural variation in  
256 emotions may in part be patterned, reflecting functional products of cultural evolution (Fessler,  
257 2006a). For example, the phylogenetically ancient social-hierarchy facet of “shame” is likely to  
258 be labeled, prized, reflected upon, and phenomenologically salient in stratified societies, but  
259 unmarked and ignored in those that valorize individualism and social mobility (Fessler, 2004).  
260 Note that this position does not entail extreme cultural functionalism, as the nature of cultural  
261 evolution is such that some of the variation in the many dimensions of emotion may be non-  
262 adaptive, yet hold important social relational and culturally constructed meanings nonetheless.

263         We thus seek to promulgate a middle ground in the ongoing debate between emotion  
264 universalists and cultural constructivists wherein the components of emotion are both  
265 universal—such as cultures drawing on a basic set of available panhuman emotions (Fessler &  
266 Gervais 2010)—and culturally constructed—such as the ways in which those constituent parts  
267 are then shaped into unique constellations and social relations (e.g., Lutz & White, 1986;  
268 Wierzbicka, 1992b). For example, emotions can be felt and experienced differently, elicited by  
269 different circumstances, group into different assemblages, be made more or less salient or likely  
270 to be experienced, and differentially socially valued. We hope that the examples described above  
271 and below usefully illustrate that emotions embody both universal and relativistic properties. A  
272 purely ethnographic approach to understanding emotion does not sufficiently illuminate the  
273 underlying panhuman structure, just as both a high-level theoretical perspective and a  
274 comparative phylogenetic approach are insufficient for understanding specific cultural contexts  
275 and the relational implications for individuals situated within those contexts. Melding both

276 approaches is therefore critical in the effort to establish a more complete anthropology of  
277 emotion.

278         Importantly, we do not see our position as radical, as the middle ground in this debate has  
279 already been extensively mapped by cultural psychologists and psychological anthropologists  
280 who have demonstrated that emotions share certain open-ended features across cultures while  
281 also varying substantially in the arrangements and associations of their various components  
282 (Lindholm 2005; Quinn 2015; Shweder *et al.* 2008).

283         We turn next to two specific cases—“anger” and “disgust”—that highlight the  
284 interactions between evolved emotional mechanisms and the context-specific cultural  
285 constructions that modify and shape those emotions in bounded ways. In so doing, we hope to  
286 illustrate the utility of an evolutionary approach for not only uncovering recurrent and consistent  
287 patterns of emotion across cultures, but also shedding light on how and why those emotions vary  
288 so much between cultures.

289

## 290 **Anger**

291         From a baseline evolutionary functionalist perspective, the mechanism underlying what  
292 English speakers label “anger” (hereafter, for readability, simply anger) motivates inflicting costs  
293 or withholding benefits in response to perceived transgressions or conflicts (Fessler, 2006b; Sell  
294 *et al.*, 2009). In both cases, the functional goal is the imposition of net costs on transgressing  
295 parties in order to obtain a favorable outcome in a given conflict of interest; to forestall future  
296 transgressions; or to make future conflicts of interest more likely to end in favorable outcomes,  
297 given the demonstrated ability to impose costs. Such a signal can be directed at both the current  
298 transgressor(s) and at other potential future transgressors. However, this is only a general

309 scaffolding for human anger: consonant with the ideas presented above, culture fills in,  
300 elaborates on, and transforms that scaffolding into something more concrete. For example, while  
301 many societies place a general importance on managing emotions and their behavioral output,  
302 destructive emotions in particular—such as anger—are often targets for such social control in  
303 order to minimize the costs of disruption (Matsumoto *et al.* 2010). Thus, there is both an  
304 underlying, underdetermined universal core feature-set and general function to anger, as well as  
305 ample space for culture to change the context of that function, and its relational features to other  
306 aspects of encultured lives.

307         The Pacific has figured prominently in discussions of emotions in general, and of anger  
308 in particular (e.g. Levy, 1984; Lutz, 1988). The Kingdom of Tonga, where T.S. has conducted  
309 ethnographic research, affords an illustration of the above position. In Tonga, *'ita*, readily  
310 recognizable as similar to what English speakers would term *anger*, is negatively valued and  
311 feared, and children are socialized from a young age to avoid displays and expressions of it  
312 (Morton, 1996). Indeed, the ability to suppress anger is closely associated with acquiring social  
313 competence and adulthood. Open displays of anger are shameful, and individuals are expected to  
314 suppress their anger in most social situations (Bender *et al.* 2007). When discussing situations of  
315 interpersonal conflict—such as land or business disputes—people rarely openly emote what  
316 might be glossed as anger or *'ita*, even when the conflict is clearly frustrating. Situated within a  
317 broader context, negative valuations of anger are not uncommon in Polynesia, occurring in  
318 similar—although not isomorphic—forms in Tahiti and Samoa (Levy 1975; Steele & McGarvey  
319 1996). This raises the questions of whether Tongans and members of other Pacific island cultures  
320 actually experience less anger, and/or whether, for example, conceptualizations of anger in  
321 Tonga are incommensurate with conceptualizations in less censorious societies. A purely social

322 constructivist perspective might hold that anger is too differently experienced across cultures to  
323 be systematized or compared. Conversely, a rigidly universalist approach would not leave room  
324 for the kind of variation in social meanings that results in the hypercognition of anger and its  
325 suppression found in Tonga. We believe that the middle-ground approach is the best framework  
326 for understanding anger in a cross-cultural context.

327         Andrea Bender and colleagues sought to systematically understand both the culturally  
328 specific elicitation of anger in Tonga and its comparability to anger concepts across cultures  
329 (Bender *et al.* 2007, 2012). They find that, while anger is often suppressed in Tonga, it is also  
330 phenomenologically similar to anger in other societies in terms of its qualia and many of its folk  
331 linguistic concepts. Further, anger is elicited by many of the same triggers, such as norm  
332 violations. Hence, even in a culture where anger is censured and regulated, there remains a  
333 common underlying experience of anger and its qualia, revealing a core emotional scaffolding  
334 shared by humans. However, in addition to anger being expressed less frequently—owing to its  
335 negative valuation—there are also culture-specific elicitation contexts, such as a greater role for  
336 rank in determining whether anger is suppressed or expressed (compare with Lutz, 1982). In the  
337 Tongan context, anger thus exhibits both universal features and highly contextual manifestations  
338 and social meanings.

339         In some respects, the prominence assigned to anger in Tonga is not unique, as the extent  
340 to which some cultures place especially strong boundaries on this emotion is well documented.  
341 Famously, Briggs (1970, 1987) describes intense prohibitions among Utku people on expressing  
342 anger. From a cultural evolutionary perspective, the circumstances in which anger may be more  
343 or less socially valued ought to vary across environments and contexts. When the relative costs  
344 of anger for a society are particularly high, groups that suppress anger will thrive more than



345 groups that do not, hence such groups will either attract members from the latter or displace  
346 them. In short, in such ecologies, a macro-level form of cultural evolution, *cultural group*  
347 *selection*, will favor elaborate negative valuations of anger. For example, the condemnation of  
348 anger and proscriptions on its expression among Utku people, or similar constellations among  
349 Faeroe Islanders (Gaffin 1995), can be understood as functional given severe ecological contexts  
350 in which individuals are highly interdependent for survival, there is a low margin for error, and  
351 lethal vengeance is all too easily enacted. More generally, in societies where individualism is less  
352 prominent, greater emphasis may be placed on regulating expressions of anger (Matsumoto *et al.*  
353 2008); conversely, an ethos of extreme individualism may be associated with hypercognizing  
354 homicidal violence as a normative expression of anger in contexts such as bereavement  
355 (Robarchek & Robarchek 2005). Lastly, in each of these contexts, broader cultural models—  
356 including those concerning parenting, social sanctioning, and relational structures in general—  
357 constitute cultural attractors for particular construals of anger. In each domain, cultural models  
358 reinforce particular valuations of anger, and, in turn, those valuations reinforce said models  
359 during processes of information acquisition, retention, and transmission, resulting in an  
360 evolutionarily stable cultural configuration.

361         In the parlance of the evolutionary social sciences, *evoked culture* refers to psycho-  
362 behavioral similarities across members of a group that arise when individuals' biologically  
363 evolved psychological mechanisms respond alike to shared social or ecological cues (Tooby &  
364 Cosmides 1992). Importantly, evolved mechanisms likely gauge the importance in a given  
365 environment of, respectively, cooperating with others (cf. Cosmides & Tooby, 1992; Kameda et  
366 al., 2005) or deterring transgression. Potentially acting in parallel with, and reinforcing, the  
367 processes described in the previous discussion, these mechanisms probably increase the intuitive

368 appeal of corresponding socially transmitted values that proscribe or prescribe anger. Hence,  
369 while unalloyed evoked-culture phenomena may be uncommon, it is likely that evolved  
370 psychological mechanisms often create cultural attractors that shape the acceptance, retention,  
371 modification, enactment, and transmission of cultural models addressing significant experiences  
372 and behaviors, including both the elicitation and the expression of anger.

373

### 374 **Disgust**

375 Disgust is another emotion that illustrates how evolved psychological and cultural  
376 systems jointly produce psychological traits, demonstrating the utility of applying an  
377 evolutionary lens to the cross-cultural study of human psychology and emotions. Disgust  
378 highlights a) the ways in which particular constellations of emotion address specific adaptive  
379 challenges, b) the tendency for both biological and cultural evolution to re-use mental  
380 architecture and mechanisms, and c) the role of culture in shaping and co-opting those  
381 adaptations in profound ways, without erasing the underlying adaptive functions. We address  
382 each of these three points in turn.

383 Part of a broader suite of psychological processes and behaviors designed to address the  
384 phylogenetically ancient threat posed by disease, disgust originally evolved as a defensive  
385 behavioral mechanism for ameliorating the costs of pathogens (see Ackerman et al., 2018; Tybur  
386 et al., 2013), in part by deterring ingestion of potential sources of pathogens; by triggering  
387 emesis if contaminants have been consumed; by generally avoiding contact with substances  
388 likely to bear microbes; and by avoiding close contact with individuals who display cues of  
389 infection. The evolutionary function of pathogen disgust is revealed by the details of its  
390 mechanism, and by its phylogenetic history. First, substances that, across cultures, frequently

391 elicit disgust—such as feces, blood, and other bodily substances, rotting food, and, more broadly,  
392 visual and olfactory indices of putrefaction—are also likely to contain pathogens (Curtis & Biran  
393 2001). Second, cues of disease oftentimes motivate avoidance of potentially infected agents  
394 (Schaller 2011). Third, revealing the importance of its adaptive function, pathogen disgust may  
395 be phylogenetically ancient and fairly conserved over evolution—many animal species possess  
396 ingestion-rejection systems, and there is evidence that primates engage in other disease  
397 prophylaxis, such as avoidance of feces and infected conspecifics (see Fessler & Gervais, 2010;  
398 Nunn & Altizer, 2006).

399         Disgust also illustrates some of biological evolution’s mechanistic properties, in  
400 particular the common pattern wherein an adaptation is modified by selection to address a new or  
401 different adaptive goal (Holbrook & Hahn-Holbrook, 2022) – a pattern explicable in terms of  
402 competition among variations present in a population at a given time, such that natural selection  
403 acts as “a tinkerer, not an engineer” (Jacob 1977). This highlights some of the utility of applying  
404 an evolutionary approach to studying human psychology cross-culturally, as integrating across  
405 different levels of explanation reveals underlying shared connections between emotions that may  
406 be construed and configured in a variety of ways across cultures. While pathogen disgust is  
407 explicable as an emotional mechanism for regulating exposure to disease threats, disgust can also  
408 motivate avoidance of other sources of fitness reduction. By processes of serial homology of  
409 psychological traits (Moore 2013) whereby evolutionary structures are duplicated and modified  
410 to address new functions, disgust has been reused by natural selection to motivate the avoidance  
411 of threats other than pathogens (Holbrook & Fessler 2015). First, researchers have proposed that  
412 sexual disgust spurs avoidance of costly sexual behavior (Tybur et al., 2009). Reflecting  
413 overlapping biological mechanisms in the appetitive components of hunger and sexual desire

414 (reviewed in Fessler, 2003), disgust is antithetical not only to ingesting food, but also to sexual  
415 arousal. This is most starkly evident in the case of human inbreeding avoidance. While cultural  
416 kinship systems and sexual taboos provide a rich conceptual landscape within which marriage  
417 and mating occurs, underlying this symbolic environment is a biologically-evolved mechanism  
418 that processes cues of biological relatedness (childhood propinquity and perinatal maternal-infant  
419 association) which then articulates with sexual disgust to avoid the fitness costs associated with  
420 inbreeding while still allowing for close affiliative relationships with kin (Lieberman *et al.*  
421 2007).

422 Moral disgust constitutes a third disgust domain alongside pathogen disgust and sexual  
423 disgust. Moral disgust is undoubtedly more phylogenetically recent, as it is an adaptation for  
424 addressing some of the potential costs and benefits associated with the encultured lives of  
425 humans (Rozin *et al.* 2008). Specifically, moral disgust, elicited by transgressions of important  
426 moral rules or norms, motivates avoiding social contact or association with those who commit  
427 such transgressions. Although these transgressions can involve behaviors that are often broadly  
428 considered antisocial across societies, including lying, stealing, and inflicting harm on ingroup  
429 members (Tybur *et al.*, 2009), they can also be highly parochial, relevant only to a particular  
430 society's norms, conventions, and beliefs. Therefore, even more so than pathogen disgust and  
431 sexual disgust, moral disgust is subject to cultural influence, supporting the creation of culture-  
432 bound emotion assemblages that generate society-specific relational structures.

433 Arguably, the basic architecture of disgust includes the open-endedness so clearly evident  
434 in moral disgust. Being dietary generalists occupying a wide variety of ecosystems, humans are  
435 fundamentally reliant on cultural transmission in learning what to eat and what not to eat. As a  
436 consequence, even the meaning of elementary gustatory and olfactory cues can vary across

437 cultural cuisines (Rozin 1987). With its central focus on the mouth and the regulation of  
438 ingestion (Fessler & Haley, 2006; Kupfer *et al.*, 2021; compare with Rozin *et al.*, 2008),  
439 pathogen disgust plays a key role in this process, as evidenced by the importance of disgust in  
440 culturally parochial food taboos – prescriptions that, while often serving important purposes in  
441 marking group membership, are mostly not functional on disease-avoidance or dietary grounds  
442 (Fessler & Navarrete, 2003). Likewise, the role of sexual disgust in inbreeding avoidance may  
443 provide a further bridge between a phylogenetically ancient precultural system and one in which  
444 the acquisition of socially-transmitted moral rules is central, as disgust appears to be important in  
445 motivating the enforcement of incest taboos despite their variable configurations across cultures.

446       Clearly, the role of cultural learning in disgust has been extensively elaborated in moral  
447 disgust. This is in keeping with the fact that conformity to—and enforcement of—moral rules is  
448 central to success in all societies, yet the contents of such rules differ substantially from culture  
449 to culture. In all societies, interacting with moral transgressors entails costs—either directly,  
450 because of transgressors’ unreliability as cooperative or norm-following partners, or their  
451 propensity to inflict harm, or indirectly, because of perceived guilt-by-association on the part of  
452 other group members. Cooperation and coordination are maintained in human societies not  
453 simply by punishment of rule violators, but also by higher-order punishment, that is, costs  
454 inflicted on those who fail to punish rule violators (Henrich *et al.* 2006). Given the gains to be  
455 obtained by inclusion in group activities, ostracism offers a relatively efficient form of  
456 punishment (in that it is more costly to the punished than to the punisher), one which can readily  
457 be scaled up to higher-order punishment (i.e., ostracism of those who fail to ostracize rule  
458 violators) (e.g. von Rueden & Gurven, 2012). Moral disgust evinces properties ideally suited for  
459 this function, as, building on features that originally evolved for purposes of avoiding infectious

460 individuals, it motivates social distancing from, and avoidance of, norm violators and moral  
461 transgressors, driving behavior as if moral failings were actually contagious (see Giner-Sorolla et  
462 al., 2017). For example, Lutz (1982) describes the Ifaluk term *niyabut*, “disgust”, as  
463 prototypically elicited by a spoiled or fetid object, yet also linked to *gasechaula*, “hate”, and  
464 capable of precipitating *ma*, “shame/embarrassment” when directed at individuals who fail to  
465 adhere to social standards (compare with Fessler [1999, 2004] regarding relationships between  
466 disgust, contamination, and *malu*, “shame”, in Bengkulu, Indonesia).

467         The structure of disgust is such that versions of the emotion effectively serve the goals of  
468 avoiding pathogens, avoiding inbreeding, and avoiding interactions with socially sanctioned  
469 individuals. Across evolutionary time, disgust has thus been repeatedly duplicated and modified  
470 so as to drive avoidance of differing fitness-reducing contexts. Given this duplication, and the  
471 wide range of culturally dependent parameters that structure costs in the local environment,  
472 disgust should be subject to substantial cultural modification, yet still preserve the core functions  
473 of the evolved architecture. Speculatively, openness to cultural modification may parallel the  
474 phylogeny of this emotion, such that the oldest version of the serial homology, pathogen disgust,  
475 while somewhat modifiable, is considerably less variable across cultures (see, for example Curtis  
476 & Biran, 2001; Elwood & Olatunji, 2009) than the newest version, moral disgust, with sexual  
477 disgust being intermediate in this regard. Importantly, these three disgust domains are not  
478 necessarily an exhaustive taxonomy, as cultural evolution and/or ontogeny can also take  
479 advantage of the capacity for homology to create culture-bound emotion homologues (Holbrook  
480 & Hahn-Holbrook, 2022). That is, paralleling processes of biological evolution, societies may  
481 draw on psychological adaptations to create parochial disgust homologues that respond to  
482 distinct domains outside of the three described above. Ethnographic work in psychological

483 anthropology is uniquely well-positioned to uncover what some of those constellations might be,  
484 which in turn can inform evolutionary perspectives on disgust.

485         As noted previously, in cultural evolution, multiple cultural attractors can reinforce one  
486 another, leading to constellations of beliefs, values, and practices that can be highly stable over  
487 time. Anthropologists have long recognized the importance of purity concepts across cultures  
488 (Douglas, 2002; Shweder et al., 1997), as well as the relationship between gustatory and moral  
489 disgust (Wierzbicka 1992a). Because the evolved psychological mechanisms undergirding,  
490 respectively, pathogen disgust, sexual disgust, and moral disgust are each capable of powerfully  
491 motivating behavior, and are each in part dependent on cultural input, when cultural  
492 understandings link concepts of contamination, sexuality, and moral disapprobation, the result is  
493 a powerful cultural attractor that can play a role in anchoring entire assemblages of ideas and  
494 practices. As illustrated by what have been termed the purity cultures of South Asia, such  
495 assemblages can form the foundation of cultural systems that endure for millennia.

496         While cultural-level variation is an important determinant of disgust, we do not wish to  
497 imply that variation only occurs across societies, nor do we mean to essentialize cultural  
498 differences. More broadly, within social groups, cultural concepts are always heterogenous and  
499 variant across individuals (Schwartz 1978). Correspondingly, disgust also varies within societies,  
500 across individuals and contexts. For example, disgust may vary across individuals partly as a  
501 function of risk-proneness (Sparks *et al.* 2018), and social preferences (Tybur et al., 2016), and  
502 vary across contexts as a function of disease exposure (Hlay *et al.* 2021), and kinship and social  
503 closeness (e.g. Tybur et al., 2020). This variation provides grist for further interaction between  
504 disgust and culture. For example, individuals who more strongly endorse their own society's  
505 norms are also more likely to experience disgust (Tybur et al., 2016). In addition, the relationship

506 between disease avoidance and individual endorsement of traditional norms varies across social  
507 contexts as a function of complex interactions with the cultural milieu (Samore *et al.* 2021,  
508 2022).

509         Taken in sum, an evolutionary perspective on disgust illustrates the utility of adopting a  
510 middle-ground approach between universalist and constructivist perspectives on emotion. The  
511 universalist position fails to appreciate that the wide diversity of disgust elicitors and experiences  
512 across cultures, and the important role that institutions and collectively realized relational models  
513 play in shaping those elicitors and experiences. Hence, universalists mistakenly devalue the  
514 importance of an anthropological, cross-cultural approach to disgust and the mind. Psychological  
515 anthropologists' in-depth, person-centered ethnographies provide rich contexts for discovering  
516 culture-bound emotion homologues and constellations. Conversely, the constructivist perspective  
517 fails to recognize that recurrent features of the phenomenology of disgust across cultures are  
518 reflective of a common function and shared panhuman cognitive architecture, thus leading to a  
519 fragmented and siloed understanding of emotions. In contrast to each of these polar approaches,  
520 a middle-ground evolutionary perspective can aid in both systematizing knowledge and  
521 generating hypotheses regarding disgust in particular, and emotions in general, thus illustrating  
522 the potential for highly productive collaboration between psychological anthropology and the  
523 evolutionary social sciences.

524

## 525 **Conclusion**

526         We think that some of the most productive scholarship arises from the fertile ground that  
527 lies between disciplines. Given the complementary strengths of evolutionary anthropology and  
528 psychological anthropology, we hope that we have illustrated some of the pathways for such



529 synergistic exchanges. Although an evolutionary approach is not always necessary or even  
530 useful, many of the research questions addressed in psychological anthropology could benefit  
531 from incorporating some of the evolutionary perspectives presented here. In particular, an  
532 evolutionary lens can be useful for connecting rich ethnographic observations and more general  
533 cultural processes that have been addressed in cognitive anthropology, such as the means by  
534 which individuals instantiate and transform cultural information. Although similar enterprises  
535 have been pursued for decades within psychological anthropology, this has largely been done  
536 without the benefit of recent advances in the evolutionary social sciences, including models that  
537 specify the composition of the mind as a large set of evolved adaptations, and the mechanics of  
538 the relationship between culture and the mind.

539         While we wish to skirt debates within anthropology regarding the relative merits of  
540 positivism versus interpretivism, it seems reasonable to assume that, whether the goal is  
541 hypothesis testing or interpretation, many anthropologists would see their enterprise as most  
542 productive when grounded in a framework that is convergently supported by—or at least  
543 congruent with—other evidence. It is therefore worth noting that, while various versions of  
544 psychoanalytic theory continue to be employed in the humanities (Yeung 2021) and some  
545 branches of psychological anthropology (see Groark, this volume ), in contrast to the rapidly  
546 increasing impact of evolutionary approaches, psychoanalytic models have been abandoned in  
547 psychology (Yeung 2021) due to the resounding lack of empirical evidence (Paris 2017).  
548 Importantly, the evolutionary psychological and cultural evolutionary perspectives touched on in  
549 this chapter are not solely applicable to hypothesis generation in quantitative research. They can  
550 also be useful interpretative frameworks in qualitative work (cf. Heywood *et al.* 2010), orienting  
551 ethnographers toward particular features of, for instance, different cultural practices, including

552 norms, traditions, and rituals. Likewise, theories of cultural evolution can help guide qualitative  
553 research when considering similarities and differences across cultures and contexts.

554         Concordantly, psychological anthropology is uniquely positioned to study how portions  
555 of the full palette of evolved emotions are combined, emphasized, or ignored to create distinct,  
556 and richly diverse, cultural emotion schemas and corresponding experiences. Longstanding  
557 research traditions in psychological anthropology, such as person-centered ethnography and  
558 phenomenology, can be enriched by evolutionary approaches, as the latter specify the contents of  
559 that panhuman emotion palette, and where either overlapping adaptive functions, phylogenetic  
560 derivations, or both create natural groupings that will often color a culture's resulting tableau. An  
561 approach that combines deep ethnographic understanding with a contemporary evolutionary  
562 perspective can thus help illuminate and clarify the possibilities for difference and similarity in  
563 emotions across humans.

564         These dynamics speak to the fruitfulness of collaboration in academia. Perhaps for  
565 historical reasons related to the discipline's cultural expectations about the nature of fieldwork  
566 and ethnography, collaboration is particularly infrequent in anthropology. We view this as both  
567 deeply unfortunate and highly inefficient. Anthropology is a large field, with diverse  
568 perspectives and knowledge, hence there is enormous opportunity to leverage complementary  
569 expertises through collaborations across subfield lines. Given the pragmatic obstacles to  
570 acquiring expertise in all subfields, collaboration provides a means for psychological  
571 anthropologists and evolutionary anthropologists to productively and expertly blend approaches,  
572 potentially generating many important new insights.

573         Finally, while we have primarily focused on research in evolutionary anthropology that  
574 we think may be valuable for psychological anthropology, as we stated in the introduction, we

575 believe that it is equally important for evolutionary anthropologists to learn about many of the  
576 important ongoing contributions made by psychological anthropologists. As one example, the  
577 kind of reflexivity and community engagement that have become increasingly central in  
578 psychological anthropology have regrettably yet to influence much evolutionary social science.  
579 Hopefully, this chapter will inspire future efforts among psychological anthropologists to engage  
580 in dialogue with their evolutionary colleagues, including along these lines.

581

582

### 583 **Acknowledgements**

584 We thank Edward Lowe and the UCLA Experimental Biological Anthropology group for their  
585 valuable feedback. T.S. benefited from support by the Templeton Religion Trust/Issachar Fund  
586 project “Science and Religion: An Evolutionary Perspective” while this research was conducted.

587

588

### 589 **References**

590 Ackerman, J. M., Hill, S. E., & Murray, D. R. (2018). The behavioral immune system: Current  
591 concerns and future directions. *Social and Personality Psychology Compass*, **12**(2),  
592 e12371.

593 Apicella, C. L., & Barrett, H. C. (2016). Cross-cultural evolutionary psychology. *Current*  
594 *Opinion in Psychology*, **7**, 92–97.

595 Averill, J. R. (1980). A constructivist view of emotion. In R. Plutchik & H. Kellerman, eds.,  
596 *Theories of Emotion*, Academic Press, pp. 305–339.

597 Barrett, H. C. (2015). *The Shape of Thought: How Mental Adaptations Evolve*, Oxford  
598 University Press.

- 599 Barrett, H. C. (2021). Psychology within and without the state. *Annual Review of Psychology*.  
600 doi:10.1146/annurev-psych-020821-110248
- 601 Barrett, L. F. (2006). Are emotions natural kinds? *Perspectives on Psychological Science*, **1**(1),  
602 28–58.
- 603 Bender, A., Spada, H., Rothe, A., Traber, S., & Rauss, K. (2012). Anger elicitation in Tonga and  
604 Germany: The impact of culture on cognitive determinants of emotions. *Frontiers in*  
605 *Psychology*, **3**. doi:10.3389/fpsyg.2012.00435
- 606 Bender, A., Spada, H., Seitz, S., Swoboda, H., & Traber, S. (2007). Anger and rank in Tonga and  
607 Germany: cognition, emotion, and context. *Ethos*, **35**(2), 196–234.
- 608 Boyd, R., Richerson, P. J., & Henrich, J. (2011). The cultural niche: Why social learning is  
609 essential for human adaptation. *Proceedings of the National Academy of Sciences*,  
610 **108**(Supplement 2), 10918–10925.
- 611 Boyer, P. (2001). *Religion Explained: The Evolutionary Origins of Religious Thought*, Basic  
612 Books.
- 613 Boyer, P., & Liénard, P. (2006). Why ritualized behavior? Precaution Systems and action parsing  
614 in developmental, pathological and cultural rituals. *Behavioral and Brain Sciences*, **29**(6),  
615 595–613.
- 616 Breugelmans, S., & Poortinga, Y. (2007). Emotion without a Word: Shame and Guilt among  
617 Rarámuri Indians and Rural Javanese. *Journal of Personality and Social Psychology*, **91**,  
618 1111–22.
- 619 Briggs, J. L. (1970). *Never in Anger: Portrait of an Eskimo Family*, Harvard University Press.
- 620 Briggs, J. L. (1987). In search of emotional meaning. *Ethos*, **15**(1), 8–15.

621 Broesch, T., Crittenden, A. N., Beheim, B. A., ... Mulder, M. B. (2020). Navigating cross-  
622 cultural research: Methodological and ethical considerations. *Proceedings of the Royal*  
623 *Society B: Biological Sciences*, **287**(1935), 20201245.

624 Claidière, N., Scott-Phillips, T. C., & Sperber, D. (2014). How Darwinian is cultural evolution?  
625 *Phil. Trans. R. Soc. B*, **369**(1642), 20130368.

626 Clancy, K. B. H., & Davis, J. L. (2019). Soy lent is people, and WEIRD is white: Biological  
627 anthropology, whiteness, and the limits of the WEIRD. *Annual Review of Anthropology*,  
628 **48**(1), 169–186.

629 Cosmides, L., & Tooby, J. (1992). Cognitive adaptations for social exchange. In J. H. Barkow, L.  
630 Cosmides, & J. Tooby, eds., *The adapted mind: Evolutionary psychology and the*  
631 *generation of culture*, New York, NY, US: Oxford University Press, pp. 163–228.

632 Curtis, V., & Biran, A. (2001). Dirt, disgust, and disease: Is hygiene in our genes? *Perspectives*  
633 *in Biology and Medicine*, **44**, 17–31.

634 D'Andrade, R. G. (1995). *The Development of Cognitive Anthropology*, Cambridge University  
635 Press. Retrieved from [https://www.cambridge.org/core/books/development-of-cognitive-](https://www.cambridge.org/core/books/development-of-cognitive-anthropology/9BF096B8566E4824609C1E70625763CB)  
636 [anthropology/9BF096B8566E4824609C1E70625763CB](https://www.cambridge.org/core/books/development-of-cognitive-anthropology/9BF096B8566E4824609C1E70625763CB)

637 Doi, T. (1971). *The Anatomy of Dependence*, Kodansha International.

638 Douglas, M. (2002). *Purity and Danger: An Analysis of Concepts of Pollution and Taboo*,  
639 Routledge.

640 Ekman, P., & Friesen, W. V. (1971). Constants across cultures in the face and emotion. *Journal*  
641 *of Personality and Social Psychology*, **17**(2), 124–129.

642 Elwood, L. S., & Olatunji, B. O. (2009). A cross-cultural perspective on disgust. In B. O.  
643 Olatunji & D. McKay, eds., *Disgust and its disorders: Theory, assessment, and treatment*  
644 *implications*, Washington, DC, US: American Psychological Association, pp. 99–122.

645 Eriksson, K., & Coultas, J. C. (2014). Corpses, maggots, poodles and rats: Emotional selection  
646 operating in three phases of cultural transmission of urban legends. *Journal of Cognition*  
647 *and Culture*, **14**(1–2), 1–26.

648 Fessler, D. M. T. (1999). Toward an understanding of the universality of second order emotions.  
649 In A. L. Hinton, ed., *Biocultural approaches to the emotions*, New York, NY, US:  
650 Cambridge University Press, pp. 75–116.

651 Fessler, D. M. T. (2003). No time to eat: An adaptationist account of periovulatory behavioral  
652 changes. *The Quarterly Review of Biology*, **78**(1), 3–21.

653 Fessler, D. M. T. (2004). Shame in two cultures: Implications for evolutionary approaches.  
654 *Journal of Cognition and Culture*, **4**. doi:10.1163/1568537041725097

655 Fessler, D. M. T. (2006a). Steps toward an evolutionary psychology of a culture-dependent  
656 species. In P. Carruthers, S. Laurence, & S. Stich, eds., *The Innate Mind: Volume 2:*  
657 *Culture and Cognition*, UK: Oxford University Press, pp. 61–77.

658 Fessler, D. M. T. (2006b). The male flash of anger: Violent response to transgression as an  
659 example of the intersection of evolved psychology and culture. In J. H. Barkow, ed.,  
660 *Missing the Revolution*, Oxford University Press. Retrieved from  
661 [https://oxford.universitypressscholarship.com/10.1093/acprof:oso/9780195130027.001.0](https://oxford.universitypressscholarship.com/10.1093/acprof:oso/9780195130027.001.0001/acprof-9780195130027-chapter-3)  
662 [001/acprof-9780195130027-chapter-3](https://oxford.universitypressscholarship.com/10.1093/acprof:oso/9780195130027.001.0001/acprof-9780195130027-chapter-3)

663 Fessler, D. M. T. (2007). From appeasement to conformity: Evolutionary and cultural  
664 perspectives on shame, competition, and cooperation. In J. L. Tracy, R. W. Robins, & J.

665 P. Tangen, eds., *The self-conscious emotions: Theory and research*, New York, NY,  
666 US: Guilford Press, pp. 174–193.

667 Fessler, D. M. T., & Gervais, M. M. (2010). From whence the captains of our lives: Ultimate and  
668 phylogenetic perspectives on emotions in humans and other primates. In P. M. Kappeler  
669 & J. Silk, eds., *Mind the Gap: Tracing the Origins of Human Universals*, Springer, pp.  
670 261–280.

671 Fessler, D. M. T., & Haley, K. (2006). Guarding the perimeter: The outside-inside dichotomy in  
672 disgust and bodily experience. *Cognition and Emotion*, **20**(1), 3–19.

673 Fessler, D. M. T., & Navarrete, C. D. (2003). Meat is good to taboo: Dietary proscriptions as a  
674 product of the interaction of psychological mechanisms and social processes. *Journal of*  
675 *Cognition and Culture*, **3**(1), 1–40.

676 Fessler, D. M. T., Pisor, A. C., & Navarrete, C. D. (2014). Negatively-biased credulity and the  
677 cultural evolution of beliefs. *PLoS ONE*, **9**(4), e95167.

678 Fiske, A. P. (2020). The lexical fallacy in emotion research: Mistaking vernacular words for  
679 psychological entities. *Psychological Review*, **127**(1), 95–113.

680 Fuentes, A. (2016). The extended evolutionary synthesis, ethnography, and the human niche:  
681 Toward an integrated anthropology. *Current Anthropology*, **57**(S13), S13–S26.

682 Fuentes, A. (2017). Human niche, human behaviour, human nature. *Interface Focus*, **7**(5),  
683 20160136.

684 Gaffin, D. (1995). The production of emotion and social control: Taunting, anger, and the rukka  
685 in the Faeroe Islands. *Ethos*, **23**(2), 149–172.

686 Giner-Sorolla, R., Kupfer, T., & Sabo, J. (2018). What makes moral disgust special? An  
687 integrative functional review. *Advances in Experimental Social Psychology*.  
688 doi:10.1016/bs.aesp.2017.10.001

689 Heath, C., Bell, C., & Sternberg, E. (2001). Emotional selection in memes: The case of urban  
690 legends. *Journal of Personality and Social Psychology*, **81**(6), 1028–1041.

691 Henrich, J., McElreath, R., Barr, A., ... Ziker, J. (2006). Costly punishment across human  
692 societies. *Science*. doi:10.1126/science.1127333

693 Heywood, L. L., Garcia, J. R., & Wilson, D. S. (2010). Mind the gap: Appropriate evolutionary  
694 perspectives toward the integration of the sciences and humanities. *Science & Education*,  
695 **19**, 505–522.

696 Hlay, J. K., Albert, G., Batres, C., ... Hodges-Simeon, C. R. (2021). The evolution of disgust for  
697 pathogen detection and avoidance. *Scientific Reports*, **11**(1), 13468.

698 Holbrook, C., & Fessler, D. M. T. (2015). The same, only different: Threat management systems  
699 as homologues in the tree of life. In P. J. Carroll, R. M. Arkin, & A. L. Wichman, eds.,  
700 *Handbook of personal security*, New York, NY, US: Psychology Press, pp. 95–109.

701 Holbrook, C., & Hahn-Holbrook, J. (2022). Evolved to learn: Emotions as calibrational  
702 adaptations. In D. Dukes, E. Walle, & A. Samson, eds., *The Oxford Handbook of*  
703 *Emotional Development*, Oxford University Press.

704 Jacob, F. (1977). Evolution and tinkering. *Science*. doi:10.1126/science.860134

705 Kameda, T., Takezawa, M., & Hastie, R. (2005). Where do social norms come from? The  
706 example of communal sharing. *Current Directions in Psychological Science*, **14**(6), 331–  
707 334.



708 Kline, M. A., Shamsudheen, R., & Broesch, T. (2018). Variation is the universal: Making  
709 cultural evolution work in developmental psychology. *Philosophical Transactions of the*  
710 *Royal Society B: Biological Sciences*, **373**(1743), 20170059.

711 Kupfer, T. R., Fessler, D. M. T., Wu, B., ... Holbrook, C. (2021). The skin crawls, the stomach  
712 turns: Ectoparasites and pathogens elicit distinct defensive responses in humans.  
713 *Proceedings of the Royal Society B: Biological Sciences*, **288**(1955), 20210376.

714 Laland, K. N., Brown, G., & Brown, G. R. (2011). *Sense and Nonsense: Evolutionary*  
715 *Perspectives on Human Behaviour*, OUP Oxford.

716 Langlie, B. S. (2021). Origins of food production in the high andes. In *Oxford Research*  
717 *Encyclopedia of Anthropology*. doi:10.1093/acrefore/9780190854584.013.442

718 Lévi-Strauss, C. (1963). *Totemism*, Beacon Press.

719 Levy, R. I. (1975). *Tahitians: Mind and Experience in the Society Islands*, University of Chicago  
720 Press.

721 Levy, R. I. (1984). Emotion, knowing, and culture. In R. A. Shweder & R. A. Levine, eds.,  
722 *Culture theory: Essays on mind, self, and emotion*, Cambridge University Press.  
723 Retrieved from [https://pt.scribd.com/document/425479314/1984-LEVY-Robert-Emotion-](https://pt.scribd.com/document/425479314/1984-LEVY-Robert-Emotion-Knowing-And-Culture-p-214-237)  
724 [Knowing-And-Culture-p-214-237](https://pt.scribd.com/document/425479314/1984-LEVY-Robert-Emotion-Knowing-And-Culture-p-214-237)

725 Lieberman, D., Tooby, J., & Cosmides, L. (2007). The architecture of human kin detection.  
726 *Nature*, **445**, 727–31.

727 Lindholm, C. (2005). An anthropology of emotion. In C. Casey & R. B. Edgerton, eds., *A*  
728 *Companion to Psychological Anthropology*, John Wiley & Sons, Ltd, pp. 30–47.

729 Lindquist, K. A. (2013). Emotions emerge from more basic psychological ingredients: A modern  
730 psychological constructionist model. *Emotion Review*, **5**(4), 356–368.

- 731 Lutz, C. A. (1982). The domain of emotion words on Ifaluk. *American Ethnologist*, **9**(1), 113–  
732 128.
- 733 Lutz, C. A. (1988). *Unnatural Emotions: Everyday Sentiments on a Micronesian Atoll and Their*  
734 *Challenge to Western Theory*, Chicago, IL: University of Chicago Press.
- 735 Lutz, C. A., & White, G. M. (1986). The anthropology of emotions. *Annual Review of*  
736 *Anthropology*, **15**, 405–436.
- 737 Matsumoto, D., Yoo, S. H., & Chung, J. (2010). The expression of anger across cultures. In M.  
738 Potegal, G. Stemmler, & C. Spielberger, eds., *International Handbook of Anger:*  
739 *Constituent and Concomitant Biological, Psychological, and Social Processes*, pp. 125–  
740 137.
- 741 Matsumoto, D., Yoo, S. H., Fontaine, J., ... Grossi, E. (2008). Mapping expressive differences  
742 around the world: The relationship between emotional display rules and individualism  
743 versus collectivism. *Journal of Cross-Cultural Psychology*, **39**, 55–74.
- 744 Mcelreath, R., Boyd, R., & Richerson, P. J. (2003). Shared norms and the evolution of ethnic  
745 markers. *Current Anthropology*, **44**(1), 122–129.
- 746 Mesoudi, A. (2016). Cultural evolution: A review of theory, findings and controversies.  
747 *Evolutionary Biology*, **43**(4), 481–497.
- 748 Moore, D. S. (2013). Importing the homology concept from biology into developmental  
749 psychology. *Developmental Psychobiology*, **55**(1), 13–21.
- 750 Morton, H., & Lee, H. M. (1996). *Becoming Tongan: An Ethnography of Childhood*, University  
751 of Hawaii Press.

752 Niiya, Y., Ellsworth, P. C., & Yamaguchi, S. (2006). Amae in Japan and the United States: An  
753 exploration of a “culturally unique” emotion. *Emotion (Washington, D.C.)*, **6**(2), 279–  
754 295.

755 Nunn, C., & Altizer, S. (2006). *Infectious Diseases in Primates: Behavior, Ecology and*  
756 *Evolution*, Oxford: Oxford University Press.  
757 doi:10.1093/acprof:oso/9780198565857.001.0001

758 Paris, J. (2017). Is psychoanalysis still relevant to psychiatry? *Canadian Journal of Psychiatry.*  
759 *Revue Canadienne de Psychiatrie*, **62**(5), 308–312.

760 Prinz, J. (2004). Which emotions are basic? In D. Evans & P. Cruse, eds., *Emotion, Evolution,*  
761 *and Rationality*, pp. 69–88.

762 Quinn, N. (2015). A critique of Wierzbicka’s theory of cultural scripts: The case of Ifaluk fago.  
763 *Ethos*, **43**(2), 165–186.

764 Richerson, P. J., Baldini, R., Bell, A. V., ... Zefferman, M. (2016). Cultural group selection  
765 plays an essential role in explaining human cooperation: A sketch of the evidence.  
766 *Behavioral and Brain Sciences*, **39**. doi:10.1017/S0140525X1400106X

767 Richerson, P. J., & Boyd, R. (2008). *Not By Genes Alone: How Culture Transformed Human*  
768 *Evolution*, University of Chicago Press.

769 Robarchek, C., & Robarchek, C. (2005). Waorani grief and the witch-killer’s rage: Worldview,  
770 emotion, and anthropological explanation. *Ethos*, **33**(2), 206–230.

771 Rozin, P. (1987). Psychobiological perspectives on food preferences and avoidances. In M.  
772 Harris & E. B. Ross, eds., *Food and Evolution: Toward a Theory of Human Food Habits*,  
773 Temple University Press.

774 Rozin, P., Haidt, J., & McCauley, C. R. (2008). Disgust. In M. Lewis, J. M. Haviland-Jones, &  
775 L. F. Barrett, eds., *Handbook of emotions, 3rd ed*, New York, NY, US: The Guilford  
776 Press, pp. 757–776.

777 Samore, T., Fessler, D. M. T., Sparks, A. M., & Holbrook, C. (2021). Of pathogens and party  
778 lines: Social conservatism positively associates with COVID-19 precautions among U.S.  
779 Democrats but not Republicans. *PLOS ONE*, **16**(6), e0253326.

780 Samore, T., Fessler, D. M. T., Sparks, A. M., ... Wang, X. T. (2022, July 8). Greater  
781 Traditionalism Predicts COVID-19 Precautionary Behaviors Across 27 Societies,  
782 PsyArXiv. doi:10.31234/osf.io/mduw8

783 Sauter, D. A., LeGuen, O., & Haun, D. B. M. (2011). Categorical perception of emotional facial  
784 expressions does not require lexical categories. *Emotion (Washington, D.C.)*, **11**(6),  
785 1479–1483.

786 Schaller, M. (2011). The behavioural immune system and the psychology of human sociality.  
787 *Philosophical Transactions of the Royal Society B: Biological Sciences*, **366**(1583),  
788 3418–3426.

789 Schwartz, T. (1978). Where is the culture? Personality as the distributive locus of culture. In G.  
790 D. Spindler, ed., *The Making of Psychological Anthropology*, University of California  
791 Press, pp. 419–441.

792 Scott-Phillips, T. C., Blanke, S., & Heintz, C. (2018). Four misunderstandings about cultural  
793 attraction. *Evolutionary Anthropology*, **27**(4), 162–173.

794 Scott-Phillips, T. C., Dickins, T. E., & West, S. A. (2011). Evolutionary theory and the ultimate–  
795 proximate distinction in the human behavioral sciences. *Perspectives on Psychological  
796 Science*, **6**(1). doi:10.1177/1745691610393528

797 Sell, A., Tooby, J., & Cosmides, L. (2009). Formidability and the logic of human anger.  
798 *Proceedings of the National Academy of Sciences*, **106**(35), 15073–15078.

799 Shweder, R. A., Haidt, J., Horton, R., & Joseph, C. (2008). The cultural psychology of the  
800 emotions: Ancient and new. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett, eds.,  
801 *Handbook of emotions, 3rd ed*, The Guilford Press, pp. 397–414.

802 Shweder, R. A., Much, N. C., Mahapatra, M., & Park, L. (1997). The “big three” of morality  
803 (autonomy, community, divinity) and the “big three” explanations of suffering. In A. M.  
804 Brandt & P. Rozin, eds., *Morality and health*, Taylor & Frances/Routledge, pp. 119–169.

805 Sparks, A. M., Fessler, D. M. T., Chan, K. Q., Ashokkumar, A., & Holbrook, C. (2018). Disgust  
806 as a mechanism for decision making under risk: Illuminating sex differences and  
807 individual risk-taking correlates of disgust propensity. *Emotion (Washington, D.C.)*,  
808 **18**(7), 942–958.

809 Spiro, M. M. E. (1997). *Gender Ideology and Psychological Reality: An Essay on Cultural*  
810 *Reproduction*, Yale University Press.

811 Steele, M. S., & McGarvey, S. T. (1996). Expression of anger by Samoan adults. *Psychological*  
812 *Reports*, **79**(3 Pt 2), 1339–1348.

813 Tooby, J., & Cosmides, L. (1992). The psychological foundations of culture. In J. H. Barkow, L.  
814 Cosmides, & J. Tooby, eds., *The adapted mind: Evolutionary psychology and the*  
815 *generation of culture*, New York, NY, US: Oxford University Press, pp. 19–136.

816 Tooby, J., & Cosmides, L. (2008). The evolutionary psychology of the emotions and their  
817 relationship to internal regulatory variables. In *Handbook of emotions, 3rd ed*, New York,  
818 NY, US: The Guilford Press, pp. 114–137.

819 Tybur, J., Lieberman, D., & Griskevicius, V. (2009). Microbes, mating, and morality: Individual  
820 differences in three functional domains of disgust. *Journal of Personality and Social*  
821 *Psychology*, **97**, 103–22.

822 Tybur, J. M., Inbar, Y., Aarøe, L., ... Žeželj, I. (2016). Parasite stress and pathogen avoidance  
823 relate to distinct dimensions of political ideology across 30 nations. *Proceedings of the*  
824 *National Academy of Sciences*, **113**(44), 12408–12413.

825 Tybur, J. M., Lieberman, D., Fan, L., Kupfer, T. R., & de Vries, R. E. (2020). Behavioral  
826 immune trade-offs: Interpersonal value relaxes social pathogen avoidance. *Psychological*  
827 *Science*, **31**(10), 1211–1221.

828 Tybur, J. M., Lieberman, D., Kurzban, R., & DeScioli, P. (2013). Disgust: Evolved function and  
829 structure. *Psychological Review*, **120**(1), 65–84.

830 von Rueden, C. R., & Gurven, M. (2012). When the strong punish: Why net costs of punishment  
831 are often negligible. *The Behavioral and Brain Sciences*, **35**(1), 43–44.

832 Wierzbicka, A. (1992a). *Semantics, Culture, and Cognition: Universal Human Concepts in*  
833 *Culture-specific Configurations*, Oxford University Press.

834 Wierzbicka, A. (1992b). Talking about emotions: Semantics, culture, and cognition. *Cognition*  
835 *and Emotion*, **6**(3–4), 285–319.

836 Yeung, A. W. K. (2021). Is the influence of Freud declining in psychology and psychiatry? A  
837 bibliometric analysis. *Frontiers in Psychology*, **12**, 631516.

838