

Humour as a threat-coding mechanism

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Abstract

The integration of humour's classical theories such as relief, superiority, and incongruity suggest that the differences and patterns in what we find funny are largely dependent on attaching an "explicitly safe" meaning to novel entities. It is argued that humour is a substantial organising influence in human socialisation and personal threat perception. Built on such work as Caleb Warren and A. Peter McGraw's notion of humour in explicated ambiguity, Tom Veatch's paradox of humour as a "normal" violation, and V.S. Ramachandran's False Alarm Theory of humour, an integrational theory is developed and tested against a variety of hypotheses associated with the core findings of classical humour research.

Keywords: humour, evolution, safety, ambiguity, appraisal.

1. Introduction

Researchers in the area of humour have developed a variety of competing theories. For example, Warren and McGraw (2016: 409-414) focus on humour in the context of explicated ambiguity while Veatch (1998: 161-216) describes the paradox of humour as a "normal" violation of morality. In contrast, Ramachandran (1998: 351-354) developed the False Alarm Theory of humour, which revolves around the idea that physical displays of humour signal an anticipated threat is not present. Amadeu Viana and Barbara Fredrickson (Viana 2017a: 15; Fredrickson 2001: 218-226) have a theory that construes humour as a social phenomenon. Integrating these theories and expanding them with concepts gleaned from evolutionary biology can lead to new ways that humour can be seen as adaptive.

This paper uses an evolutionary biology perspective to argue that organisms capable of emotions use those emotions to help catalyse behaviours efficient for specific settings. It is further argued that humour is close enough to an emotion to enable similar results, and as such, essentially serves as a physiological prompt for behaviour. Accordingly, it is hypothesised that humour helps individuals code ambiguous events as safe, and has explanatory power in multiple domains, including relief theory, superiority theory, and incongruity theory.

By the end of this paper, I hope to have demonstrated the value of a new hypothesis of humour that not only helps to connect existing theories, but also may be able to predict the situationality of humour – when and how individuals find events funny.

2. Emotions as “pointers”

What is the value of emotion to a person? Emotion has been defined as a conscious or unconscious appraisal of the personal meaning of a stimulus, leading to a host of allied responses both physiological and related to subjective experience (Fredrickson 2001: 218-226), or, more specifically, as an organising intermediate between a stimulus and a response, which, if apt, should help increase fitness (Izard 2009: 4). There are a whole host of arguments connected to the idea of emotion as being ‘that which makes life worth living’ (Aranzadi 2011: 87), but evolutionary biology sets aside philosophical talk about the value of eudaimonia-related life goals in favour of a frame that sets productivity, not experience, as an end (Brommer 2000: 378; Polimeni & Reiss 2006: 347-348). Specifically, organisms (including people) that are successful enough to pass their genes to the next generation do so insofar as their traits are adaptive to their environment, and those with traits better adapted to their environment have a better chance of lasting long enough to make babies. Philosophers who have no children may have succeeded in life on their own terms, but not in terms of the end explored by evolutionary biology, meaning their natural propensities will die with them. From an evolutionary perspective, the fact that childless philosophers’ teachings may live on is an imperfect substitute, because they are not passing on their genes, or substrate. Therefore, evolutionary biology asserts that there are practical survivalist reasons to have emotions ranging from eudaimonia-style contentment all the way down to less refined feelings like hunger and fear. The physiological basis of fear has been particularly-well studied, with the amygdala figured as important in soliciting a Pavlovian fear response (LeDoux 2000: 171).

To summarize, a grounded contemporary view is that emotions are pointers within the consciousness of an organism that urge certain classes of behaviour (Morreall 1983: 301).

What direction do certain emotions point? Hunger, conceptualized as an emotional experience by MacCormack and Lindquist (2019: 301), helps cue an organism to eat, increasing its strength and ability to survive. Fear helps cue an organism to escape a situation likely to result in harm or death (Scott et al. 1997: 254). Happiness helps cue an organism that its current set of behaviours are productive, and should be repeated or maintained (Lench et al. 2011: 850). Meanwhile, humour may help cue an organism that a certain unexpected experience is non-threatening, and, inferentially, resources should not be spent to evade the source of the experience.

Humour is less related to mechanistic behaviour in the literature. In fact, it suffers from the opposite problem as hunger. While hunger is so tied through drive states to a desired response (feeding) that it does not obviously meet the subjective experience criterion needed to be an emotion (MacCormack & Lindquist 2019: 301), humour is not obviously tied to a desired response. I will later argue that the unifying criteria of all forms of humour is, in fact, the lack of need to elicit an urgent response.

This means that it is important to note that standard definitions of emotion can encompass a range of feelings from hunger to humour. There will be more on humour’s role as an emotion in the next section.

3. Humour playing the role of emotion

The present section of the paper justifies and explores the idea that humour is similar enough to an emotion to modify its ‘wearer’s’ behaviour and impact fitness. Humour is documented as an emotion (Mathews 2016: 22; Martin 2007: 5), as a process with an emotional component (Berger et al. 2018: 764) or at least an emotional regulator (Braniecka et al. 2019: 10). Morreall’s (1983: 303; Morreall 2015: 10-11) assertion that humour can suppress intense emotion and allow for rational thinking seems well-supported without leading necessarily to his conclusion that humour is distinct from emotion. One can be overwhelmed with mirth, just as easily as one can be piqued to think creatively about a task because of a touch of anger.

The explanations of what fitness-related purpose humour serves are not as precise as they can be, leaving room for the present paper. Indeed, there is little consensus on the definition of humour (Raskin 1985: 7; Gervais & Wilson 2005: 396). However, the evolution of humour and its common attendant display, laughter (Raskin 1985: 9), is well-researched. Viana (2017a: 15) describes two key moments in the development of humour among the human far ancestral population: (1) the emergence of non-Duchenne laughter (intentional laughter), and (2) the emergence of articulated language. Viana argues that laughter, a way of soliciting humour and attendant emotional feelings of situational contentment, evolved into a powerful signalling/display tool to help develop increasingly abstract bonds of social solidarity among early humans or pre-humans. Despite some controversy, humour can potentially be identified in nonhuman species, being argued for in this capacity by no less a luminary than Charles Darwin (Raskin 1985: 14). Humour is unlikely to be a purely social emotion insofar as it had to come first to help elicit social constructs, and because there is extensive contemporaneous evidence of solitary laughter (Weeks 2016: 85).

One interesting hint at the pre-verbal or emotionally-related origins of humour is that individual words considered to be the most funny tend to involve a clucking (pseudo-laugh) sound, as well as a physical-sexual connotation. Engelthaler and Hills (2018: 1118) found the most humorous words in their study were, in order, “Booty,” “Tit,” and “Booby.” Westbury et al. (2016: 154) had a complementary finding that (1) nonwords can be funny, and (2) the funniness of non-words increases the more they sound like words (low semantic entropy) without actually having meaning, which suggests that the noises we use to communicate with each other were scaffolded from sounds we find pleasant. The dynamism of humour evident in Engelthaler and Hill’s psycholinguistic study has been similarly found by Bennett and Lengacher (2008: 39), who found that laughter is tied with a short-term rise and a medium-term fall in physiological markers linked to stress.

Ultimately, humour is both powerful and affective (Thomas 2015: 47). Emphasizing the humorous character of one’s behaviour allows one some flexibility in safely violating social norms, and thus humour is supportive of play and creativity (Polimeni 2016: 79; Proyer 2013: 86), as well as social bonding in times of shared amusement (Fredrickson 2001: 218-226; Ortega 2015: 33; Marone 2015: 79). Displays of humour are multimodal, containing paralinguistic elements like intonation and body language (Rus 2017: 33; Tabacaru & Lemmens 2014: 15; Niedenthal 2007: 1005), which is consistent with the idea of humour as evolving prior to human language.

4. Humour as pointer – helps code ambiguous events as explicable and safe

It is time to assess the general role of humour from an adaptive perspective. As clearly as possible – it is my hypothesis that humour helps individuals code unexpected events as

explicitly non-threatening, so those individuals will not waste energy in alarm responses to said events. The idea that humour may foster some efficiency in information transmission is supported by Suslov (1992: 320-324). This paper's hypothesis in general owes a great deal to existing research. Nijholt (2018: 30), for instance, notes that humour tends to arise from "conditions that make unexpected events 'non-threatening,'" though he follows Critchley (2002: 4) as presenting humour as non-goal-oriented for this reason, rather than adaptive.

Veatch's (1998: 161-216) seminal paper has a similar conclusion – "humour occurs when a perceiver views a situation simultaneously as being normal and as constituting a violation of the "subjective moral order" – but does not explore in detail why exceptions to social expectation are so pressing as to have a whole emotion built around it, or, relatedly, how humour can exist in an individual context.¹ Individualised humour does make sense when considering adaptive fitness, which must eventually decompose to the individual level. Tripathy (2018: 65) argues that the limiting condition of humour is harmlessness – an act of near-harm, such as slipping on a banana peel, can be funny, but would not be funny if you or someone like you was injured. From the present paper's interpretive schema, a key physical expression of humour is laughing, which would pass the message of non-threat to those who are attentive. However, just as adaptive humour is not solely elicited by social context, neither is laughter (Weeks 2016: 85).

An exploration of humour complementary to Veatch comes from Ramachandran. Ramachandran (1998: 351-354) developed the False Alarm Theory. Here the evolutionary aspect of the present paper's hypothesis is finally suggested. Focused more on laughter than humour, False Alarm Theory asserts that the repetitive noises of laughter developed evolutionarily to let other members of a group know that a potential threat is not present (Ramachandran 1998: 352). When certain patients with damage to their insular cortex are jabbed with needles, they profess "pain but no hurt" and start laughing seemingly automatically – an apparently maladaptive emotion-facilitated response to a situation that is not quite as safe as the patients seem to feel it is (Ramachandran 1998: 353). However, Ramachandran self-limits his theory by asserting it does not explain the ways in which healthy humans use humour as a psychological self-defence mechanism, which he frames as a separate process that evolved to prevent unnecessary over-orienting towards anomalous stimuli (1998: 353). Thus, while Ramachandran is very clear on the role of humour/laughter in noticing a lack of potential threat, False Alarm Theory does not hone in on the fundamental ambiguity of a wide variety of stimuli. That is, how humour can constructively develop all sorts of normative responses to different types of ambiguity, creating variable long-term patterns of behaviour by creatively inventing new performative schema. The Benign Violation Hypothesis, which claims humour is a juxtaposition of the first two terms of its name (Warren & McGraw 2016: 409-414), and thus appears as a more specific form of Veatch's theory, has similar limitations as False Alarm Theory because it does not emphasise the violation (potential danger) as being evaluated up to the moment of its classification, and indeed, its authors found evidence contradicting the idea of a juxtaposition of the benign concept and the violation concept as creating humour. The Benign Violation Hypothesis does not argue for instance, that unusual by highly positive events

¹ Decades later, Veatch posted a sort of follow-up paper on his personal website (Veatch 2013) that further elucidated his thoughts on humour. He seems to think the violation/non-violation aspect of humour is a form of absurdity which elicits an internal mental component called the Inner Judge to shut down, leading to an "inner surrender" which is the general mechanism for all forms of bliss. This construct may have substantial explanatory power, but it suggests Veatch's humour work as containing room to be extended with evolutionary fitness logic

are humorous (Warren & McGraw 2016: 416), whereas, drawing on Ramachandran and the evolutionary perspective, this paper would argue that such events likely are – imagine someone laughing and smiling after winning the lottery.

The idea I am trying to stress here, and what I think Veatch brings to Ramachandran's more explicitly biological work, is that the external substrate of humour need not involve a refuted objective safety violation. However, there is always a violation that is at least subjective. Different patterns of humorous responses to stimuli are both possible and coded with various packages of long-term fitness benefits (or costs) depending on the environment of the individual or subpopulation with a specific sense of humour. For example, the defeat of an unambiguously attacking animal, such as a tiger, might bring laughter, even though the tiger's arrival was not a false alarm. The propensity of a victorious human to laugh as a result of the tiger's defeat seems – in an extension of Ramachandran by Veatch – to be dependent on their subjective valuing of the safety of the result. In a tiger-aftermath that involved minor injury, a human with a culture or set of biases where even a scratch invited bad spirits would be less likely to laugh, whereas one who sees the injury as a coming-of-age experience would be more likely to laugh. This leads back to the intersection of subjectivity and fitness. How can a subjective decision have anything to do with fitness? When it is a hunch based on limited information. For example, in some locations it might be more valuable to worry about wound infection than others.

Veatch complements Ramachandran. Combining the former author's appreciation of humour-from-ambiguity with the latter author's mechanistic exploration of humour in the face of potential direct threat increases the potential explanatory power of the evolutionary theory of humour as presented in this paper.

It is important to note at this point that neither the threat matrix into which I have injected Veatch, nor Veatch and close descendant approaches, have a monopoly on broad-minded ways to think of humour. Raskin's (1985: 44) linguistic-based Semantic Script Theory of Humour (SSTH) focuses on the idea that humour occurs when one way of thinking applies over a second, as when a person upset at apparent lack of water is interrupted by a second person clearing their throat, nodding at a specific object, and saying: "Well."² Initially limited to jokes, SSTH was expanded by Attardo and Raskin (1991: 293) to a General Theory of Verbal Humour (GTVH), taking into account such factors as humour's targets. Expounders have attempted, with mixed success, to map the constraints of GTVH to humour-predictive computer models (Oring 2019). The SSTH model, mentioned here because it strongly informs the linguistically-oriented portion of the field, as well as Veatch himself (Veatch 1998: 193), is a case exploration from the perspective of this paper's evolutionary theory, which is grounded in humour's pre-spoken origins.

The remainder of this article will focus mostly on the hypothesized evolutionary explanation of humour in the context of a systematic range of examples. While a single failure to explain a case can help disprove a hypothesis, a bevy of examples in support does not necessarily support the hypothesis unless there is some attempt to suggest the examples are fully representative of their category (in this case, humour). By engaging, in turn, with examples in support of each of three classical theories of humour – relief, superiority, and incongruity (Wilkins & Eisenbraun 2009: 349) – as well as a smattering of other theories that purport to be partially or wholly general, I hope to provide evidence that the theory presented in this article is indeed robust and worthy of further exploration.

When describing situations below, I will rely to some degree on the intuitive element of humour – that is, the reader will be able to check my logic by evaluating whether they find

² The pun is between the idea of "Well" as being a way to broach an awkward conversation, and "Well" as being a place to find water.

certain examples or counter-examples funny. Face validity is an important criterion in science (Hardesty & Bearden 2004: 99), and this article uses it explicitly, making the reader's own emotions about humour an important component of the narrative.

5. Relief examples

The relief theory of humour asserts that humour is an expulsion of nervous energy (Meyer 2000: 312). The theory is largely built on Sigmund Freud's understanding of ideas expounded by Herbert Spencer (Olin 2016: 341). The relief theory is directly intelligible as a case of the evolutionary theory of humour described above – nervous energy is expelled because novel information has been evaluated to have no threat, so the energy is not needed.

The relief theory, as contextualized by the evolutionary theory of humour, has particularly powerful explanatory value towards social humour. From this joint perspective, friends "hanging out" appear to be constantly giggling at statements no outsider would find funny because they are continually signalling that they feel safe around the uniquenesses of the others. If a friend abruptly stopped giggling, this would signal they no longer felt comfortable. Meanwhile, an outsider would have difficulty finding any of this funny from the start because the outsider is not experiencing the "safety" of being accepted by the social group. Revi (2014: 112) discusses a classic aspect of juvenile-style humour – obscenity – and how crude statements capable of causing social sanction in certain contexts can feel automatically humorous in more friendly settings – evolutionary theory would assert this is because the interlocutors feel safe.

Another example of the outsider/insider dichotomy, which is fascinating because it gets at the edge of humour, comes in Dionigi and Canestrari (2018: 62) – in patient-therapist interactions, patients are found to laugh universally at jokes told by therapists, while the converse is not true. This is explainable by evolutionary theory because patients have every incentive to try to make themselves feel safe and comfortable in front of therapists (presumably, they entered therapy to try to get help), while therapists need to evaluate if any strange statements made by patients (such as intended jokes), are harmless, helpful, or pathological.

Similarly, Waisbergerová (2018: 10) finds that unusual elements in the podcast *Welcome to Night Vale* might be unambiguously humorous in another context, and in situ provide unresolved ambiguity as much as comic relief, because the podcast raises questions of dangerous technology that remain salient outside the program. Waisbergerová presents this unresolved tension as a deficit in relief theory, but the conclusion is explainable through evolutionary theory, which can frame the strangeness in *Welcome to Night Vale* as ambiguously safe, and difficult to code because all the facts about social-technological development are not yet in. Supporting this interpretation, Couder (2019: 19) makes a positive case that absurdist humour as found in fiction like Douglas Adams' *The Restaurant at the End of the Universe* is only really funny when the reader succeeds in some effort to understand the social context of the text.

The evolutionary theory of humour as presented in this paper is different from the relief theory because the evolutionary theory does not require any substantive tension prior to a humorous relief, merely the adaptive explication of a strange and non-threatening event. To provide an example, laughter can build in a positive direction – certainly the point of going to see a comedy movie is not to be on the edge of your seat until finally you escape a tense affair (this may be more the mechanism of enjoyment of horror movies). Relief theory is foundationally built on a model of mental life that is Freudian, emphasizing tension in the context of "psychic energy," which even Freud admitted is not as empirically tied to literal biological processes as he might have wished (Boothby 2013: 4). How an event can be strange

but not unsurprising is made clear more through superiority theory, which focuses on behaviours committed regularly by undervalued others.

6. Superiority examples

The superiority theory of humour asserts that humour is a way of identifying oneself as “above” or “aloof” to others (Meyer 2000: 314). Historical figures like Plato, Aristotle, Cicero, and Quintilian have been associated as originators of superiority theory (and its inherent critique of humour) by a consensus of modern humour researchers, though the current definition of superiority theory is essentially modern and does not perfectly characterise the ancients’ ideas (Perks 2012: 126).

The Three Stooges can be used to provide an example of the logic behind this theory. The characters played by the Three Stooges are characteristically slow and physically awkward. They are funny fundamentally when they make decisions that exacerbate their own weaknesses, and are dissimilar to the ones their viewers would make (Davies 2011: 266), such as not reacting to avoid a pie in the face. The evolutionary theory of humour as presented in this paper highlights that all cases of superiority humour involve two conditions. First, the viewer finds the practitioners of the potentially humorous incident to be below them (prima facie strange but non-threatening). Second, those ‘strange lessers’ who are engaged in the humorous behaviour must act in a manner that appears harmless to the viewers who finds the action funny, while being atypical of the behavioural assumptions the viewers set for themselves (reinforcing the initial assumption of lack of threat in light of an incident in need of categorization).

Takovski (2018: 70) notes that while many jokes of ethnic superiority play on chauvinism by interchangeably presenting derided ethnicities as generically stupid or lazy, these jokes may not be as resonant to informed observers as jokes that target specific ethnic relationships (such as the idea Macedonian is a dialect of Bulgarian). From the perspective of evolutionary theory, this is explainable because the second category of jokes may more authentically match real-world patterns of superiority and vulnerability, and thus make listeners who have “bought-in” to the joke feel more safe when they search their background knowledge for additional context about a strange other. Religion also characterises individual humour preferences in a “rally-around-the-flag” sort of way – both Muslims and Christians react more negatively to jokes targeting their own religion than jokes targeting other religions (Ott & Schweizer 2018: 26). Evolutionary theory would note that humour is an individual response, even though it is amenable to social amplification, and humorous reactions would naturally decrease in the presence of jokes that make light of deeply personal and sincerely-held beliefs.

As an example of an attempt when a superiority joke would broadly not work, the Third Estate organizing during the French Revolution in a manner similar to aristocrats could meet the humorous criteria of activity by a perceived lesser, but would not meet the criteria of strange harmlessness to those in the aristocratic social position, and thus would not be funny.

From the perspective of this paper’s evolutionary theory of humour, the only difference between relief examples of humour and superiority examples of humour is that superiority examples come from sources expected to engage in periodic bouts of strange-non-threatening behaviour, rather than from sources from which there is no a priori expectation. This negative expectation is supported by fMRI research, which indicates joyous (solidarity) laughter and taunting laughter are correlated with different neural connectivity patterns (James 2018: 8).

7. Incongruity examples

The incongruity theory of humour asserts that humour comes from witnessing unexpected things (Meyer 2000: 313). Its development is associated with the 18th century and the thinkers Thomas Hobbes, Francis Hutcheson, and Immanuel Kant (Olin 2016: 343). This paper's evolutionary theory of humour would argue that the unexpected is a necessary but not sufficient condition for humour, and that all humorous incidents for a given viewer meet an additional criterion – they are non-threatening to the observer. Kulka (2007: 333) has a similar critique of the incongruity theory, though he claims that the missing piece of humour is a need for resolution. What is interesting is that the ideas of resolution and non-threat are similar – that which is resolved can no longer be a threat.

Take the following example: You might not expect a tiger in your office, but the humour of the situation would decrease in proportion to your ongoing concerns about the physical safety of yourself and those you cared about. A situation that could indeed be extremely funny if an evacuation occurred in time, and no one was hurt, would abruptly have very little humour in it if you thought the situation was about to go “bad.” (Note the predictive aspect of the prior statement, in line with humour's evolutionary benefit.) An example very similar to this thought experiment is presented by Chen and Jiang (2018: 77) where a cat looks into a mirror and sees a lion. This is funny in the incongruity sense because it is explainable as a metaphor for the cat's hubris rather than any actual threat. Chen and Jiang's innovation, integrating prototype theory with incongruity theory, further posits that part of the humour comes from ‘seeing how the relationship went off the rails’ – an elephant in the mirror would be less funny because it would be more of a non sequitur than an abrupt right turn. Evolutionary theory has no problem with the explanatory power added by prototype theory. From an evolutionary framework, humour involving prototypes is especially poignant because, after the shock, matching the unexpected incidence with the prototype (understanding, at a delay, why the specific humorous situation was chosen) provides an additional sense of understanding, and thus safety.

Returning to Kulka (2007: 326), the following joke is an excellent explanation of how some resolution of ambiguity seems to be an important element of humour: “Why was Oscar Wilde? Because he didn't get his Daily Mail.” This statement is unlikely to be funny until one finds the “Wilde = wild” pun (puns apparently being a source of “emergency meaning” that can save the day in the face of initially confusing linguistic stimuli).³

Additional support for the evolutionary theory of humor comes from Viana (2017b: 32), who describes a tension between humorous incongruity and the potential of ridicule. Evolutionary theory would suggest that ridicule is but one potential harm that might come as a result of an incongruous experience, and recognising when ridicule is close but not present would confer fitness benefits.

8. Other examples

Relief, superiority, and incongruity are not the only existing theories of humour. One recent development, presented in Aharoni (2018: 27), suggests that a certain fraction of humorous incidents are explainable as “a shift of weight, namely of attention, from meaning to its carrier.” For example, “Non-conformists of the world - unite!” (Aharoni 2018: 20), and “Would you like

³ Oscar Wilde is in the historical record as engaging in same-sex relationships (Smith 2002: 613), meaning the wild=Wilde joke may have a superiority component if the reader both knows this fact and looks down on homosexuality. As superiority jokes often stem from politics of exclusion, this is not the sense in which I would like the joke to be read.

to hear a joke? – Yes! – OK. Once there were two jokes. One fell ill. The other sat by its bed, consoled it, fed it soup. Isn't it a good joke?" (Aharoni 2018: 26). Within the shift-of-weight theory, both of these jokes are defined as being self-reflexive – they redefine assumptions of understanding within the joke narrative. The non-conformists are so excited to be non-conformists that they conform with each other, while the joke is good not as a diversion, but as a person might be, in a moral setting. This paper's evolutionary theory of humour, which is all about the formula of strange + non-threatening, is easily consonant with shift-of-weight theory's emphasis on reflexivity. The strange transition present in each shift-of-weight joke is harmless because the transition of meaning only affects the joke itself. "Non-conformists of the world – attack!" is less funny because it is less self-contained, and thus potentially more harmful. Similarly, if the punchline of the joke with the soup called the empathetic joke a "bad joke," this would not be as funny, because common moral values are being subverted.

Next, returning to the Three Stooges, Robert Solomon's inferiority theory posits that "though the Stooges made themselves lowly and ridiculous, we do not laugh at them as a result of regarding them as beneath us" (Davies 2011: 266); "One doesn't walk away from the Stooges feeling superior, rather released and relieved" (Solomon 1996: 608). Solomon (1996: 609), who greatly enjoyed the Stooges, frames this concept as "mutual humiliation." To interpret this situation, evolutionary theory would separate out the details of the humour from the purported interpretation. The details are that the Stooges "make themselves lowly" and repetitively act in a self-humiliating manner. This meets the conditions of the evolutionary interpretation of superiority theory. The fact that the Three Stooges are intentionally making themselves lowly has no bearing on the theory's application. Appreciation of the Stooges' talents while laughing at them in the act creates cognitive dissonance, but the way the act itself is interpreted in situ perhaps can be clarified by an exploration of the etymology of the word "stooge." Originally, the word referred to the idea of stage or comedian's assistant, but after the Stooges came to popularity, the definition shifted to include the idea of a puppeted person lacking personal agency (Harper 2019). The Three Stooges debased the word in a very literal way. Once they left the scene, taking their reputation as performers with them, what remained was the cultural impression of their behaviour, which is that it was pathetic.

Evolutionary theory has explanatory power even when assaying results of studies conducted outside the main humour research tradition. From a game theory perspective, Yang et al. (2019: 4) tested whether the presence of funny images would encourage participants to accept unfair divisions of reward money (as opposed to rejecting the division, so neither side would earn money). The authors found the funny images did indeed increase participant willingness to accept unfair deals. Evolutionary theory would suggest the presence of humour encouraged participants to act in a resource-gathering mode, rather than a threat-control mode.

Finally, some attention should be paid to John Morreall, who has played a major role in the modern understanding of humour, describing it as disengaged play (Morreall 2009: 90-105). Morreall has been criticised by Tapley (2013: 147) as conflating the idea of play and humour. Tapley (2013: 156) believes that play may have been tied to humour in the ancestral environment, but has evolved to a different function. More precisely, from Tapley (2013: 162) "play was adaptively oriented towards social negotiation, and linguistic and moral development, where humour was adaptively suited to social cohesion and the mitigation of aggression." This is hardly the last word on the subject, but limits the strength of Morreall's ideas as a refutation of the thrust of this paper's evolutionary theory. Evolutionary theory, being focused on the ideas of assessment and safety, has little to say about play, which is naturally longitudinal, beyond the idea that humour might help signal it is safe to play.

Discussion thus far focused on humour's positive evolutionary implications. However, for the gelotophobic individual, laughter does not appear to have a positive association (Führ et

al. 2009: 62). In fact, gelotophobic individuals think that others perceive them as odd and consequently, they actually expect others to laugh at them (Ruch & Proyer 2008: 20). Rather than seeing the situation as safe, they, in fact, seem to get suspicious when hearing laughter and see themselves as being ridiculed (Ruch & Proyer 2008: 26). As one might expect, a study focusing on adolescents revealed that gelotophobic individuals tended to feel lonely (Führ et al. 2013: 93). Accordingly, research also points to a positive relation between bullying experience and gelotophobia from childhood through adolescence and adulthood (Führ et al. 2013: 94). The explanation for these findings, however, are not as clear as a study by Platt, Proyer, and Ruch (2009: 145) suggests that the gelotophobic individual might be interpreting playful teasing in a different way than others. Support for this position comes from research demonstrating gelotophobes are less likely than others to recognize or display facial joy markers (Hoffmann et al. 2015: 1-12) and are more likely to ascribe maliciousness to certain characteristics of a particular laughter pattern (Ruch et al. 2014: 7). In addition, Proyer and Neukom (2013: 1191-1195) found some evidence that gelotophobia has a genetic component. Accordingly, Platt et al. (2009: 145) suggest that it might, in fact, be beneficial to teach these individuals an increased understanding of humour, a suggestion which certainly supports the evolutionary value of humour as an important pointer in determining safety.

On the other hand, sardonic laughter (essentially equivalent to mocking laughter) is sometimes a real cue of danger and appropriately interpreting it has a safety value. It can alert individuals to protect themselves against a wide range of dangers, from psychological pain (e.g., ridicule) to physical injury or death. Anthropologists have evidence that hunters in a variety of cultures laugh upon the completion of a successful hunt (David 2014: 15-39). Certainly the objects of their laughter would, if they were still alive, have had every reason to be frightened of the hunters' intent. Towards that end, we know, for example, that the Colombine killers laughed as they swept through the high school halls shooting students (Kuntz: 1999). It, therefore, appears that humour is closely bound to perceptions and even impositions of level of safety.

Sardonic laughter has a second definition as a physiological phenomenon divorced from the emotional component – that is, laughter forced by a chemical or by other medical condition (Işıkay 2016: 102) – though certain uses of the phrase can blur the difference (Trapp 2019: 148). This awkwardness of classification highlights the difficulties in understanding humour one does not agree with, and further reinforces the idea stressed in this paper that humour helps one come to terms with a personalized level of threat.

9. Discussion

This paper is a new attempt to scaffold certain aspects of evolutionary biology atop the rich work that evolved more linearly from classical theories of humour. As such, it is interdisciplinary, and is limited by an inevitable lack of ground in any one research perspective. Comprehensive theories of humour have been attempted many times before – certainly each of the classical theories of humour purports to be a central explanation, even before one gets to more recent work by authors like Morreall or Veatch. This points to the need for follow-up research and analysis in relation to the thesis proposed herein.

The present evolutionary theory is intended to be more of a supplement than a replacement. Where did humour come from? Why might humour have been perpetuated through evolution? These are the questions the present theory attempts to address, in conjunction with the more traditional question of what exactly humour is. How can one attempt to trace back the

sort of thing to which one says “I know it when I see it?” The way this paper attempts to answer this criticism is by attempting a sort of ecumenical everything-in approach. The coding-atypicality-as-explicably-safe hypothesis might have been in this paper before the examples, but the actual development of the research idea developed in almost exactly the opposite way. To wit, the author attempted to find the common denominator of various examples of humour, tried to define this denominator in a way consistent with the various recursive hormonal feedback mechanisms we know exist through biology, and then considered why such a feedback mechanism might have developed. To return to a key piece of evidence: Bennett and Lengacher (2008: 39) point out that laughter is associated with a short-term rise and a medium-term fall in physiological markers linked to stress. Their find is an indication, if one accepts the link between laughter and humour, that the methodology in this paper progresses on a productive path.

10. Conclusion and implications

This paper has attempted to introduce to the reader an integrated perspective that can be used to explain primary elements underlying humour. Support for this perspective was presented by contextualizing work done by authors like Warren and McGraw (2016: 407-430), Veatch (1998: 161-216) and Ramachandran (1998: 352-353), as well as the three major classical theories of humour: relief, superiority, and incongruity. Future research can go beyond supportive literature and face validity checks to present participants with vignettes. This research has the potential to predict differences in what people find funny directly from the evolutionary elements of humour identified, and, given that what is funny to one person may be harmful to another (a bully enjoying the harassment of a fellow student is one example), the research may help contribute to the development of a new theoretical framework for interventions that promote empathy and collaboration. Hale’s (2018: 57) Discursive Defensive Mechanism asserts that we have a reflex “to block the act of humour until we can analyse it for its status as threat, or benign act” “because humour is, by nature, unexpected.” Evolutionary theory contains a slight reframing of this idea, and asserts that humour is fundamentally an individualised response to a situation, like the emotions hunger or anger. The Discursive Defence Mechanism’s joke blocking is thereby contextualized as a feature of the humour process when a strange event is identified as threatening. Without some lack of threat, no incident can be humorous for a beholder.

“It’s just a joke,” is a phrase that uses weaknesses in the current understanding of humour to allow one person to diminish the concerns of another. A consensus that humour is all about differential abilities to disregard potential threats will help give that phrase valuable gravity. Humour can, at its finest, be a powerful source of stability, helping survivors come to terms with or move on from terrorist attacks (James 2014: 40), hospitalisations (Tan et al. 2014: 4), or even genocide (Üngör & Verkerke 2015: 83). At the same time, humour, being specific to person and place, can create pain when used outside the context to which it was adjusted (Üngör & Verkerke 2015: 92), or be wielded to normalise the idea of rape (Kramer 2011: 163; Romero-Sánchez et al. 2017: 967). The way humour can multi-directionally manipulate empathy towards vulnerable populations by changing networks of perceived safety deserves to be better understood. Ultimately, while humour is a personal response, it has a powerful ability to create, maintain, prevent, or destroy networks of socialisation.

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