




PERSPECTIVE

Darwin's illegitimate children: How body language experts undermine Darwin's legacy

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Abstract

The Expression of the Emotions in Man and Animals has received and continues to receive much attention from emotion researchers and behavioural scientists. However, the common misconception that Darwin advocated for the universality of emotional reactions has led to a host of unfounded and discredited claims promoted by 'body language experts' on both traditional and social media. These 'experts' receive unparalleled public attention. Thus, rather than being presented with empirically supported findings on non-verbal behaviour, the public is exposed to 'body language analysis' of celebrities, politicians and defendants in criminal trials. In this perspective piece, we address the misinformation surrounding non-verbal behaviour. We also discuss the nature and scope of statements from body language experts, unpacking the claims of the most viewed YouTube video by a body language expert, comparing these claims with actual research findings, and giving specific attention to the implications for the justice system. We explain how body language experts use (and misuse) Darwin's legacy and conclude with a call for researchers to unite their voices and work towards stopping the spread of misinformation about non-verbal behaviour.

Key words: body language expert; Darwin; emotions; facial expressions; misinformation; nonverbal behaviour

Social media summary: Self-proclaimed 'body language experts' often misinterpret and misuse Darwin's work on emotions and non-verbal behaviour.

The Expression of the Emotions in Man and Animals (Darwin, 1872) has received and continues to receive much attention from emotion researchers and behavioural scientists. Since the 1960s, the scientific community has produced tens of thousands of scientific publications on non-verbal behaviour, including facial expressions (Plusquellec & Denault, 2018). However, a common misconception is that Charles Darwin advocated for the universality of emotional reactions. In actuality, Darwin fully acknowledged cultural diversity (Darwin, 1871, 1872), and his work was not about emotions per se, but about states of mind – emotions being just one example of such states (e.g. disgust, anger, helplessness, patience, affirmation, negation; Fridlund & Russell, *in press*). Hinde (1985) suggested that the title of Darwin's book might have added to this confusion, leading many astray.

More specifically, although he wrote that 'the same state of mind is expressed throughout the world with remarkable uniformity' (Darwin, 1872: 17), Darwin did not posit that facial expressions were universal. This claim was made by Sylvan Tomkins in the 1950s and 1960s (Tomkins, 1962, 1963). Darwin also did not assert that facial expressions evolved for a communicative purpose (Russell & Fernandez-Dols, 1997). Instead, he argued for the opposite position (Burkhardt, 1985). According

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to Darwin, ‘there are no grounds, as far as I can discover, for believing that any muscle has been developed or even modified exclusively for the sake of expression’ (Darwin, 1872: 354). This statement is often overlooked by researchers and scientists (for a detailed overview of *The Expression of the Emotions in Man and Animals*, see Browne, 1985).

Darwin’s view, rather than making the case for universality, was aimed at undermining the creationist argument of Charles Bell that facial expressions were unique to humans (Russell & Fernandez-Dols, 1997) – which he proposed in *Essays on the Anatomy of Expression in Painting* (Bell, 1806). Bell, being both an artist and theologian, equated facial expressions to a divine gift providing humans with the ability to communicate what they feel inside:

In man we not only see united all the capacities for expression, and all the incidental and necessary effects of the several motions of features, which are to be found in the several classes of quadrupeds, but we find besides, several peculiar muscles, to which no other office can be assigned, than to act as organs of expression; to serve as instruments of that universal language which has been called instinctive, which at least produces something like the effect of innate sympathy, and seems to be independent of experience or arbitrary custom. (Bell, 1806: 88)

In other words, humans, in contrast to other animals, essentially had the face of God, and their ability to communicate what they felt inside was for a divine purpose. According to Bell (1806), ‘the design of man’s being was, that he might praise and honor his maker’ (p. 105). However, in providing a refutation of Bell’s argument, Darwin overstated his position by ignoring the possible communicative purpose of facial expressions, fearing that this would undermine his position (Burkhardt, 1985; Fridlund, 1992). Darwin opted for an encoding–decoding approach where facial expressions served specific functions (e.g. surprise widens the eyes to increase one’s field of vision) and humans later learned to interpret as meaningful those ‘vestiges or accidents’ (Fridlund, 1992: 117). Yet the common misconception that Darwin advocated for the universality of emotional reactions has influenced the development of research on non-verbal behaviour and has led to a host of unfounded and discredited claims promoted by ‘body language experts’ on both traditional and social media.

Proponents of the Basic Emotion Theory (‘BET’), for example, make extensive reference to Darwin. They assert that specific emotions experienced and reported by individuals are associated with specific facial muscle activations similar across cultures in their presentation and understanding. This refers to the concept of universality. Proponents of the BET assert that those specific facial muscle activations leak ‘authentic’ reflections of mental and affective states in response to external or imagined stimuli. They are automatic and involuntary. This echoes the words of Darwin, that is, ‘when movements, associated through habit with certain states of the mind, are partially repressed by the will, the strictly involuntary muscles, as well as those which are least under the separate control of the will, are liable still to act; and their action is often highly expressive’ (Darwin, 1872: 48), and refers to the concept of ‘leakage’. Both concepts, however, stem from the use (and misuse) of Darwin’s legacy, and yet they have been promoted to the public for decades, and have formed the foundation on which body language experts have, to varying degrees, built their house of cards: ‘the body never lies’. That is, non-verbal behaviour, including facial expressions, is a universal ‘language’, that occurs outside of conscious awareness, thus making it possible to ‘see’ a person’s mental and affective states.

Researchers routinely debate different theories, develop new hypotheses and integrate novel findings. We are certain the adjoining articles in this special issue do just that. However, our objective is not to address the development of scientific knowledge, but to focus on body language experts. In this perspective piece, we address misinformation about non-verbal behaviour. We also discuss the nature and scope of statements from body language experts, unpacking the claims of the most viewed YouTube video by a body language expert, comparing these claims with actual research findings, and giving specific attention to the implications for the justice system. We explain how body language experts use (and misuse) Darwin’s legacy, and conclude with a call for researchers to unite their voices and work towards stopping the spread of misinformation about non-verbal behaviour.

Misinformation about non-verbal behaviour

Despite the tens of thousands of scientific publications on non-verbal behaviour (Plusquellec & Denault, 2018), body language experts sell conferences, workshops, seminars, training programmes and books, all of which propose that subtle face and body movements allow one to 'read' anyone, anywhere, much like words on a page, when in fact, research has shown that non-verbal cues hardly ever have a straightforward relationship with mental and affective states. As Hall et al. (2019) underline, 'there is no dictionary of nonverbal cue meanings, because contextual factors involving encoders' intentions, their other verbal and nonverbal behaviors, other people (who they are and their behavior), and the setting will all affect meaning' (p. 272).

The claim that liars can be detected through their facial expressions is also popular. Again, conferences, workshops, seminars, training programmes and books on the subject are numerous, and training tools to detect deception are commonly sold online, some having been developed by BET proponents (Paul Ekman Group, 2022; Humintell, 2022). Yet the claim that such products can improve lie detection ability is questionable (Zloteanu et al., 2021a). Research has shown that non-verbal cues to detect liars are generally faint and/or unreliable (DePaulo et al., 2003; Luke, 2019; Sporer & Schwandt, 2007; Vrij et al., 2019). Research has also shown that individuals trained with micro-expression recognition software do not improve their deception detection accuracy above chance level (Jordan et al., 2019; Curtis, 2021; Zloteanu, 2020; Zloteanu et al., 2021a).

The prevalence of unfounded and discredited claims, however, does not make them trivial, especially in the hands of people in positions of power. Their use can have severe consequences. For example, in police settings, the belief that subtle face and body movements allow one to 'read' anyone, anywhere, can result in coercive actions, baseless accusations, and ultimately, false confessions (Kassin, 2015; Denault et al., 2020). In security settings, this belief can result in 'an unacceptable risk of racial and religious profiling' (Handeyside, 2017: 1; see also Denault et al., 2020). In judicial settings, the consequences can be disastrous. If judges in bench trials are unaware that non-verbal behaviour is influenced by cultural factors, for example, they can be misled into interpreting the honest testimonies of complainants and defendants as dishonest. This potentially can result in miscarriages of justice and, in countries where capital punishment is still in effect, can be a matter of life or death (Denault, 2020). These consequences, although disastrous, are nothing new, but the faulty understanding of Darwin's view strengthened a thousand-year-old tradition of attempting to (naively) connect non-verbal behaviour to elements that others may wish to keep from us.

Almost 3,000 years ago, for example, a papyrus asserted that it was possible to determine if someone was trying to poison another by looking at non-verbal behaviour. 'He [the poisoner] does not answer questions, or they are evasive answers; he speaks nonsense, rubs the great toe along the ground, and shivers; his face is discoloured; he rubs the roots of the hair with his fingers; and he tries by every means to leave the house' (Wise, 1845: 394). Further examples show how, throughout history, bodily reactions have played a central role in determining the guilt of individuals. Trials by Ordeal, also known as Judgements of God, are one such example. During the Middle Ages, individuals suspected of committing a crime could be subject to a physical ordeal (e.g. holding a piece of hot iron in their hand, submerging their hand in boiling water), and it was believed that a supreme being would ensure innocent individuals remained unharmed. Depending on the healing of their wound inflicted by the physical ordeal, individuals would be convicted or acquitted (Pilarczyk, 1996; Perkins, 1926). In other words, humans have attempted, throughout time, to harness non-verbal behaviour to inform their judgements, but the advent of scientific research on the topic, instead of clarifying the issue, is sometimes used (and misused) to further embolden unfounded and discredited claims. The use of bodily reactions to determine guilt, for instance, has given rise to other controversial techniques such as the polygraph (Trovillo, 1939).

While misinformation about non-verbal behaviour dates back thousands of years, the concepts of universality and leakage have given it a scientific veneer. More recently, traditional media, but even more so social media, have further changed the game. Body language experts receive unparalleled

public attention (Denault et al., 2021; Tait, 2021). However, to varying degrees, they present unfounded and discredited claims with disarming confidence, draw dubious conclusions about honesty and dishonesty, and at times, appeal to science and cherry-pick studies to support their claims, while ignoring studies that contradict them and failing to adequately present the nuances and complexities of non-verbal behaviour.

Dissecting the claims of body language experts

Rather than being presented with empirically supported findings on non-verbal behaviour, the public is exposed to ‘body language analysis’ of celebrities, politicians and defendants in criminal trials (Denault et al., 2015, 2021, Denault & Jupe, 2017). The US trial opposing Johnny Depp and Amber Heard is one of the most recent, and striking, examples of ‘body language experts’ conducting body language analysis; the videos posted on social media yield millions of views.

A simple search for body language experts on popular search engines similarly yields millions of results. Such experts appear on prime-time television, commenting on the latest headlines as if human thought held no secrets for them. The same holds for social media platforms, where body language experts receive extensive public attention and large followings. The most-watched video about body language on YouTube, for example, was posted by WIRED on 21 May 2019, has been viewed more than 45 million times – approximately 36,000 views a day – and has received more than 40,000 comments (WIRED, 2019). This video features a ‘body language expert’ who explains ‘how to read body language’, and is a striking example of the use (and misuse) of Darwin’s legacy.

The video begins with the speaker defining non-verbal communication, adequately and broadly, as ‘anything that is communicated but is not a word’. This is followed, however, by the speaker’s statement that ‘how we dress, how we walk, have meaning and we use that to interpret what’s in the mind of the person’, suggesting subtle face and body movements allow one to ‘read’ anyone, anywhere. However, as we discussed above, within police, security and judicial settings, this can result in severe consequences.

Following a summary of his law enforcement credential, thus presenting an argument from authority, the speaker asserts that non-verbal communication is ubiquitous, including that ‘we know from the research that most of us select our mates based on nonverbals’, and debunks ‘myths’ about non-verbal cues. These include, for example, that arm-crossing is a blocking action, that gaze direction indicates deception, and that ‘if the person clears their throat, touches their nose, or covers their mouth they’re lying’. The speaker states that those meanings are ‘just sheer nonsense’. He adds that ‘scientifically and empirically there’s no Pinocchio effect’, and ‘we humans are lousy at detecting deception’. The absence of the Pinocchio effect refers to the absence of a single specific and diagnostic non-verbal behaviour that is always present when telling a lie, and absent when telling the truth, as with Pinocchio’s nose. This is all in line with the empirical literature. However, the speaker then goes on to offer his own interpretation of what such non-verbal cues mean.

According to the speaker, arm-crossing is actually to ‘self-soothe, because in essence, it’s a self-hug’, eye direction indicates that ‘the person is processing the information’ and clearing your throat, touching your nose and covering your mouth are ‘self-soothers, they’re pacifying behaviour’. From the text that appears during the video, self-soothing refers to ‘the action of calming or comforting oneself when unhappy or distressed’. Those different meanings and explanations, however, are just as misleading as those described by the speaker as being ‘sheer nonsense’. Research shows, as mentioned above, that non-verbal cues hardly ever have a 1-to-1 relationship with mental and affective states (Hall et al., 2019); namely, the same movements can have different meanings and explanations depending on a host of factors. For instance, while self-hugs can be ‘self-soothers’, they can also occur when one is feeling cold or is sitting in an uncomfortable position, among other reasons. For the public, however, who are presumably unaware of the current thinking within the emotion research, the law enforcement credential and the appeal to science (e.g. ‘we know from research’, ‘scientifically and empirically’) might give the impression that those ‘insights’ are reliable. This is typical of body language experts who

frequently debunk ‘myths’ about non-verbal behaviour, referring to research findings (or more aptly, simply intersperse the word ‘research’ into their speech, without providing sources or any further details), but then proceed to present their own techniques, approaches and methods that, unbeknownst to the public, are just as unfounded and discredited as the ‘myths’ they debunk.

The video continues with a personal anecdote on how, while working at a law enforcement agency, the speaker uncovered a spy as the result of noticing a single gesture: the way the spy held a flower bouquet facing downwards when coming out of a shop. Because, according to the speaker, this is how people carry flowers in Eastern Europe. This example appears to contradict what the speaker previously said about the absence of a Pinocchio effect, and how the speaker addresses the use of non-verbal behaviour. He states that ‘I look at behaviors to do an assessment: what is this person transmitting in relation to any stimuli? My further questioning comes from my observing these behaviors’. This call for caution, however, is worthless but typical of body language experts’ discourse aimed at creating an impression of nuance, complexity and thoroughness in what they do.

Rather than giving definitive meanings to particular non-verbal cues, which – considering what research has found to date – would be at best, unrealistic, and at worst, laughable, many body language experts advise otherwise. They often say people should evaluate the baseline, that is, the ‘normal’ behaviour of an individual, consider clusters of behaviours that ‘may’ be signs of something and adapt the nature of their questions. However, because the clusters of behaviours driving the questions are unfounded and/or discredited, this approach is meaningless. This is all the more since our spontaneous first impressions of others, their general demeanour and individual characteristics can have strong effects on our judgements of them and how we choose to interact with them, often strongly biasing us (Levine et al., 2011). Thus, the baseline evaluation and everything that follows is potentially the product of biases, stereotypes, expectations and personal experiences, and may operate much like a self-fulfilling prophecy.

If (or when) the claims body language experts make happen to result in negative consequences, nothing changes because the contradictory evidence is excused away. They can always deny any shortcomings, replying that people did not adequately evaluate the baseline, consider clusters of behaviours properly or adapt the nature of their questions accordingly. In other words, body language experts often make their claims immune to falsification (Popper, 1959), perhaps even without knowing it. However, this only raises further questions given that, at the same time, body language experts appeal to science and cherry-picked studies to support their unfounded and discredited claims. Such practices veer into the territory of pseudoscience (Denault et al., 2015, 2020).

The video then presents non-verbal cues that, according to the speaker, are relevant to look for, some of which are associated with specific meanings and explanations. The hair and the face, according to the speaker, are important. For example, the glabella (the space between the eyebrows) is ‘one of the first areas that reveals information to us’ because, supposedly, ‘most often when we don’t like something, we do that bunny nose of “I don’t like”’; and the forehead ‘is very interesting because a lot of time we reveal stress’, and ‘a lot of things that we have gone through in life are often etched in the forehead’. About the lips, the speaker says ‘we tend to compress them when something bothers us, when something really bothers us, we tend to suck them in’, about the shoulders ‘you ask somebody a question they don’t know, both shoulders shoot up very quickly’, and about the fingers ‘when something’s troubling us we tend to stiffen our fingers, interlace them, and almost like a teepee, we move our hands back and forth very slowly’. But those meanings and explanations are misleading (Jupe & Denault, 2019; Denault & Jupé, 2017). The speaker fails to adequately present the nuances and complexities of non-verbal behaviour, and their association with specific meanings and explanations is very much like Pinocchio’s nose, a reversal in the speaker’s attitude from that at the start of the video, when he said ‘scientifically and empirically there’s no Pinocchio effect’.

The speaker highlights other non-verbal cues, including crossing, wiggling, kicking and withdrawing the feet, brushing the legs with the hands, putting the hands on the hips, with the thumbs forward or outward, tilting the head, walking inside or outside the sidewalk, blinking the eyes, looking at a watch and rubbing the tongue against the inside of the cheek. The latter is claimed to be valuable

because ‘when we try to hide it, it tells me that this person is trying to do some perception management, and if they are, I want to know why’. This rapid-fire assessment and the myriad ‘insights’ gained from subtle face and body movements lend themselves to the appeal of body language experts in the eyes of the public, even if the ‘experts’ use moderating words (e.g. often, usually, we tend, we may) suggesting some caution. Because mixed with inferences and judgements, and statements such as ‘how we dress, how we walk, have meaning and we use that to interpret what’s in the mind of the person’, moderating words can easily go unnoticed by the public. Moreover, moderating words open the door to a host of meanings and explanations, only for the ‘experts’ to arbitrarily disseminate, without explanation, meanings and explanations that support their narrative. This further deprives their discourse of credibility, but again, can easily go unnoticed by the public who are overloaded with ‘insights’. That is, the public can be led to believe that ‘experts’ can extract a variety of unique and reliable insights from the seemingly involuntary actions we all display, and that ‘experts’ know more about non-verbal behaviour than the researchers, the former having developed what looks like a dictionary of non-verbal cue meanings while the latter have not achieved such a feat.

In addition, in the video, while making inferences and judgements, the speaker states that ‘when we study nonverbals, it’s not about making judgements’, and adds that this is ‘about assessing what is this person transmitting in that moment’, and ‘what we look for are the differences in behavior down to the minutia’. These statements need to be carefully considered as the meanings and explanations which, according to the speaker, are transmitted ‘in that moment’, are misleading.

A striking example is the speaker’s suggestion to count blinks in face-to-face interactions; he states that the blink rate of another person in front of him is ‘eight around eight times a minute, but you don’t know that. You’re not sitting there counting’. Yet how the blink rate is supposed to be informative or what it represents is not mentioned. Nevertheless, ‘all these things factor in because they’re transmitting information. Now it’s up to us to then use that information to say: Okay we need to marshal resources to be on that individual right now,’ according to the speaker. This can be interpreted as part of the ‘sell’, indicating that the speaker is constantly monitoring others and gaining insights into their psyche. Even if it were possible to do this, and even if it allowed one to ‘interpret what’s in the mind of the person’ – an assertion that is not grounded in empirical evidence – the belief that it is possible to count blinks, for example, first to establish a blink-rates baseline, and then to look for different blink-rates, while listening to what everybody is saying, and evaluating a baseline (for all other behaviours), considering clusters of behaviours, and adapting the nature of their questions, and for several practitioners, such as judges in bench trials, complying with laws that govern their conduct, is ‘just sheer nonsense’. There is no evidence that such a feat is possible to accomplish. There is no evidence that it is possible to replace spontaneous first impressions with deliberate observations and combinations of several specific meanings and explanations, provided that those meanings and explanations were well founded, and even if it was possible, there is no evidence it would be useful at the level touted by body language experts, or that people can effectively learn it from them. Yet this is what body language experts often claim, either implicitly or explicitly, when selling their wares.

The only outcome that can be expected from ‘learning’ unsubstantiated claims from body language experts and their products is that people will be just as (or even more) mistaken about a person’s mental and affective states as those who have not applied these techniques, approaches and methods, but the former group will likely be more confident and perhaps even more prejudiced than the latter group; namely, all that is achieved is that they will supplant and/or complement their spontaneous first impressions (which are influenced by their own biases, stereotypes, expectations and personal experiences) with new pseudoscientific claims regarding non-verbal behaviour.

The speaker in the WIRED video then goes on to conduct his own body language analysis of two situations. In the first situation, the speaker watches two people meeting, and addresses the issues of haptics (the use and perception of touch) and proxemics (the use and perception of space). For example, the speaker states that ‘handshaking is both necessary and essential in most cultures’, and that closer conversational distance can create discomfort. In the second situation, the speaker watches a poker game and addresses issues of kinesics (body movements). He mentions non-verbal cues to

look for that, supposedly, indicate ‘psychological discomfort’ and allow one to collect ‘poker intelligence’, including if individuals are shifting in their chair, moving their head and reaching over and grabbing their shoulder, or having shoulders that ‘are rather high’, and then goes into more detail about how players hold their cards. For example, the speaker states that ‘when we like things, we tend to move our hands forward. When we don’t like things, we tend to move the hands away’, an assertion of common sense, while, at the same time, that ‘some players will cage their cards, some players will put their hands directly on top and press them down, and they may do that because the cards have now increased in value’, and that ‘I want to see where those thumbs of his are. Because he holds them very close when nothing’s going on but does that change as the game evolves’. Yet these statements – for which no empirical evidence is provided – are a combination of nebulous and ambiguous meanings and explanations, and unsubstantiated claims, which are further exacerbated by the vagueness and spectrum of the non-verbal cues mentioned by the speaker. While haptics, proxemics and kinesics are legitimate areas of research, conclusions based on how players hold their cards and the movements of their thumbs are also ‘just sheer nonsense’. This continues for the remainder of the video.

At the end of the video, which concludes with a personal anecdote and a reminder that non-verbal communication ‘has gravitas because it affects how we communicate with each other’ and ‘is no small matter’, the speaker claims that ‘it’s often useful to look at [the videos] at double the speed because all the nonverbals that are critical jump out at you as though it were a caricature’, that ‘75 to 80 % of the information we need is sitting out there’ and that ‘you can’t have a poker body. Somewhere it’s going to be revealed’. While decades of peer-reviewed articles clearly show that non-verbal behaviour is, just as the speaker suggests, important in face-to-face interactions (Burgoon et al., 2010; Harrigan et al., 2008; Knapp et al., 2013), the other claims from the speaker are baseless. Even if the lack of empirical support was to be ignored, and even if there was any value in watching videos at double the speed, this would be of no use when asking questions in face-to-face interactions. This is a senseless suggestion – much like the percentages presented by the speaker.

Body language experts frequently present quantitative estimates, usually percentages, that supposedly show the importance of non-verbal behaviour. This is another argument from authority, and an excellent marketing tool. ‘If you don’t attend my conferences, workshops, seminars, and trainings, or if you don’t read my book on body language, you will miss 93% of the messages communicated to you’, is what such percentages ‘tell’ the public. The 93% figure often comes up and is regularly attributed to Albert Mehrabian, a world-renowned professor emeritus of the University of California, Los Angeles. In fact, the 93% figure is an abusive extrapolation of Mehrabian’s research findings (Mehrabian & Ferris, 1967; Mehrabian & Wiener, 1967), and Mehrabian himself addressed the issue:

I am obviously uncomfortable about misquotes of my work. From the very beginning, I have tried to give people the correct limitations of my findings. Unfortunately, the field of self-styled ‘corporate image consultants’ or ‘leadership consultants’ has numerous practitioners with very little psychological expertise. (Atkinson, 2004: 345)

Finally, when claiming ‘you can’t have a poker body. Somewhere it’s going to be revealed’, the speaker explicitly states what was implicitly suggested throughout the video, that is, non-verbal behaviour is a universal ‘language’ that occurs outside of conscious awareness, thus making it possible to ‘see’ a person’s mental and affective states. Yet as we discuss above, non-verbal cues to detect liars are faint and/or unreliable (DePaulo et al., 2003; Luke, 2019; Sporer & Schwandt, 2007; Vrij et al., 2019). This glaring contradiction between the claims of the speaker and the empirical research on non-verbal behaviour should not be ignored. Nor should we ignore this other reversal in the speaker’s attitude from that at the start of the video, when he said ‘scientifically and empirically there’s no Pinocchio effect’. By the end of the video, all caution has been abandoned and anything is possible.

On the evaluation of the claims

Despite the foregoing, there is no reason to question the good faith of body language experts. That is, most of them may believe in all honesty that their teachings ‘work’, and that they can help practitioners. However, good faith and good practice are not synonymous, and unfounded and discredited claims, regardless of the intention of body language experts, can result in severe consequences. The consequences are all the more severe in the hands of people in positions of power. This includes judges in bench trials (Denault, 2015, 2017; Charbonneau et al., *in press*; Strömwall & Granhag, 2003). Judges are typically unaware of the state of science about non-verbal behaviour, and rarely receive advanced training in psychology or communication. Thus, if exposed to body language experts, judges can adopt or rely upon such unfounded and discredited claims when making their ruling. In turn, this adds another layer of potential problems in assessing the credibility of witnesses, which itself is a complex, nuanced and developing area of study, resulting in potential miscarriages of justice (Denault, 2020).

The challenge then is trying to help the public separate the wheat from the chaff, which can be a very difficult task. For example, even for the above-discussed video, although we unpacked and compared claims to research findings, we refrained from providing a breakdown of research indicating all the possible interpretations for each non-verbal behaviour mentioned by the body language expert, as ultimately this would have been a Sisyphean task.

A practical approach

One way to help the public evaluate what body language experts are saying is to unpack and compare their claims with actual research findings. This could, of course, displease body language experts. Yet if they appeal to science, either implicitly or explicitly, they must expect and accept scrutiny. They cannot reject the rules of science, while simultaneously using science as a source of legitimacy. The same rules hold for body language experts disseminating their claims to millions of people. While the issue of misinformation about health can result in severe consequences (Hotez, 2020; Rocha et al., 2021), and is more frequently discussed than the issue of misinformation about non-verbal behaviour, the latter also has real-world implications, even outside of justice systems, for example, when it affects applicants’ employment opportunities, students’ disciplinary sanctions and patients’ medical treatments. Thus, there is a necessity to carefully examine and scrutinise the claims of body language experts.

However, unpacking and comparing claims to research findings, even if very effective in showing the actual nature of what is disseminated by body language experts, is extremely time-consuming. ‘The amount of energy needed to refute bullshit is an order of magnitude larger than to produce it’ (Brandolini, 2013) – not to mention the fact that body language experts often use ad hoc manoeuvres to refute any misreading. That is, after assuming a 1-to-1 relationship with mental and affective states, body language experts often refute claims that contextual elements, personal characteristics, and even the improper use of their teaching, are the likely cause of any misreading. Once again, this makes their claims immune to falsification. Thus, we suggest that a more ‘theoretical’ approach may also be needed, with the provision of detailed explanations demonstrating that body language analysis is highly complex, if not downright impossible, to achieve, especially when it comes to face-to-face interactions.

A theoretical approach

For the public, the ability to use body language as an additional source of information is attractive because it is believed that speech only enables us to know what a speaker wants us to know, whereas subtle face and body movements can reveal additional information, including elements that others may wish to keep from us. This is integral, both explicitly and implicitly, to the discourse of body language experts, and stems from the concepts of universality and ‘leakage’ described above (Ekman, 2003). This would be a compelling narrative if the empirical literature did not provide only weak support for both concepts. For example, BET, from which the concepts of universality and ‘leakage’ are derived, is subject to ongoing scientific debates. While a full review is beyond the scope of the current article (for more detailed accounts, see Fridlund, 1992; Zloteanu, 2020), the main points cannot be overlooked.

Essentially, BET has received substantial scrutiny and criticism in recent years but also from its inception given its overuse of forced-choice paradigms (i.e. presenting people with a list of emotion labels to answer questions), non-naturalistic stimuli (i.e. intense, static and pre-selected images of facial displays matching specific facial muscle activations), non-social contexts (i.e. images presented in isolation) and its overreliance on Western senders, receivers and notions of emotions (Crivelli & Fridlund, 2019; Zloteanu & Krumhuber, 2021). As argued by Fridlund (1994; see also Leys, 2017), landmark papers regularly cited in support of the universality of emotional reactions have long been shown to be quite limited, if not outright incorrect.

Furthermore, recent research has raised substantial concerns about the concept of universality and, as a result, about the concept of leakage, both when considering existing databases of facial expressions (Nelson & Russell, 2013) and when exploring non-Western societies (Crivelli et al., 2016; Gendron et al., 2014) – all this in addition to research reporting that the specific emotions that individuals experience and report often do not produce the facial muscle activations predicted by BET (Durán & Fernández-Dols, 2021). And if adopting the contrasting Behavioural Ecology View (Fridlund, 1991, 1994, 2002; Crivelli & Fridlund, 2018), non-verbal behaviours can be interpreted as signals meant to purposefully convey meanings and influence receivers. Under this approach, non-verbal behaviour must be seen within a social, interactive context. Thus, the functions of non-verbal behaviour are obviously not a clear and settled matter. Body language experts, conversely, will ignore or neglect the crucial issue that non-verbal behaviour, including facial expressions, can be produced deliberately, and will claim that each behaviour has a specific meaning and is consistent from one person to another, and that this allows us to know what others try to conceal. And when unfounded and discredited claims are challenged, critics have been, on occasion, subjected to intimidation and threats of legal action (Denault et al., 2015; Jupe & Denault, 2019).

This adds to the poor ability of humans to discriminate ‘authentic’ from ‘fabricated’ non-verbal cues (Zloteanu et al., 2018), which raises further concerns about the concept of ‘leakage’. Body language experts could retort that the observation of so-called ‘reliable’ muscles makes it easier for them to discriminate ‘authentic’ from ‘fabricated’ non-verbal cues (Ekman & Friesen, 1969). These claims have been very influential both in the media and in academia, referring to the work of Guillaume Duchenne de Boulogne on physiognomic differences between authentic (‘Duchenne smiles’) and fabricated smiles (‘non-Duchenne smiles’). Often, side-by-side images of the two forms of smiling illustrate how an observer can determine if facial displays reflect genuine mental and affective states. However, this line of research is subject to objections similar to BET, including the overuse of intense, static and pre-selected images of facial displays matching the criteria (and expectation) of researchers, and the use of forced-choice paradigms (i.e. ‘authentic’ vs. ‘fabricated’), thus transforming complex naturalistic judgements into simple matching tasks (i.e. matching the label to the stimulus; for a more detailed discussion, see Zloteanu & Krumhuber, 2021).

Much like claims about ‘authentic’ and ‘fabricated’ non-verbal cues, the observation of so-called ‘reliable’ muscles to discriminate ‘authentic’ from ‘fabricated’ non-verbal cues fails to be supported. Research finds that humans can deliberately activate so-called ‘reliable’ muscles even when provided with only minimal instruction, while at the same time, when experiencing genuine affect, they do not always spontaneously activate these muscles (Gunnery et al., 2013; Gunnery & Hall, 2014; Krumhuber & Manstead, 2009). In any case, even if there were slight morphologic or temporal differences in facial muscle activations between genuine and non-genuine expressions (e.g. for surprise, Namba et al., 2017, 2021), this does not mean that humans are able to learn them from ‘body language experts’, and to detect them in face-to-face interactions (e.g. Zloteanu et al., 2018, 2021b). This is rendered even more unlikely if people, following the advice of body language experts, are attempting to evaluate a baseline, consider clusters of behaviours and adapt the nature of their questions at the same time. The above arguments capture only a sliver of the issues surrounding the use (and misuse) of Darwin’s legacy by body language experts, but also raise a sensitive question. What if proponents of the Basic Emotion Theory were, in fact, the first to undermine Darwin’s legacy when they used

(and misused) *The Expression of the Emotions in Man and Animals* (Darwin, 1872), and what if this mislead body language experts about Darwin's legacy? This adds to other research findings typically ignored or neglected by body language experts, including presentational differences or emotional dialects which produce cultural variations in facial displays and influence individual judgements (Elfenbein et al., 2007). Similarly, the entire empirical literature on impression management (Schlenker, 1980), self-presentation (DePaulo, 1992) and behaviour control (Buller & Burgoon, 1996) is rarely addressed by body language experts. Moreover, when being evasive or deceptive – especially if facing scrutiny – people can employ tactics (non-verbal or otherwise) to appear more honest, resulting in them appearing, ironically, more believable than genuinely honest individuals (e.g. Gilovich et al., 1998).

Finally, there is substantial research on the impact of individual differences when being judged by others, including perceived believability (Levine et al., 2011) or perceived attractiveness, dominance and trustworthiness (Willis & Todorov, 2006). Yet this is also typically ignored by body language experts because, otherwise, their house of cards would collapse. Empirically supported findings and theoretical accounts suggest that the kind of body language analysis promoted by many experts is unlikely to be effective, especially given the simplistic and overly confident manner in which these techniques, approaches and methods are presented.

This leads to the ultimate question: if even carefully controlled laboratory conditions cannot provide evidence for the effectiveness of body language analysis, what hope does the public have that body language experts can help them understand celebrities, politicians and defendants in criminal trials? What hope could practitioners in police, security and judicial settings have that those body language experts could actually help them catch criminals? As Sagan highlighted, 'Extraordinary claims require extraordinary evidence' (p. 73). Yet although claims from body language experts are regularly extraordinary, their evidence is generally underwhelming.

A call for unity for researchers

Much has been written about non-verbal behaviour, including facial expressions, since *The Expression of the Emotions in Man and Animals* (Darwin, 1872). This has led to a variety of different theories, hypotheses and findings, with major implications for applied science, often in high-stakes situations. A dialogue and synthesis among groups of researchers taking different paths often seem impossible, especially since, on the face of it, nothing unites them. However, while researchers are engaging in fierce scientific debates, as they should be in science, body language experts receive unparalleled public attention, sometimes turning the situation to their advantage: 'Look at these researchers in their ivory towers, not even agreeing on what "works". I have trained thousands of practitioners, and my teaching "works"! When such experts make claims that go far beyond those of actual research findings, they are undermining Darwin's legacy – perhaps even without knowing it, but this does make it any less damaging.

Given the high stakes of misinformation, non-verbal behaviour scholars, including emotion researchers and behavioural scientists, should unite their voices to stop the spread of misinformation. This should not be taken as requiring researchers to ignore the debates and discussions around different behavioural frameworks and models of non-verbal communication. Rather, we propose that researchers can and should acknowledge the common bonds that unite them: their reliance on the scientific method, being open to new (and contradictory) information, updating their beliefs and expressing the limitations and uncertainties of their work. This is something so-called 'experts' do not do. Beyond non-verbal behaviour, this could help the public to better understand what researchers do, and improve the public's trust in science as a whole.

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