

Digital Media

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Author Note

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35. Digital Media

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We are living in the digital age, where technologies like smartphones and social media have revolutionised how we live, interact, and exchange information. Today, most people across the globe have internet access, enabling activities like reading the news, playing online games, and interacting with others or even AI chatbots like ChatGPT.

This is very different to how our species lived for most of its evolutionary history, i.e., as hunter-gatherers on the African savannah. Since the human mind evolved over millennia in this context, an evolutionary perspective is a particularly useful way of understanding how we are adapting to our new digitised world.

That is, by examining the effects of digital media (information stored/transmitted on digital devices like smartphones and computers) through the lenses of evolutionary psychology and cultural evolution, we can better understand how digital media interacts with our cognitive adaptations (evolved mental mechanisms and biases) to shape behaviour, wellbeing, and the spread of information. For example, humans have a negativity bias that makes us focus on the negative and pay attention to threat-related stimuli (Baumeister et al., 2001). This likely evolved to keep us safe in dangerous ancestral environments, and works well on average, but can sometimes misfire in modern contexts, e.g., when we have constant access to negative information online.

This evolutionary perspective also shows that cognitive adaptations influence the cultural evolution of digital technology itself, and that digital technology is both an extension and reflection of human nature and culture. It also allows us to make important predictions, such as that the online world should often mirror or complement the offline one and many online social problems should originate offline.

In this chapter, we harness this explanatory power of an evolutionary perspective, integrating both evolutionary psychology and cultural evolution, to examine digital media's effects on wellbeing, cooperation, misinformation, and politics.

By the end of the chapter, you should understand:

- How digital media interacts with cognitive adaptations to affect wellbeing
- How our evolved psychology for cooperation vs. competition plays out in the digital world
- How cognitive adaptations influence the spread of online information
- How cognitive adaptations and differences between people in their personality traits and situations influence the spread of misinformation, hostility, and political polarisation online

35.1 Wellbeing

Many people are growing pessimistic about digital technology's impact on wellbeing, possibly due to negativity bias (see above) but also because of studies showing some negative effects. However, an evolutionary perspective predicts that digital technology will have mixed effects on wellbeing.

That is, when it comes to negative effects, some evolutionary psychologists are concerned about evolutionary mismatches between what the human mind evolved to handle on the African savannah and what it now encounters in digital environments. For example, while our hunter-gatherer ancestors lived in small tight-knit bands, spending much of their time being active outdoors, digital technology often keeps us isolated and inactive indoors. This could be detrimental because time spent online is time not spent doing things that make us feel good, like having a full night's sleep, exercising, or being

with loved ones. Being digitally connected to vast online networks may also overwhelm our brains that evolved to manage a limited number of relationships. However, evolutionary psychologists have also shown that, despite the vast online population, people still mostly interact with a small circle of familiar individuals who live nearby (Dunbar, 2016).

An evolutionary perspective also predicts that digital media will have some neutral or beneficial effects, and there are three main reasons for this. First, humans are cognitively flexible. This flexibility has helped us conquer diverse environments and adapt to cultural innovations and may help us adapt to increasing exposure to digital technology. Second, spending time using digital technologies provides a way to rest, which is also essential for mental health. And third, digital technologies have culturally evolved to captivate us by activating brain regions that make us feel good and by providing respite from mundane and lonely yet stressful and overcrowded offline environments (Katiyar et al., 2023). In role-playing video games, for example, players can explore immersive worlds filled with stimuli that excite or satisfy their evolved preferences, such as their motivations to explore 3D environments and their cognitive adaptations for handling risks and dangers. Players can also earn experience and reputation points that excite their evolved desire for social status and approval. Similarly, social media and online communities cater to our highly social nature and offer benefits such as helping people strengthen and maintain meaningful relationships, feel connected with their kin and culture when they have moved far from their birthplace, form new friendships and romantic relationships, and gain social support, e.g., via online support groups, online mental health professionals, and online communities for people at risk of being marginalised such as LGBTQ+ youths.

It is therefore unsurprising that moderate use of digital technology has been shown to be beneficial (whereas spending most of one's time using it is detrimental, as is hardly using it at all) (Przybylski & Weinstein, 2017). It is also unsurprising that, in line with our evolutionary perspective, the broader scientific evidence shows that digital media has mixed effects on mental health (National Academies of Sciences, Engineering, and Medicine, 2024), and that minor and inconsistent changes in global wellbeing have occurred since the rise of digital media (Voorre & Przybylski, 2023).

However, like almost any rewarding activity, there is a risk of overusing digital technology or using it in ways that harm wellbeing, and some people are more at risk than others of problematic usage. Some scholars are particularly concerned about adolescent girls in some countries in the Western world. This is because mental health in these countries started declining around 2010, coinciding with the rise of Instagram and other visually-oriented platforms that potentially expose girls to cyberbullying, unrealistic beauty standards, and intense competition over physical attractiveness (Haidt, 2024). This aligns with evolutionary theories about young women engaging in indirect aggression and intrasexual competition over physical attractiveness, for which platforms like Instagram provide the ideal arena. But scholars disagree about whether digital media really *causes* a reduction in wellbeing among girls, and some argue that digital media's role is much less important than offline and cultural factors (Odgers, 2024). For example, girls in individualistic cultures may not have enough offline social support. By contrast, girls in Chinese and other collectivist cultures have not shown the same rates of mental health issues, possibly because they have more offline social support and use social media in more beneficial ways, such as organising social gatherings and building a sense of community, rather than using it, as individualists often do, to distinguish themselves from others. In short, many complex interacting factors are involved, and some scholars believe digital media's role is too small to warrant concern (Orben & Przybylski, 2019).

Overall, then, digital media's effects on wellbeing are mixed, as expected from a (cultural) evolutionary perspective, and while social media may have negative effects on teen girls in certain countries, the evidence is inconclusive.

35.2 Cooperation

Our hunter-gatherer ancestors relied on one another to survive harsh environments, hunt large prey, and raise vulnerable offspring. Humans therefore became highly cooperative, meaning they had to help one another and work together for mutual and group benefits. However, cooperation varies widely among individuals because both cooperation and its opposite, aggressive competition, offer evolutionary advantages. While cooperators gain through mutual aid as well as reciprocity (helping others increases the chance of getting help in return) and reputation (helping others makes you more attractive as a long-term partner or ally), dominance-oriented status-seekers can climb dominance hierarchies and gain short-term benefits, e.g., by exploiting others. That said, cooperators usually greatly outnumber dominance-oriented status-seekers, otherwise cooperation tends to collapse. Behavioural ecology also plays a role as people become less cooperative in resource-scarce and socially unequal settings where competition for status intensifies. So, in many modern societies where people are relatively socially equal, cooperation should prevail.

This may change in digital contexts, however. Online interactions are often one-shot rather than repeated, which may reduce cooperation because people cooperate less when they will probably never have to see one another again. Online interactions are also often anonymous, or at least not face-to-face, which hinders our ability to detect malicious intent and discourage aggressive behaviour and enables offenders to evade consequences. Hypothetically, then, online cooperation should decrease while online exploitation, cyberbullying, trolling, hostility, harassment, and hate speech increase, sometimes even spilling over into offline violence.

However, similar to the hypothesis that digitisation generally harms wellbeing, the hypothesis that digitisation generally harms cooperation lacks robust evidence. Most people are cooperative online, offering helpful information and encouragement or promoting others' content. They often do this, even if only subconsciously, to gain benefits via reciprocity or reputation as they do offline (see above), but they also often do so anonymously without expecting anything in return (Acerbi, 2019). This may be because, as studies show, nice people tend to be nice across different situations (Peysakhovich et al., 2014), so those who are nice offline may also tend to be nice online. Moreover, their cognitive adaptations for cooperation may not fully grasp anonymity or other differences between online and offline interactions. Whatever the case may be, most people are just as cooperative online as offline.

Digital platforms may also increase various forms of cooperation. First, they may enhance general cooperation when people broadcast their unselfish traits and acts of kindness. This boosts their reputation and in turn increases their chances of being cooperated with. Second, digital platforms help people mobilise support for online and offline causes and collective action (e.g., disaster relief, TikTok challenges for good causes, the #MeToo Movement, and political activism/participation/protest) which is especially crucial in authoritarian and corrupt nations. And finally, digital platforms facilitate cooperation across group boundaries, vast distances, and cultural barriers. This reduces between-group conflict and allows people to cooperate, trade, and form relationships with many more people than just members of their cultural groups.

Meanwhile, although online factors like anonymity may facilitate some online aggression, there is only a small minority of online aggressors who, unlike when they are offline, can be blocked and banned and cannot do any physical harm. Moreover, aligning with the above-mentioned evolutionary and behavioural ecological perspectives on cooperation, offline factors like pre-existing personality traits and socio-environmental factors seem to be behind online aggression: most online aggressors are callous status-seeking men who are equally aggressive offline, and inequality and other socio-environmental factors that reduce cooperation offline also reduce it online (Bor et al., 2024; Rasmussen & Petersen, 2023).

There are also similarities between online and offline social dynamics and motivations that influence online and offline cooperation, collective action, and offline violence. For example, like in the offline world, online mobs can whip themselves up into morally self-righteous frenzies or clash with rival factions, which can fuel violence in offline protests (Gallacher et al., 2021).

In sum, an evolutionary perspective suggests that most people are cooperative, as this helped humans survive harsh ancestral environments. However, there are always some dominance-oriented status-seekers who can gain evolutionary advantages by being aggressive and exploitative, especially in socially unequal environments. This seems to be no different online, where people are generally nice and hostility is often explained by the same offline factors that explain offline hostility. Digital platforms therefore seem to be a new playing field for the same old game of strategic cooperation/competition.

35.3 (Mis)information

35.3.1 Cognitive adaptations influence what we pay attention to online

Cultural evolution theory highlights that we humans pay more attention to certain kinds of information due to evolved biases (e.g., negativity bias), and that we are not only extremely cooperative but also extremely group-oriented (Acerbi, 2019). We tend to prefer members of our own group (ingroup) over other groups (outgroups), copy whatever most ingroup members believe or do, and copy and follow popular ingroup members – tendencies known as intergroup favouritism, conformity, and prestige bias, respectively. These types of biases are adaptive in that they help us survive on average (e.g., conformity and prestige bias help us learn skills and knowledge of local environments from the group and its leaders) and should influence what we pay attention to online.

Indeed, people tend to engage with the same type of content online as they do offline, such as content that appeals to negativity bias (e.g., threat-related or disgusting content), prestige bias (e.g., celebrity-related content) as well as intergroup favouritism (e.g., moral, political, identity-based, and anti-outgroup content) (Rathje et al., 2021). Metaphorically speaking, these content categories compete for attention, e.g., while negative information usually gets more attention than positive or neutral information, it may not get more attention than *pro-ingroup* positive information (Stieglitz & Dang-Xuan, 2013). Moreover, websites and content creators exploit the potential of adaptive content, e.g., news outlets know that bad news sells, and some tailor their content to appeal to group identities. Digital platforms also appeal to our need to pay attention to popularity and prestige by showing us clear indicators of this, e.g., number of likes/followers/friends/comments.

35.3.2 Cognitive adaptations influence the spread of misinformation online

Our cognitive adaptations may also contribute to the online spread of misinformation and other harmful information – a topic of increasing concern in today's society. For example, our conformity and prestige bias may make us follow harmful internet trends, and instead of learning from locals offering adaptive information and skills relevant to our local environments, we may copy globally influential people online who, shielded from accountability, can easily, rapidly, and widely spread harmful information. To illustrate, instead of trusting our own doctor's advice on vaccinations, we may copy anti-vaccination celebrities like the American actor Jim Carrey. Moreover, unlike true information, misinformation is not bound to reality so can be more easily tailored to exploit our evolved preferences, such as our tendency to believe and pay preferential attention to negative information. Indeed, misinformation often contains negative and other attention-grabbing content that can sometimes help it spread faster and more widely than true information (Acerbi, 2019).

Teaching activity: 'Broken Telephone' competition

To demonstrate what type of content is more memorable, have a competition where two groups of five or more people (each group must have the same number of people) whisper information from one person to the next to see which group produces the most accurate message at the end. Each group could start with a message containing a certain type of content. E.g., one message could contain disgusting content while the other contains positive content: "Anna scooped up a handful of slimy maggots from the rotting carcass, feeling them wriggle between her fingers as she carefully fed exactly twelve of them to the baby bird she had rescued a week earlier" versus "Anna picked a handful of juicy berries from the beautiful bush, feeling them roll around her hand as she carefully fed exactly twelve of them to the baby bird she had rescued a week earlier". Afterwards, discuss which version was remembered more accurately and why. What does this suggest about how cognitive adaptations and emotions influence memory and the spread of information online?

Some evolution-based theories also predict that harmful (mis)information will arise more in dangerous or threatening situations. One such theory is that we have a hyperactive agency detection device (HADD) that makes us think there is a 'mind' or 'purpose' behind things, even when there is not. This device is thought to have evolved to help us survive in dangerous ancestral environments. If you hear a rustling in the bushes, it is better to assume it is a dangerous animal or enemy sneaking up on you than ignore it and risk being attacked. So, your brain assumes there is an 'intentional agent' behind many events, which can lead to believing in conspiracies that are not real. A similar theory argues that conspiracy beliefs arise from an evolved cognitive system that recruits several cognitive adaptations, including the HADD, to specifically detect dangerous male coalitions—a common danger for our ancestors (van Prooijen & van Vugt, 2018). Intergroup conflicts and other threats may therefore activate conspiracy theorising and aggression, fear, or paranoia (Raihani & Bell, 2019). Another related theory is that intergroup conflict occurred throughout human evolutionary history and so, during such conflict, humans should tend to behave in ways that can make the ingroup tighter and mobilised against outgroups (Peterson et al., 2020). This includes a tendency to believe and spread any (mis)information (e.g., propaganda) that can achieve these goals. It has also been argued that, while preferring misinformation is intellectually irrational, it is *evolutionarily* rational in that it is useful for gaining status, signalling ingroup commitment, testing loyalty, using as ammunition against rivals, and provoking outrage that mobilises ingroups against outgroups (Barlev & Neuberg, 2024). All these theories may be partly correct, but misinformation's main motivation seems to be mobilising people against outgroups (Osmundsen et al., 2021).

35.3.3 Personality and socio-environmental factors influence the spread of misinformation online

Given these social uses of misinformation, there have always been some people who produce and spread it. Theoretically, they should primarily be dominance-oriented status-seekers and their group-oriented followers. Dominance-oriented status-seekers are risk-prone, self-interested, and less concerned about social norms, so may use misinformation to mobilise followers against rival individuals and groups for personal gain, and to gain attention, money, and status from followers. In contrast, group-oriented people are usually quite fearful and tend to conform to social norms, so may use misinformation to unite their ingroup against perceived threats and signal ingroup commitment (spreading misinformation is an effective costly signal as it indicates willingness to lose reputation points from outgroups). Group-oriented individuals may also be susceptible to misinformation because it often contains threat-related content that plays on their fearfulness. They may also be susceptible because of conformity pressure and a fear of being excluded for not sharing misinformation – they seek approval from the ingroup, which often rewards members who believe and share (mis)information that aligns with group goals and norms while shunning members who do

not. Finally, both dominance- and group-oriented individuals are likely susceptible due to confirmation bias (also called myside bias; a tendency to seek and believe information supporting pre-existing beliefs while ignoring or being overcritical about information challenging them). This is because both types of individuals approach information with the goal of using it for social purposes.

The evidence indeed suggests that people who exchange misinformation are usually dominance-oriented status-seekers with 'dark' personality traits like narcissism and psychopathy (Calvillo et al., 2024), and group-oriented people like collectivists (Adam-Troian et al., 2021), or authoritarians who feel closely bound to their political or religious groups (Dyrendal et al., 2021). Furthermore, and suggesting that automatic evolved motives fuel misinformation, individuals susceptible to misinformation are prone to prioritising emotional/intuitive over critical/analytical thinking and often have lower mathematical and other cognitive skills (Arechar et al., 2023) – while also ironically being overconfident in their thinking skills (Lyons, 2023). Interestingly, however, individuals with misbeliefs often drop them and refrain from sharing them when prompted or offered rewards to do so (Arechar et al., 2023). This implies that they can separate truth from fiction but are unmotivated to do so.

However, as discussed in the previous section, humans are generally cooperative and thus reputation-conscious. Furthermore, a tendency to mindlessly believe misinformation would be maladaptive (bad for survival and reproduction) because, as discussed above, misinformation has always existed due to its social uses (Mercier, 2020). Theoretically, then, most people both online and offline should usually produce, share, and believe accurate reputation-enhancing information that promotes cooperation, rather than reputation-damaging (mis)information that generally targets outgroups.

Existing evidence aligns with this theory (Acerbi, 2019). Misinformation is only a tiny fraction of online content, in part because most people share accurate information – for reputational reasons (Altay et al., 2022) but also anonymously. Moreover, contrary to popular opinion, misinformation generally goes unshared and disbelieved, and does not spread faster and more widely than true information. People do not mindlessly follow influential people and bandwagons; instead, they intuitively evaluate information and the expertise and trustworthiness of different local and non-local sources, and tend to only copy harmless or beneficial trends, beliefs, and behaviours (Acerbi, 2019). They are also often as good as experts at distinguishing facts from falsehoods (Arechar et al., 2023), and they trust science and health experts (Nielsen et al., 2021) while scrutinising misinformation (Wagner & Boczkowski, 2019). The public is also typically politically moderate, often dismissing political misinformation (Rao et al., 2022). Thus, despite concerns about influential figures easily manipulating the gullible masses, even intense manipulation attempts rarely have lasting effects on beliefs and behaviour (Williams, 2023).

An evolutionary view also suggests that misinformation does not arise from digital media as much as from offline factors that fuel dominance- or group-oriented motivations, e.g., inequality and intergroup conflict (Fischer, 2023). Indeed, in line with the idea that misinformation is as old as humanity because of the fitness benefits it provides, misinformation occurs in populations without access to digital media and was prevalent long before the advent of digital media (van Prooijen & van Vugt, 2018). For example, some Yanomamö mixed horticulturalist–foragers of the Amazon rainforest who had no exposure to digital media have accused enemy tribes of sorcery (Chagnon, 1988). Moreover, misinformation levels did not rise with the rise of digital media (Uscinski et al., 2022). Instead, misinformation correlates with factors like relative deprivation, collectivism, polarisation, and war, and is prevalent in corrupt, undemocratic nations with relatively few internet users (Williams, 2023). Thus, while it has been likened to a digital disease (contagious virus or 'infodemic'), misinformation is mainly a *symptom* of offline psychological factors and sociopolitical problems.

So, evolved motivations often fuel misinformation, and rather than people being passively exposed to and brainwashed by it, it tends to resonate with a small minority of dominance- and group-oriented people who actively seek and willingly believe it. Consequently, instead of misinformation altering their beliefs and behaviours, their existing beliefs and motivations often lead them to consume and believe (mis)information that validates their views and behavioural tendencies and advances their social goals. Meanwhile, the internet generally boosts accurate information among the majority who mainly trust those, prestigious or otherwise, who are familiar or like they are: cooperative, reputation-conscious, moderate, and inclined to share useful information.

Box 35.1 Research focus: How should we tackle the problem of harmful (mis)information?

Research overlooking (cultural) evolution tends to assume misinformation spreads like a virus because most people are gullible. This leads to interventions like debunking (correcting misinformation) and prebunking (training people how to spot misinformation), which can sometimes be effective because some people really are uncritical or lazy thinkers, but may breed unwarranted skepticism towards accurate information and trustworthy institutions (Altay, 2022).

In contrast, our evolutionary view suggests that (1) people are generally too sceptical of information (Morin et al., 2021), (2) most information is accurate due to reputation concerns, etc., (3) when misinformation is successful, it is mainly among dominance- and/or group-oriented people who are highly motivated to misinform and be misinformed, mostly because misinformation helps them attack outgroups, (4) they will even spread accurate information that harms outgroups, and (5) misinformation mainly arises from offline factors like intergroup conflict.

Research should therefore focus on promoting accurate information and building trust in institutions like science. With misinformation making up less than 5% of online content, enhancing the spread and credibility of true information (>95%) will have a far greater impact than targeting misinformation (Acerbi et al., 2022). Cultural evolution theory suggests tailoring information to include cognitively attractive (e.g., negative) content, preferably delivered by prestigious and other members of the target audience's ingroup. Research should also focus on how to tackle the dominance- and group-oriented motivations behind misinformation. Interventions should be designed that (a) reassure people their personal and group statuses are not threatened, (b) appeal to dominance-driven individuals by addressing their self-interest and status needs, (c) engage group-oriented people with content appealing to their psychological predispositions, such as threat-related content, or by highlighting that their (ideally prestigious) ingroup members approve of the piece/source of information, (d) remind group-oriented individuals of pro-social identities and norms. Interventions should also focus on increasing empathy for outgroups since both dominance- and group-oriented people behind a lot of misinformation are likely driven by anti-outgroup sentiments. In addition, our view suggests that research and interventions should not only focus on accurate information but also true-but-harmful information that, for example, strategically omits key facts, like on the efficacy of vaccines, or provokes violence against outgroups. Finally, our view suggests that we should target the offline causes of misinformation that have driven it throughout human history, e.g., inequality, conflict, and other drivers of dominance- and group-oriented behaviours behind many societal ills.

35.4 Politics

35.4.1 Both left- and right-wing people contribute to online hostility and political misinformation

Research suggests that evolved dominance-oriented (vs. cooperative) and group-oriented (vs. individualistic) social drives exist in humans (Claessens et al., 2020; Fischer, 2023). These drives are distinct and linked to different traits and ideologies. Dominance-orientation aligns with selfishness, right-wing free-market capitalism ('economic conservatism'), and even left-wing revolutionary attitudes (versus empathic and pro-equality left-wing ideologies prioritising social justice and social welfare). Meanwhile, group-orientation aligns with conformity, closed-mindedness, fearfulness, and 'right-wing authoritarianism' or 'social conservatism' emphasising traditional norms, as well as 'left-wing authoritarianism' emphasising pro-equality norms (versus open-mindedness, creativity, and pro-freedom values like classical liberalism). Therefore, contrary to claims that conservatives are especially to blame for online hostility and misinformation, our perspective points to dominance- and group-oriented individuals across the political spectrum.

Indeed, online hostility and political misinformation does not consistently correlate with political orientation; instead, as we have seen, they are typically spread by people with 'dark', dominance-oriented traits, prevalent among right-wing economic conservatives and left-wing revolutionaries. Political misinformation also thrives among others across the political spectrum, e.g., individuals with anti-establishment attitudes and a 'need for chaos' (Petersen et al., 2023), extremists and authoritarians on the political right (Osborne et al., 2023), as well as extremists and highly polarised people on the political left (van Prooijen et al., 2015).

35.4.2 Polarisation

An evolutionary perspective also sheds light on whether digital media contributes to political polarisation, which has risen in some countries and is often blamed on online echo chambers (like-minded people reinforcing existing beliefs). However, echo chambers are nothing new. Humans naturally interact with like-minded others (homophily) and learn from them (similarity bias), which has aided cooperation and knowledge exchange within human groups throughout history, from early humans sharing hunting techniques to modern scientific groups solving complex problems (Acerbi, 2019).

Reflecting these evolved tendencies, both offline and online social networks tend toward homophily; online content is often shared between like-minded people; and echo chambers are *more* common offline than online (Gentzkow & Shapiro, 2011). A prominent study also suggests that Facebook's algorithms are less responsible for limiting exposure to ideologically challenging content than people's natural disinclination to click on it (Bakshy et al., 2015). Digital media therefore seems less to blame for echo chambers than natural human group-mindedness.

Additionally, as we saw in the previous sections, humans are generally risk-averse and cooperative. Humans should also tend to fall towards the centre of most spectrums because extremes are usually maladaptive. This suggests that most people will be politically moderate and hesitant to provoke outgroups. Only a minority driven by strong dominance- or group-oriented motivations should form echo chambers to exchange polarising misinformation.

This is indeed the case. Polarising echo chambers seem to be primarily inhabited by a minority (Guess, 2021) who mainly follow ingroup political elites (Wojcieszak et al., 2022) and can therefore become increasingly polarised. These already polarised or polarisation-prone people also seem to seek out polarising content rather than being driven towards it by algorithms (Budak et al., 2024). Meanwhile, most people are indeed politically moderate (Rao et al., 2022) and uninterested in politics and online

culture wars and do not follow political elites (Guess, 2021; Wojcieszak et al., 2022). Most people do not even consume any news online, and those who do, typically rely on relatively politically neutral mainstream sources while avoiding polarising ones and echo chambers (Arguedas et al., 2022; Guess et al., 2018). On social media, most people on both the political right and left follow and engage with diverse individuals and content (Arguedas et al., 2022; Guess et al., 2018), e.g., about one in five of people's Facebook friends belongs to the opposite political tribe (Bakshy et al., 2015), as do at least a third of accounts followed on Twitter/X (Barberá et al., 2015). In fact, people tend to encounter *more* diversity of ideas and people online than offline (Arguedas et al., 2022; Gentzkow & Shapiro, 2011; Guess et al., 2018).

This online diversity could theoretically be depolarising as people become more exposed to rational arguments from the other side and see the other side as more similar than different to themselves. However, the evidence on this is mixed: online diversity sometimes has no impact on polarisation, sometimes depolarises people, and other times polarises them (González-Bailón & Lelkes, 2023; Lorenz-Spreen et al., 2023). When online diversity polarises people, it seems to primarily polarise those mentioned above who are already prone to polarisation, e.g., highly group-oriented people who strongly identify with a political party (Arguedas et al., 2022).

Our evolutionary view also suggests that offline factors rather than online ones are the main drivers of polarisation. That is, factors like threat, resource scarcity, and intergroup conflict have always activated group-oriented motivations that now fuel polarisation (Fischer, 2023). Consistent with this, American polarisation is often worse offline (Gentzkow & Shapiro, 2011; González-Bailón & Lelkes, 2023; Guess et al., 2018) and started rising before the advent of social media (Boxell et al., 2022). Polarisation also decreased in many rich countries, does not positively correlate with internet use across countries, and varies greatly by country, suggesting country-specific environmental factors are responsible, rather than one global factor like the rise of the internet (Arguedas et al., 2022; Boxell et al., 2022). These country-specific factors seem threat- and violence-related, e.g., inequality and racial tensions in the USA. Thus, online polarisation may generally be a symptom rather than a cause of offline polarisation. Nonetheless, some evidence suggests that the rollout of high-speed internet worsened polarisation among older Americans, partly driven by conservatives consuming more misinformation than progressives, which may indicate a role of digital media (Melnikov, 2021).

35.5 Conclusion

Looking through an evolutionary lens, we can see striking differences between the ancestral environments humans spent over 300,000 years inhabiting and digital environments that have only arisen over the last two decades. Despite this, we also see that digital media has both positive and negative effects on wellbeing, and people behave similarly online and offline, e.g., most are cooperative, peaceful, and unpolarised and do not exchange or believe misinformation. We also see that problems that seem to be caused by digital media often come from the offline world, e.g., a lack of offline social support fuelling poor mental health, and inequality and conflicts fuelling online hostility, misinformation, and polarisation. And we see that hostility, misinformation, and polarisation have always existed among humans, but mainly among dominance- and group-oriented individuals. Digital technology therefore seems less to blame for the social problems discussed in this chapter than socio-environmental, cultural, and psychological factors, most of which are predictable from an evolutionary perspective.

Despite this, as is so often the case with new technologies (Orben, 2020) (partly thanks to negativity bias and risk aversion), much pessimism and panic surrounds digital media. We should be cautious about getting too caught up in this negativity, however, because ironically it can have very negative consequences. For example, overconcern leads to restricting young people from using digital devices,

depriving them of digital media's beneficial effects on their development, social lives, and mental health. Overconcern about online hostility and misinformation also leads to banning and censoring people, which makes things worse, e.g., it drives offenders to become more radicalised on less regulated platforms and makes them and their content seem to be suppressed by elites who are trying to hide something. This makes people feel sympathy for the content-creators and more interested in their censored content. Meanwhile, overstating the prevalence of misinformation and the need for skepticism can breed unnecessary skepticism toward accurate information and trustworthy sources (Altay, 2022). This is particularly problematic given that the vast majority of available information is accurate, but people are already overskeptical of it and its sources, which makes them uninformed rather than misinformed. Moreover, exaggerating polarisation can fuel it further (González-Bailón & Lelkes, 2023), and probably in turn also online hostility and misinformation, which we know are often driven by intergroup conflict. And last but by no means least, blaming digital media for the issues covered in this chapter diverts attention and resources away from addressing, and even identifying, their major offline causes.

Class discussion/activities ideas

1. Discuss possible pros and cons of digital media like social media, online news, and video games.
2. Have a discussion/debate on whether digital media is generally an important cause of declining mental health among some teens in certain countries.
3. Have a discussion/debate on whether the main driver of misbelief is social motives or lower critical thinking skills.
4. Discuss how and why (including evolutionary reasons) political ideology may link to online hostility and misinformation.
5. One problem presented in this chapter is misinformation, and some potential solutions to it are presented in Box 35.1. Following this example, break up into groups to identify some other problems presented in this chapter and discuss some potential solutions to them, preferably but not necessarily using evolution-based insights presented in this chapter (as we did in Box 35.1).

Self-study questions

1. How might digital media harm mental health, and how might digital media improve mental health?
 2. What two main personality/psychological predispositions among humans are often linked to online hostility, misinformation, and polarisation, and why?
 3. Why might cooperation be different (either lower or higher) online compared to offline?
 4. People both spread and resist misinformation. What are the potential evolutionary reasons for this?
 5. What are some of the best ways to promote information?
 6. Explain the potential evolutionary advantages of echo chambers.
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