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Aging in an Era of Fake News

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Abstract

Misinformation causes serious harm, from sowing doubt in modern medicine to inciting violence. Older adults are especially susceptible – they shared the most fake news during the 2016 US election. The most intuitive explanation for this pattern blames cognitive deficits. While older adults forget where they learned information, fluency remains intact and decades of accumulated knowledge helps them evaluate claims. Thus, cognitive declines cannot fully explain older adults' engagement with fake news. Late adulthood also involves social changes, including general trust, difficulty detecting lies, and less emphasis on accuracy when communicating. In addition, older adults are relative newcomers to social media, who may struggle to spot sponsored content or manipulated images. In a post-truth world, interventions should consider older adults' shifting social goals and gaps in their digital literacy.

Keywords

aging; fake news; misinformation; truth

Discriminating facts from fiction has never been straightforward, but falsehoods spread faster than truths in the age of social media (Vosoughi, Roy, & Aral, 2018). Public concern about this phenomenon spiked during the 2016 US presidential election. Since then, *fake news*, *post-truth*, and *misinformation* appeared as the “word of the year” in Collins Dictionary, Oxford Dictionary, and [Dictionary.com](https://www.dictionary.com), respectively. Americans consider “made-up news” to be a bigger problem than climate change, racism, or terrorism (Pew Research Center, 2019a). Tackling this crisis requires a lifespan perspective, as one of the strongest predictors of engagement with fake news is advanced age.

During the 2016 US election, older adults' Twitter feeds contained the most fake news; over 2% of their exposures to political URLs came from fake news sites (e.g., InfoWars), compared to less than 1% of young adults' exposures (see Figure 1). Users over 50 were also overrepresented among “supersharers,” a group responsible for 80% of fake news shares (Grinberg, Joseph, Friedland, Swire-Thompson, & Lazer, 2019). A similar pattern emerged on Facebook: Compared to young users, those over 65 shared 7 times more links to fake news domains (see Figure 2). The effect of age holds after controlling for partisanship, education, and overall posting activity (Guess, Nagler, & Tucker, 2019). This finding is particularly troubling given that older adults went on to vote at a higher rate (70.9% turnout)

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than any other age group (e.g., 46.1% among 18- to 29-year-olds, U.S. Census Bureau, 2017). Why do older adults engage more frequently with fake news? In this review, we explore three candidate explanations: cognitive declines, social changes, and digital illiteracy.

Cognitive Declines

The most obvious scapegoat for older adults' vulnerability to fake news involves cognitive deficits. Indeed, important abilities like episodic memory and abstract reasoning peak early (in the 20s and 30s) and then steadily decline (Salthouse, 2009). As cognition feels increasingly effortful for older adults (Hess, Smith, & Sharifian, 2016), do they resort to heuristics when evaluating news? People of all ages rely on mental shortcuts to judge whether incoming information is true or false (Brashier & Marsh, 2020). One such "rule of thumb" involves repetition (Unkelbach, Koch, Silva, & Garcia-Marques, 2019). Repeating statements like *The thigh bone is the longest bone in the human body* makes them feel easier to process (fluent), and thus truer, than new ones (Hasher, Goldstein, & Toppino, 1977). Disturbingly, this *illusory truth effect* occurs for fake news: A single exposure to headlines like *Donald Trump sent his own plane to transport 200 stranded Marines* increases belief in them later (Pennycook, Cannon, & Rand, 2018).

Several studies investigated whether susceptibility to this illusion increases with age. Young and older adults evaluated pieces of trivia (e.g., *Austria and Switzerland are linked by the Brenner Pass*; Mutter, Lindsey, & Pliske, 1995) or product claims (e.g., *ChapStick contains seven percent wax*; Law, Hawkins, & Craik, 1998; Parks & Toth, 2006). Just like most social media users scrolling through their timelines, participants received no cues to the claims' accuracy. Across experiments, repetition inflated perceptions of truth to the same extent in young and older adults (Law et al., 1998; Mutter et al., 1995; Parks & Toth, 2006). If anything, a weak illusion may indicate dementia – repetition persuades healthy older adults more than patients with Alzheimer's disease (Mitchell, Sullivan, Schacter, & Budson, 2006).

What about cases where third-party fact checkers, like Snopes and Politifact, flag false content? Later, users likely encounter the same stories without accompanying "false" tags. Unfortunately, older adults forget details about where information came from (Mitchell & Johnson, 2009). This *source memory deficit* suggests that fact checks fade from memory, while the original misinformation still feels fluent. Older adults can correct myths like *Liars sometimes give themselves away by physical 'tells'* in the short term, but revert to familiar beliefs over a delay (Swire, Ecker, & Lewandowsky, 2017).

Similarly, repetition has "ironic effects" (Jacoby, 1999) in old age. In one experiment, medical claims (e.g., *Corn chips contain twice as much fat as potato chips*) appeared with "true" or "false" tags. Participants saw these pairings one or three times. After a delay, participants evaluated the claims alone (without labels). Additional exposures to statements marked as "false" benefited young adults; they rejected those seen three times previously more often than those seen once. Paradoxically, older adults demonstrated the opposite pattern: Repeatedly seeing statements with a "false" tag *increased* belief in them later (Skurnik, Yoon, Park, & Schwarz, 2005). Older adults over-relied on feelings of fluency

when recollection failed them, suggesting that fact checks can have unintended consequences.

Dual-process theories of aging pit fluency (familiarity) and recollection against each other, ignoring a facet of memory that improves with age: general knowledge. Older adults continue to acquire facts about the world (Umanath & Marsh, 2014), which can help them evaluate claims' accuracy. Repeating *The fastest land animal is the leopard* misleads young adults, even though they "know better" (that the cheetah is the fastest; Fazio, Brashier, Payne, & Marsh, 2015). Older adults, on the other hand, stick with what they know; they reject claims that contradict their knowledge, even when these falsehoods feel fluent (see Figure 3, Brashier, Umanath, Cabeza, & Marsh, 2017). Asking young adults to behave like fact checkers helps them to "look like" older adults (Brashier, Eliseev, & Marsh, 2020).

With age also comes awareness of the limits of knowledge. For example, the ability to answer questions like *If interest rates rise, what will typically happen to bond prices?* increases across the lifespan. But *self-rated* financial literacy surges in young adulthood (Sanchez & Dunning, 2018). Gaps between actual and perceived knowledge yield important consequences – *overclaiming*, or professing to know fictional things, predicts belief in fake news. In one study, participants indicated whether they had heard of historical names and scientific terms, some of which were made-up (e.g., *Queen Alberta* and *cholarine*). The perceived accuracy of fake headlines like *Trump on revamping the military: We're bringing back the draft* increased with willingness to overclaim, or report impossible knowledge (Pennycook & Rand, 2019c).

Older adults' reliance on their impressive knowledge bases may explain why their initial impressions of headlines tend to be correct. Three weeks after the 2016 U.S. election, Allcot and Gentzkow (2017) presented people with true (e.g., *The musicians Beyoncé and Jay Z appeared at a rally in support of Hillary Clinton*) and false (e.g., *Pope Francis endorsed Donald Trump*) headlines. For each one, participants answered *At the time of the election, would your best guess have been that this statement was true?* The ability to distinguish fake from true headlines *increased* with age. Re-analysis of two experiments by Pennycook and Rand (2019b) reveals the same trend. Discernment of fake (e.g., *Trump to ban all TV shows that promote gay activity*) from real (*Vladimir Putin personally involved in US hack, report claims*) headlines improved with age (Study 1: $r = 0.08$, $p = .019$; Study 2: $r = 0.14$, $p < .001$).² Without repetition, and accompanying memory failures, older adults outperform their young counterparts.

In sum, older adults successfully categorize true and false headlines *at first glance*. The trouble may arise when viral news stories crop up repeatedly in their newsfeeds. Even in these situations, some requisite cognitive processes decline with age (recollection), while others remain intact (fluency) or improve (knowledge). Crucially, sharing content is not the same as believing it; young adults express willingness to share headlines they recognize as false (Pennycook et al., 2018). Older adults may circulate fake news with specific social goals in mind.

Social Changes

Popular media outlets like *Buzzfeed* and *Scientific American* have speculated that older adults share fake news out of loneliness. But good, not bad, moods leave people gullible (Forgas, 2019). And, countering stereotypes, older adults are *not* the loneliest age group – loneliness peaks in the late-20s, mid-50s, and late-80s (Lee et al., 2018). Positive emotions increase with age (Carstensen, 2011), even as social networks shrink (Wrzus, Hanel, Wagner, & Neyer, 2013); older adults lose peripheral social partners, which may result in misplaced trust. With fewer “weak ties” on social media platforms, older adults might assume that content shared by friends and followers is accurate (i.e., *my close friends and family wouldn't spread fake news*).

For better or worse, interpersonal trust increases with age (Poulin & Haase, 2015). Older adults give more optimistic answers to the question, *Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?* They also report more trust in family members, friends, neighbors, and strangers (Li & Fung, 2013), including unfamiliar people who previously lied (Slessor, Phillips, Ruffman, Bailey, & Insch, 2014). Older adults may strategically choose trust over distrust – one neuroimaging study suggests that older adults “go with their guts” less than young adults do. Participants viewed photos of faces and judged either the targets' gender or their trustworthiness. The pictured individuals seemed more trustworthy to older than young adults. Whereas young adults differentially recruited the anterior insula, a region implicated in “gut feelings,” when evaluating trustworthiness, older adults did not (Castle et al., 2012). Thus, older adults may follow questionable pages and bots that seem like real accounts, increasing their exposure to fake news.

Along these lines, older adults struggle to detect deception. In several experiments, young and older adults watched footage of people accurately stating or lying about their opinions (e.g., *Stem cell usage in humans is ethical*). After each clip, participants judged whether the target told the truth or lied. Compared to young adults, older adults detected fewer lies (Stanley & Blanchard-Fields, 2008) and less capably distinguished truths from lies (Ruffman, Murray, Halberstadt, & Vater, 2012). This “doubt deficit” increased when fabrications came from same-age peers (Slessor et al., 2014). Notably, older adults also fail to spot spontaneous deception, filmed as people lied to protect a research assistant (without rehearsal or instructions; Sweeney & Ceci, 2014). Features that distinguish lies in person (e.g., sparse details) may also characterize misleading posts online; by extension, older adults may perceive fewer “tells” when a Facebook friend provides commentary on a fake story.

When older adults deem a person unreliable, though, this trait information is memorable. Rahhal, May, and Hasher (2002) exposed participants to trivia claims like *About 4 hours are required to boil an ostrich egg*, spoken by a male (*John*) or female (*Mary*) voice. Instructions emphasized that one speaker always tells the truth, while the other always lies. At test, participants saw the claims and reported either the original voice (*John, Mary, new*) or the statements' veracity (*true, false, new*), inferred from the speaker's character. Relative to young adults, older adults' source memory suffered for perceptual features (speaker's

gender). However, older adults correctly remembered whether claims came from a dishonest person (see Figure 4). Social context, like cues about a person's character, seems to leave a longer-lasting impression than simple "true" and "false" tags (Skurnik et al., 2005). Relatedly, older adults weigh negative behaviors (e.g., *Jennifer told the clerk she had been undercharged for an item*) more than equally frequent positive ones (e.g., *Jennifer kept the money from the wallet she found*) when assessing honesty. *Social expertise*, acquired over decades, dictates that dishonest acts are more diagnostic (i.e., truth-tellers rarely lie, but liars often tell the truth; Hess & Auman, 2001). Revealing that Donald Trump averaged 15 false claims a day in 2018, for example, may benefit older adults more than debunking any one of his "alternative facts" (e.g., *The noise from windmills causes cancer*). In a related neuroimaging study, participants learned health-related facts (e.g., *Women's hearts beat faster than men's*) paired with explicit tags (*true, false*) or social sources (*Pat, Chris*) previously described as honest or dishonest. Compared to young adults, older adults' subsequent memory for truth value depended more on the ventral medial prefrontal cortex, an area involved in socioemotional processing (Cassidy, Hedden, Yoon, & Gutchess, 2014).

More generally, older adults often prioritize interpersonal goals over accuracy. They primarily use technology to connect with others, rather than to gain new information (Sims, Reed, & Carr, 2017), and may be especially interested in interacting with young adults. Middle-aged and older adults express more generativity, or concern for the next generation, than young adults do (McAdams, de St. Aubin, & Logan, 1993). One generative goal involves passing along knowledge. Older adults tell better stories than young adults, focusing on gist over details and conveying the "moral of the story" (Barber & Mather, 2014), in line with increases in religiosity with age (Hayward & Krause, 2015). Older storytellers also "tune" to their audience; for example, they simplify stories and elaborate more when a child, rather than an experimenter, is listening (Adams, Smith, Pasupathi, & Vitolo, 2002). Online, older adults may overlook errors to share a moral message (e.g., about a political candidate or party) with young followers.

Suspending an accuracy mindset can happen unintentionally, as people evaluate information in a biased way that favors prior beliefs and protects their political identity. Does such *motivated reasoning* contribute to older adults' propagation of fake news? Older adults do struggle to set their opinions aside (e.g., Klaczynski & Robinson, 2000). But belief in fake news reflects "lazy thinking" more than motivated reasoning. Pennycook and Rand (2019b) asked participants to judge the accuracy of headlines that favored Republican (e.g., *Hillary Clinton filed for divorce in New York courts*) or Democratic (e.g., *Sarah Palin calls to boycott Mall of America because 'Santa was always white in the Bible'*) views. Then participants completed the cognitive reflection test, whose questions (e.g., *If you're running a race and you pass the person in second place, what place are you in?*) require people to inhibit intuitive, but incorrect, answers (e.g., *first place*). Analytic thinkers discerned fake from real headlines, even when the stories aligned with their politics. Re-analysis of these data suggest that analytic thinking increases with age ($r = 0.09, p = .016$). In fact, older adults can outperform young adults on a long-form cognitive reflection test (Hertzog, Smith, & Ariel, 2018). Analytic thinking likely offsets older adults' motivated reasoning, but may not protect them from misleading content on social media, like manipulated photos and native advertisements.

Digital Illiteracy

Older adults are relative newcomers to the Internet, creating a *grey digital divide*. 40% of Americans over 65 use social media (Pew Research Center, 2019b), up from only 8% of older adults a decade ago.³ Fewer years of experience with clickbait and Internet hoaxes (e.g., chain letters) may leave them at a disadvantage. Even digitally-savvy young adults struggle to discriminate mainstream from fringe online news sources (McGrew, Breakstone, Ortega, Smith, & Wineburg, 2018). Re-analysis of work by Pennycook and Rand (2019a) suggests that discernment between mainstream (e.g., *NPR*) and fake (e.g., *World News Daily Report*) outlets may not change with age (Study 1: $r = 0.02$, $p = .542$; Study 2: $r = 0.03$, $p = .287$). Moreover, only 9% of readers notice when news stories are sponsored; this inability to distinguish advertising from editorial content worsens with age (Amazeen & Wojdyski, 2018). These native advertisements, designed to “feel like” regular, unpaid stories, are widespread – even reputable publications like *The New York Times* use them. At the extreme, Russia paid for targeted ads on Facebook (e.g., *Secured borders are a national priority. America is at risk now more than ever*) that read like news, but contained fabrications intended to sow discord.

Manipulated images, which often accompany fake news stories, are also notoriously difficult to spot. For example, false claims that Hillary Clinton “stole votes” appeared with a picture of a man unloading a truck of ballot boxes. Outlets removed some of the “ballot box” labels to imply foul play (see Figure 5). These edits left conspicuous irregularities, but readers likely passed over them. People exhibit a bias to accept images as “real,” so one-third of manipulated photos go undetected (Nightingale, Wade, & Watson, 2017). The ability to distinguish real from fake photos declines with age. When viewing altered real-world scenes, older adults miss added or removed objects, distorted angles, and inconsistent shadows (Nightingale, Wade, & Watson, personal communication). Older viewers may also be less likely to do a reverse image search, where Google returns images similar to an uploaded picture. Even without doctoring, pictures inflate perceived truth. People are more likely to accept claims (e.g., *Alpacas chew in a Figure 8 pattern*) that appear with uninformative photographs (e.g., an alpaca without food in its mouth; Fenn, Ramsay, Kantner, Pezdek, & Abed, 2019) – this *truthiness* effect persists across the lifespan (Derksen, Giroux, Newman, & Bernstein, personal communication). Pictures also increase people’s willingness to share both true and false information on social media (Fenn et al., 2019).

Digital illiteracy could explain why older adults seem gullible online, but resilient to scams offline. Contrary to popular opinion, susceptibility to consumer fraud *decreases* with age (Ross, Grossmann, & Schryer, 2014). Young adults in their 20s are twice as likely to be victims of fraud (40% of complainants) than older adults (18%; Federal Trade Commission, 2018). Intriguingly, older adults *self report* less willingness to share fake news than young adults. When asked *Would you consider sharing this story online (for example, through Facebook or Twitter)?* after viewing fake headlines, participants’ agreement decreases with age ($r = -0.12$, $p = .006$; re-analysis of Study 2, Pennycook et al., in press). Older adults’ intentions stand in stark contrast to their actual sharing behavior, a discrepancy that may

reflect misunderstandings about how algorithms populate their newsfeeds or forgetting that “shares” imply endorsement.

Implications

While fake news targets readers of all ages, older adults share the most misinformation. This problem could intensify in years to come: America is “greying” rapidly – the 65-and-over population will nearly double by 2050 (U.S. Census Bureau, 2014) – and by some estimates, people will consume more false than true information by 2022 (Gartner, Inc., 2017). For example, increasingly sophisticated “deepfakes” use artificial intelligence to depict events that never occurred (e.g., speeches by world leaders). Psychological science allows us to better understand the current misinformation crisis (Lazer et al., 2018; Lewandowsky, Ecker, & Cook, 2017) and offers insight into why older adults are especially vulnerable. We argue that cognitive declines alone cannot explain older adults’ engagement with fake news. Interventions in a “post-truth world” must also consider their shifting social goals and gaps in their digital literacy.

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³ This spike does not simply reflect a cohort of digitally-savvy 50-year-olds getting ten years older. In 2009, only 25% of 50–64 year-olds reported using a social media site.

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Recommended Readings

- Brashier NM, & Marsh EJ (2020). (see references). A review of the cognitive and affective processes involved in judging truth.
- Carstensen LL, Isaacowitz DM, & Charles ST (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psychologist*, 54, 165–181. A theory of how social goals change with age. [PubMed: 10199217]
- Chan MS, Jones CR, Jamieson KH, & Albarracín D (2017). Debunking: A meta-analysis of the psychological efficacy of messages countering misinformation. *Psychological Science*, 28, 1531–1546. A meta-analysis showing that belief in misinformation often persists after corrections. [PubMed: 28895452]
- Lazer et al., 2018 (see references). An explanation of why fake news proliferates and how we can intervene.
- Lewandowsky S, Ecker UKH, & Cook J (2017). (see references). A discussion of how psychological science bears on the fake news crisis.

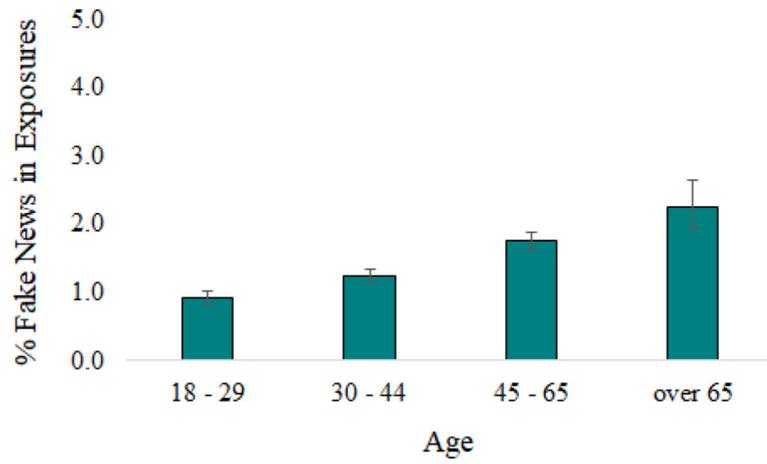


Figure 1. Twitter users over 65 saw the most political fake news in their feeds during the 2016 election. Adapted from Grinberg, Joseph, Friedland, Swire-Thompson, & Lazer (2019).

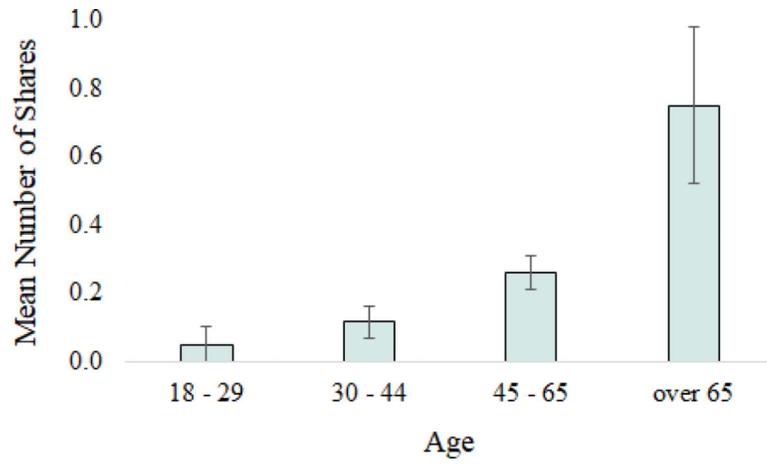


Figure 2. Facebook users over 65 shared the most links to fake news sites during the 2016 election. Adapted from Guess, Nagler, and Tucker (2019).

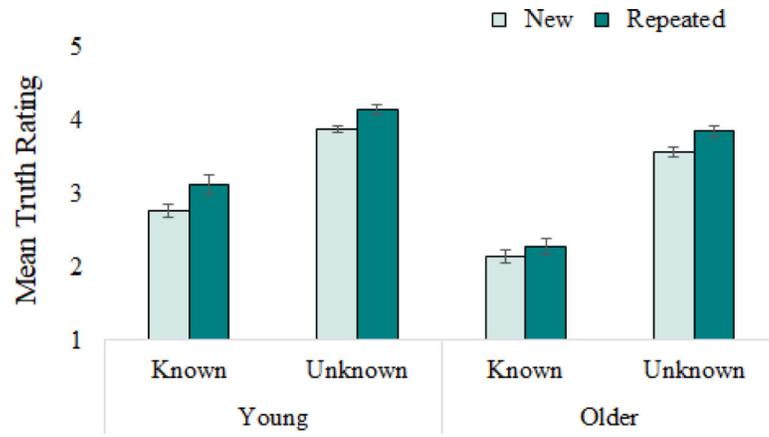


Figure 3. When falsehoods contradict older adults' knowledge, repetition does not mislead them. Adapted from Brashier, Umanath, Cabeza, and Marsh (2017).

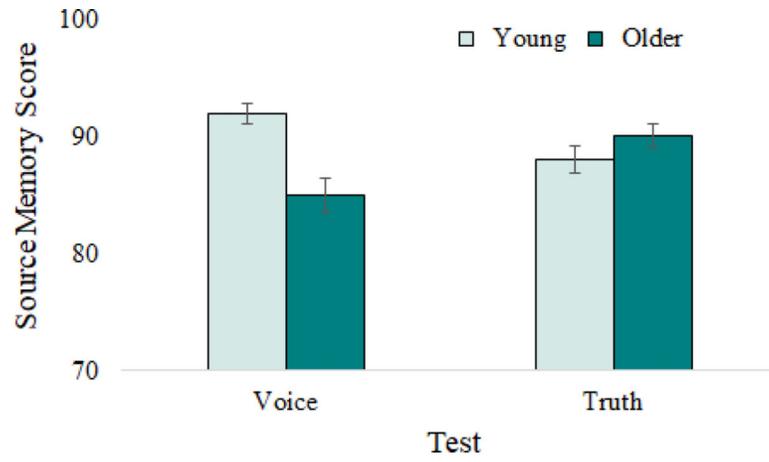


Figure 4. Older adults remember details inferred from a source's character as well as young adults do. Adapted from Rahhal, May, and Hasher (2002).



Figure 5.

Christian Times Newspaper altered a photograph of a man unloading ballot boxes. The outlet removed some of the “ballot box” labels and reversed the image (presumably to make the original picture harder to find).