



Aggressive priming online: Facebook adverts can prime aggressive cognitions



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ABSTRACT

Through the process of priming, incidental stimuli in our environments can influence our thoughts, feelings and behaviour. This may be true of incidental stimuli in online environments, such as adverts on websites. Two experiments ($N = 325$, $N = 331$) showed that the mere presence of advertisements with violent content on a simulated Facebook page induced higher levels of aggression-related cognition in comparison to non-violent adverts ($d = 0.56$, $d = 0.71$). In a subsequent word recognition task, participants primed with the violent stimuli 'remembered' more actually-unseen violence-related words than did the control participants. That is, they reported recognising violent words they had not actually seen. However, priming with violent adverts had no effect on mood or person perception. A third correlational study ($N = 131$) examined whether variance in the extent of priming could be attributed to individual differences in aggressiveness. Participants' aggressiveness was unrelated to their scores on the aggressive cognition measure. These studies established that website adverts with violent content could prime aggressive cognitions. Individuals differed in the extent to which they experienced the priming effect, and this was not attributable to their levels of trait aggressiveness. No effects of priming were found on either mood state or person perception.

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1. Introduction

Internet adverts can be annoying. But could they actually influence your thoughts, and make you more aggressive?

When we use online services, we are typically exposed to numerous stimuli that simultaneously compete for our attention. Some are things we consciously focus on – the material we are attending to. Others are unattended, incidental stimuli. For instance, when one looks at a page of Google search results, or a Facebook page, one is also exposed to targeted adverts at the side of the screen. Both the attended and the incidental stimuli may have effects on our psychological processes.

1.1. Automaticity and priming

Environmental cues may influence our behaviour, without our volition or awareness, in a phenomenon known as automaticity (e.g. Bargh & Williams, 2006; Huang & Bargh, 2014). There is considerable evidence (e.g. Bargh & Chartrand, 1999) that many social processes, thoughts and behaviours can proceed in a seemingly

automatic manner when triggered by incidental environmental cues. This process of triggering is known as 'priming', where the accessibility of a mental construct is temporarily increased by exposure to stimuli semantically associated with that construct. This increased accessibility means the construct (e.g. a stereotype, goal, behavioural script or other type of schema) is more likely to be used in guiding our evaluations, cognitions and even actions. For example, seeing the word 'food' may prime one to start thinking about dinner plans.

There is currently debate about the strength of some claims made for the automaticity of behaviour, the degree to which these processes are truly unconscious, and the replicability of certain studies (Newell & Shanks, 2014; Pashler, Coburn, & Harris, 2012; Stafford, 2014). However, even critics concede that some priming effects are robust (e.g. Pashler et al., 2012; Stafford, 2014). There is a large body of evidence that priming effects do occur, and can influence our thoughts, feelings, perceptions and actions.

1.2. Priming effects of attended stimuli

If priming effects can arise from stimuli in our physical environments, is the same true of cues we encounter in computer-mediated environments and online interaction spaces? Indeed, there is some evidence that attended stimuli (the things we are

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actually looking at) in online environments can have psychological effects on users. For example, a study by [Kramer, Guillory, and Hancock \(2014\)](#) that sparked significant media debate and ethical concerns ([Verma, 2014](#)), involved manipulating information presented to Facebook users. Facebook users see a range of content delivered via the News Feed feature. This comprises a selection, determined by Facebook's proprietary algorithms, of materials posted by other users they are linked to as 'friends'. Facebook users often express emotions in materials they post on the network. Therefore, any typical user will be exposed to a selection of content via the News Feed that includes information about friends' emotional states.

To assess whether emotional material posted by friends impacted on users' own emotional states, Kramer et al. manipulated the content users saw in their News Feed. Suppressing the number of posts with positive words displayed in the News Feed resulted in users' own posts containing fewer positive and more negative words. Conversely, screening out posts with negative words resulted in users' posts containing fewer negative and more positive words.

Kramer et al. explained their findings in terms of emotional contagion, postulating that the actual emotional experience was transferred from one individual to another via text. However, their findings can be also explained in terms of priming effects. If exposure to negative words increases accessibility of related words, then reducing the exposure should reduce the accessibility compared to some baseline level. Therefore, fewer negative words should be used in subsequent postings – which is what Kramer et al. reported.

1.3. Priming effects of unattended stimuli

Kramer et al.'s study dealt with material that Facebook users actively attended to – the content of the News Feed. Such stimuli that we actively attend to are likely to influence us in various ways. However, what about incidental stimuli such the adverts that clutter our screens but to which users typically devote little attention? Might they affect us in similar ways? The companies that place the adverts clearly believe that they do influence brand perception and purchasing behaviour, despite observations that click-through rates for various types of advert are typically low ([Lewis & Reiley, 2014](#)).

Empirically, there is some evidence that online adverts can influence the thoughts of those who view them. [Courbet, Fourquet-Courbet, Kazan, and Intartaglia \(2014\)](#) showed that exposure to pop-up adverts for a novel fictional brand on a website influenced participants' ratings of that brand up to three months later, with people who had seen the pop-ups rating the brand and their own purchase intentions more positively. These findings suggest that online adverts may well have effects consistent with the desires of the advertisers who place them. However, there is also scope for them to have other less desirable effects. For example, what effects might adverts with antisocial or violent content have?

1.4. Violent content online

There have been concerns over the visibility of violent materials in social media. [Livingstone, Kirwil, Ponte, and Staksrud \(2014\)](#) found that unwanted exposure to violent content was one of the main risks of the internet that European children reported being concerned about. Such concerns apply mainly to content that users have posted, but have also been expressed about adverts. For example, in 2010 the UK Advertising Standards Authority banned Facebook from displaying an advert for the game 'Mafia Wars' featuring a man wielding a knife, arguing that it implied carrying

weapons could lead to success and respect ([Sweney, 2010](#)). Internet companies have made efforts to curtail violent content online, but it is a problematic area where issues of public protection collide with those of free speech. At the time of writing, violent content – of at least a mild variety, for example in adverts for games or films – still features prominently in online advertising. There are clear parallels between these concerns, and the more general debate on media violence that still persists after a number of decades. There has also been long-standing concern about antisocial, aggressive behaviours such as 'trolling' or misogynistic attacks online, which have received recent media scrutiny. As well as being examples of aggression themselves, these have the additional characteristic of adding more aggression-related content to what is already publicly viewable online.

1.5. Aggressive priming

There is considerable experimental evidence that mere exposure to unattended, incidental, aggression-related stimuli can lead to activation of aggressive thoughts, feelings and behaviour. The best-known example of this is the Weapons Effect. [Berkowitz and LePage \(1967\)](#) demonstrated that subjects behaved more aggressively (giving more electric shocks to a confederate of the experimenter) when a rifle was incidentally present in the laboratory than they did when a badminton racket was present. There is also considerable evidence that exposure to violent cues in the media (e.g. film, television, music and computer games) can lead to priming of aggressive thoughts (e.g. [Anderson, Carnagey, & Eubanks, 2003](#); [Bushman, 1998](#); [Todorov & Bargh, 2002](#)). However, even more subtle cues can lead to increases in aggression-related thoughts, feelings and behaviours. For example, [Srull and Wyer \(1980\)](#) showed that exposure to aggression-related words as part of a sentence construction task led participants to rate an ambiguous target person as more aggressive. There is still disagreement over the extent to which these findings map on to real-world aggressive behaviour (e.g. [Ferguson, 2009a](#)), but the evidence for effects in laboratory settings is substantive.

1.6. Aggressive priming online

In summary, there may be scope for incidental stimuli such as adverts on social media to influence our psychological processes through the mechanism of priming. Concerns are regularly expressed about the effects that violence-related online stimuli may have on observers. The question that needs to be answered is whether such stimuli can prime aggression-related responses in the same way as they have been shown to in the offline world.

1.7. Aim and hypotheses

The overall aim of this project was to examine whether non-attended incidental stimuli, in the form of online adverts, could have priming effects. The focus was on adverts with violent content, given their potential to prime violent thoughts, feelings and behaviour.

Study 1 was intended to ascertain whether incidental priming using aggressive stimuli can influence cognition (misrecognition of aggressive information, implying that priming could lead to faulty impressions of material), emotion, and evaluation of others. Hypothesis 1 was that participants exposed to aggressive primes would experience more aggressive cognition than participants exposed to less aggressive primes. Hypothesis 2 was that participants exposed to aggressive primes would experience more hostile mood than would participants exposed to less aggressive primes. Hypothesis 3 was that participants exposed to aggressive primes would evaluate a target person as more aggressive than would participants exposed to less aggressive primes.

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