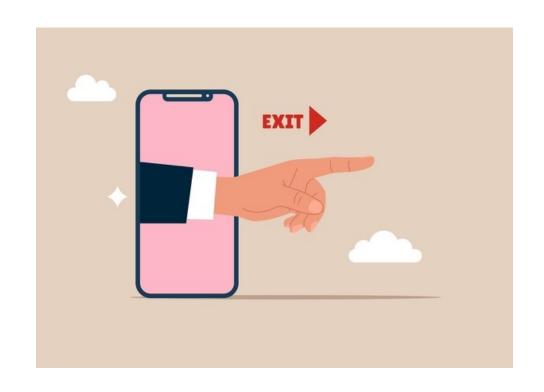
# 101 reasons to stop

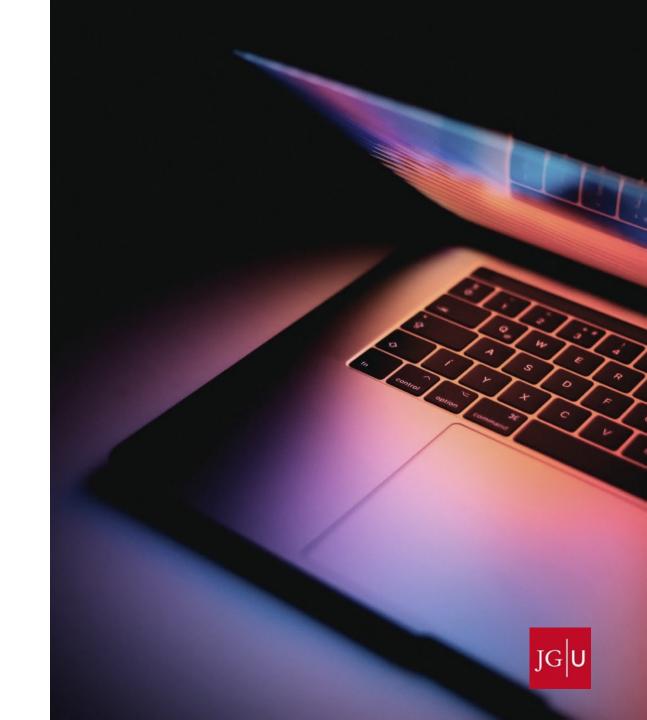
# A systematic review of media cues for disengagement

Alicia Gilbert, Frauke Schöne, Rebekka Kreling, Felix Dietrich, & Leonard Reinecke

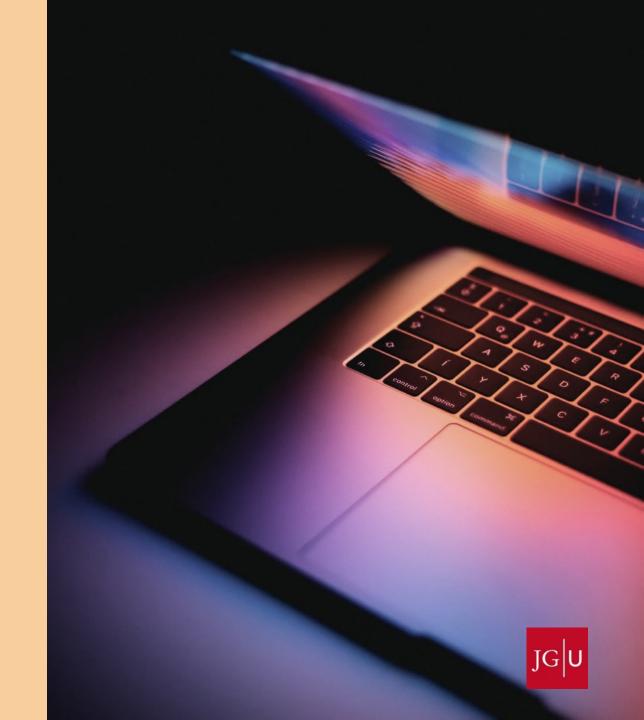




Media communication and content today are permanently available, algorithmically curated, designed to be frictionless.

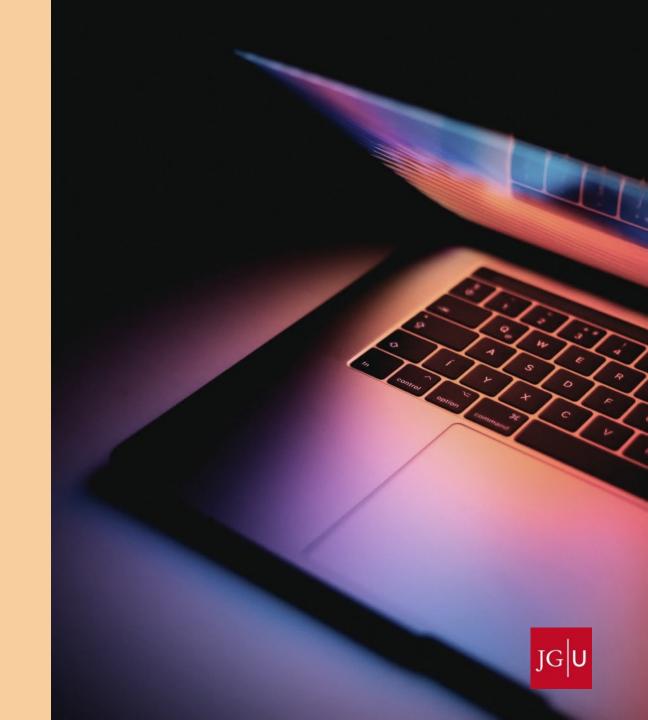


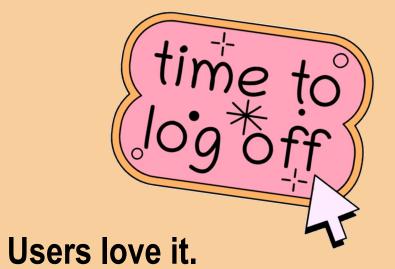
**Users love it.** 



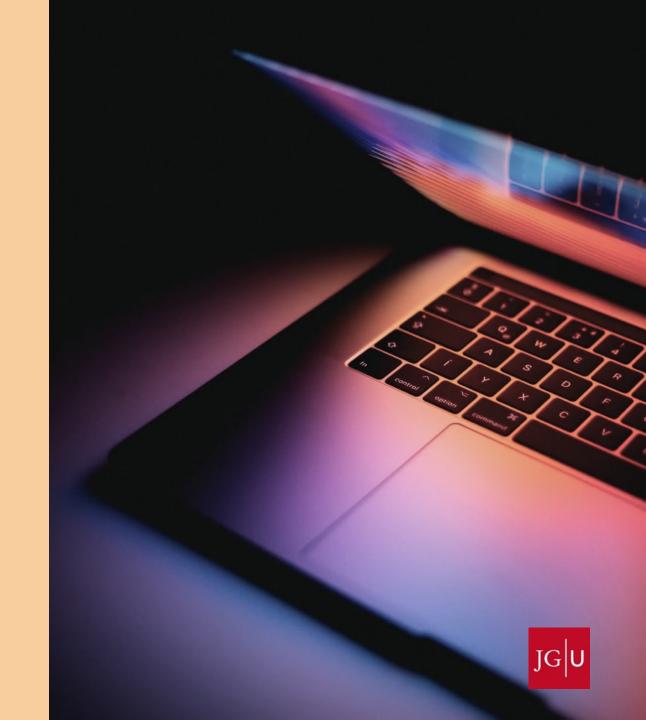
**Users love it.** 

And hate it.





And hate it.



#### **Defining media use disengagement**

Situational

Interventive

Behavioral adjustment

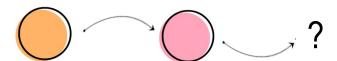
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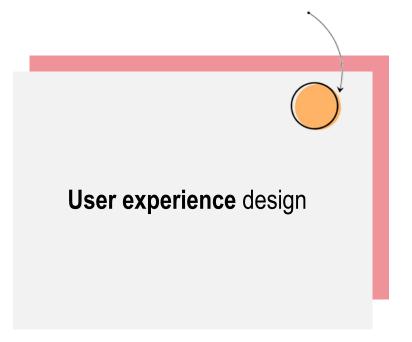
the act of **intervening** with media use and **terminating exposure** in a given situation



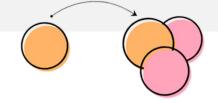
## A case for studying disengagement

Holistic media process models





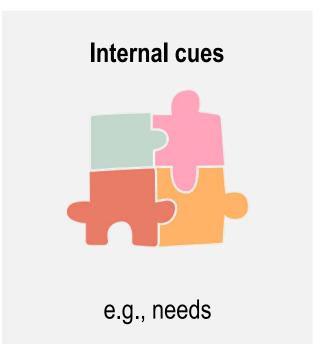


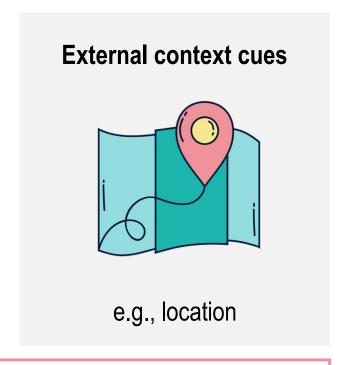




#### **Predictors of disengagement**







**Situational cues**: environmental information serving as input to the perception of a situation (Magnusson & Magnusson, 2013; Rauthmann, 2015)



#### **Predictors of disengagement**

#### Media cues

?

#### **Internal cues**

Physiological states

Psychological states

Affect and emotions

Needs and goals

Mental resources

#### **External context cues**

Temporal

Spatial

Technical

Social

Other activities



#### **Systematic review**

Overview structural properties of the research field

- 2 Systematize media cues by levels of analysis
- 3 Evaluate relevance of media cues for disengagement

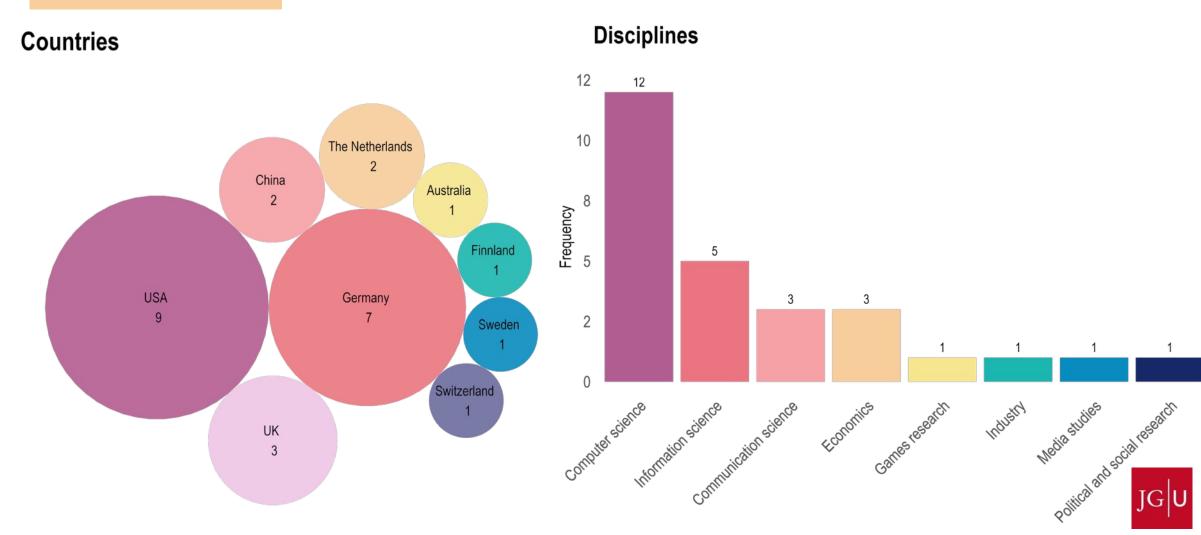


#### Identification of studies via databases **Systematic review** Records identified from: Identification Records removed before screening **ACM Digital Library** ACM: no proceedings or journal articles (n = 74) (n = 1,547)CA: no peer-reviewed journal articles (n = 558) **Communication Abstracts** CA: not English (n = 87)(n = 1,898)search Records excluded Records screened No disengagement (n = 2,601) (n = 2,726)No media cues predicting disengagement (n = 25) Duplicate (n = 25) **Search string** Not English (n = 3)Not peer-reviewed / wrong format (n = 32) Title and abstract search No full text (n = 3)Screening Reports sought for retrieval Media agnostic (n = 37)Disengagement terms: Reports excluded: (disengage\* OR stop\* OR Reports assessed for eligibility No disengagement (n = 6) (n = 37)No media cues predicting disengagement (n = 3) terminat\* OR exit\* OR discontinu\* OR "turn\* off" Studies included in review OR avoidance OR friction\* Included (n = 27)Cases of media cues included in review OR scroll\*)

(k = 90)

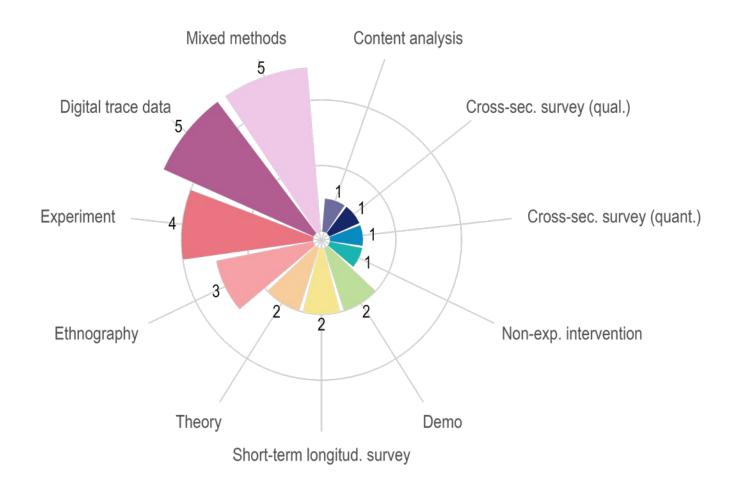


#### The research field



#### The research field

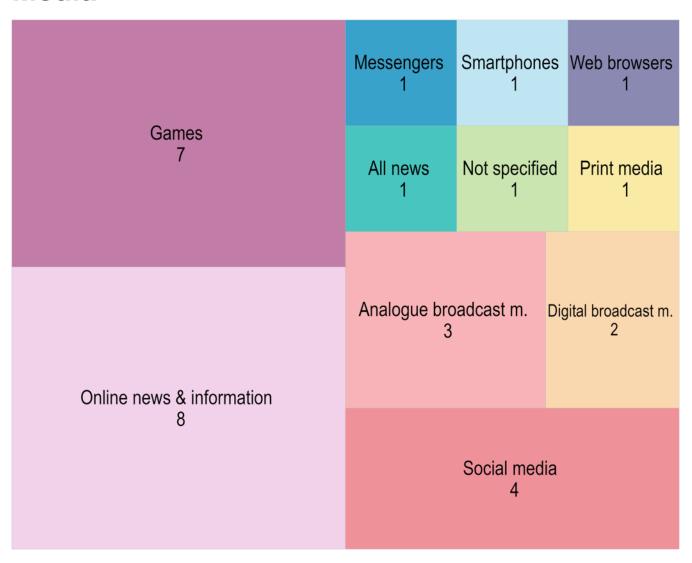
## **Methods**





#### The research field

## Media





Device	5
Application	14
Feature	20
Interaction	7
Message	48

- Hierarchical Taxonomy of Computer-Mediated Communication (CMC) (Meier & Reinecke, 2021)
- k = 43 unique media cues
- Most common:
  - Technical problems
  - Closure cues



- Most media cues
  - Are idiosyncratic
  - Apply to only one level of analysis



Device	5
Application	14
Feature	20
Interaction	7
Message	48

### **Examples**

- Hidden notifications
- Feed separation
- Opportunity to save game progress

→ only investigated for digital media types





Device	5
Application	14
Feature	20
Interaction	7
Message	48

## **Examples**

- Disagreements with other players
- Harassment
- Strong opponents / skill mismatch

→ exclusively studied in the **gaming** context





Device	5
Application	14
Feature	20
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Message	48

#### **Examples**

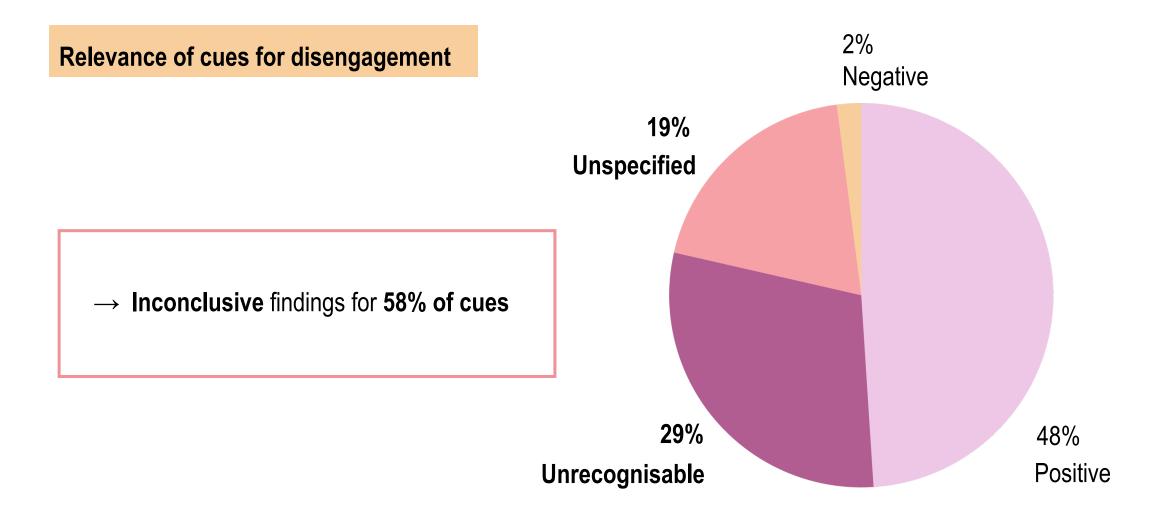
• Closure, e.g., end of a story

Negative valence

Redundacy

→ most common level of analysis







#### **Limitations**

#### Lack of theory

- Eclectic selection of cues
- Broad concepts
- Inconsistent terminology

#### **Sampling**

- Likely underrepresenting certain media
- No engagement studies



#### **Implications**

#### For theory

- Clearly define
   disengagement and
   situational cue categories
- Appraisal process
- Independence of specific media types

#### For empirical research

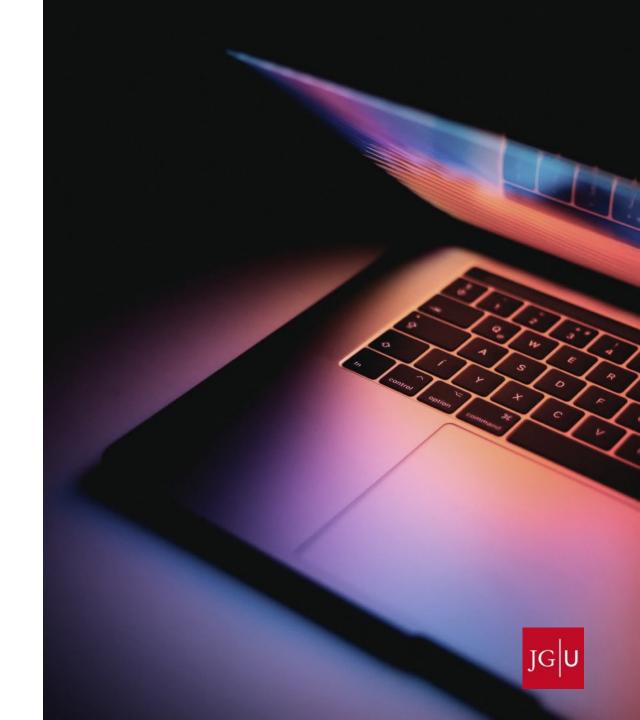
- Cues relevant to other nonuse behaviors might transfer
- Systematically compare different media use types
- Leverage in-situ methods

#### For design

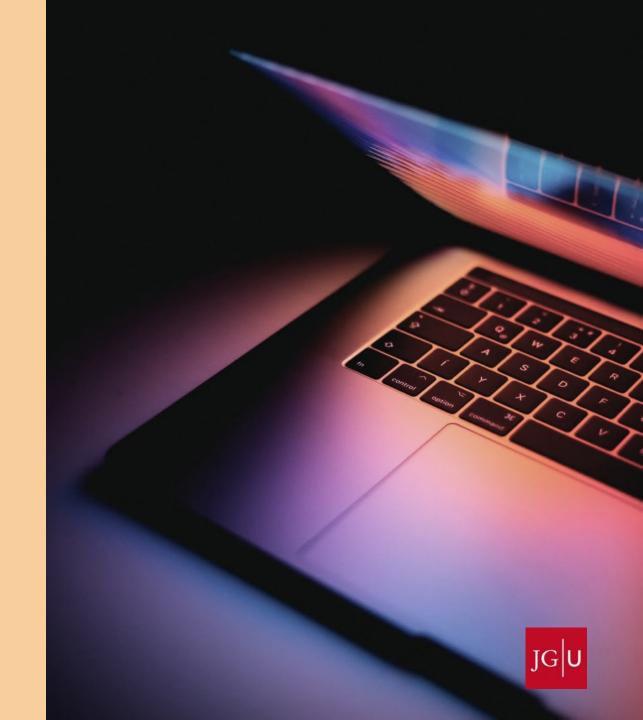
- Preliminary
- Implications depend on
  - Goal directedness of the media type
  - User motivations
- Mitigate friction



Positive, agentic experiences of disengagement are important to the user experience.



Negative disengagement experiences can drive users to adopt disconnective practices of non-use.



## Thank you for the attention!

101 reasons to stop:

A systematic review of media cues for disengagement

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#### Full search string (for Communication Abstracts)

TI ((disengage\* OR stop\* OR terminat\* OR exit\* OR discontinu\* OR "turn\* off" OR avoidance OR friction\* OR scroll\*)

AND (media OR internet OR web\* OR "online communication" OR "online social network" OR texting OR chat OR email OR messaging OR "instant mess\*" OR "mobile mess\*" OR "social networking site" OR gam\* OR "mobile device\*" OR "mobile phone\*" OR smartphone\* OR TV OR television OR movie\* OR streaming\* OR "binge\* watching" OR radio OR book\* OR news\* OR "online search" OR "information search" OR Facebook OR Instagram OR TikTok OR Snapchat OR Twitter OR BeReal OR WhatsApp OR WeChat OR Weibo OR Netflix OR Twitch OR YouTube)

**NOT** (family OR school\* OR security OR infrastructure OR attack OR detection OR industry OR robot\* OR vehicle OR car OR energy OR mobility))

OR AB ((disengage\* OR stop\* OR terminat\* OR exit\* OR discontinu\* OR "turn\* off" OR avoidance OR friction\* OR scroll\*)

AND (media OR internet OR web\* OR "online communication" OR "online social network" OR texting OR chat OR email OR messaging OR "instant mess\*" OR "mobile mess\*" OR "social networking site" OR gam\* OR "mobile device\*" OR "mobile phone\*" OR smartphone\* OR TV OR television OR movie\* OR streaming\* OR "binge\* watching" OR radio OR book\* OR news\* OR "online search" OR "information search" OR Facebook OR Instagram OR TikTok OR Snapchat OR Twitter OR BeReal OR WhatsApp OR WeChat OR Weibo OR Netflix OR Twitch OR YouTube)

**NOT** (family OR school\* OR security OR infrastructure OR attack OR detection OR industry OR robot\* OR vehicle OR car OR energy OR mobility))



Table 1: Media cues for disengagement

Analysis level	Media cue	Explanation and examples	Media context	Relevance	Referenc es
Device	Media availability	Availability of other media and technologies in a situation	Not spec.	Not spec.	[54]
	Technical problems	Device crash, loss of internet connection	Online news and information, social media	+, Not spec.	[37, 50]
	Timer	Reminder that a time budget is up	Games	+	[1, 61]
Application	Friction	Design element interrupting automatic use, e.g., app presenting breathing exercises or a black screen	Smartphones	Unrecog.	[25]
	Media availability	Availability of other media and technologies in a situation	Not spec.	Not spec.	[54]
	Notifications	Incoming push notification from competing medium	Newspaper, social media	+	[23, 50]
	Technical problems	Application crash, bugs in games, results not loading, slow data transmission	Online news and information, social media, games, web browsers	+	[1, 2, 37, 50, 52]
Feature	Access to data download	Ability to download the searched data, e.g., in a data repository	Online news and information	+	[34]
	Blocked autoplay	No automatic start of a next piece of content after finishing the other	Social media	Unrecog.	[36]
	Colour desaturation	Black and white screen to lower aesthetic appeal	Social media	Unrecog.	[36]
	Compact layout	Removed sidebar and peripheral content, "de-cluttering"	Social media	Unrecog.	[36]
	External link	Hyperlinks to other applications and websites	Social media	+	[50]
	Feed separation	Home feed separated into sections instead of infinite scroll, e.g., "load more" button or pagination	Digital broadcast media, messengers, social media	Not spec., Unrecog.	[26, 36]
	Forced interaction	Engagement (like, comment, share) required to proceed to the next piece of content	Social media	+	[51]
	Hidden homepage feed	Removed posts on the homepage	Social media	Unrecog.	[36]
	Hidden notifications	Muted notifications about updates and messages	Social media	Unrecog.	[36]
	Meaningless choices	Game actions without impact on subsequent in-game events	Games	Unrecog.	[5]
	Opportunity to save game progress	At the end of a level or challenge	Games	+	[1]
	Practical support of exiting play	Explicit menu option	Games	+	[1]

	Restricted avatars	Restriction to certain play styles or identities, point deduction for other game actions	Games	Unrecog.	[5]
	Technical problems	Feature freezes	Online news and information	+	[37]
Interaction	Arrangements with other players	Communication about time budget and preferred exit points	Games	+	[1]
	Disagreements with teammates	Disagreements on game strategy	Games	Unrecog.	[5]
	Harassment by other players	Insults, misogyny	Games	Unrecog.	[5]
	Matchmaking	With team members and opponents, system based on player rank	Games	+	[32]
	Skill mismatch	Between team members	Games	Unrecog.	[5]
	Strong opponents	AI opponents	Games	Unrecog.	[5]
Message	Advertisement	Ad break, e.g., on the radio or television	Analogue broadcast media	+, Unrecog.	[40, 41, 56]
	Boring content	Low stimulus frequency, low production value	Social media	+	[50]
	Closure	End of an episode, game completed	Games, digital broadcast media, analogue broadcast media	Mostly +, not spec., unrecog.	[1, 45, 54, 56, 57]
	Content rank position	Position of search results on the results page	Online news and information	+, -	[4, 63]
	Educational content	Learning segment, in-game test sequence	Games	+	[13]
	Error messages	Failed log in, page not found, no access to information source	Online news and information	+	[34, 37]
	Game pace slowing down	After completion of a game challenge, less interaction	Games	+	
	High difficulty	Game challenges	Games	+	[1]
	Irrelevant information	Bad quality of search results	Online news and information	Mostly –, +	[16, 67]
	Issue / actor presence	Presence of certain political actors or of certain news issues	News	+	[24]
	Key information withheld	Information necessary to complete a challenge or level unavailable	Games	Unrecog.	[5]
	Negative content	Negative valence, e.g., violence, sadness	Digital broadcast media, messengers, social media	+	[26]
	Obvious game structures	Information about game structure and environment	Games	+	[1]

Message	Advertisement	Ad break, e.g., on the radio or television	Analogue broadcast media	+, Unrecog.	[38, 39, 54
	Boring content	Low stimulus frequency, low production value	Social media	+	[48]
	Closure	End of an episode, game completed	Games, digital broadcast media, analogue broadcast media	Mostly +, not spec., unrecog	[1, 43, 52, 54, 55]
	Content rank position	Position of search results on the results page	Online news and information	+, -	[4, 61]
	Educational content	Learning segment, in-game test sequence	Games	+	[12]
	Error messages	Failed log in, page not found, no access to information source	Online news and information	+	[32, 35]
	Game pace slowing down	After completion of a game challenge, less interaction	Games	+	
	High difficulty	Game challenges	Games	+	[1]
	Irrelevant information	Bad quality of search results	Online news and information	+, mostly –	[15, 65]
	Issue / actor presence	Presence of certain political actors or of certain news issues	News	+	[22]
	Key information withheld	Information necessary to complete a challenge or level unavailable	Games	Unrecog.	[5]
	Negative content	Negative valence, e.g., violence, sadness	Digital broadcast media, messengers, social media	+	[24]
	Obvious game structures	Information about game structure and environment	Games	+	[1]
	Purposeful content variation	Display of different content types	Digital broadcast media, messengers, social media	+	[24]
	Redundancy	Old or no new content, similar information across articles or search results	Digital broadcast media, messengers, news, online news	Mostly +, not spec.,	[9, 22, 24, 48]
	Result relevance	High or diminishing relevance of results to the search task	and information, social media Online news and information	unrecog. +, –	[4, 35, 61]
	Result type	Type of search results, e.g., ads, websites, news, images	Online news and information	+, -	[4]
	Sufficient useful information	Enough information found within a search task	Online news and information	+	[9, 35, 65]
	Timer	Reminder that a time budget is up, e.g., pop-up message	Digital broadcast media, messengers, social media	+	[24]
	Unskippable segments	Forced exposure to content, e.g., tutorials, story lines	Games	Unrecog.	[5]