

Wegmann, E. et al.: Feels good, and less bad: Problematic use of the Internet is associated with heightened experiences of both gratification and compensation

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SUPPLEMENTARY MATERIAL

Methods

Adaptive structured clinical interview for internet use disorders

We conducted an adaptive structured clinical interview for specific internet use disorders based on the diagnostic criteria for gaming disorder in the DSM-5, which was an adapted version of the AICA structured clinical interview for specific Internet use disorders (Müller & Wölfling, 2018). The interview assessed the following criteria: preoccupation, loss of interest in other behaviors, unsuccessful attempts of abstinence and loss of control, continuation despite negative consequences, tolerance, symptoms of withdrawal, emotion regulation, deception, loss of important relationships or future perspectives. Furthermore, functional impairment in daily life was assessed as a further decisive criterion. The interview was adapted and conducted specifically for the first-choice online behavior, namely gaming, pornography use, buying-shopping, and social networks use. Participants who fulfilled five or more of the DSM-5 criteria were classified as individuals with pathological use, participants with less than five but more than one symptom fulfilled were classified as individuals with risky use, and participants who fulfilled one or no criterion were included as control participants indicating non-problematic use of the preferred online behavior. The clinical interviews have been conducted by trained scientists of the research unit who were regularly supervised by clinically working supervisors and principal investigators.

Assessment of Criteria for Specific Internet use disorders

As additional measurement of symptom severity we used the Assessment of Criteria for Specific Internet use Disorders (ACSID-11; Müller et al., 2022) which is a screener based on the ICD-11 diagnostic criteria for gaming disorder. The scale assesses the experiences of impaired control, increasing priority, continuation/escalation, functional impairment and marked distress specific for each online behavior performed in the last 12 months by self-report. Participants have to rate eleven items on two 4-point Likert scales investigating frequency of symptom occurrence from 0="never" to 3="often" and the severity of symptoms from 0="not at all intense" to 3="intense". Sum scores were calculated separately for the frequency and severity scales.

Experience of Gratification Scale (EGS) and Experience of Compensation Scale (ECS)

The EGS assesses the experienced gratification while using a specific online application (Wegmann et al., 2022). The questionnaire consists of six items, which are answered on a 5-point Likert scale ranging from 1="never" to 5="very often". It includes two factors each containing three items: gratification of needs (e.g., "While using [a specific application], I feel powerful".) and experience of pleasure (e.g., "While using [a specific application], I experience

fun"). All items referred adaptively to the targeted specific online behavior (i.e., gaming, online pornography, online buying-shopping, or social networks use).

We used the ECS for measuring the experienced compensation while using a specific online application (Wegmann et al., 2022). Comparable with the EGS, all items were related to the targeted specific online behavior. Participants were asked to imagine using a specific application compared to other activities or compared to when the internet is not used. The questionnaire consists of six items, which must be rated on a 5-point Likert scale ranging from 1="never" to 5="very often". The ECS includes two factors each containing of three items: compensation of needs (e.g., *"While using [a specific application], I feel less unsuccessful."*) and experience of relief from negative feelings (e.g., *"While using [a specific application], I feel less worried."*).

Internet Use Expectancies Scale

We used modified versions of the Internet Use Expectancies Scale to assess individual expectancies towards the previously selected online application (Brand et al., 2014). The questionnaire contains two factors with six items each: positive use expectancies (e.g., *"I use [a specific application] to experience pleasure."*) and avoidance expectancies (e.g., *"I use [a specific application] to distract myself from problems."*). Items had to be rated on a 6-point Likert scale ranging from 1="completely disagree" to 6="totally agree". Mean scores for each subscale have been used.

Self-Report Habit Index

We used the Self-Report Habit Index (SRHI) by Verplanken and Orbell (2003). The scale was modified for the specific online usage behavior. Participants had to rate 12 items (e.g., *"Using [a specific application] is something I do without thinking"*) with regard to the preferred online application on a 5-point Likert scale ranging from 1="agree" to 5="disagree". A mean score was calculated. Higher values indicate lower habitualized behavior.

Specific usage motives

We used behavior-specific validated questionnaires to assess usage motives. For gaming, the Motives for Online Gaming Questionnaire (Demetrovics et al., 2011) has been used. The questionnaire contains 27 items, which had to be rated on a 5-point Likert scale ranging from 1="almost never/never" to 5="almost always/always". The items are categorized in seven factors: social (e.g., *"I play online games, because I can get to know new people."*), escape (e.g., *"[...] because it makes me forget real life."*), competition (e.g., *"[...] because I enjoy competing with others."*), coping (e.g., *"[...] because it helps me get rid of stress."*), skill development (e.g., *"[...] because gaming shapes my senses."*), fantasy (e.g., *"[...] to feel as I was somebody else."*), and recreation (e.g., *"[...] for recreation."*). We calculated mean scores for each factor.

For buying-shopping, the Online Shopping Expectancies (Trotzke et al., 2015) as measurement for buying-shopping specific usage motives has been used. Participants had to response to 15 items on a 5-point-Likert scale ranging from 1="absolute disagreement" to 5="absolute agreement". There are three factors: buying anonymously/avoiding social interactions (e.g., *"I prefer buying on the Internet because no one can see me buy."*), buying

availability/product variety (e.g., “I prefer buying on the Internet there are more product choices.”), and immediate positive feeling (e.g., “I prefer buying on the Internet because I can get more immediate pleasure from buying.”).

We used the Pornography Consumption Inventory (Reid et al., 2011) for specific usage motives in pornography use. Participants had to rate 15 items on a 5-point Likert scale ranging from 1=“never like me” to 5=“very often like me”. The questionnaire contains four factors: emotional avoidance (e.g., “I turn to it when I’m feeling down, sad, or lonely.”), sexual curiosity (e.g., “I use it to learn more about a sexual activity or practice.”), excitement seeking (e.g., “I use it to escape into a fantasy world.”), and sexual pleasure (e.g., “I use it to feel physical pleasure.”). Sum scores were calculated for each factor and an overall score.

The Motives for Using Social Media scale by Al-Menayes (2015) was used for assessing specific motives for social networks use. The questionnaire contains 18 items loading on five factors: entertainment (e.g., “I use it to kill time”), personal utility (e.g., “To join groups”), information seeking (e.g., “To search for information”), convenience (e.g., “Others can answer anytime.”), and altruism (e.g., “To help others”). Participants had to rate each item on a 5-point Likert scale ranging from 1=“not at all” to 5=“exactly”.

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