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Trends in Cyberbullying in Hungary During the COVID-19 Pandemic: A Nationwide Representative Study

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Introduction

Cyberbullying is commonly defined as a form of bullying that occurs through **digital technologies** and online platforms, in which the perpetrator **intentionally** and **repeatedly** harasses, threatens, or humiliates another person over time[1]. Despite general consensus on these core elements, the literature reveals substantial **definitional heterogeneity**[2]. One major area of debate concerns the **applicability of traditional bullying criteria**—intent, repetition, and power imbalance—in digital contexts. For example, **anonymity** can obscure intent, and even a **single harmful act** may have prolonged effects due to the persistent, shareable nature of online content, thus challenging the notion of repetition[3]. The **rapid evolution of digital technologies and social media** further complicates conceptual clarity, as emerging platforms continuously reshape how individuals interact and experience harm online. These definitional and operational inconsistencies make it difficult to **track trends** in cyberbullying over time or compare prevalence estimations across studies[4]. The **COVID-19 pandemic** further transformed the digital landscape. As **screen time surged**[5] due to online learning/working and social restrictions, exposure to digital risks increased. Studies suggest that cyberbullying may have intensified during this period[6,7,8,9,10], with perpetration often driven by motives such as **revenge for prior offline bullying** or **boredom**[6], reflecting a continuity between offline and online aggression.

This study aimed to assess the prevalence and correlates of **cyberbullying** and **cybervictimization** among **Hungarian adults** and examine how these patterns changed **between 2019 and 2023** In addition, we explored changes over time in the **self-reported likelihood of employing various coping strategies** in response to a hypothetical cyberbullying scenario. Our goal was to identify risk groups, examine relevant sociodemographic predictors, and better understand how coping intentions may have shifted over a four-year period.

Methods

The target population consisted of the general adult population of Hungary aged 18 to 64 years. Participants were selected using **quota sampling**, stratified by **sex, age group, geographic region**, and **type of residence**.
Data collection was conducted through **computer-assisted personal interviewing (CAPI)** by trained professionals.
Two independent, cross-sectional samples were collected **four years apart**, before and after the COVID-19 pandemic. The final combined sample included **3,691 individuals** (2019: *N* = 1,691, 849 males; 2023: *N* = 2,000, 1,010 males).
Participants provided information on their **sociodemographic background**, **cyberbullying and victimization experiences**, and were also asked how likely they would be to engage in specific coping strategies if they were the target of a **hypothetical cyberbullying scenario** involving threatening messages and the spread of embarrassing images.

Survey-weighted binary logistic regressions were conducted to identify predictors of cyberbullying and victimization. The models included **year of data collection, gender, age group, education level, and residency type**, along with **their interactions with year** to examine changes in associations over time.

Results

Model fit was supported by design-based Wald F-tests:
– *Victimization model*: $F(13, 3490) = 5.78$, $p < .001$, $R^2 = .030$
– *Perpetration model*: $F(13, 3489) = 4.30$, $p < .001$, $R^2 = .021$

Significant predictors are indicated on Figures 1 & 2.

The prevalence of **cyberbullying victimization** **increased** from **2.5% (SE = ±0.4%)** in 2019 to **5.7% (SE = ±0.54%)** in 2023.
The prevalence of **perpetration** **rose** from **1.3% (SE = ±0.29%)** to **3.3% (SE = ±0.41%)** over the same period.

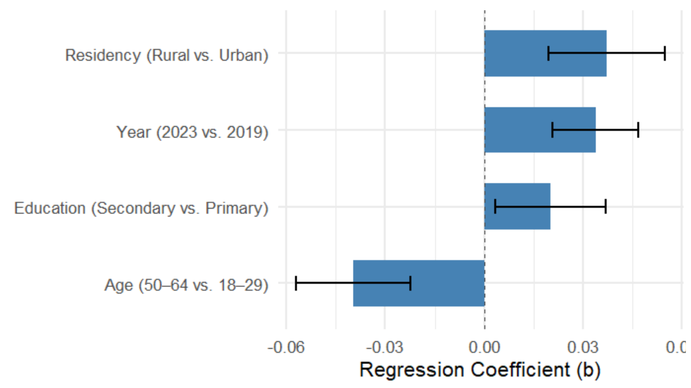

Figure 1. Significant Predictors of Cybervictimization.

Note. Bars indicate logistic regression coefficients with 95% confidence intervals. Positive values reflect higher likelihood of victimization.

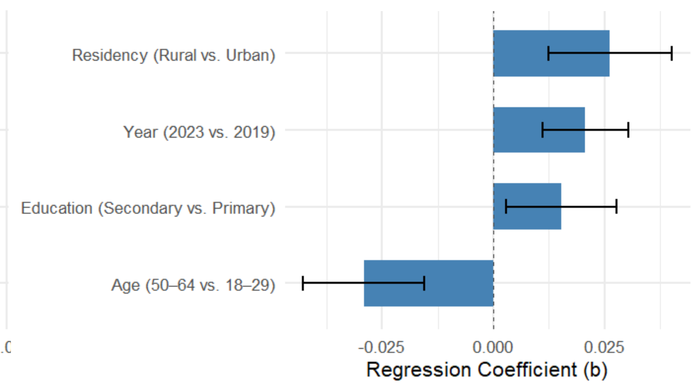

Figure 2. Significant Predictors of Cyberbullying.

Note. Bars indicate logistic regression coefficients with 95% confidence intervals. Positive values reflect higher likelihood of perpetration.

We conducted a Principal Component Analysis (PCA) with Varimax rotation to explore the underlying structure of individuals' coping responses to cyberbullying. The analysis was based on a set of 36 self-report items assessing a variety of behavioral, emotional, and cognitive reactions.
The Kaiser-Meyer-Olkin (KMO) measure verified sampling adequacy (KMO = 0.94), and Bartlett's test of sphericity was significant ($\chi^2 = 47554.77$, $p < .001$), supporting the suitability of the data for factor analysis. Based on the scree plot and eigenvalues >1, a five-component solution was retained, accounting for 60.8% of the total variance.
The rotated component matrix revealed five interpretable components reflecting distinct coping styles. Each item loaded ≥ .50 on its primary component, with minimal cross-loadings.

RC1 - Protective and Support-Seeking Coping
RC2 - Retaliatory Coping
RC3 - Helplessness and Self-Blame
RC4 - Formal Help-Seeking
RC5 - Assertive Coping

Differences in composite scores between the 2019 and 2023 data collection waves were assessed using survey-weighted t-tests within a complex sampling design.
Composite scores were derived from PCA-based coping factors, computed as the average of items loading ≥ .50 on each factor (Figure 3.).

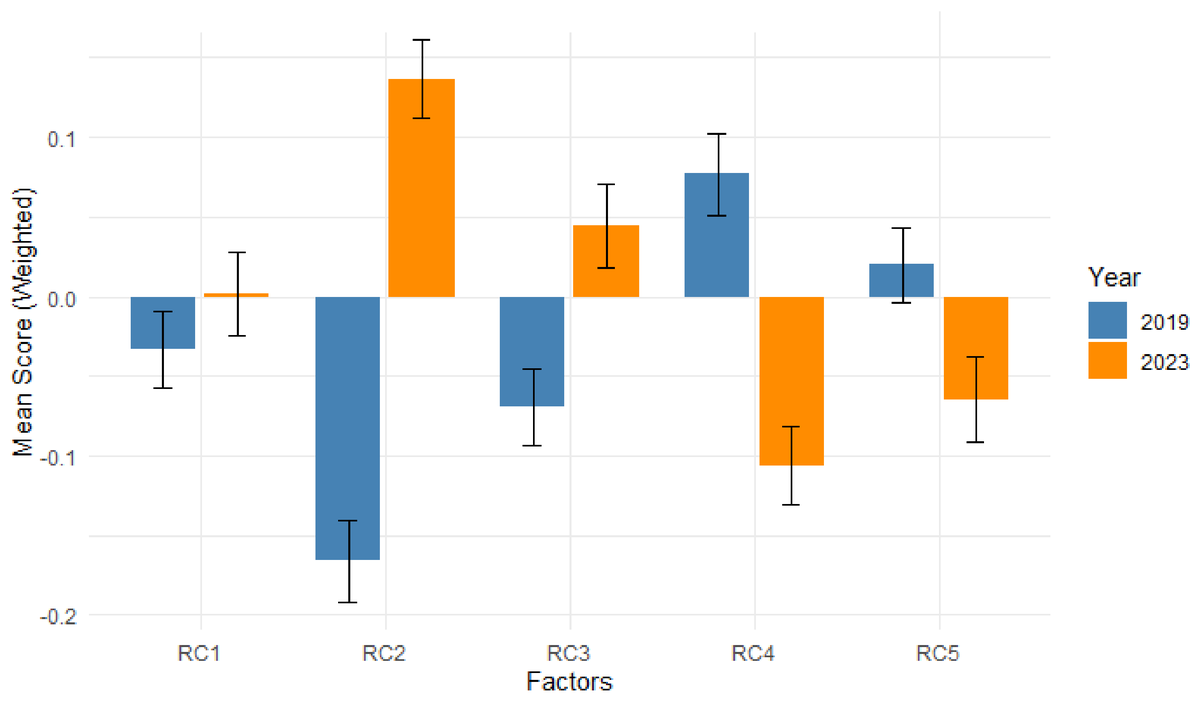

Figure 3. Comparison of coping strategy scores derived from principal component analysis (RC1–RC5) across 2019 and 2023.
Note. Bars show weighted means; error bars indicate standard errors.

No significant change was observed for **Protective and Support-Seeking Coping (RC1)** $t(3485) = 0.98$, $p = .33$.
Retaliatory Coping (RC2) scores significantly **increased** ($M_{diff} = 0.30$), $t(3485) = 8.49$, $p < .001$
Helplessness and Self-Blame (RC3) also **increased** ($M_{diff} = 0.11$), $t(3485) = 3.20$, $p = .001$
Formal Help-Seeking (RC4) **decreased** significantly in 2023 ($M_{diff} = -0.18$), $t(3485) = -5.19$, $p < .001$
Assertive Coping (RC5) showed a modest **decline** ($M_{diff} = -0.08$), $t(3485) = -2.34$, $p = .019$

Discussion

Our findings revealed an increase in both **cyberbullying victimization and perpetration** following the COVID-19 pandemic. **Secondary education** and **rural residency** emerged as consistent risk factors for both outcomes. In contrast, **older adults (aged 50–64)** were significantly less likely to report involvement.
Regarding coping strategies, increases were observed in **retaliatory responses** and **helplessness/self-blame**, while **formal help-seeking** and **assertive coping** declined—suggesting a shift toward **less adaptive responses**.
Taken together, these results highlight a **concerning upward trend** in cyberbullying, accompanied by **changes in coping behaviors** that may reduce the likelihood of effective resolution.

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