# Countering bullying and cyberbullying using technology-based solutions: a systematic review

Elena Serritella – PhD Student – elena.serritella@unifi.it

UNIVERSITÀ DEGLI STUDI FIRENZE
FORLILPSI
DIPARTIMENTO DI FORMAZIONE, LINGUE, INTERCULTURA, LETTERATURE E PSICOLOGIA

INTRODUCTION

Countering **bullying and cyberbullying** has assumed high relevance in past decades (UNICEF, 2018; 2019).
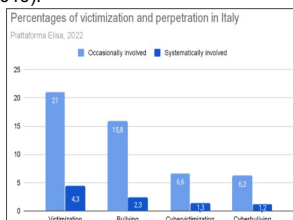
This evidence has led to numerous prevention projects (Gaffney et al., 2021), but few of them has considered **Virtual Environments and Information and Communication Technologies (ICTs)** as preventive environments (Nocentini et al., 2015).

The aim of this study was to **systematically review** the scientific literature on technology-based prevention interventions for both traditional and online bullying among adolescents.

METHODS

The review was conducted using the PRISMA guidelines (Page et al., 2021; Moher et al., 2009).

WHERE? Three databases: **PsychInfo, Scopus and Web of Science**

WHAT? Four clusters of keywords:
Environment ('Online', 'Virtual', 'Web*', 'Internet', 'Digital', 'Computer', 'Artificial intelligence', 'Gam*', 'Simulat*');
Intervention ('Intervent*', 'Educat*', 'Prevent*', 'Trial*', 'Program*', 'Project*');
Phenomenon ('Bull*', 'Cyberbull*', 'Cybervictim*', 'Victim*', 'Peer harass*', 'Peer violen*', 'Peer aggress*');
Target ('Student*', 'Adolescen*', 'Youth*', 'Teen*', 'Young*').

Selection criteria:
(i) articles not published in scientific journals; (ii) not published in English, Italian or Spanish; (iii) not involving participants under 18 years old; (iv) not dealing with bullying or cyberbullying; (v) not referring to interventions and, in particular, (vi) not referring to technology-based interventions.
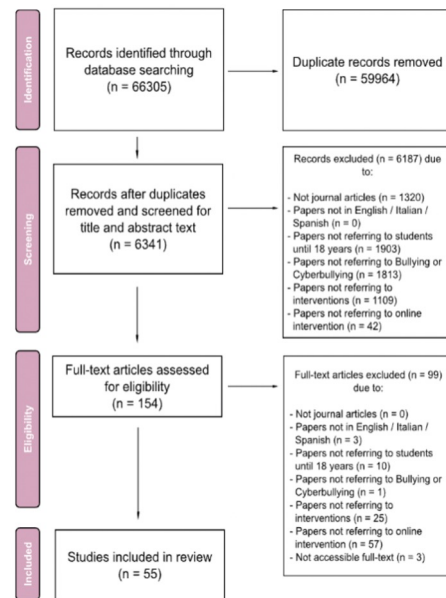

Figure 1. The diagram shows the processing flow of the collected records (Page et al., 2021).

RESULTS AND DISCUSSION

A total of 55 articles were included in the review, reflecting **42 intervention protocols** and **38 papers with quantitative data**.

Overall, literature has developed **both fully technology-enabled and mixed interventions**, with a greater prevalence in recent years of **highly interactive tools** such as Serious Games, Virtual Reality and Artificial Intelligence.
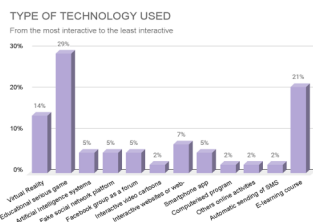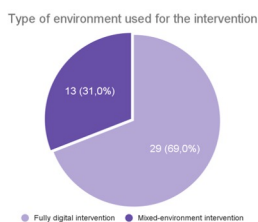
The technological tools seem to be an **excellent and effective ally** in the fight against both bullying and cyberbullying.

Only 3 interventions had no significant effectiveness results.

Figure 2. Outcomes for which the remaining 35 papers were effective.

CONCLUSION

The time is ripe for a **more careful and detailed analysis of technological components** useful in the prevention of bullying and cyberbullying phenomena in schools. This may contribute to enable practitioners, policy-makers and administrators **to make positive use of the digital transformation** continuously taking place in schools of all levels.

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