Addressing racial misinformation at school: a psycho-social intervention aimed at reducing ethnic moral disengagement in adolescents

Francesca D'Errico[1] · **Paolo Giovanni Cicirelli**[1] · **Giuseppe Corbelli**[2] · **Marinella Paciello**[2]

Abstract

The present study aims to examine whether by promoting the socio-analytic thinking it is possible to intervene in the reliance on ethnic moral disengagement as a negative consequence of racial misleading news, that can seriously contribute to the diffusion of ethnic prejudice. We focus on the neglected phenomenon of racial hoaxes, which can be defined as misleading news stories dealing with health or safety threats, in which the protagonist is described in terms of ethnicity or nationality. The intervention procedure has been created starting from the well-established literature focused on media biases' reflection, integrated with the recent studies on 'mediated intergroup contact' where the observation of the person belonging to the outgroup is crucial for prejudice reduction. The intervention involved 83 adolescents ($M_{age}=13.9$; $SD_{age}=0.9$) and it was composed of two different parts, one focused on the analytical racial hoax reading, and the other focused on racial hoax rewriting after the 'mediated contact', represented by an alternative story given by the African protagonist. The results show that in dealing with misleading news, the promotion of this social-analytic processing reduces ethnic biases of moral disengagement. In particular, it was found that analytical processes are supported by the participants' level of propensity for analytical reasoning and that these processes directly hinder distorted ethnic beliefs. Overall, these results suggest that improving social-analytic processes related to reflexivity could be an effective intervention to counter those distorted beliefs, such as ethnic disengagement beliefs, associated with discrimination and racial prejudice.

Keywords Racial misinformation · Moral disengagement · Analytical reasoning · Mediated intergroup contact intervention · Adolescence

---

Extended author information available on the last page of the article

1 Introduction

1.1 The effect of misleading racial news

The spread of misleading news, as information disorders (Ireton & Posetti, 2018), is currently a phenomenon of great interest to researchers, (e.g., Pennycook et al., 2021), educators, and teachers. In particular, misinformation, i.e. the unintentional diffusion of incorrect information, or false information, but transmitted with the conviction of its truth, does not concern only fake news but is also linked with a particular kind of manipulated news, called "racial hoaxes" (Cerase & Santoro, 2018). Racial Hoaxes can be defined as communicative acts with distorted and misleading information in the form of a threat to our health and safety, in which a protagonist is a person, or a group of people described in terms of his/her/their ethnicity, nationality or religion (Cerase & Santoro, 2018; D'Errico et al., 2022). In particular, this kind of misleading news can include a bias toward the person responsible for the action that can be described using marked or implicit negative evaluation: in the first case, the news contains emotive and sensationalistic language (language bias), or exaggeration or overinterpretation of the fact (factual bias) or also the description of the fact by taking into account only one side, instead of giving a bi-sided or complex framework of the news (author or fairness bias; Litovsky, 2021).

In particular, misleading racial news generally contains typical linguistic forms of stereotypes, mainly focused on the absence of morality, and prejudices aimed at dehumanizing and attributing various types of threats to their protagonists (D'Errico et al., 2022). The stereotypical and schematic view of immigrants can be a powerful way to propagate biased information by reinforcing people's anti-immigrant attitudes, as demonstrated in an adult sample by Wright and colleagues (2021).

The misinformation literature mainly focuses on adults (van der Linden, 2022) and little space has been dedicated to a sensitive population, defined as digital natives (Prensky, 2009), who are generally attributed with advanced digital skills. On the contrary, as recent research shows, digital natives are actually vulnerable to misleading news, and even racially biased news (Herrero-Diz et al., 2021; Papapicco et al., 2022). For this reason, it is crucial to study psycho-educational interventions that make young people aware of the factors and communication dynamics that can perpetrate distorting beliefs such as ethnic moral disengagement (Lo Cricchio et al., 2021), which can lead to, reinforce, and maintain stereotypes and/or attitudes such as ethnic bias (Carrera et al. 2018; Passini, 2019). Based on these premises, the present study focuses on the overlooked phenomenon of racial hoaxes among adolescents and in particular on ethnic moral disengagement, which indeed represents one of the well-recognized risk factors associated with harmful attitudes and behavior in adolescence (Bayram et al., 2020; Caravita et al. 2019; Lo Cricchio et al. 2021; Iannello et al. 2021). Specifically, we present a research-intervention paper to test whether, by promoting social-analytic thinking, ethnic moral disengagement as a negative consequence of misleading racial news can be prevented. In agreement with some authors (Bustamante & Chaux, 2014) we argue that promoting analytic cognitive processing can actively counteract bias processes. After the phase related to cognitive processing, in which participants reflect on the stereotypical language of the misleading
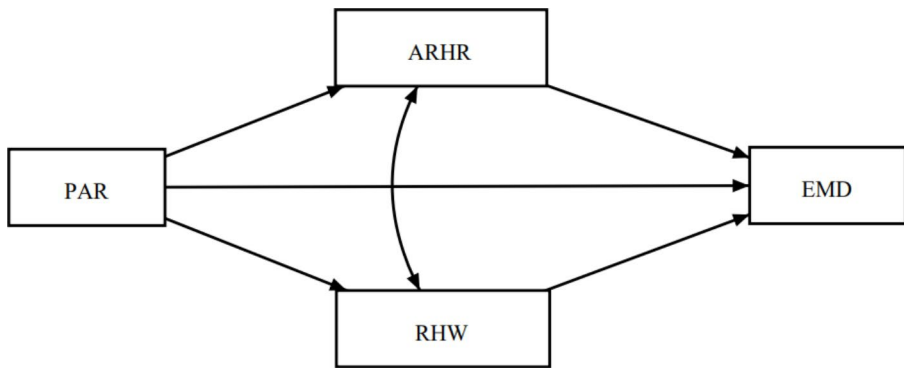
Fig. 1 Hypothesized model. *Note*: PAR=Propensity to engage in Analytical Reasoning; ARHR=Analytical Racial Hoax Reading; RHW=Racial Hoax re-writing; EMD=Ethnic Moral Disengagement

news, adolescents are brought into contact with the immigrant's perspective through his or her humanized point of view, thus realizing the so-called "mediated intergroup contact" with the outgroup member, which in multiple studies has been shown to be effective in reducing ethnic prejudice (Banas et al., 2020). As illustrated in the proposed theoretical model (Fig. 1), our main hypothesis is that analytical thinking, through a two-step intervention (analytical reading and post-mediated contact rewriting), can hinder ethnic moral disengagement while also taking into account the starting levels of adolescents' propensity for analytical reasoning.

By examining this posited model, the present study aims to contribute to recent literature on intervention on fake news that has stressed the importance of priming analytical thinking (Lutzke et al., 2019) to face misinformation and credulity. Moreover, it aims to contribute to the literature on moral disengagement intervention in adolescence by taking into account the role of effortful cognitive processes in counteracting its use. Specifically, building on the well-established approach of Paul and Elder (2004), which is focused on reflecting on media bias, in integration with the literature on reducing moral disengagement and ethnic bias (Bustamante & Chaux, 2014; Iannello et al., 2021), we propose the results of a pilot study based on a two-stage intervention: the first aimed at the analytical reading of linguistic biases and distortions, and the second targeted at rewriting misleading racial news after indirect, mediated intergroup contact with the outgroup member, while monitoring changes in the distortions represented by disengaged moral beliefs that may play a crucial role in preventing ethnic prejudice and discrimination (Banas et al., 2020; Mutz et al., 2010).

1.2 Stereotypes, prejudice, and ethnic moral disengagement

Moral disengagement represents one of the most important social-cognitive dimensions introduced by Bandura in the Social Cognitive Theory to understand why individuals engage in aggressive and damaging conduct. It specifically refers to self-serving cognitive distortions weakening moral awareness and regulation and consequently giving the green light to justified harmful conduct for others and the entire community. The morally disengaged distortions concern those cognitive strat-

egies through which individuals can justify and interpret their behavior (e.g., moral justification), its possible negative consequences (e.g., distortion of consequences), its attribution causality (e.g., attribution of blame), and accountability (e.g., responsibility diffusion). The literature on moral disengagement and harmful behavior is massive, attesting to its disinhibitory power in educational contexts (e.g., Iannello et al., 2021; Gini et al. 2014) and its negative effects—especially during adolescence (Paciello et al., 2008; Hyde et al., 2010). However, concerning ethnic discrimination, there are relatively fewer contributions (e.g., Mazzone et al. 2018; Passini, 2019; Lo Cricchio et al., 2021) and only a small number of recent studies have considered the implications of moral disengagement in understanding the several forms of online discriminations (Maftei et al., 2022; D'Errico & Paciello, 2018; Faulkner & Bliuc, 2016; Paciello et al., 2021).

In particular, concerning ethnic prejudice and the different forms of discrimination, previous findings substantiate the important role of moral disengagement in connecting indifference to derogatory attitudes toward out-group members (Passini, 2019) as well as in mediating the relationship between negative attitudes toward out-group members and racist behaviors (Carrera et al. 2018). Ethnic prejudice indeed is translated into discriminatory conduct by using cognitive distorting processes to allow people to protect their moral conscience while harming and dehumanizing ethically different people (Costello & Hodson, 2014). Also in adolescence, Mazzone et al. 2018 found that many characteristics of immigrant youth may be perceived as "deviant", and their maltreatment thereby justified. In addition, moral disengagement can take place due to in-group interest (Pinter & Wildschut, 2012). When individuals act as members of a group, the salience of moral beliefs and self-awareness may decrease, increasing the propensity to harm outgroup members (Lantos & Molenberghs, 2021).

In the case of online discrimination, a recent study conducted by Maftei and colleagues (2022) has suggested that fake news is a form of cyberbullying and that moral disengagement mediated the relationships between impulsive use of the internet and cyberbullying fake news - in adolescence, but not in adults: "online fake news creation and spreading emerge in a virtual environment that often encourages moral disengagement and, generally, immoral actions" (Maftei et al., 2022, p.1). The interrelationships among moral disengagement, misinformation, and discrimination are understandable since each of these constructs is related to online hate speech (Schäfer & Schadauer, 2018).

Despite the evidence about the need of preventing the recourse to moral disengagement distortions, especially in adolescence when these mechanisms can crystalize (Paciello et al., 2008), studies aimed at testing interventions' efficacy are limited. In particular, some scholars pointed out how for instance recognizing common thinking errors in a specific situation that lead people to be aggressive could be a possible strategy to contrast cognitive distortion (Gibbs et al., 1995). In accordance, Bustamante and Chaux (2014) suggest that developing a disciplined mental activity to evaluate different arguments before making an ethical judgment can contrast the resort to moral disengagement mechanisms. This intervention approach is also in line with recent findings attesting to the link between cognitive impulsivity and moral disengagement (Zhao et al., 2021); moreover, it seems theoretically convinc-

ing because—as posited by Bandura (1991)—the capacity to analyze correctly and accurately the different elements in complex social situation play an important diagnostic function in the self-regulation process. Overall, results suggest that, as in the case of intervention on misinformation, also for moral disengagement distortions the development of the intentional, volitional, and effortful cognitive processes sustain the regulatory abilities of a reflective mind could be a key for intervention on biased cognitive processes- also involuntary, as moral disengagement ones.

1.3 Interventions on racial misinformation: a socio-analytical approach

In recent years, the so-called pre-bunking (van der Linden, 2022) interventions concerning misinformation have highlighted that it is effective to alert people to misleading news through the so-called "accuracy prompts" or nudges (Epstein et al., 2021; Pennycook & Rand, 2022), since they can induce potential victims to reflect on the accuracy and credibility of false and distorted information by promoting the use of analytic processing, especially for people with low propensity to engage in analytical reasoning (Pennycook & Rand, 2019).

This intervention approach draws on the inattention-based theory (Pennycook et al., 2021): according to this theory, users generally prefer to avoid spreading misinformation, and, despite being able to distinguish true news from those manipulated, they share the same inaccurate news as the social environment focuses their attention on other factors (such as, for example, political opinions), rather than on accuracy (Pennycook et al., 2021). Also, Lutzke and colleagues (2019) demonstrated how either proposing a series of guidelines for evaluating news online or reading and then rating the importance of each guideline can be an effective way to 'prime' analytical thinking when people are exposed to fake news. A very structured recent approach to intervening on young people's media biases and cognitive distortions by inducing analytical priming was the one defined by Paul and Elder (2004) because they highlighted how it is necessary to promote analytical processing (a) by identifying the point of view from which the story is told, (b) by identifying which points of view are denied or ignored, c) by distinguishing between the facts underlying the story and the interpretation given to those facts. Buluc (2018) also proposes alongside the reflections on the potential epistemic and ideological reasons of the news writer, to add a reflection on the phrases that are either ambiguous or unsupported by facts or evidence.

In addition, being the nature of racial hoaxes strictly connected with ethnic stereotypes and prejudices, our intervention needs to deal with the psycho-social research on stereotypes and prejudice reduction, in particular the one produced in recent years that stemmed from the well-known Contact Hypothesis (Pettigrew & Tropp, 2006). This approach inspired the work of Birtel and colleagues, who asked participants to draw or write something to an outgroup member to exhort them to imagine a personal contact. The results reveal that participants in the experimental condition reported less intergroup bias in the form of contact intentions and behavioral inclusiveness (Birtel et al., 2019).

Alongside this, a more recent study approach has highlighted how reading a story can be a means by which it is possible to engage in a 'mediated intergroup contact'

with people belonging to groups subject to prejudice (Banas et al., 2020; Mutz et al., 2010). Reading an alternative story for the reduction of prejudice seems particularly promising: for instance, Johnson and colleagues showed that reading a full narrative was particularly effective at reducing implicit prejudice in low dispositional perspective-takers (Johnson et al., 2013). Also, the work of Paravati and colleagues (2022) demonstrated that reading stories in general improves explicit and helpful attitudes towards refugees, especially in relation to the resilience of the characters, and that "restorative" stories have a direct influence on the readers' positive attitude. Cocco and colleagues (2022) operationalized vicarious contact with story reading and creating fairy tales on stigma-based bullying where the majority of characters bullied minority characters; participants were Italian primary schoolchildren and were read fairy tales in small groups by an experimenter once a week for 3 weeks. The results show that the intervention increased intergroup empathy and anti-bullying peer norms and stimulated contact intentions (Cocco et al., 2022). Igartua and Guerrero-Martin studied the effects of similarity with the protagonist and the text's narrative voice on attitudes towards immigration and intention of collaborating with NGOs (Igartua & Guerrero-Martín, 2022).

With particular attention to ethnic moral disengagement, recently a social media study has shown how exposition to a mediated negative intergroup contact can promote ethnic moral disengagement (D'Errico & Paciello, 2018). In the same vein, we posit here that positive mediated contact with an outgroup member can be an effective way to reduce ethnic moral disengagement.

2 Methods

2.1 Participants

Since the project focuses on adolescents, in order to recruit an adequate sample we approached a number of schools in the same Italian region to collect their willingness to participate in the research project. Among them, three schools coming from South Italy were interested; accordingly, their students were reached as a convenience sample. In total, 83 participants were involved including 41 males, 41 females, and 1 non-binary. The sample age varied between 12 and 16 years (M_{age}=13.9; SD_{age}=0.9).

2.2 Procedure

The research project was carefully presented to the schools' staff involved, and because the participants were all underage, the questionnaires were administered only after receiving appropriate informed consent with signatures from the student's legal guardians. None of the participants refused to participate or withdrew from the study. After the final administration, an appropriate debriefing was conducted with all participants. All the procedures strictly followed the Helsinki ethical principles and were in accordance with the AIP (Italian Psychology Association) ethical code; moreover, the design and the procedure were approved by the ethics committee of the University to which two of the authors are affiliated (reference code: ET-22-01).

The research has been divided into two consecutive phases: (1) pre-intervention measures; (2) composite intervention through analytical processing of racial hoaxes, news rewriting, and post-intervention measures. In the first phase, a battery of tests and questionnaires was presented to the participants through the school's computer lab computers, structured through the scientific markup software Inquisit v.6.5.2 (2021). The objective was to assess the variables of interest, namely: individual propensity levels for reflective thinking, tendency to justify ethnically-based moral violations and to collect basic socio-demographic information (gender and age). The duration of this initial survey was approximately 50 min. After one week the students were presented with a new battery comprising a two-part intervention, followed by a new ethnic disengagement survey.

For the composite intervention phase, a quanti-qualitative tool was created and distributed via Google Form; through the creation of an imaginary context in which the student was involved in an online newsroom, an active attempt is made to guide the participant to recognize the communicative and substantive features that characterize a racial hoax; simultaneously, their ability to learn, and thus recognize racially motivated misleading news was assessed. Next, the adolescent was asked to rephrase the same news item by reading the immigrant's standpoint on the same fact, bringing the participants to integrate the two news items, the first misleading and the second focused on the version of the immigrant protagonist.

At the end of the intervention, the tendency to justify ethnically-based moral violations (i.e., Ethnic Moral Disengagement) was measured again with the same items as in the first phase.

The time to complete the entire intervention varied from 30 to 50 min.

2.3 Measures

2.3.1 Propensity to engage in analytical reasoning (cognitive reflection Test-2)

As suggested by Pennycook and Rand (2019) for this specific area of research, the Cognitive Reflection Test was adopted to measure the adolescent's propensity to think slowly and carefully through a problem, resisting the impulsive tendency to give the first plausible answer. The revised version of the Cognitive Reflection Test (CRT-2; Thomson & Oppenheimer, 2016) has been preferred over the original (Frederick, 2005) both because of its greater simplicity of administration to a sample of adolescents and because of the lower dependence of the score on mathematical skills. Indeed, the test aims to assess the propensity to engage in analytical reasoning (PAR) and is not meant at all as an assessment of mathematical intelligence (Böckenholt, 2012; Campitelli & Gerrans, 2014; Sinayev & Peters, 2015). After applying the (reversed) coding scheme to the four open responses as indicated by the authors (Thomson & Oppenheimer, 2016) and averaging the values, the test outcomes ranged between 1 (impulsive-incorrect responses only) and 2 (correct responses only).

2.3.2 Ethnic moral disengagement

To assess the tendency to engage in the moral disengagement mechanisms in the specific context of interethnic interactions, three items from the Ethnic Moral Disengagement (EMD) scale were specifically selected (Lo Cricchio et al., 2021): (1) "If any boy/girl of different ethnicity or origin is treated badly by others, it is because he/she is the first to behave badly toward Italians"; (2) "People of different ethnicities or origins who are mistreated usually deserve it because they are like beasts"; (3) "It is not serious to insult someone of a different ethnicity or origin since beating them would be even worse". The three items are related to the mechanisms of attribution of blame, dehumanization, and advantageous comparison, respectively. Each item was rated on a 5-point Likert scale ranging from 1 ("*Strongly disagree*") to 5 ("*Totally agree*"). Cronbach's α for the three initial items was 0.77, and 0.73 for the same items measured after the intervention.

2.3.3 Analytical racial hoaxes reading

To calculate an indicative score of the ability to recognize the characteristic manipulations of a racial hoax, a purpose-built battery consisting of several parts was made (ARHR, Analytical Racial Hoaxes Reading index).

First, in keeping with the specific ecology of social networks, a screenshot of a news story was presented to the participant, reporting it as if it had been encountered on Instagram (Fig. 2). The news item, constructed specifically after a series of specific focus groups, turned out to be highly realistic for teenagers (Lottridge & Bentley, 2018).

Subsequently, through guided reflections specially structured to encourage analytical processing, participants were asked to analyze the racial hoax in detail. The guided analyses, based on media biases reflection (Paul & Elder, 2004), included: detecting ethnic stereotypes associated with the title and content of the news stimulus; distinguishing between fact and judgment; reflecting on the source of the news; identifying the prevailing narrated point of view, or focus; to reflect on the existence of alternative focus, with questions such as "can you see an alternative narrative?".

To code the level of analytical reasoning applied to the open-ended responses given by the subjects, an ad hoc coding scheme was defined and applied at the end of this first phase. The analytical racial hoaxes reading index was then obtained by summing the score obtained in each one of the six different tasks, coded by two independent judges according to the following coding scheme: stereotype recognition in the title (0=no; 1=yes), with an inter-judge agreement of $k=0.778$; stereotype recognition in the text (0=no; 1=yes), with an inter-judge agreement of $k=0.783$; recognition of the difference between fact and judgment (0=none, 1=only one, 2=both), with an inter-judge agreement of $k=0.714$; source identification (0=no; 1=partially identified; 2=identified), with an inter-judge agreement of $k=0.935$; search for other points of view (0=no, 1=partially correct, 2=correct), with an inter-judge agreement of $k=0.943$; ability to find alternative interpretations (0=no, 1=yes), with an inter-judge agreement of $k=0.935$. Because of different scaling factors among the

Fig. 2 Racial hoax example. *English translation*: #LAMPE-DUSA: #OPEN-AIR DUMP FOR DIRT DUMPED BY MIGRANTS. SYRACUSANS IN A PIGSTY WITHOUT #DECENCY. A huge pile of foul-smelling clothes and mattresses, scraps, excrement, cans, and food remains were found in Lampedusa. An immigrant at the exit of the Reception Center tries to give some explanation in unintelligible Italian, but the complaint comes from a group of residents who, reconstructing what happened, claim to have seen in the night a group of immigrants that were even dancing in front of this pile of garbage. Now it is up to the environmental workers to clean up the area thoroughly

11:15

Piace a ▊▊▊▊▊▊ e **altre persone**
breaknotizie24 #LAMPEDUSA: #DISCARICA A CIELO APERTO PER LO SPORCO SCARICATO DAI MIGRANTI. I SIRACUSANI IN UN PORCILE SENZA #DECENZA.

A Lampedusa è stato trovato un mucchio enorme di vestiti e materassi maleodoranti, scarti, escrementi, lattine e resti di cibo. Cerca di dare qualche spiegazione un immigrato all'uscita del Centro di Accoglienza in un italiano incomprensibile, ma la denuncia arriva da un gruppo di residenti che ricostruendo quanto accaduto affermano di avere visto in nottata un gruppo di immigrati che addirittura danzavano davanti a questo mucchio di rifiuti. Ora spetta agli operatori ecologici #pulire accuratamente la zona.

➡ Per saperne di più, vai al link in bio.

Giacomo Forlivesi/CartaItalia

six analytical racial hoaxes reading measures, to ensure the same impact on the final index the single results have been standardized before summing them.

2.3.4 Racial hoaxes re-writing after mediated contact

Next, a second index was calculated after the presentation to participants of an alternative version of the same story just encountered. Specifically, this phase was inspired by studies on mediated contact (Banas et al., 2020; Birtel et al., 2019) in which participants are engaged in the immigrant's point of view through a medium that can be an effective way to promote the decrease of ethnic bias. In our intervention, the mediated contact is represented by reading the alternative news (Fig. 3) focused on an interview of the protagonist given to a reliable news source, who presents the same event from his point of view. In this way, the protagonist has a specific
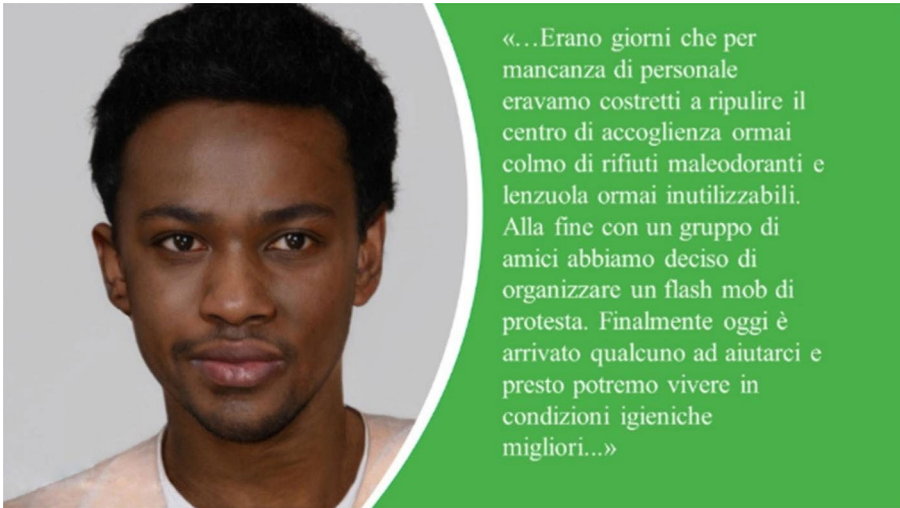
Fig. 3 Alternative news item based on immigrant point of view. *Translation*: "For many days, due to lack of staff, we had been forced to clean up the reception center filled with smelly garbage and unusable bed sheets. Eventually, with some friends, we decided to organize a flash mob. At last, today someone came to help us, and soon we will be able to live perhaps in better hygienic conditions."

face and a particular name (in this case Said) and expresses his point of view while trying to explain his reasons, thus allowing for different perspectives on the reported event to be explored.

After reading this alternative viewpoint, subjects were asked to completely rewrite the news story paying particular attention to the new source provided. More specifically, they were instructed to consider the importance of the outgroup member's point of view, hence the "mediated contact" (Banas et al., 2020), while also reasoning about the presence (or absence) of stereotypes and the need for the construction of a more neutral point of view through the integration of different foci.

Moreover, a different coding scheme was applied to the rewritten text. The racial hoaxes re-writings index (RHW) was obtained by summing the scores of results in four different tasks, coded by two independent judges and standardized to avoid scale effects: rewriting the title focus (from 0=same focus and same judgment; to 4=multiple foci and no judgment), with an inter-judge agreement of $k=0.717$; rewriting the text focus (from 0=same focus and same judgment; to 4=multiple foci and no judgment), with an inter-judge agreement of $k=0.767$; presence of stereotypes in the rewritten title (from 0=negative stereotype to 2=positive stereotype), with an inter-judge agreement $k=0.980$; presence of stereotypes in the rewritten text (from 0=negative stereotype to 2=positive stereotype), with an inter-judge agreement $k=0.980$.

2.4 Planned analyses

First, skewness and kurtosis tests were performed for each variable, along with Mardia's test (1970) for multivariate normality assumption. Then, to verify the consistency of the theoretically proposed relationships with the measured values, a path

Table 1 Descriptive statistics for the relevant variables

	Mean	*SD*	Sk	K
Propensity to engage in Analytical Reasoning	1.44	0.32	0.19	-0.91
Analytical Racial Hoaxes Reading	-0.40	3.19	-0.07	-0.30
Racial Hoaxes re-Writing	-0.26	3.01	-0.59	-0.62
Ethnic Moral Disengagement	1.70	0.81	1.43	1.72
Ethnic Moral Disengagement (post-intervention)	1.76	0.85	1.49	2.46

Table 2 Zero-order correlation matrix

	1	2	3	4	5
1. Propensity to engage Analytical Reasoning	-				
2. Analytical Racial Hoaxes Reading	.37**	-			
3. Racial Hoaxes re-Writing	.40***	.35**	-		
4. Ethnic Moral Disengagement	-.19	-.17	-.29*	-	
5. Ethnic Moral Disengagement (post-intervention)	-.23	-.41***	-.46***	.67***	-

*p < .05, **p < .01, ***p < .001.

analysis model was tested as shown in Fig. 1. All analyses were conducted in R v.4.0.4 (R Core Team, 2021) with the mvnormalTest (Zhang et al., 2020), psych (Revelle, 2022), Hmisc (Harrell, 2022), and lavaan (Rosseel, 2012) packages.

3 Results

3.1 Preliminary analyses

To summarize the characteristics of the sample, summary statistics and zero-order correlations regarding the pertinent variables are shown in Tables 1 and 2, respectively.

In particular, a moderate correlation was found between ethnic disengagement measured before and after the intervention; significant correlations were also found between propensity to engage in analytical reasoning and the two parallel types of intervention (i.e., analytical reading of racial hoaxes, and analytical re-writing of racial hoaxes). No significant correlation was found between analytical propensity and ethnic moral disengagement either measured before or after the intervention. Instead, the two types of intervention show a significant correlation with ethnic disengagement measured after the intervention, while disengagement measured before the intervention correlates only with the racial hoax re-writing index.

Regarding the distribution of the variables, the skewness and kurtosis values for each variable were found to be within the limits of acceptability of ±2 in order to assume a univariate distribution close to normality (Trochim & Donnelly, 2006), except for the kurtosis of ethnic moral disengagement measured after the intervention. Moreover, Mardia's test confirmed a statistically significant departure from multivariate normality for both skewness (83.6, $p < .001$) and kurtosis (2.4, $p = .015$).
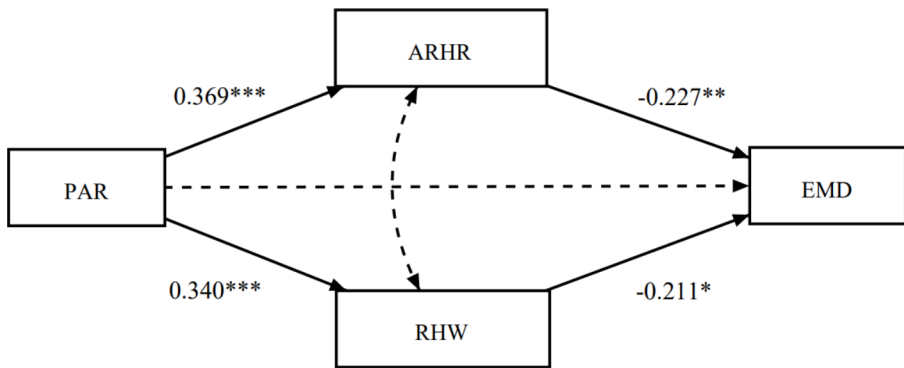
Fig. 4 Path diagram: Robust maximum-likelihood parameter estimates for hypothesized model. *Note*: the displayed estimates are the standardized regression coefficients; for the sake of clarity, the effects of gender and moral disengagement (measured before the intervention) are not shown. Solid lines indicate significant paths (at p<.05); dashed lines indicate non-significant paths. * *p*<.05, ** *p*<.01, *** *p*<.001

3.2 Path analysis

Path analysis was performed with a Satorra-Bentler corrected maximum likelihood estimator (MLM) due to the non-normal multivariate distribution of observed variables. Figure 4 shows the diagram with the result of the path analysis; based on the fit indices, the proposed theoretical model is found to be plausible following Kline's (2015) cut-off values: $\chi2=7.414$, df=6, p=.873; CFI=0.986; TLI=0.967; RMSEA=0.054 (90% CI=0.000−0.161), p=.389; SRMR=0.069.

The model was controlled for age, gender, and the level of Ethnic Moral Disengagement measured before the intervention. As expected from the relationships between variables outlined in the theoretical model, the results show that an increase in propensity to engage in analytical reasoning significantly raises the performance at the analytical reading of racial hoaxes ($\beta=0.369$, p=.001), and simultaneously also enhances the performance at re-writing the same news items ($\beta=0.340$, p=.001). Although the two performance indices of the intervention do not appear to be correlated with each other after linking them both with the propensity to engage in analytical reasoning index, it is found that as either of them increases, post-intervention Ethnic Moral Disengagement decreases significantly (analytical reading: $\beta=−0.227$, p=.006; re-writing: $\beta=−0.211$, p=.044). In contrast, no direct path was found between propensity to engage in analytical reasoning and post-intervention Ethnic Moral Disengagement. As for the control variables, age was not significant in any case, whereas gender was found to have a significant effect only on propensity to engage in analytical reasoning ($\beta=−0.246$, p=.032), while Ethnic Moral Disengagement measured before the intervention was significantly linked to the same variable measured after the intervention ($\beta=0.578$, p<.001), to the performance in rewriting the racial hoax ($\beta=−0.276$, p=.016), and to propensity to engage in analytical reasoning index ($\beta=−0.242$, p=.015).

To test whether there is a significant indirect effect of the propensity to engage in analytical reasoning on ethnic moral disengagement through both reading and re-

writing interventions, 95% confidence intervals for indirect effects were estimated using the bias-corrected bootstrap method with 5000 samples (MacKinnon et al., 2004). The results show a significant negative indirect effect of the propensity to engage in analytical reasoning on ethnic moral disengagement through the performance in the analytical reading intervention ($\beta = -0.084$, 95% CI [-0.165 − 0.003]); conversely, the confidence interval around the standardized estimate of the indirect effect of the propensity to engage in analytical reasoning on ethnic moral disengagement through the re-writing of the racial hoax did include zero ($\beta = -0.072$, 95% CI [-0.152 0.008]). However, when considering the effect through the two pathways related to the complementary types of intervention simultaneously, a significant negative total effect is found ($\beta = -0.156$, 95% CI [-0.251 − 0.060]). Thus, it is safe to say that individual propensity to engage in analytical reasoning indirectly impacts ethnic moral disengagement measured after the intervention through the dual intervention as a whole.

4 Discussion

The present research-intervention work arises in the light of the need to fill a gap in the literature concerning the psycho-educational tools to be tested to promote analytical thinking in adolescence, as digital natives (Prensky, 2009; Herrero-Diz et al., 2021; Papapicco et al., 2022), potentially exposed to racial misinformation, and therefore exposed to a potential increase in stereotypes, and thus in distorted beliefs, such as the case of ethnic moral disengagement, and prejudice (Wright et al., 2021).

The literature concerning interventions is mainly based on the improvement of attentional mechanisms, as in the case of attentional nudges (Pennycook et al., 2021), however neglecting the peculiarity of racial misleading news, which have the prevalent characteristic of associating different types of stereotypes and threats to people belonging to particular groups considered as outgroup (Cerase & Santoro, 2018; D'Errico et al., 2022). The characteristic of this particular type of misleading news requires an intervention based not only on the objectivity or truthfulness of the news, but also on analytic thinking considered as the ability to recognize and monitor the main or the biased point of view of the source, its use of facts and personal evaluations (Paul & Elder, 2004), and of the ethnic stereotypes associated (D'Errico et al., 2022).

Thus, the present study aimed to verify whether an intervention based on the analytic reflection of misleading racial news could inhibit or decrease the distorted beliefs associated with harmful conduct toward ethnic out-group. In this regard, after administering racial misleading news, the participants were asked to analytically recognize the biases associated with it, following the Paul and Elder procedure (2004), that is, trying to focus adolescents on the distinction between fact and evaluation, on the recognition of the main point of view, and on identification of the stereotypes in the text. Furthermore, taking advantage of the social psychological literature on mediated intergroup contact (Banas et al., 2020; Birtel et al., 2019), that demonstrated its efficacy in reducing ethnic prejudice by means of the other's perspective taking (Harwood, 2010), the participants read a text with a direct interview with the alleg-

edly guilty immigrant, in which he told his story and his point of view, allowing to reprocessing, in a subsequent writing work, the two sources encountered during the intervention. This two phases intervention procedure made it possible to significantly decrease the associated cognitive distortions measured by means of a crucial factor in prejudice reduction, the Ethnic Moral Disengagement. In this regard, the results seem to encourage the promotion of intervention on social-analytic thinking through reading and rewriting misleading news to reduce ethnic moral disengagement.

Although Moral Disengagement is a very studied construct in the literature and many studies attest to its negative effects (Bayram et al., 2020; Caravita et al. 2019; Lo Cricchio et al. 2021; Iannello et al. 2021), little research has tested the effectiveness of interventions aimed at reducing ethnic disengagement. The results of this study underline the role of socio-analytical processing, supported by the individual propensity to engage in deliberated reasoning, in reducing the recourse of those socio-cognitive processes that lead to justify aggression/ bullying towards immigrants generally associated with misleading racial news. The results are in line with Bustamante's and Chaux's work (2014) and suggest, in the same direction, the usefulness of training voluntary effortful processes that require greater engagement from adolescents. In fact, disengagement could be also prevented by contrasting the low propensity to the analytical reasoning that occur when adolescents are exposed to "negative" stimuli during technological interactions (Zhao et al., 2021), but also by inducing indirectly the other' perspective (Falla et al., 2021). Intervention on ethnic disengagement, closely related to prejudice and negative attitudes towards ethnic minorities (Passini, 2019), could allow psychologists and educators to operate simultaneously both on the thought structures that support it and on its consequent discriminatory behaviors, that could become tolerated, justified, and even normalized. Future studies are needed to evaluate the effectiveness of this form of intervention, which having the goal of improving social-analytic skills could easily be implemented in the educational setting. With this in mind, educators and teachers could consider simple instructions such as those provided in the proposed procedure when reading and rewriting a misleading news story. In addition, this approach could allow a shift from a contextualized intervention such as the attentional prompt on specific misleading news to a more enduring approach based on the so-called analytic central pathway, which can change attitudes having reworked the quality of the information in depth (Petty & Cacioppo, 1984; Lutzke et al., 2019).

In this perspective, this study has the limit of being a one-shot intervention; future studies should control the longitudinal effect of promoting socio-analytic processing in racial misleading news. In addition, another limitation is the lack of a control group; it would also be good to be able to reach a larger sample, for instance including schools coming from different socio-cultural contexts, to further reinforce the results on the effectiveness of the intervention. Despite these margins for improvement, however, the findings of the present study could be applicable in designing and developing technological tools aimed at preventive interventions to promote ethnic stereotypes and prejudices associated with racial hoaxes. In addition, these findings shed light on possible areas where education can intervene, instructing both teachers and students in the practical application of the directions of the social-analytic

approach by identifying and promoting a potential ethical orientation toward ethnic and stigmatized minorities and preventing anti-immigrant prejudice.

5 Appendix A: Analytical Racial Hoaxes Reading (ARHR) intervention phase

Imagine working in a newsroom. Today your editor has decided to put you to the test by raffling off the 'journalist of the week' certificate. Therefore, with your colleagues you are trying to investigate the following news story, checking whether it is misleading.

[here the news stimulus is presented]

The good journalist's first clue to tell if the news is distorted is to read the headline, identifying its stereotypes.

Stereotypes are those characteristics that are attributed to a person based on a general opinion associated with a group other than one's own; for example, "immigrants are all illegal immigrants, Italians are all members of mafia". How clear is this concept to you?

[likert scale from 1 to 5]

Did you find any stereotypes in the title? If yes, can you write them here?

[open-ended question]

Now check the text of the news. Did you find any stereotypes? Which ones?

[open-ended question]

Let us turn, instead, to the difference between fact and judgment. See the example below. How well are you clear on this?

[likert scale from 1 to 5]

The one exposed was just an example. Now, if you read the news on your paper, can you point out the central fact?

[open-ended question]

Instead, looking at your news story again, what are the journalist's judgments and assessments that go beyond the fact?

[open-ended question]

In writing a news story, the journalist has the source, that is, the origin of the news. There are unreliable sources (e.g., gossip or a single random witness) or reliable sources with multiple points of view about the incident. Are you comfortable with this distinction?

[likert scale from 1 to 5]

Now it's your turn! In your news story what is the source?

[open-ended question]

Does the source seem reliable?

[likert scale from 1 to 5]

Every news story has its own "focus," that is, the main point of view, on which the journalist dwells; the same happens when you have to take a picture and you choose what to frame. The same event can be seen from two different viewpoints and change meaning. How clear is this to you?

[likert scale from 1 to 5]

In the news story you are examining, who does the reporter dwell on: the disabled person or the immigrant?

[likert scale from 1 to 5]

Are there other focuses, that is, viewpoints that we might consider to better explain how things turned out? Which ones?

[open-ended question]

For example, in the news story the immigrant speaks unintelligibly, do you confirm?

[dichotomous question: yes or no]

The reporter may have misunderstood-what other motivations might have led the boy to raise his voice against the disabled person?

[open-ended question]

6 Appendix B: Racial Hoaxes re-Writing after mediated intergroup contact (RHW) intervention phase

[here the alternative news story (as an interview of the protagonist) is presented]

After reading Said's statements, how would you rewrite the headline and the news story? Pay attention to stereotypes, fact/judgment distinction, sources, and different focuses!

Title of news item:

[open-ended question]

Text of news item:

[open-ended question]

References

Banas, J. A., Bessarabova, E., & Massey, Z. B. (2020). Meta-analysis on mediated contact and prejudice. *Human Communication Research*, *46*(2–3), 120–160. https://doi.org/10.1093/hcr/hqaa004.

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational behavior and human decision processes, 50*(2), 248–287. https://doi.org/10.1016/0749-5978(91)90022-L

Bayram Özdemir, S., Giles, C., & Özdemir, M. (2020). Differences and similarities between perpetrators of ethnic and non-ethnicity-based victimization. *Journal of Youth and Adolescence*, *49*(9), 1805–1820. https://doi.org/10.1007/s10964-020-01271-5.

Birtel, M. D., Di Bernardo, G. A., Stathi, S., Crisp, R. J., Cadamuro, A., & Vezzali, L. (2019). Imagining contact reduces prejudice in preschool children. *Social Development*, *28*(4), 1054–1073. https://doi.org/10.1111/sode.12374.

Buluc, R. (2018). *Critical thinking in the fight against fake news.* Arhipelag XXI Press.

Bustamante, A., & Chaux, E. (2014). Reducing Moral Disengagement Mechanisms: A comparison of two interventions. *Journal of Latino/Latin American Studies*, *6*(1), 52–54. https://doi.org/10.18085/llas.6.1.123583644qq115t3

Böckenholt, U. (2012). The cognitive-miser response model: Testing for intuitive and deliberate reasoning. *Psychometrika*, *77*(2), 388–399. https://doi.org/10.1007/s11336-012-9251-y.

Campitelli, G., & Gerrans, P. (2014). Does the cognitive reflection test measure cognitive reflection? A mathematical modeling approach. *Memory & cognition*, *42*(3), 434–447. https://doi.org/10.3758/s13421-013-0367-9.

Caravita, S. C., Strohmeier, D., Salmivalli, C., & Di Blasio, P. (2019). Bullying immigrant versus non-immigrant peers: Moral disengagement and participant roles. *Journal of School Psychology*, *75*, 119–133. https://doi.org/10.1016/j.jsp.2019.07.005.

Cerase, A., & Santoro, C. (2018). From racial hoaxes to media hypes Fake news' real consequences. In P. Vasterman (Ed.), *From media hype to Twitter storm. News explosions and their impact on issues, crises, and public opinion* (pp. 333–354). Amsterdam University Press.

Carrera-Fernández, M. V., Cid-Fernández, X. M., Almeida, A., González-Fernández, A., & Lameiras-Fernández, M. (2018). Attitudes toward cultural diversity in Spanish and Portuguese adolescents of secondary education: The influence of heteronormativity and moral disengagement in school bullying. *Revista de Psicodidáctica (English ed.), 23*(1), 17–25. https://doi.org/10.1016/j.psicoe.2017.07.002

Cocco, V. M., Bisagno, E., Visintin, E. P., Cadamuro, A., Di Bernardo, G. A., Trifiletti, E., & Vezzali, L. (2022). Fighting stigma-based bullying in primary school children: An experimental intervention using vicarious intergroup contact and social norms. *Social Development*, *31*(3), 782–796. https://doi.org/10.1111/sode.12574.

Costello, K., & Hodson, G. (2014). Explaining dehumanization among children: The interspecies model of prejudice. *British Journal of Social Psychology*, *53*(1), 175–197. https://doi.org/10.1111/bjso.12016.

D'Errico, F., Corbelli, G., Papapicco, C., & Paciello, M. (2022). How personal values count in misleading news sharing with moral content. *Behavioral Sciences*, *12*(9), 302. https://doi.org/10.3390/bs12090302.

D'Errico, F., Papapicco, C., & Taulè Delor, M. T. (2022). 'Immigrants, hell on board': Stereotypes and prejudice emerging from racial hoaxes through a psycho-linguistic analysis. *Journal of Language and Discrimination, 6*(2), 191–212. https://doi.org/10.1558/jld.21228

D'Errico, F., & Paciello, M. (2018). Online moral disengagement and hostile emotions in discussions on hosting immigrants. *Internet Research*, *28*(5), 1313–1335. https://doi.org/10.1108/IntR-03-2017-0119.

Epstein, Z., Berinsky, A. J., Cole, R., Gully, A., Pennycook, G., & Rand, D. G. (2021). Developing an accuracy-prompt toolkit to reduce COVID-19 misinformation online. *Harvard Kennedy School (HKS) Misinformation Review*. https://doi.org/10.37016/mr-2020-71.

Falla, D., Romera, E. M., & Ortega-Ruiz, R. (2021). Aggression, moral disengagement and empathy. A longitudinal study within the interpersonal dynamics of bullying. *Frontiers in Psychology*, 3981. https://doi.org/10.3389/fpsyg.2021.703468.

Faulkner, N., & Bliuc, A. M. (2016). 'It's okay to be racist': Moral disengagement in online discussions of racist incidents in Australia. *Ethnic and Racial Studies*, *39*(14), 2545–2563.

Frederick, S. (2005). Cognitive reflection and decision making. *Journal of Economic Perspectives*, *19*(4), 25–42. https://doi.org/10.1257/089533005775196732.

Gibbs, J. C., Potter, G. B., & Goldstein, A. P. (1995). *The EQUIP program: Teaching youth to think and act responsibly through a peer-helping approach*. Research Press. https://doi.org/10.1037/e552692012-085.

Gini, G., Pozzoli, T., & Hymel, S. (2014). Moral disengagement among children and youth: A meta-analytic review of links to aggressive behavior. *Aggressive behavior*, *40*(1), 56–68. https://doi.org/10.1002/ab.21502.

Harrell, F. E. Jr. (2022). Hmisc: Harrell Miscellaneous. R package version 4.7-1. https://CRAN.R-project.org/package=Hmisc

Harwood, J. (2010). The contact space: A novel framework for intergroup contact research. *Journal of Language and Social Psychology*, *29*(2), 147–177.

Herrero-Diz, P., Conde-Jiménez, J., & Reyes-de-Cózar, S. (2021). Spanish adolescents and fake news: level of awareness and credibility of information (Los adolescentes españoles frente a las fake news: Nivel de conciencia y credibilidad de la información). *Culture and Education*, *33*(1), 1–27. https://doi.org/10.1080/11356405.2020.1859739.

Hyde, L. W., Shaw, D. S., & Moilanen, K. L. (2010). Developmental precursors of moral disengagement and the role of moral disengagement in the development of antisocial behavior. *Journal of Abnormal Child Psychology*, *38*(2), 197–209. https://doi.org/10.1007/s10802-009-9358-5.

Iannello, N. M., Camodeca, M., Gelati, C., & Papotti, N. (2021). Prejudice and ethnic bullying among children: The role of moral disengagement and student-teacher relationship. *Frontiers in Psychology, 12*. https://doi.org/10.3389/fpsyg.2021.713081

Igartua, J. J., & Guerrero-Martín, I. (2022). Personal migrant stories as persuasive devices: Effects of audience–character similarity and narrative voice. *Journal of Social and Political Psychology*, *10*(1), 21–34. https://doi.org/10.5964/jspp.8237.

Inquisit 6 [Computer software] (2021). Retrieved from https://www.millisecond.com.

Ireton, C., & Posetti, J. (2018). *Journalism, fake news & disinformation: Aandbook for journalism education and training*. Unesco Publishing.

Johnson, D. R., Jasper, D. M., Griffin, S., & Huffman, B. L. (2013). Reading narrative fiction reduces arab-muslim prejudice and offers a safe haven from intergroup anxiety. *Social cognition*, *31*(5), 578. https://doi.org/10.1521/soco.2013.31.5.578.

Kline, R. B. (2015). *Principles and practice of structural equation modeling*. Guilford publications.

Lantos, D., & Molenberghs, P. (2021). The neuroscience of intergroup threat and violence. *Neuroscience & Biobehavioral Reviews*, *131*, 77–87. https://doi.org/10.1016/j.neubiorev.2021.09.025.

Litovsky, Y. (2021). (Mis)perception of bias in print media: How depth of content evaluation affects the perception of hostile bias in an objective news report. *PloS one*, *16*(5), e0251355. https://doi.org/10.1371/journal.pone.0251355.

Lo Cricchio, M. G. L., Stefanelli, F., Palladino, B. E., Paciello, M., & Menesini, E. (2021). Development and validation of the ethnic moral disengagement scale. *Frontiers in Psychology*, 12. https://doi.org/10.3389/fpsyg.2021.756350.

Lottridge, D., & Bentley, F. R. (2018, April). Let's hate together: How people share news in messaging, social, and public networks. *In Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (pp. 1–13). https://doi.org/10.1145/3173574.3173634

Lutzke, L., Drummond, C., Slovic, P., & Árvai, J. (2019). Priming critical thinking: Simple interventions limit the influence of fake news about climate change on Facebook. *Global Environmental Change*, *58*, 101964. https://doi.org/10.1016/j.gloenvcha.2019.101964.

MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, *39*(1), 99–128. https://doi.org/10.1207/s15327906mbr3901_4.

Maftei, A., Holman, A. C., & Merlici, I. A. (2022). Using fake news as means of cyber-bullying: The link with compulsive internet use and online moral disengagement. *Computers in Human Behavior*, *127*, 107032. https://doi.org/10.1016/j.chb.2021.107032.

Mardia, K. V. (1970). Measures of multivariate skewness and kurtosis with applications. *Biometrika*, *57*(3), 519–530.

Mazzone, A., Thornberg, R., Stefanelli, S., Cadei, L., & Caravita, S. C. (2018). "Judging by the cover": A grounded theory study of bullying towards same-country and immigrant peers. *Children and Youth Services Review*, *91*, 403–412. https://doi.org/10.1016/j.childyouth.2018.06.029.

Mutz, D. C., & Goldman, S. K. (2010). Mass media. In J. F. Dovidio, M. Hewstone, P. Glick, & V. M. Esses (Eds.), *Handbook of prejudice, stereotyping, and discrimination* (pp. 241–258). Sage. https://doi.org/10.4135/9781446200919.n15

Paciello, M., Fida, R., Tramontano, C., Lupinetti, C., & Caprara, G. V. (2008). Stability and change of moral disengagement and its impact on aggression and violence in late adolescence. *Child Development*, *79*(5), 1288–1309. https://doi.org/10.1111/j.1467-8624.2008.01189.x.

Paciello, M., D'Errico, F., Saleri, G., & Lamponi, E. (2021). Online sexist meme and its effects on moral and emotional processes in social media. *Computers in Human Behavior*, *116*, 106655. https://doi.org/10.1016/j.chb.2020.106655.

Papapicco, C., Lamanna, I., & D'Errico, F. (2022). Adolescents' vulnerability to fake news and to racial hoaxes: A qualitative analysis on Italian sample. *Multimodal Technologies and Interaction*, *6*(3), 20. https://doi.org/10.3390/mti6030020.

Paravati, E., Fitzgerald, K., Green, M. C., McAllister, C., & Moore, M. M. (2022). Narratives to increase prosociality towards refugees. *International Journal of Communication*, *16*, 2551–2572. https://ijoc.org/index.php/ijoc/article/view/18773.

Passini, S. (2019). The indifference that makes a difference: why unconcern for minorities disguises prejudicial attitudes. *Journal of Moral Education*, *48*(2), 263–274. https://doi.org/10.1080/03057240.2018.1509064.

Paul, R., & Elder, L. (2004). *The thinkers guide for conscientious citizens on how to detect media bias and propaganda in national and world news: Based on critical thinking concepts and tools*. Rowman & Littlefield

Pennycook, G., & Rand, D. G. (2019). Lazy, not biased: susceptibility to partisan fake news is better explained by lack of reasoning than by motivated reasoning. *Cognition*, *188*, 39–50. https://doi.org/10.1016/j.cognition.2018.06.011.

Pennycook, G., Epstein, Z., Mosleh, M., et al. (2021). Shifting attention to accuracy can reduce misinformation online. *Nature*, *592*(7855), 590–595. https://doi.org/10.1038/s41586-021-03344-2.

Pennycook, G., & Rand, D. G. (2022). Accuracy prompts are a replicable and generalizable approach for reducing the spread of misinformation. *Nature communications*, *13*(1), 1–12. https://doi.org/10.1038/s41467-022-30073-5.

Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology*, *90*(5), 751. https://doi.org/10.1037/0022-3514.90.5.751.

Petty, R. E., & Cacioppo, J. T. (1984). *Source factors and the elaboration likelihood model of persuasion*. ACR North American Advances.

Pinter, B., & Wildschut, T. (2012). Self-interest masquerading as ingroup beneficence: Altruistic rationalization and interindividual–intergroup discontinuity. *Small Group Research*, *43*(1), 105–123. https://doi.org/10.1177/1046496411419016.

Prensky, M. (2009). H. sapiens digital: From digital immigrants and digital natives to digital wisdom. I*nnovate: Journal of Online Education, 5*(3).

R Core Team (2021). R: A language and environment for statistical computing. R Foundation for Statistical Computing. https://www.R-project.org/

Revelle, W. (2022). *psych: Procedures for personality and psychological research*. Northwestern University. https://CRAN.R-project.org/package=psych.

Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, *48*(2), 1–36. https://doi.org/10.18637/jss.v048.i02

Schäfer, C., & Schadauer, A. (2018). Online fake news, hateful posts against refugees, and a surge in xenophobia and hate crimes in Austria. In Dell'Orto, G. & Wetzstein, I. (Eds), *Refugee news, refugee politics: journalism, public opinion and policymaking in Europe* (pp. 109–116). Routledge.

Sinayev, A., & Peters, E. (2015). Cognitive reflection vs. calculation in decision making. *Frontiers in Psychology*, *6*, 532. https://doi.org/10.3389/fpsyg.2015.00532.

Thomson, K. S., & Oppenheimer, D. M. (2016). Investigating an alternate form of the cognitive reflection test. *Judgment & Decision Making, 11*(1), 99–113. https://doi.org/10.1017/S1930297500007622.

Trochim, W., & Donnelly, J. (2006). *The research knowledge methods base*. Atomic Dog Publishing.

van der Linden, S. (2022). Misinformation: susceptibility, spread, and interventions to immunize the public. *Nature Medicine*, *28*(3), 460–467. https://doi.org/10.1038/s41591-022-01713-6.

Wright, C., Brinklow-Vaughn, R., Johannes, K., & Rodriguez, F. (2021). Media portrayals of immigration and refugees in hard and fake news and their impact on consumer attitudes. *Howard Journal of Communications*, *32*(4), 331–351. https://doi.org/10.1080/10646175.2020.1810180.

Zhang, Y., Zhou, M., Shao, Y., & Zhang, M. Y. (2020). mvnormalTest: Powerful Tests for Multivariate Normality. R package version 1.0.0. https://CRAN.R-project.org/package=mvnormalTest

Zhao, H., Zhou, J., Xu, X., Gong, X., Zheng, J., & Zhou, J. (2021). How to be aggressive from virtual to reality? Revisiting the violent video games exposure-aggression association and the mediating mechanisms. *Cyberpsychology Behavior and Social Networking*, *24*(1), 56–62. https://doi.org/10.1089/cyber.2019.0762.

Francesca D'Errico is Associate Professor in Social Psychology working at the Department of Educational Sciences, Psychology, Communication, University of Bari "Aldo Moro". Her main research interests concern persuasive strategies in political and ethical communication by deepening the role played by socio-cognitive processes within classic and new media (inter alia, social media). Currently she coordinates an European project STERHEOTYPES that aims at studying the effects of racial hoaxes on digital natives by promoting their awareness of stereotypes and discrimination.

Paolo Giovanni Cicirelli is currently a doctoral student in Human Relations Sciences at the Department of Educational Sciences, Psychology, Communication, University of Bari "Aldo Moro". His main area of research involves those social variables that influence online credulity and misinformation. He is currently part of the social psychology team of the European project STERHEOTYPES.

Giuseppe Corbelli is a doctoral candidate in Mind and Technologies in the Digital Society at International Telematic University Uninettuno, Faculty of Psychology, Italy. His main research interests are related to the analysis of self-regulation processes through a quantitative approach, with a specific focus on cognitive modeling. He is currently working on the interaction between the person and misinformation, examining the processes related to critical and analytical thinking from an agentic perspective.

Marinella Paciello is Associate Professor of General Psychology at International Telematic University Uninettuno, Faculty of Psychology, Italy. Her research interests are mainly related to the cross-sectional and longitudinal impact of personality dimensions on aggressive and prosocial behaviors. Most of her studies focused on the role of social-cognitive processes leading to misbehaviors in different domains of human functioning such as online and educational settings.

Authors and Affiliations

Francesca D'Errico[1] · **Paolo Giovanni Cicirelli**[1] · **Giuseppe Corbelli**[2] · **Marinella Paciello**[2]

✉ Paolo Giovanni Cicirelli
    paolocicirelligiovanni@gmail.com

1   Università degli Studi di Bari "Aldo Moro", For.Psi.Com, Bari, Italy

2   Faculty of Psychology, Uninettuno Telematic International University, Rome, Italy