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RESEARCH ARTICLE



The Machiavellian bully revisited: A closer look at differences and processes of Machiavellian bullying and cyberbullying perpetration

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Abstract

Numerous studies on personality traits conducive to traditional bullying and cyberbullying mentioned Machiavellianism as an influential predictor of these behaviors. Machiavellianism comprises manipulative, egotistic orientations that help acquire desired outcomes. However, it is questionable whether bullying and cyberbullying reflect unidimensional constructs since they are frequently categorized into verbal, relational, and physical aspects (with the latter being applicable only in traditional bullying). Similarly, evidence suggests that Machiavellianism is not a uniform trait. In this research, using a sample of 634 students (339 girls; 54%) from 40 classes from eighth to tenth grades, a five-dimensional measure of bullying and cyberbullying was devised and suggested that aspects of (cyber)bullying are related but still separable. Subsequently, differential relations between the five forms of (cyber)bullying and two facets of Machiavellianism were modeled. Those facets were Machiavellian approach (i.e., manipulative aspects of Machiavellianism) and Machiavellian avoidance (i.e., distrustful aspects of Machiavellianism). Multilevel models revealed that Machiavellian approach predicted relational bullying (but not relational cyberbullying) and Machiavellian avoidance predicted verbal (cyber)bullying and physical bullying. All links were mediated by overt dehumanization, that is, the tendency to cognitively deprive a person of typically human characteristics.

KEYWORDS

bullying, cyberbullying, dehumanization, Machiavellianism, scale development

1 | INTRODUCTION

Bullying refers to repetitive acts of intentional violence performed by an individual or a group imposed on a weaker person who cannot easily defend himself or herself (Olweus, 1993). An oft-cited classification of bullying (subsequently labeled *traditional bullying*) postulates three forms. Those refer to *verbal* (e.g., calling names), *physical* (e.g., hitting

or kicking), and *relational* aspects (e.g., spreading rumors and thus harming social relations; Olweus, 1993). A new phenomenon, conducive to the proliferation of technical devices, is *cyberbullying* (Kowalski et al., 2014), that is, employing violent verbal or relational acts using electronic devices. Although cyberbullying does not involve a physical form of appearance, both traditional and cyberbullying cause comparable damage (Giumetti et al., 2022; Kowalski et al., 2014).

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As bullying can help attain social or material goods, such as raising perpetrators' status (Salmivalli et al., 2021; Volk et al., 2021), numerous scholars have examined the role of the antagonistic, goaloriented, and manipulative trait Machiavellianism (Mach; Christie & Geis, 1970) when modeling the personality of "typical" (cyber)bullies (Andreou, 2004; Berger & Caravita, 2016; Berger et al., 2015; Giumetti et al., 2022; Kerig & Stellwagen, 2010; Sutton & Keogh, 2000; Wang et al., 2016; Wei & Chen, 2012; Wright et al., 2022; Yuan et al., 2020). However, many pertinent studies have utilized global scores not only of Mach but also of (cyber) bullying, that is, they averaged across all items, irrespective of which content of (cyber)bullying the items assess. Multidimensional assessments have seldom been applied (i.e., separated verbal, relational, and physical bullying scores). Thus, undifferentiated operationalizations of bullying can be methodological limitations (Gajda et al., 2022; Volk et al., 2021).

This research sought to clarify in detail the links between particular facets of both Mach and (cyber)bullying perpetration. To this end, and to address the question of whether different sorts of bullying are equivalent from a psychological perspective (Cornell et al., 2006), we developed a multidimensional (cyber)bullying scale that separates relational, verbal, and physical aspects as well as traditional and cyberbullying. Third, to shed light on one potential mechanism promoting (cyber)bullying perpetration, we investigated whether dehumanization mediates these links.

1.1 Machiavellianism and bullying perpetration

Mach is broadly defined by egotistic, strategic manipulation, distrust. and skepticism of human nature. Individuals high in Mach view the world as a competitive place in which the strong dominate the weak and in which one must take advantage of opportunities as they arise. Thereby, individuals high in Mach show little affect toward others and refuse to adhere to societal values (Christie & Geis, 1970; Zeigler-Hill et al., 2020). To obtain their goals, individuals high in Mach are expected to avoid overt aggression as it could jeopardize their long-term plans (Jones & Paulhus, 2009). However, just as recent research has mostly relied on global (cyber)bullying scores, so have earlier studies on Mach predominantly utilized global Mach scores, although the multidimensionality of this construct has been demonstrated. For example, based on the overarching motives proposed in the writings of the eponym of the construct, Niccoló Machiavelli (i.e., acquisition and conservation of resources at any cost), and to address empirical and theoretical shortcomings of other approaches to Mach (e.g., atheoretical derivation, incomplete or ambiguous considerations of Machiavelli's treatises), Blötner and Bergold (2022) have proposed a goal-oriented, manipulative, exploitative facet (Machiavellian approach) and a loss-avoiding, neurotic, distrustful facet of Mach (Machiavellian avoidance). This twodimensional structure is superior to a unidimensional Mach conceptualization in terms of model fit and construct validity (Blötner & Bergold, 2022, 2023).

Indirect or relational aggression is a helpful means to acquire desired especially in (Farrell æ goals. adolescence Vaillancourt, 2021; Salmivalli et al., 2021). Machiavellian approach was sought to account for strategic behavior (Blötner & Bergold, 2022). This makes overt aggression (i.e., verbal and physical) unlikely since overt bullying might pose a higher risk of getting caught and sanctioned than relational bullying (see also Graf et al., 2022). Opposing theoretical considerations about Mach, consistent positive relations between Mach and overt aggression have emerged (Vize et al., 2018). To explain such findings, Blötner and Bergold (2022) attributed overt aggression to Machiavellian avoidance. Their conceptualization proposes that, given a threat to one's resources or goals, individuals high in Machiavellian avoidance employ any means necessary to restore desired states or to prevent loss. Perceiving oneself as a victim of others' wrongs or injustices, in turn, can evoke overt aggression and an external locus of control. Individuals high in this mindset might therefore use displaced aggression to restore their powerless self-image (Santos et al., 2022). An external locus of control is expected to be rather typical of Machiavellian avoidance (Blötner & Bergold, 2022). Latter considerations suggest that Machiavellian approach and avoidance account for *different* forms of (cyber) bullying (relational vs. verbal and physical).

1.2 Dehumanization as a mediator between machiavellianism and bullying behavior

A guestion frequently addressed in research on violence refers to mental processes enabling individuals to harm others. One such mechanism is dehumanization, the tendency to cognitively deprive others of typical human features, subsequently inhibiting empathic responses (Bandura et al., 1996). Dehumanization corresponds to dismissing others' suffering and is linked to a host of violent behaviors (e.g., Haslam & Loughnan, 2014). Online environments might have certain affordances to enact online violence, so thatcompared to traditional bullying-lower levels of dehumanization are required to initiate cyberbullying (Runions & Bak, 2015). Thus, in the sense of psychological distance (i.e., limited sensory contact and hence only limited cues of the victim's suffering), those engaging in cyberbullying might find it "easier" to dehumanize others (Bastian et al., 2012; Graf et al., 2022). Given cynical views of humanity, low compassion for others, a view of others as exploitable means, and antagonism in Mach (Blötner & Bergold, 2022; Christie & Geis, 1970), we expected individuals high in Mach to possess higher dehumanizing tendencies (Sijtsema et al., 2019), which in turn explains (cyber) bullying conduct.

1.3 Current research

Because Machiavellian approach refers to strategic aspects of Mach, it was expected to be positively associated with relational forms of both traditional (H1) and cyberbullying (H2). Physical and verbal aggression-as more overt forms of aggression-were considered to be ways to immediately restore a powerless self-image. Therefore, we expected Machiavellian avoidance to be positively related to verbal cyberbullying (H3), verbal bullying (H4), and physical bullying (H5). In keeping with recent research on the promoting effect of dehumanization on aggressive behaviors (Haslam & Loughnan, 2014), we employed dehumanization as a mediator of all hypothesized relations (H6). Given that overt (i.e., stating explicitly that one deprives others of human features) and covert dehumanization (i.e., implicitly denying that members of a certain group possess human features) deal with complementary aspects (Haslam S. Loughnan, 2014), we employed a latent dehumanization factor comprising both aspects. Since the constructs in the study represent aversive views, traits, and behaviors, socially desirable responses might occur (e.g., Pabian et al., 2015). Hence, we controlled for social desirability and compared the results obtained with and without the control variable.

Environmental and social characteristics, such as existing pro- or antibullying classroom norms, are expected to affect the prevalence of (cyber)bullying conduct (e.g., Giumetti et al., 2022; Swearer & Hymel, 2015) such that the peer group approves or disapproves bullying as a means to status acquisition (Pan et al., 2023; Salmivalli et al., 2021). However, recent research has seldom considered the nested structure of students within classes (see Strøm et al., 2013, for an exemplary exception). To acknowledge the hierarchical structure in examinations of (cyber)bullying behaviors, we employed multilevel modeling. Thereby, we tested our hypotheses at the individual level (i.e., level 1) and modeled differences in (cyber)bullying perpetration across classes (i.e., level 2).

2 | METHOD

2.1 | Sample

We conducted an a priori Monte Carlo simulation to derive the required sample size to obtain a statistical power of at least 80% (α < .05) for all parameters of genuine interest in a multilevel path model (i.e., all hypothesized paths and covariances among [cyber] bullying and Mach facets, but not necessarily paths involving the control variable; see https://osf.io/d2be9 for details). The Monte Carlo simulation revealed a minimum of 480 participants. After assessing this sample size, however, we found that more students per class were willing to participate and that the effect of nesting was somewhat higher than expected for some aspects of (cyber) bullying (i.e., higher intraclass correlation [ICC]; highest observed ICC = 0.13, assumed ICC = 0.10), curtailing the accuracy of our simulation. Thus, we continued recruiting until we had 700 students from eighth to tenth grades from the lower, middle, and academic tracks of the German secondary education system (40 classes). Data were collected from December 2021 to September

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2022. Only those participants were included in subsequent analyses who passed two attention checks (e.g., "Please choose '*Disagree strongly*'"; n = 634; 339 girls; 181, 214, and 239 students from grades 8, 9, and 10, respectively; 63, 108, and 176 from lower, middle, and academic track, 287 from *Gesamtschule*, which covers all levels; $M_{age} = 14.74$, $SD_{age} = 1.01$, ranging from 13 to 18 years). On average, 16.26 students per class participated in the study. The results were robust in that the same conclusions could be derived, regardless of whether the actual sample or the minimum sample size as obtained from the Monte Carlo simulation was used (i.e., 488 students from the first 28 classes). Missing data (maximum of missing values per variable = 2.8%) were subjected to multilevel imputation in the *R* package mice (van Buuren & Groothuis-Oudshoorn, 2011).

2.2 | Measures

2.2.1 | Short bullying and cyberbullying assessment (SBCBA)

New items for (cyber)bullying were developed based on the contents of existing measures because recent studies did not comprise sufficient items to calculate reliable scores for all five categories of interest. Three raters independently assigned items from a pool of 37 items to the five facets, $0.68 \le$ Cohen's $\kappa s \le 0.90$. Differences in the assignments only regarded the "location" of bullying (traditional or cyberbullying) but the assignment to verbal, physical, and relational aspects was consistent. The final pool entailed five items per domain of traditional bullving and six items per cyberbullving domain. Respondents indicated the frequency of employing each behavior (1 = never, 2 = seldom, 3 = sometimes, 4 = often, 5 = very often). To reduce misclassifications of behaviors as (non)bullying and to ensure the separation of traditional and cyberbullying, oral instructions provided by the first author during data collection explicitly mentioned the definition criteria (power imbalance, intention, repetitiveness; Olweus, 1993), the term "bullying" was explicitly mentioned in the introduction of the study (Ybarra et al., 2007), and traditional and cyberbullying items were presented in separate blocks with distinct instructions (see Supporting Information: Table S1 for the English instructions).

2.2.2 | Machiavellianism

Mach was measured with the German Machiavellian Approach and Avoidance Questionnaire (Blötner & Bergold, 2022). Responses were given on a five-point scale, 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree (e.g., "I tend to manipulate others to get my way." [approach]; "People are friendly to each other only because of ulterior motives." [avoidance]). For evidence of construct validity, see Blötner and Bergold (2022, 2023).

2.2.3 | Overt and covert dehumanization

To assess overt dehumanization, a self-translated version of the fouritem dehumanization subscale from Bandura et al.'s (1996) *Mechanisms of Moral Disengagement Scale* was used, 1 = strongly disagree, 5 = strongly agree (e.g., "Some people have to be treated roughly because they lack feelings that can be hurt."). To assess covert dehumanization, a self-translated and modified version of the eightitem *Human Nature and Human Uniqueness* scales (Bastian et al., 2012) was presented. Participants indicated the extent to which they believe that victims of (cyber)bullying had particular human characteristics (e.g., emotionality, intellect [both reversed]), 1 = not at all, 7 = very much so.

2.2.4 | Social desirability

Social desirability was measured with the German 20-item form (Musch et al., 2002) of the *Balanced Inventory of Desirable Responding* (Paulhus, 1998), 1 = *strongly disagree*, 5 = *strongly agree*. Three items (referring to speeding, sexual performance, and paying duty on goods) were excluded to ensure the items' applicability for adolescents.

2.3 | Analytic strategy

2.3.1 | Confirmatory factor analyses

We computed multilevel-confirmatory factor analyses both for the five bullying scales (verbal bullying, verbal cyberbullying, relational bullying, relational cyberbullying, physical bullying) and the composite five-factor model to ensure the factor structure of the newly developed bullying scales. We utilized the R package lavaan (version 0.6-12; Rosseel, 2012) and regarded comparative fit indexs (CFIs) > 0.95 (>0.90), root mean square error of approximations (RMSEAs) < 0.06 (0.08), and square root mean residuals (SRMRs) < 0.08 as indices of good (acceptable) model fit (Hu & Bentler, 1999). To test whether five factors are appropriate to fit the data, we also carried out twofactor (bullying and cyberbullying) and three-factor analyses (physical bullying, verbal [cyber]bullying, relational [cyber]bullying) and compared the model fit characteristics (CFI, RMSEA, SRMR; Akaike's information criterion [AIC], Bayesian information criterion [BIC], with lower [higher] RMSEAs, SRMRs, AICs, and BICs [CFIs] indicating better fit).

2.3.2 | Zero-order correlations and estimates of reliability

We computed bivariate correlations among all study variables, using the R package *correlation* (version 0.8.2; Makowski et al., 2022). Cronbach's α s were computed using the R package *psych* (version 2.2.5; Revelle, 2022).

2.3.3 | Path models

We computed multilevel structural equation models with and without social desirability considered, using lavaan. We used Hu and Bentler's (1999) guidelines for model evaluation.

2.3.4 | Quantification of similarities between parameter estimates and correlations

Given that we controlled for shared variances among predictors and criteria alike, suppression might occur. To quantify the effect of partialing, we calculated the agreement between bivariate correlations and the path coefficients obtained from the model (Rose et al., 2022). To this end, we computed the *Double-Entry ICC*_{DE} with the R package *ICC*_{DE} (version 0.3.4; Blötner & Grosz, 2022). The more *ICC*_{DE} differs from +1, the higher the bias stemming from partialing.

2.4 | Ethical approval, transparency, and openness

This study obtained approval from the institutional review board of TU Dortmund University and was preregistered. The Open Science Framework directory provides the data set, the analysis script, and supplements (https://osf.io/3wyf6/).

3 | RESULTS

3.1 | Confirmatory factor analyses

Table 1 presents confirmatory factor analyses of the subscales of the SBCBA and the confirmatory factor analysis of the composite SBCBA. All subscales exhibited very good fit after excluding a maximum of one item per subscale (e.g., due to redundancies; all CFIs \geq 0.98, all RMSEAs \leq 0.05, all SRMRs_{within} \leq 0.06). The SRMR_{between} of the relational cyberbullying subscale indicated poor fit (SRMR_{between} = 0.83), but this seems to be typical when ICCs are very small (i.e., *ICC* ≤ 0.05; Dyer et al., 2005; Wu et al., 2017), as was the case for the relational cyberbullying items. The multilevel confirmatory factor analysis did not converge for the composite models, presumably due to low variances observed for different factors in many classes and low ICCs of some items (Dyer et al., 2005). Thus, for the analyses of the SBCBA with two, three, or five factors, single-level confirmatory factor analyses without hierarchical nesting were used (maximum Likelihood estimator with robust standard errors). The final SBCBA entails four items each for physical and relational bullying, and five items each for verbal bullying, relational cyberbullying, and verbal cyberbullying (see Supporting Information: Table S1). Unlike the two- and three-factor models, all fit indices suggested a good fit for the five-model (see Table 1). The five-factor model had a better fit than the two- and threefactor models (AICs = 27,098, 27,506, and 27,572; BICs = 27,343, 27,712, and 27,786, in this order).

TABLE 1 Multilevel confirmatory factor analyses of the bullying and cyberbullying scales.

| Model (number of items) | χ²(df) | CFI | RMSEA [90% CI] | SRMR _{within} | SRMR _{betweer} |
|--------------------------------------|--------------|------|-------------------|------------------------|-------------------------|
| TB _v (5) | 4.23 (10) | 1.00 | 0.00 [0.00, 0.01] | 0.01 | 0.03 |
| TB _r (5) | 88.78 (10) | 0.90 | 0.11 [0.09, 0.13] | 0.06 | 0.11 |
| TB _r -R (4) | 6.31 (4) | 1.00 | 0.03 [0.00, 0.07] | 0.02 | 0.08 |
| TB _p (5) | 46.20 (10) | 0.97 | 0.08 [0.06, 0.10] | 0.04 | 0.03 |
| TB _p -R (4) | 1.95 (4) | 1.00 | 0.00 [.00, 0.04] | 0.01 | 0.02 |
| CB _v (6) | 74.50 (18) | 0.95 | 0.07 [0.05, 0.09] | 0.04 | 0.15 |
| CB _v -R (5) | 26.34 (10) | 0.98 | 0.05 [0.03, 0.08] | 0.03 | 0.10 |
| CB _r (6) | 26.69 (18) | 0.99 | 0.03 [0.00, 0.05] | 0.03 | 0.94 |
| CB _r -R (5) | 9.53 (10) | 1.00 | 0.00 [0.00, 0.04] | 0.03 | 0.83 |
| Five-factor SBCBA (23) ^a | 403.50 (220) | 0.94 | 0.04 [0.03, 0.04] | 0.05 | - |
| Two-factor SBCBA (23) ^a | 626.07 (229) | 0.87 | 0.06 [0.05, 0.06] | 0.07 | _ |
| Three-factor SBCBA (23) ^a | 657.37 (227) | 0.85 | 0.06 [0.05, 0.06] | 0.07 | - |
| | | | | | |

Note: Subscripted p, r, and v indicate physical, relational, and verbal bullying, respectively. "-R" indicates revised structure after item exclusion. Abbreviations: CB, cyberbullying; CFI, comparative fit index; CI, confidence interval; RMSEA, root mean square error of approximation; SBCBA, short bullying and cyberbullying assessment; SRMR, square root mean residual; TB, traditional bullying. ^aSingle-level confirmatory factor analysis.

TABLE 2 Bivariate correlations and Cronbach's as of all study variables.

| | ΤB _p | ΤB _r | ΤΒ _ν | CB _r | CB _v | Deh | SocDes | Арр | Av | HN | HU | HNHU |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|--------|--------|--------|-----|--------|--------|------|
| TB_{p} | .79 | | | | | | | | | | | |
| TBr | .51*** | .75 | | | | | | | | | | |
| TB_{v} | .74*** | .50*** | .86 | | | | | | | | | |
| CBr | .54*** | .60*** | .48*** | .69 | | | | | | | | |
| CB_{v} | .53*** | .56*** | .54*** | .68*** | .77 | | | | | | | |
| Deh | .39*** | .37*** | .36*** | .32*** | .39*** | .70 | | | | | | |
| SocDes | 28*** | 32*** | 32*** | 23*** | 31*** | 32*** | .74 | | | | | |
| Арр | .35*** | .37*** | .39*** | .34*** | .40*** | .45*** | 32*** | .74 | | | | |
| Av | .25*** | .21*** | .33*** | .19*** | .28*** | .46*** | 41*** | .42*** | .70 | | | |
| HN | .10* | .10* | .06 | .07 | .08* | .16*** | 03 | .03 | .04 | .33 | | |
| HU | .12** | .04 | .08* | .13** | .12** | .19*** | 08 | .08 | .00 | .56*** | .32 | |
| HNHU | .12** | .08 | .07 | .11** | .11** | .20*** | 06 | .06 | .03 | .89*** | .87*** | .50 |
| ICC | .11/.10 | .06/.05 | .13/.13 | .02/.02 | .06/.05 | _ | - | _ | _ | _ | _ | _ |

Note: Subscripted p, r, and v indicate physical, relational, and verbal bullying, respectively. App and Av indicate Machiavellian approach and avoidance, respectively. HN, HU, and HNHU represent facets of covert dehumanization (Human Nature, Human Uniqueness, and the composite of both, respectively). *ICC* observed in the multilevel path models (with/without social desirability controlled for). Italicized parameters on the diagonal represent Cronbach's α s.

Abbreviations: CB, cyberbullying; Deh, overt dehumanization; *ICC*, intraclass correlation; SocDes, social desirability; TB, traditional bullying. *p < .05; **p < .01; ***p < .001.

3.2 | Bivariate and ICCs

Table 2 entails bivariate correlations and estimates of reliability. Given the conciseness of the subscales, estimations of reliability of the five subscales were sufficient, Cronbach's $\alpha s \ge .69$. The facets of the SBCBA were positively correlated but still yielded uniqueness, $0.48 \le rs \le .74$ (all *ps* < .001, if not stated otherwise). Thus, and in line with the confirmatory factor analyses, it is worthwhile to separate the

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five domains. Both facets of Mach and all facets of (cyber)bullying were negatively related to social desirability, all rs ≤ -.23. Machiavellian approach and Machiavellian avoidance correlated positively with the other constructs but differed in strength. For instance, Machiavellian approach correlated more strongly with relational bullying and cyberbullying (rs = .37 and .34) than did Machiavellian avoidance, rs = .21 and .19, both $zs \ge 3.69$, ps < .001. However, Machiavellian approach was also more strongly related to physical bullying and verbal cyberbullying, but not to verbal bullying (rs = .35, .40, and .39 in this order) than was Machiavellian avoidance, rs = .25, .28, and .33, zs = 2.50, 3.06, and 1.55, ps = .01, .002, and .12, respectively. The scores of the facets of covert dehumanization and their composite score revealed only weak links with the other variables in the study. Due to less-than-acceptable estimates of reliability ($\alpha s \le .50$) and only weak relations with overt dehumanization (rs ≤ .20), we excluded covert dehumanization and used overt dehumanization as a mediator in the path models. The ICCs of the forms of (cyber)bullying ranged from 0.02 to 0.13 in both models (see Table 2).

3.3 | Path models

The multilevel path model with overt dehumanization as a mediator revealed a satisfactory fit, $\chi^2(6) = 61.16$, p < .001, *CFI* = 0.98, *RMSEA* = 0.12, 90% CI [0.09, 0.15], *SRMR*_{within} = 0.06, *SRMR*_{between} = 0.02 (the *RMSEA* tends to be inflated in models with small degrees of freedom; Kenny et al., 2015). As can be seen in Table 3, when controlling for social desirability, Machiavellian avoidance had no direct effect on physical bullying (β = .05, p = .14), and Machiavellian approach had no direct effect on relational cyberbullying (β = .02, p = .26), opposing H2 and H5. All remaining direct, indirect, and total effects (β s ≥ .03, all $ps \le .001$) were positive and thus advocated in favor of H1, H3, H4, and H6. Hence, overt dehumanization emerged as a mediator of all hypothesized relations between Mach and (cyber)bullying.

The multilevel path model without social desirability yielded a good fit, $\chi^2(5) = 59.59$, p < .001, *CFI* = 0.97, *RMSEA* = 0.13, 90% CI [0.10, 0.16], *SRMR*_{within} = 0.07, *SRMR*_{between} = 0.02. The patterns of parameters were highly similar to those obtained for the model with social desirability, *ICC*_{DE} = 0.95 (see Table 3). The only difference regarded the path between Machiavellian avoidance and physical bullying, yielding significance when social desirability was omitted (β = .07, p = .02), supporting H1 as well as H3–H6.

3.4 Comparisons between correlations and parameters obtained from the path model

The overall comparison between bivariate correlations and the parameters of the path models exhibited stark disagreement, $ICCs_{DE} = -0.37$ and -0.26 with and without the control variable, respectively. As stated earlier, for instance, Machiavellian approach correlated more strongly with physical and verbal (cyber)bullying than

TABLE 3 Summary of the adapted multilevel model on (cyber) bullying in Machiavellianism.

| Parameters | With social desirability ß [95% CI] | Without social desirability |
|--|---|-----------------------------|
| Direct paths | p [//// Cl] | p [/3/6 Cl] |
| App \rightarrow TB _r (H1) | .05 [.02, .09] | .06 [.03, .10] |
| App \rightarrow CB _r (H2) | .02 [01,.04] | .02 [.009, .05] |
| $Av \rightarrow CB_v$ (H3) | .04 [.007, .08] | .06 [.03, .09] |
| $Av \rightarrow TB_v$ (H4) | .17 [.10, .24] | .20 [.13, .27] |
| $Av \rightarrow TB_p$ (H5) | .05 [02, .11] | .07 [.01, .13] |
| Paths involving the mediator (H6) | | |
| $App \to Deh$ | .29 [.22, .36] | .29 [.22, .36] |
| $Av \rightarrow Deh$ | .30 [.23, .37] | .30 [.23, .37] |
| ${\sf Deh} \to {\sf TB_v}$ | .22 [.14, .30] | .26 [.18, .34] |
| $Deh\toCB_v$ | .17 [.12, .22] | .20 [.15, .24] |
| $Deh \to TB_p$ | .26 [.19, .34] | .30 [.23, .37] |
| $Deh \to CB_r$ | .11 [.07, .14] | .13 [.09, .16] |
| $Deh \to TB_r$ | .14 [.09, .19] | .17 [.13, .22] |
| Indirect effects | | |
| $Av \to Deh \to TB_v$ | .07 [.04, .09] | .08 [.05, .11] |
| $Av \to Deh \to CB_{v}$ | .05 [.03, .07] | .06 [.04, .08] |
| $Av \to Deh \to TB_p$ | .08 [.05, .11] | .09 [.06, .12] |
| $App \to Deh \to TB_r$ | .04 [.02, .06] | .05 [.03, .07] |
| $App \to Deh \to CB_r$ | .03 [.02, .04] | .04 [.02, .05] |
| Total effects | | |
| $Av \rightarrow Deh \rightarrow TB_v$ | .23 [.16, .30] | .28 [.21, .34] |
| $Av \to Deh \to CB_{v}$ | .09 [.06, .13] | .12 [.08, .15] |
| $Av \to Deh \to TB_{p}$ | .13 [.06, .19] | .16 [.10, .22] |
| $App \to Deh \to TB_r$ | .10 [.06, .13] | .11 [.08, .15] |
| $App \to Deh \to CB_r$ | .05 [.02, .07] | .05 [.03, .08] |
| ICC _{DE} | .95 | |

Note: Subscripted p, r, and v indicate physical, relational, and verbal occurrences, respectively. Covariances among facets of Mach and among facets of (cyber)bullying ($\beta s \ge .08$) as well as paths involving the control variable were omitted in the table ($\beta s \le -.11$, all $ps \le .001$). Bolded coefficients were significant at p < .05.

Abbreviations: App, Machiavellian approach; Av, Machiavellian avoidance; CB, cyberbullying; Deh, overt dehumanization; TB, traditional bullying.

Machiavellian avoidance, but these paths were restricted to null in the multilevel path models. However, freeing these restrictions in the path models would not substantially improve the agreement between correlations and path coefficients ($ICC_{DE}s = -0.26$ and -0.16 with and without the control variable; see our OSF supplement). We concluded that controlling for shared variances (among facets of

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[cyber]bullying and among facets of Mach), but not the correlation differences of the facets of Mach with physical and verbal (cyber) bullying accounted for the disagreement.

4 | DISCUSSION

The present research pursued three goals. The main goal was to model distinct relations between two facets of Mach and five facets of (cyber)bullying. To facilitate the simultaneous assessment of physical, relational, and verbal forms of (cyber)bullying, our second goal was the development of the SBCBA. Machiavellian approach was thereby hypothesized to be related to higher engagement in relational (cyber)bullying and Machiavellian avoidance was expected to be related to higher engagement in verbal and physical (cyber) bullying. Last, dehumanization was tested as a mediator of all of these relations.

4.1 | Evaluation of the current findings

Referring to the main goal, the findings from bivariate correlations and path analyses suggested that the differentiation of Mach into approaching and avoiding aspects was well-suited to pinpoint relational aspects of (cyber)bullying, but opposing our considerations, Machiavellian approach also correlated more strongly with verbal and physical bullying than Machiavellian avoidance. This might be explained by the general function of diverse acts of aggression to gain and maintain dominance, popularity, or status (Salmivalli et al., 2021). In contrast to our initial considerations, overt (cyber) bullying forms might thus serve individual reward-seeking and goal attainment, for instance by intimidating others, irrespective of a person's strategic acting in other respects. Arguably, individuals high in Mach adopt overt antisocial behavior only when the likelihood of punishment is low (Christie & Geis, 1970). Relatedly, striving for social dominance translates into bullying only if the class norm to defend victims is low, suggesting that bullies enact their behavior only if they expect little social costs or reputational harm (Pan et al., 2023; Salmivalli et al., 2021). Since we did not assess the circumstances under which (cyber)bullying was enacted, future research might test situational affordances influencing overt (cyber) bullying by individuals high in Machiavellian approach.

The items supposed to assess covert dehumanization revealed different psychometric problems (e.g., negative interitem correlations), hampering estimations of reliability and relations with other constructs. We attributed this to the combination of response scales in which only the most extreme anchors were labeled and the inclusion of reversed-scores items. Thus, equal interpretations of the intermediate categories could not be ensured, and a low endorsement of reversed items does not necessarily imply a high endorsement of regular items (Weijters et al., 2010). Interestingly, however, but consistent with earlier work (Vigil-Colet et al., 2012), controlling for social desirability did not substantially affect the results of our

adapted model, although all involved variables had negative bivariate relations with social desirability.

4.1.1 | Machiavellianism, bullying and cyberbullying, and dehumanization

Unlike peer-report studies (Berger et al., 2015; Peeters et al., 2010; Wei & Chen, 2012), self-report studies have consistently demonstrated positive relations between Mach and engagement in bullying (Berger & Caravita, 2016; Sutton & Keogh, 2000; van Geel et al., 2017). Intriguingly, in a study by Andreou (2004), the Manipulation facet of Mach predicted only girls' overall bullying and the Lack of Faith in Human Nature facet of Mach predicted only boys' overall bullying. The stated facets roughly correspond to Machiavellian avoidance and approach, respectively. However, Andreou's (2004) findings contradict those of Czibor et al. (2017) who posited lack of faith in human nature and manipulation as prototypical manifestations of Mach in women and men, respectively. Based on Czibor et al.'s characterizations, one could have expected manipulation and lack of faith in human nature to predict bullying in boys and girls, respectively. Since the Mach scale in Andreou's (2004) study was based on the oft-criticized Mach IV scale (Christie & Geis, 1970; see Blötner & Bergold, 2022, for an overview of critique), further research employing psychometrically superior measures of Mach is required.

Based on teacher reports, different forms of aggression were positively correlated to Mach, with relational aggression being the strongest correlate (Kerig & Stellwagen, 2010), which roughly aligns with our findings on Machiavellian approach. In this vein, Björkqvist (2018) has argued that teacher-report might not be as valid as selfreports of bullying because teachers know only little about the actual amount of individual violence.

Mach has been further linked to higher engagement in cyberbullying (Brown et al., 2019; Gajda et al., 2022; Giumetti et al., 2022; Goodboy & Martin, 2015; van Geel et al., 2017), with decreased empathy (Yuan et al., 2020) and beliefs in human virtue (partially) mediating this association (Zhang & Zhao, 2020). Wang et al. (2016) have found that Mach predicted cyberbullying even when moral disengagement (which is a broad concept including dehumanization; Bandura et al., 1996) has been controlled. In the same vein, Mach is linked to decreased affective empathy (i.e., vicarious experience of others' emotions), but not to empathetic skills (i.e., ability to accurately identify emotions; Blötner et al., 2021). Thus, it is not a lack of empathetic skills that accounts for Machiavellian bullying, but the willingness to harm others intentionally to obtain resources (Machiavellian approach), to take vengeance for experienced harm, or to defend oneself against (anticipated) harm (both referring to Machiavellian avoidance). In line with our introductory considerations, we suggest that dehumanizing one's opponents (in the broadest sense) is a driver of antagonistic conduct because dehumanization is sought to bypass or inactivate empathic reactions toward others (Haslam & Loughnan, 2014). Similarly, the

conceptual proximity between dehumanization and victim blame (i.e., endorsing the view that it was the victim's fault to be bullied, which is also covered by the broad term moral disengagement [Bandura et al., 1996]) might have been at work, but this was beyond the scope of this study.

This being said, our findings concerning the links of Mach with dehumanization and (cyber)bullying generally agree with extant findings. However, unlike our study, earlier studies have predominantly used overall (cyber)bullying and/or Mach scores, suggesting that their scores have confounded different aspects of the constructs, leaving open the question of whether each aspect of Mach is equally predictive of each aspect of (cyber)bullying. Given that in the current study Machiavellian approach and Machiavellian avoidance correlated differently with four of five domains of (cyber) bullying, differentiated views of the constructs under consideration appear worthwhile (see correlation matrix in Table 2 and path coefficients in Table 3). Thus, our study extended and differentiated existing research.

4.1.2 | Short bullying and cyberbullying assessment

Having in mind the conciseness of the SBCBA, the estimations of reliability of its five subscales were satisfactory. Given that the five-factor structure had a better fit than alternative models with two or three factors and that the five facets yielded distinctiveness despite partially high correlations, our findings provide preliminary evidence for the assumption that different sorts of bullying are not necessarily psychologically equivalent (Cornell et al., 2006). The findings also supported the notion that different acts of (cyber)bullying often coincide or spread across media (Giumetti et al., 2022; Kowalski et al., 2014; Wei & Chen, 2012). However, despite the good psychometric properties of the scale, derived from a broad, gender-balanced sample (representing a wide range of the German secondary education system), extensive validation is yet required.

4.1.3 | Differential roles of dehumanization in bullying and cyberbullying

We assumed implicitly that dehumanization was more important in cyberbullying than in traditional bullying because it is arguably easier to enact antisocial behavior when there is little to no sensory contact between perpetrators and victims (Runions & Bak, 2015). In the current research, correlations involving dehumanization were comparable between the respective forms of bullying and cyberbullying, but path analyses suggested marginally stronger links in favor of bullying. In this vein, Graf et al. (2022) suggested that more social and other resources can be obtained from bullying than from cyberbullying. On the contrary, cyberbullying is preferred to bullying when it comes to seeking fun or excitement, reacting to threats, and taking revenge. These findings can also apply to Mach because of the

inherent orientation toward achieving goals and avoiding threats to those desired states (Blötner & Bergold, 2022, 2023).

It is relevant to note that (cyber)bullying differs from other faceto-face and online aggression in that (cyber)bullying involves *repeated* actions *intended to cause harm* to *weaker individuals* (as opposed to *unique* acts imposed on *peers of equal or greater power/strength* which might *not be intended to cause harm*; Kowalski et al., 2014; Pabian et al., 2015). Bullying is therefore sufficiently distinct from various forms of aggressiveness (Vivolo-Kantor et al., 2014). Consequently, evidence concerning general aggression cannot be perfectly applied to (cyber)bullying (Kowalski et al., 2014).

4.2 | The Dark Triad and Dark Tetrad

Other studies on (cyber)bullying have situated Mach in the Dark Triad (comprising Mach along with self-promotional narcissism as well as aggressive and impulsive psychopathy) or Tetrad of personality (Dark Triad extended by sadism, i.e., a pattern of deriving enjoyment from others' suffering). These studies have frequently used multiple regression or structural equation models to pinpoint "unique" contributions of each trait in predicting (cyber)bullying behaviors and have oftentimes found Mach to be (almost) unrelated to (cyber) bullying after partialing (Brown et al., 2019; Gajda et al., 2022; Goodboy & Martin, 2015; Knight et al., 2018; Lau & Marsee, 2013; Pabian et al., 2015; van Geel et al., 2017; for exceptions, see Giumetti et al., 2022; Safaria et al., 2020; Schade et al., 2021; Wright et al., 2020). A critique labeled perils of partialing mentions that controlling for shared variances among the traits of the Dark Triad/ Tetrad ieopardizes interpretations because partialing also eliminates desired commonalities among the traits (e.g., antagonism; Rose et al., 2022). Hence, it is unclear, for instance, what a Mach score reflects once adjusted for psychopathy, narcissism, and sadism. Additionally, partialed Dark Triad scores are far less reliable than the respective raw scores (Rose et al., 2022). Note in this regard that the current findings cannot be easily compared to those obtained from studies on the entire Dark Triad/Tetrad because, unlike the present study, the stated studies referred to global scores for each Dark Triad/Tetrad trait and (cyber)bullying. However, in the present study in which only Mach was mentioned, the differences between correlations and path coefficients have already been high (as suggested by ICCs_{DF}). We would expect that differences would be even more pronounced when considering the entire Dark Triad/ Tetrad.

4.3 | Strengths and limitations

We presented a concise measure for the assessment of five facets of bullying and cyberbullying, the SBCBA. The major strength of the current study was a comparatively large sample determined by an a priori power analysis and involving a wide array of students, as the sample was relatively balanced concerning gender, school type, and

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age, thus resembling crucial characteristics important for bullying in schools (e.g., Bergold et al., 2020). Relatedly, our study was one of the few to consider the hierarchical nature of (cyber)bullying. Given the role of peer relations and feelings of dominance during adolescence, peer conflicts are expectedly high in the assessed age range (Olweus, 1993; Wigfield et al., 1996) and these phenomena are largely affected by social and environmental characteristics, such as class-specific approval or disapproval of (cyber)bullying (Pan et al., 2023; Salmivalli et al., 2021; Swearer & Hymel, 2015; Zych et al., 2015). By separating different forms of (cyber)bullying, the present study thus sheds light on *distinct* dependencies of (cyber) bullying behaviors on class characteristics, as indicated by the variability of the ICCs among the five facets. Interestingly, all cyberbullying forms were less dependent on class characteristics than traditional bullying forms. This might be explained by the fact that cyberbullying, unlike bullying, does not necessarily occur in the immediate context of the class, but under circumstances selected by the perpetrators. Likewise, relational bullying appears to be less dependent on class characteristics than other forms of traditional bullying, which we argue is due to its more covert nature. That is, relational bullying might be less subject to group dynamic processes than verbal and physical bullying. Future research should test whether classroom norms toward distinct (cyber)bullying acts and other concrete environmental characteristics account for this variability of different (cyber)bullying acts across classes.

Notwithstanding these strengths, this study also has limitations. For instance, specific environmental features altering the frequency of (cyber)bullying perpetration were not assessed, such as school or classroom climate, class norms to tolerate or endorse bullying, or socioeconomic status (e.g., Giumetti et al., 2022; Pan et al., 2023; Salmivalli et al., 2021; Zych et al., 2015). Besides, the data collection started 1 year after the last COVID-19 lockdown in Germany (Robert-Koch-Institut, n.d.). COVID-19 measures might have had certain long-term repercussions on students' (social) behavior (Salmivalli et al., 2021), limiting the comparability to earlier (cyber)bullying studies. Likewise, the schools and students volunteering to participate might have been somewhat preselected as we had a relatively high rejection rate of contacted schools. Additionally, there has been debate about the validity of self-reports versus other reports of bullying (Vivolo-Kantor et al., 2014). Although selfreport seems to be a well-suited method for bullying (Pellegrini & Bartini, 2000), future research might employ multisource assessment (see also Björkqvist, 2018). Last, the study was crosssectional, limiting causal interpretations of the proposed process.

4.4 | Conclusion and future directions

This study had at least three key conclusions with particular importance to future research, but also to practitioners. First, it is possible and imperative to model different facets of (cyber)bullying, namely, verbal, relational, and physical (Olweus, 1993). The same is

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true of Mach because a particular facet was identified that accounts for (cyber)bullying (i.e., Machiavellian approach), albeit against our expectations in some cases. Last, we would like to urge future (cyber) bullying research to put more emphasis on the hierarchical structure of students being nested within certain social environments. Because the (cyber)bullying forms are differentially affected by class characteristics, it is worthwhile to consider these environmental determinants. These considerations are also expected to inform better antibullying interventions.

Changes during adolescence have numerous impacts on relationships with others. For instance, as social skills develop in youth, indirect aggression (as a means to assert dominance, status, and power) increases (Volk et al., 2021; Wigfield et al., 1996). This is especially true of children and adolescents high in Mach (Kerig & Stellwagen, 2010; Reeves Washer, 2008). Christie and Geis (1970) concluded that unstructured environments, the absence of affective involvement, and face-to-face contact foster the success of Machiavellian manipulation. It would, therefore, be advantageous to study the success of Machiavellian endeavors to obtain resources in dependence on specific environmental factors, and thereby apply a longitudinal design. The SBCBA, once extensively validated, could thereby play an important role.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study, analysis scripts, and auxiliary materials are openly available in Open Science Framework under https://osf.io/3wyf6/.

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SUPPORTING INFORMATION

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