



# Nice, but not smart? Attributional backlash from displaying prosocial behavior in the classroom

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## Abstract

According to attributional theory, when the application of effort leads to success we praise the achievement. Effort and ability, however, are seen as compensatory and thus, paradoxically, being praised can lead to attributions of low ability. Our study investigates whether praise, not for academic performance, but for social classroom behavior, would also incur attributional backlash. We examined whether prosociality relates to attributions of high effort and low ability, mediated by expected teacher praise and happiness. In adolescence, prosocial behavior is displayed more by females and aligns with femininity. We conducted an experimental vignette study with 324 German ninth graders to examine whether prosocial students experience a denigration of achievement via expected teacher reaction. Multilevel modelling showed that compared to nondescript students, prosocial students were judged to receive good grades as a result of effort and less due to ability, but this was not related to expected teacher reactions. Prosocial students were also judged to be more likeable and popular. Examination of gender-related outcomes showed that prosocial students were believed to be more feminine, but also more masculine than the nondescript student. Female prosocial targets were thought to be more typical, but not as occurring more frequently than their male counterparts. The results are discussed in reference to the paradox of praise. The limitations and implications of the research are discussed, particularly regarding female students' achievements.

**Keywords** Academic achievement · Attribution · Gender · Paradoxical effects of praise · Prosocial behavior

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## 1 Introduction

Attribution theory states that the causes we ascribe to outcomes have a significant impact on how we interpret and judge said outcomes (Heider, 1958). Specifically, teachers have reacted differently depending on whether a student's performance can be attributed to ability or effort (Butler, 1994; Prawat et al., 1983). Research has shown that students are praised when their performance is perceived to be a result of high effort and not high ability (Covington & Omelich, 1979; Weiner & Kukla, 1970). While it is a commonly held belief that praise is a positive experience for students (see Brummelman & Dweck, 2020), many studies have shown that praise in school can incur a negative side effect, known as the "paradox of praise" (see Graham & Chen, 2020; Meyer, 1982; Meyer et al., 1979; Möller, 2005). This paradox occurs as a result of our implicit belief that effort and ability are compensatory (Heider, 1958; Möller, 2005): someone with higher ability needs less effort to solve a task than someone with low ability and vice versa. Due to this "principle of compensation", praising can signify to others that the achieved outcome is due to effort and not ability (Binser & Försterling, 2004; Meyer et al., 1979; Möller, 2005). This essentially reduces the students' achievement to mere effort and diminishes ascriptions of ability, thus praised students may be seen as less able (Meyer et al., 1979; Möller, 2005). The paradoxical meanings of teacher praise can be interpreted by students (Miller & Hom, 1996; Möller, 2005), especially by students in adolescence (Barker & Graham, 1987; Möller, 2005). Importantly, it is not just reactions to *academic behavior* that can elicit such attributions: prior research has revealed that *social behavior* in the classroom can evoke ascriptions of ability or effort, via expected reactions by teachers (Kessels & Heyder, 2020). This previous research focused on negative classroom behavior and expected reprimands, which lead students to attribute a fictional disruptive student's low grade to low effort, rather than low ability. Rather than a negative classroom behavior, the present paper investigates positive, prosocial behavior in the classroom from an attributional perspective, aiming to illuminate whether displaying prosocial behavior relates to the denigration of achievement via expected praise.

In our introduction, we will give an overview on attributional theory and the special relation between effort and ability. We further outline praise and the norm of effort in school, showing the paradoxical effect praise has on attributions. We will ask whether these paradoxical effects of praise will generalize to praise received for prosocial behavior at school. We conclude by examining how prosocial behavior is perceived by others. Overall, the present study investigates whether prosocial behavior leads to ascriptions of high effort and low ability via expected teacher reactions, specifically praise, and how prosocial students are perceived in terms of social and gender-related outcomes.

## 2 How does classroom behavior lead to effort and ability attributions?

The causes we ascribe to certain outcomes have an impact on public and private reactions to said outcomes (Heider, 1958; Weiner, 1986). Heider's attribution theory (1958), later expanded upon by Weiner (1986, 2000), forms the basis

for investigations into the causes people believe to underlie our actions. Task difficulty, ability, effort (Heider, 1958), and luck (Weiner, 1986) are presented as key determinants of success or failure. Weiner (1986) proposed that the perceived *locus*, *controllability*, and *stability* of causes account for how causal attributions are made. Ability, an internal, stable, but not controllable attribute, is contrasted with effort, which is characterised as internal, flexible, and controllable. Importantly, effort and ability are believed to be compensatory: someone with high ability may solve easy tasks while exerting very little effort. An individual with low ability however, would need to compensate for this by applying more effort to solve the task (Meyer, 1992; Möller, 2005; Weiner & Kukla, 1970).

Applying attributional theory to classroom contexts has a rich history (see H. Wang & Hall, 2018) and investigations have shown the relevance of attributional theory from the perspective of teachers and students. Butler (1994) asked teachers to react to students described as showing low effort or low ability and found distinct pattern in responses in line with attributional theory. More significantly, these teacher reactions were shown to students, who interpreted the teacher reactions as cues of ability or effort (Butler, 1994). Thus, not only do teachers enact specific behavior in line with their attributions, such as pity, reprimands, or praise, but students receiving these cues interpret how teachers attributed their performance. Since these cues are public, it is also possible for observing peers of these students to make attributional inferences about their fellow classmates. It follows that behavior in classrooms can trigger certain teacher reactions, which are interpreted by students as indicators of teachers' effort or ability attributions (Butler, 1994; Kessels & Heyder, 2020; Meyer et al., 1979; Miller & Hom, 1996; Möller, 2005).

Importantly, it is not just on-task, academic behavior that can incur these teacher reactions and subsequent student interpretations: social behavior in the classroom can also trigger attributions. Prior research has revealed that disrupting the class prompted students to expect corresponding teacher emotions and reactions, which then had an impact on attributions of effort and ability (Kessels & Heyder, 2020). This experimental vignette study has shown that disruptive behaviors lead to expectations of teacher reprimands, which lead to ascriptions of low effort, rather than low ability, in cases of academic failure (Kessels & Heyder, 2020). Students described as equally low performing, but behaving unobtrusively, were not seen as evoking reprimands to the same extent, therefore their low performance was also less strongly attributed to mere lack of effort (Kessels & Heyder, 2020). We believe that this study could be mirrored with desirable, instead of disruptive, classroom behavior. While Kessels and Heyder (2020) revealed how low performing students can reap attributional benefits from displaying anti-social behavior, we focus on the possible attributional backlash high performing students might risk when behaving prosocially. As their prosocial behavior will likely be praised, this might impact what fellow students consider to be the causes of their good grades, resulting in negative inferences about prosocial students' abilities.

### 3 Praise in the classroom

We can understand “praise” in a school context as an expression of “approval or admiration” (Brophy, 1981, p. 5). Praise goes beyond simple feedback and is said to include a display of teacher emotion, such as pride, or delight (Brophy, 1981). Most instances of praise are seen in elementary school and then decrease in later grades (Jenkins et al., 2015), although adolescents also appreciated and responded well to praise both in familial (Padilla-Walker & Carlo, 2004) and academic contexts (Fefer et al., 2016; Hallinan, 2008).

#### 3.1 Displaying effort leads to praise from teachers

Student accomplishments are accompanied by corresponding emotions and feelings on the part of the teacher, depending on their attributions (Butler, 1994; Hareli & Weiner, 2002; Weiner, 2000). While perceived lack of effort elicits teachers’ anger (Butler, 1994; Kessels & Heyder, 2020), displays of effort trigger feelings of happiness (Prawat et al., 1983; Weiner, 2007). At school, a primary reason for receiving praise is the application of effort. Effort is praiseworthy as it is a pathway to success perceived to be under the actors’ control. According to Weiner (1995) our positive associations with effort are deeply ingrained in many of our cultures and institutions, which perceive diligence, hard work, and effort as inherently moral features. It has thus become a norm in our institutions, including school, where effort is expected (Matteucci & Gosling, 2004) and appreciated (Matteucci et al., 2008; H. Wang & Hall, 2018) by teachers who expressed greater liking for effortful students (Saidah et al., 2019). Effort has been proposed as “an implicit rule of conduct” (Matteucci & Gosling, 2004, p. 162) in school. Teachers ranked effort and diligence, rather than competence, as more important for attaining success in school and expected effortful students to be better adjusted towards the demands of school (Matteucci & Gosling, 2004), despite not displaying high ability. Overall, teachers were more likely to report valuing effort over ability (Dompnier & Pansu, 2010; Matteucci et al., 2008; Saidah et al., 2019) and displaying a lack of effort in school was penalized more harshly than displaying a lack of ability (H. Wang & Hall, 2018; Weiner & Kukla, 1970) for all students. Many studies show that praise serves as an indicator for effort, as successful students who achieved their grades as a result of effort are met with teacher praise (Meyer et al., 1979; Miller & Hom, 1996; Möller, 2005), whereas success due to high ability results in fewer instances of praise (Matteucci et al., 2008; Meyer et al., 1979; Möller, 2005; Saidah et al., 2019). Across multiple experimental vignettes studies by Weiner and Kukla (1970) that varied high versus low effort and ability of target students, participants evaluated students described as exerting effort more favourably. Students presented as low in ability but high in effort received the most rewards from participants. These and other studies (Covington & Omelich, 1979) highlight that praise follows displays of effort, rather than ability.

### 3.2 Praise from teachers leads to attributional backlash: high effort and low ability

While on the surface praise may seem like a desirable social exchange (Padilla-Walker & Carlo, 2004), research dating to the late 1970s has examined how praise can be affiliated with negative outcomes because of the associated attributions (Meyer, 1982; Meyer et al., 1979). As instructors are more likely to praise for effort than ability (Covington & Omelich, 1979; Weiner & Kukla, 1970), distributing praise signifies that a good performance is a result of high-effort. Given the compensatory nature between effort and ability (Heider, 1958; Möller, 2005; Weiner, 1986; Weiner & Kukla, 1970), praised individuals are thus judged to be lower in ability (Meyer et al., 1979). Investigating praise from an attributional perspective has yielded much experimental evidence for this ‘paradox of praise’, indicating that participants ascribe higher effort, but lower ability to those students who receive praise instead of neutral feedback (for a review, see Graham & Chen, 2020; Meyer et al., 1979; Möller, 2005). As outlined above, students are also aware of attributions of ability and effort in the classroom and they interpret teacher communications, such as direct feedback or displays of emotions, accordingly (Butler, 1994; Kessels & Heyder, 2020; Möller, 2005). These findings show that teacher reactions and behaviors in the classroom can have an impact on how students attribute their peers’ performances.

Overall it may be said that praise is typically given to displays of effort for academic achievements. We are, however, interested in praise distributed for non-academic behavior, and whether this also has a paradoxical effect on attributions for academic outcomes. Non-academic classroom behavior for which a student may receive praise would be supportive, helpful behavior, benefitting other students (Haydon et al., 2020; Ramaswamy & Bergin, 2009). As such, teachers’ reactions to a prosocial student should resemble their reactions to a student whose performance they attribute to high effort. We have thus chosen to investigate whether prosocial behavior will elicit an expectation of teacher approval, such as happiness and praise, which should then induce an attributional pattern favouring effort over ability in peers.

## 4 Prosociality leads to ascriptions of popularity and femininity

In our social world, we often see people displaying behavior that benefits others (Pfattheicher et al., 2022), while incurring a cost for themselves. In adults, such prosocial acts may be chivalrous or entail caring for others (Eagly, 2009). In children, such acts can encompass sharing and comforting others (Gerbino et al., 2018). Research shows that prosocial behavior has multiple consequences, ranging from being praised to associations with characteristics and psychological outcomes, such as popularity, likeability, and femininity. In addition to the attributional mechanism outlined above, our study investigates how prosocial peers are perceived by students.

Displaying prosocial behavior is received well by others and is associated with beneficial psychological outcomes for the individual. In a longitudinal study of adolescents, prosocial behavior predicted higher likeability and popularity (Lu et al., 2018). Children and adolescents engaging in prosocial behavior were rated as more popular (Kornbluh & Neal, 2016). Prosocial behavior was associated with better quality friendships in adolescent boys (Son & Padilla-Walker, 2020) and in general was related to better relationships to peers (Lai et al., 2020; M. Wang et al., 2019).

Researchers have claimed that “major psychological causes of prosocial behaviors include warmth-related emotion (e.g., empathy; Batson, 2011)” (Kawamura et al., 2021, p. 453), with experimental evidence showing prosocial actors being ascribed higher warmth (Kawamura et al., 2021; Klein et al., 2014). Warmth is characterized by a kind and friendly disposition directed towards others (Cuddy et al., 2008) and as prosocial behavior is defined as acts benefitting an ‘other’, the close relation between the two constructs is unsurprising (Eagly, 2009). Warmth has not only been associated with prosociality, but is also closely tied to the construct of femininity (Martin & Slepian, 2021), a pattern consistent across cultures (Asbrock, 2010; Bosson et al., 2022; Ebert et al., 2014).

Both men and women and boys and girls display prosocial behavior (Atkinson et al., 2021; Eagly, 2009), although specific helping behaviors can differ between genders (Becker & Eagly, 2004; Diekmann & Clark, 2015; Hine, 2017). Studies found girls scoring higher than boys on different measures of prosociality (Bøe et al., 2016; Gerbino et al., 2018; Koglin et al., 2007; Lohbeck et al., 2015; see Silke et al., 2018; Van der Graaff et al., 2018; Xiao et al., 2019; Zakriski et al., 2005; Zimmer-Gembeck et al., 2005). Given the connection between prosociality and warmth (Kawamura et al., 2021) and warmth and femininity (Martin & Slepian, 2021), we also find evidence of associations between prosocial behavior and femininity (Eisenberg et al., 2001; Quenneville et al., 2022), although such associations may depend on the type of prosociality. Agentic helping behaviors, such as being chivalrous or taking physical risks (Becker & Eagly, 2004; Hine, 2017), are more often associated with men, while communion-oriented behaviors, such as being nurturing and providing emotional care, are seen as more feminine (Diekmann & Clark, 2015; Eagly, 2009).

Both prosocial and antisocial behavior in school are strongly stereotyped as masculine and feminine, respectively. Antisocial behavior in school is stereotypically seen as masculine (Glock & Kleen, 2017; Heyder et al., 2021) and has been shown to have an associated beneficial attributional pattern of low effort, rather than low ability (Kessels & Heyder, 2020). Whether prosocial behavior, which is seen as feminine (Eisenberg et al., 2001; Quenneville et al., 2022), might have a negative pattern of associated attributions is the focus of the present research. The role of stereotypes on attributional judgments has been previously laid out, revealing the impact that stereotyped identities have on evaluations of performance (Reyna, 2000). The “translation” of teacher reactions into attributional causes can be affected by stereotypes (Reyna, 2000): whether a teachers’ reaction to a student contains cues of effort or ability can relate to whether the student in question is stereotyped by the teacher. These reactions impart attributional beliefs to the student, signalling whether they are considered able or effortful, in line with social stereotypes (Reyna, 2000). Our

present research relates to this attributional model of stereotypes, but focuses less on stereotyped identities, but rather on behaviors that are stereotypically associated with members of a particular group. We believe students showing feminine behaviors, such as prosociality, are more often met with positive reactions by teachers (Younger et al., 1999). Instances of expected teacher happiness and praise will, in turn, lead fellow students to attribute good performances of these prosocial students to high effort, rather than high ability.

This pattern has been observed in judgments of female achievement, as teachers reported girls' successful performance in mathematics were due to high effort, whereas boys' maths achievement were due to high ability (Espinoza et al., 2014), and female students' failure was more likely to be attributed to a lack of ability (Tiedemann, 2000). The ascription of effort and ability thus has special relevance for the denigration of female achievement. The present study investigates if the display of prosocial behavior even contributes to unfavourable attributional patterns of high performance at school.

## 5 Study overview

The present vignette study will investigate whether well-performing target students described as displaying prosocial behavior are expected to be met with happiness and praise by teachers and if this expected teacher reaction will lead students to attribute these good performances to high effort (and not high ability). In other words, will praise for prosocial behavior lead to ascriptions of lower ability in classrooms? Mirroring the underlying theory of Kessels' and Heyder's (2020) paper on attributional inferences made for a low-achieving student behaving anti-socially who is reprimanded by their teachers, we will test whether displaying prosocial behavior has adverse effects on the attributions made for the academic performance of good students. Just as Kessels and Heyder, we will look at the attributions made by students who were presented with a vignette description of a fictional peer student behaving in a specific way. We argue that prosocial behavior displayed by students will be expected to be judged positively by teachers and peers (Birch & Ladd, 1998; Lai et al., 2020; M. Wang et al., 2019; Wentzel & Asher, 1995). This positive judgment should result in the expectation of happiness experienced by the teacher and instances of praise by the teacher (Jenkins et al., 2015). We thus hypothesize that students showing prosocial behavior in a vignette will be perceived as eliciting teacher happiness and praise (H1). As praise follows displays of high effort, rather than ability (Covington & Omelich, 1979; Weiner & Kukla, 1970), we expect the prosocial student (compared to a nondescript vignette counterpart) will be ascribed greater effort for their good academic performance (H2). Research has shown that teacher reactions (Butler, 1994; Möller, 2005) can impact ascriptions of effort and ability made by peers. Accordingly, we expect that the hypothesized effort-attribution will be mediated by expected teacher happiness and praise (H2a). As putting effort into a task is seen as compensatory for having low ability in that task (Binser & Försterling, 2004; Meyer et al., 1979; Miller & Hom,

1996; Möller, 2005), the prosocial student should also be ascribed lower academic ability (H3). We believe that this lack-of-ability attribution will similarly be mediated by expected teacher reactions of happiness and praise (H3a). Relating to displaying higher effort, but lower ability, prosocial students are expected to be perceived as possessing lower intelligence (H4a), a sign of lower ability.

Given the connotations of prosociality on a theoretical and empirical level, students described as more prosocial should also be ascribed characteristics relating to popularity and likeability. Prosocial students should thus be evaluated as more popular and as having more friends (H5a) and be more well-liked and more desirable to have as a friend (H5b), which is a consistent finding in the literature (Kornbluh & Neal, 2016; Lu et al., 2018).

The close ties of prosociality to warmth (Kawamura et al., 2021), which is associated with femininity (Eagly, 2009), and the finding that girls tend to display more prosocial behavior (Bøe et al., 2016; Gerbino et al., 2018; Xiao et al., 2019) should, on the whole, relate to greater ascribed femininity for the prosocial student compared to the nondescript student. Prosocial students are hypothesized to be perceived as more feminine (H6a) and less masculine (H6b) than nondescript students. We thus hypothesize that prosocial female targets students will be perceived as more common (H6c) and more typical (H6d) than prosocial male targets.

## 6 Method

### 6.1 Sample

For the purpose of this study, we recruited 9th grade classes from three schools from the highest academic track (“Gymnasien”) in a large city in Germany. We sampled 324 ninth graders (52% female, 45% male, 2% diverse or missing) from 12 classes. (We originally sampled 326 ninth graders, but due to two cases in which more than 50% of data were missing, these two participants were excluded from the analysis). Most students were female, which is in line with the gender split in the highest academic track (Federal Statistical Office Germany, 2020), from which the sample was drawn. The mean age of the sample was 14.1 ( $SD=0.6$ ). Most students (89%) were born in Germany, and 53% of our sample reported speaking only German at home. 41% spoke German and another language, or mostly another language at home. All students participated voluntarily during regular school hours in the classroom. Students completed a paper and pencil questionnaire and were supervised by the researcher and a trained assistant. The study was deemed ethical and approved by the Senate Department for Education, Youth, and Family.



## 6.2 Materials and pilot studies

As stimulus material, four vignettes were developed: a high-achieving female student displaying prosocial behavior, a high-achieving nondescript female student, a high-achieving male student displaying prosocial behavior, and a high-achieving nondescript male student. Behaviors fit for the prosocial vignette were constructed by conducting a pilot study in which 28 university students were asked to rate a list of behaviors in terms of how pro- vs. antisocial they were on 7 pt. Likert scales. These behaviors were then rated in a second pilot by 39 university students in order to assess how warm and competent these were (7 pt. Likert scales). The chosen behaviors were rated prosocial ( $M=5.4$ ,  $SD=0.8$ ) and warm ( $M=5.9$ ,  $SD=0.9$ ), while displaying moderate competence ( $M=4.7$ ,  $SD=1.3$ ).

The names for the students described in the vignette were: Benjamin, Dominik, Natalie, and Linda, chosen from a dataset by Nett and colleagues (2020). They were matched in terms of education, attractiveness, intelligence, competence, and warmth, as well as being popular names among 15-year old adolescents.

The prosocial student was described as: “[Name] is 15 years old. His/Her grades are good, he/she often gets good passing grades. He/She behaves in a very friendly manner in school. He/She always asks before using someone else’s belongings and shares candy with others. When other students are hurt, he/she shows sympathy.”

The nondescript student was characterized as: “[Name] is 15 years old. His/Her grades are good, he/she often gets good passing grades. He/She is a quiet boy/girl who behaves rather unremarkably. He/She is very quiet in class and never shows disruptive behavior.” This behavioral description is identical to the description in Kessels and Heyder’s (2020) control condition, this vignette attempts to show an absence of prosocial behavior, rather than something in opposition to prosociality (Carifio & Lanza, 1989).

## 6.3 Dependent variables

Participants were asked to rate the targets on multiple items on a Likert scale ranging from 1–5, with higher scores representing higher agreement. The exact wording is provided in Table 1. Relevant variables included: expected praise by the teacher, expected happiness by the teacher, effort attribution, ability attribution, intelligence, number of friends, popularity, likeability, wanting to be friends with, frequency of students like this, gender typicality, masculinity, and femininity.

Furthermore, perceived masculinity and femininity of the targets was assessed using a measure by Kessels (2005). 30 items such as “helpful,” “considerate,” “gentle” and “proud,” “powerful,” “fearless”, measuring femininity and masculinity respectively (15 items each), were rated on a Likert scale ranging from 1 (does not apply at all) to 7 (strongly applies).

**Table 1** Dependent variables, descriptive statistics, and intraclass correlations

Item	Endpoints scale (1–5)	<i>M</i> ( <i>SD</i> ) Prosocial	<i>M</i> ( <i>SD</i> ) Nondescript	<i>ICC</i>
The teacher praises him/her. (praise)	Rarely—often	4.21 (0.87)	2.82 (1.09)	0.029
The teacher is happy about him/her. (happiness)	Rarely—often	4.30 (0.79)	3.22 (1.01)	0.014
He/she earns good grades because he/she makes an effort. (effort attribution)	Not at all true—totally true	3.97 (0.81)	3.72 (1.01)	–0.003
He/she earns good grades because he/she is talented. (ability attribution)	Not at all true—totally true	3.10 (0.99)	3.31 (1.05)	0.019
How many friends does he/she have in his/her class? (number of friends)	A few—many	4.17 (0.98)	2.15 (0.90)	–0.001
How popular is he/she in his/her class? (popularity)	Not popular—very popular	4.11 (0.92)	2.21 (0.91)	–0.001
How likeable do you find him/her? (likeability)	Not at all—very	4.02 (0.92)	3.64 (0.94)	–0.003
How much would you like to be friends with him/her? (want to be friends)	Not at all—very much	3.64 (0.99)	3.34 (1.08)	–0.003
How high is his/her IQ? (intelligence)	Below average—above average	3.41 (0.62)	3.77 (0.68)	–0.003
How masculine is he/she? (masculinity)	Not masculine—very masculine	4.24 (0.89)	3.14 (0.88)	–0.003
How feminine is he/she? (femininity)	Not feminine—very feminine	5.50 (0.63)	5.28 (0.76)	–0.003
How often do boys like him exist? (frequency if male target)	Rarely—very often	2.64 (0.93)	2.69 (0.94)	–0.005
How often do girls like her exist? (frequency if female target)	Rarely—very often	3.05 (0.94)	3.07 (0.99)	–0.006
How similar is he to a typical boy? (gender typicality if male target)	Not similar—very similar	2.57 (0.89)	2.30 (0.83)	–0.005
How similar is she to a typical girl? (gender typicality if female target)	Not similar—very similar	3.31 (0.93)	2.75 (0.91)	–0.006

*M* = mean, *SD* = standard deviation, *ICC* = Intraclass correlation for vignettes nested in participants (i.e., proportion of variance shared across vignettes within participants)

## 6.4 Design

Design and procedure follows Kessels' and Heyder's (2020) study. This vignette study has a mixed  $2 \times 2$  design, in which vignette (prosocial, nondescript) is varied within participants, while target gender (male, female) is varied between participants. The male and female vignettes were distributed roughly equally among male and female participants.

## 6.5 Procedure

Participating students received a paper questionnaire, which informed them that they will read about two students (either two boys or two girls) who both perform well academically, but behave very differently in school. Participants read a description of one of the students (either prosocial or nondescript, depending on counterbalancing) and were asked to take a moment to picture the student, before answering questions about this student. They then read a description of the second student and again answered a series of questions. Finally, participants answered questions about themselves and provided basic demographic details. The names of the prosocial and nondescript student, as well as the order of presentation, was varied systematically.

## 7 Results

### 7.1 Analytical plan

Data were analyzed with MPlus Version 8.6 (Muthén & Muthén, 2007). Target student behavior was coded dichotomously (0 = nondescript; 1 = prosocial). Due to the nested structure of our data, multilevel modeling with robust standard errors (MLR) were chosen to conduct the analysis. As vignettes were nested within participants, our levels were Level 1: 648 vignettes and Level 2: 324 participants.

### 7.2 Descriptive results

A comprehensive list of means and standard deviations for target ratings is provided in Table 1. This table shows results separately for prosocial and nondescript targets, as well as split by gender for questions relating specifically to female or male targets (frequency of similar boys/girls and how similar to a typical boy/girl the target is). The low intraclass correlations displayed in the table shows that most variance is due to variations on level 1 (prosocial vs. nondescript) and not level 2 (participants). Table 2 displays bivariate correlations for the prosocial and nondescript targets.

### 7.3 Ascribed teacher reactions and attributions

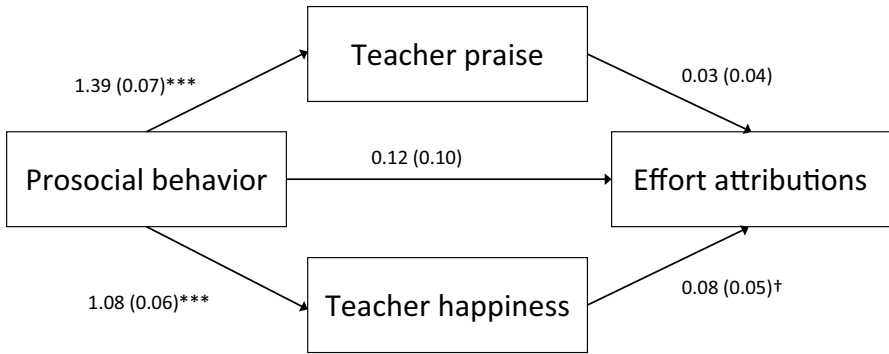
In order to investigate hypotheses 1–3b, two lower level mediation models were constructed, with all effects being fixed. The effect of target student behavior (prosocial

**Table 2** Bivariate correlations separated for prosocial and nondescript targets

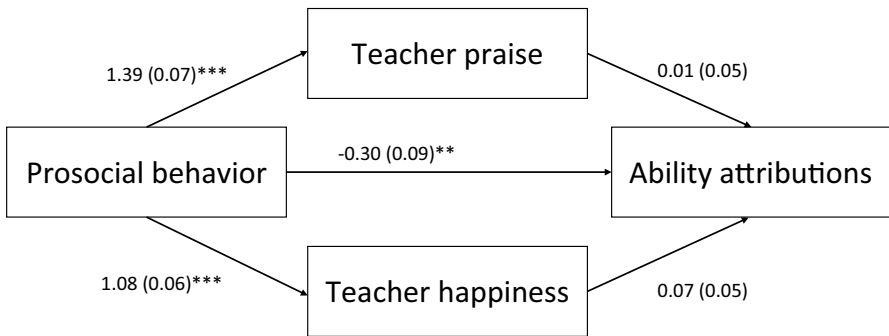
Variables	1	2	3	4	5	6	7	8	9	10	11
1. Praise	–	.540**	–.074	.196**	.325**	.269**	.058	.153**	.099	.294**	–.011
2. Happiness	.392**	–	–.003	.207**	.247**	.215**	.198**	.192**	.120*	.207**	.100
3. Effort attribution	.168**	.168**	–	–.300**	–.075	–.046	.147**	.087	–.028	.038	.166**
4. Ability attribution	–.051	.011	–.386**	–	.130*	.166**	.116*	.182**	.254**	.141*	.009
5. Number of friends	.101	.163**	.039	.012	–	.652**	.218**	.255**	.007	.466**	–.121*
6. Popularity	.021	.129*	.065	.069	.578**	–	.289**	.242**	.003	.388**	–.080
7. Likeability	–.028	.081	.134*	.122*	.231**	.286**	–	.667**	.198**	.178**	.192**
8. Want to be friends	.023	.110*	.104	.149**	.193**	.261**	.670**	–	.174**	.291**	.137*
9. Intelligence	.041	.039	–.217**	.323**	–.102	–.062	–.013	.075	–	.142*	.201**
10. Masculinity	.028	.104	.096	.060	.338**	.343**	.256**	.340**	.027	–	–.255**
11. Femininity	.124*	.091	.213**	.002	–.001	.067	.203**	.099	–.053	–.225**	–

Coefficients above the diagonal represented correlations for the prosocial condition, those below the diagonal correlations for the nondescript condition

\*\*\* $p < .001$ . \*\* $p < .01$ . \* $p < .05$



**Fig. 1** Lower level mediation model for effort attributions with fixed effects. *Note* Unstandardized coefficients with standard errors in parentheses.  $Intercept_{\text{effort attribution}} = 3.41(0.17)***$ ; Level 2 variance = 0.02(0.05).  $Intercept_{\text{praise}} = 2.82(0.06)***$ ;  $Intercept_{\text{happiness}} = 3.22(0.06)***$ ; Level 1 residual variance<sub>effort attribution</sub> = 0.81(0.06)\*\*\*; Level 1 residual variance<sub>praise</sub> = 0.97(0.06)\*\*\*; Level 1 residual variance<sub>happiness</sub> = 0.82(0.05)\*\*\*. †  $p < .10$ , \*  $p < .05$ ., \*\*  $p < .01$ ., \*\*\*  $p < .001$



**Fig. 2** Lower level mediation model for ability attributions with fixed effects. *Note* Unstandardized coefficients with standard errors in parentheses.  $Intercept_{\text{ability attribution}} = 3.07(0.20)***$ ; Level 2 variance = 0.21(0.07)\*.  $Intercept_{\text{praise}} = 2.82(0.06)***$ ;  $Intercept_{\text{happiness}} = 3.22(0.06)***$ ; Level 1 residual variance<sub>ability attribution</sub> = 0.81(0.07)\*\*\*; Level 1 residual variance<sub>praise</sub> = 0.97(0.06)\*\*\*; Level 1 residual variance<sub>happiness</sub> = 0.82(0.05)\*\*\*. †  $p < .10$ , \*  $p < .05$ ., \*\*  $p < .01$ ., \*\*\*  $p < .001$

vs. nondescript) on effort and ability attributions (Figs. 1 and 2, respectively) via expected teacher reactions of praise and happiness was investigated. Note, the coefficients presented here are unstandardized for ease of interpretation.

As seen in Fig. 1, target behavior had a significant impact on expectations of teacher happiness ( $b=1.08$ ,  $SE=0.06$ ,  $p>.001$ ) and praise ( $b=1.38$ ,  $SE=0.07$ ,  $p>.001$ ), with more prosocial behavior increasing ratings of happiness and praise, supporting hypothesis 1. In terms of effort attributions, the data reveal a significant positive total effect of target students' behavior (total effect= $0.24$ ,  $SE=0.07$ ,  $p=.001$ ), supporting hypothesis 2a, which claimed that prosocial behavior would increase effort attributions. However, contrary to expectations, this effect of student's behavior on effort attribution is not mediated by teacher reactions happiness

(specific indirect effect=0.08,  $SE=0.05$ ,  $p=.096$ ), or praise (specific indirect effect=0.04,  $SE=0.06$ ,  $p=.568$ ) and the direct effect of target behavior on effort attribution was not significant (direct effect=0.12,  $SE=0.10$ ,  $p=.215$ ). Thus, hypothesis 2b, which claimed that effort attribution would be mediated by teacher reactions, was not supported. Figure 2 presents findings pertaining to ability attributions and shows that target student behavior had a significant effect on ability attribution (total effect=-0.21,  $SE=0.07$ ,  $p=.002$ ), supporting hypothesis 3a which claimed that prosocial behavior would decrease ability attributions. No significant mediation via teacher reactions was found, showing that neither happiness (specific indirect effect=0.07,  $SE=0.06$ ,  $p=.212$ ) nor praise (specific indirect effect=0.01,  $SE=0.06$ ,  $p=.864$ ) related to ability attributions. The direct effect, however, was significant (direct effect=-0.30,  $SE=0.09$ ,  $p=.001$ ). Hypothesis 3b, which predicted a mediation of ability attribution via happiness and praise, was not supported. Finally, prosocial behavior significantly reduced ascriptions of intelligence ( $b=-0.36$ ,  $SE=0.05$ ,  $p>.001$ ), supporting hypothesis 4a.

#### 7.4 Popularity and likeability

Target student's behavior was used to predict ascriptions of target popularity and likeability. All covariances are included in the model and Table 3 displays the outcomes of the analyses in full. As predicted by hypothesis 5a, prosocial target students were ascribed a higher number of friends ( $b=2.02$ ,  $SE=0.08$ ,  $p>.001$ ) and more popularity ( $b=1.92$ ,  $SE=0.07$ ,  $p>.001$ ). The targets' likeability ( $b=0.38$ ,  $SE=0.07$ ,  $p>.001$ ) and participants' desire to be friends with the target ( $b=0.31$ ,  $SE=0.08$ ,  $p>.001$ ) were hypothesized to be higher for prosocial targets, and this was supported by the data, supporting hypothesis 5b.

#### 7.5 Gender-related outcomes

In order to test gender-related outcomes, a cross-level interaction model including target behavior (Level 1) and target gender (Level 2) was specified. Level 1,

**Table 3** Random intercept model predicting social outcomes, and intelligence

	Outcomes				
	Number of friends	Popularity	Likeability	Want to be friends	Intelligence
Intercept	2.15 (0.05)***	2.20 (0.05)***	3.64 (0.06)***	3.34 (0.06)***	3.77 (0.04)***
Prosocial → outcome	2.02 (0.08)***	1.92 (0.07)***	0.38 (0.07)***	0.31 (0.08)***	-0.36 (0.05)***
Level 1 residual variance	0.86 (0.08)***	0.79 (0.05)***	0.86 (0.07)***	0.88 (0.06)***	0.34 (0.03)***
Level 2 variance	0.04 (0.04)	0.05 (0.03)	0.01 (0.03)	0.18 (0.05)***	0.08 (0.03)**

Unstandardized coefficients and standard error in parentheses

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

**Table 4** Cross-level interaction model predicting target frequency and gender typicality

	Outcomes	
	Frequency	Gender typicality
Intercept	2.69 (0.08)***	2.30 (0.07)***
Prosocial → outcome	-0.05 (0.11)	0.28 (0.09)**
Female target → outcome	0.37 (0.11)***	0.45 (0.10)***
Prosocial*Female target → outcome	0.04 (0.15)	0.28 (0.13)*
Level 1 residual variance	0.83 (0.07)***	0.62 (0.07)***
Level 2 residual variance prosocial → outcome	0.00 (0.08)	0.05 (0.06)
Level 2 residual variance	0.07 (0.06)	0.15 (0.05)**

Unstandardized coefficients and standard errors in parentheses

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

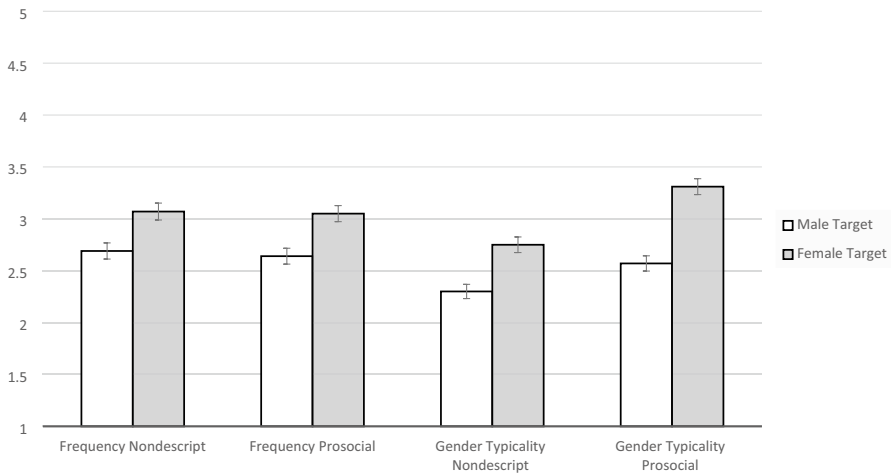
**Table 5** Random intercept model predicting masculinity and femininity

	Outcomes	
	Masculinity	Femininity
Intercept	3.15 (0.05)***	5.28 (0.04)***
Prosocial → outcomes	1.10 (0.07)***	0.22 (0.05)***
Level 1 residual variance	0.64 (0.06)***	0.38 (0.04)***
Level 2 variance	0.16 (0.05)**	0.12 (0.03)***

Unstandardized coefficients and standard error in parentheses

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

Level 2 and their interactions were allowed to covary and all results are presented in Table 4. Target student gender was coded dichotomously (0 = male, 1 = female). We also tested whether displays of prosocial behavior resulted in higher ascriptions of femininity (6a) and lower ascriptions of masculinity (6b) in a fixed effects model, the results of which are displayed in Table 5. Prosocial behavior increased both perceived femininity ( $b = 0.22$ ,  $SE = 0.05$ ,  $p > .001$ ) and masculinity ( $b = 1.10$ ,  $SE = 0.07$ ,  $p > .001$ ), supporting hypothesis 6a, but going against hypothesis 6b. The analysis shows that prosocial female students were not perceived as statistically significantly more frequent ( $b = 0.04$ ,  $SE = 0.15$ ,  $p = .790$ ) than prosocial male students, which is not in line with hypothesis 6c. However, in line with hypothesis 6d, prosocial female students were perceived as more typical than prosocial male students ( $b = 0.28$ ,  $SE = 0.13$ ,  $p = .034$ ) (Fig. 3).



**Fig. 3** Interaction effects between targets' gender (male vs. female) and behavior (prosocial vs. non-descript) in predicting frequency and gender typicality. *Note* Scales ranged from 1 to 5, error bars show standard errors

## 8 Discussion

The present vignette study aimed to investigate prosocial behavior through an attributional lens in order to establish whether displaying such behavior in classrooms is related to denigration of achievement by attributing successes to effort rather than ability. The results showed that prosocial students were indeed believed to be more effortful and lower in ability than their non-descript counterparts by participating students, but expected teacher reactions did not mediate these relations. Furthermore, our analysis revealed the prosocial student to be perceived as less intelligent than the non-descript student, supporting the general impression of prosocial students as possessing lower ability. We also found prosocial students to be perceived as more popular, as having more friends, more likeable, and being more desirable to have as a friend. Prosocial targets were perceived as more feminine than non-descript students, but contrary to our hypotheses, they were also ascribed more masculinity than non-descript students. Lastly, prosocial female targets were not found to be perceived as more frequent than male prosocial targets, but prosocial female target were rated as more typical than male prosocial targets in line with our prediction.

### 8.1 Prosocial behavior leads to attributional backlash, but is not mediated by expected praise

Our hypotheses regarding attributions were supported, we did not, however, find that expected teacher reactions of happiness and praise were related to these attributional patterns, as we had hypothesized. Kessels and Heyder (2020) found that disruptive,



low achieving students received lack-of-effort rather than lack-of-ability attributions, mediated by expected teacher reprimands. In our study, expected teacher reactions were not an integral part of this attributional process. The present study thus differs from past research on the paradox of praise, in which praise led to attributions of high effort and lower ability (Graham & Chen, 2020; Meyer et al., 1979; Möller, 2005).

The paradox of praise was presented as a possible pathway by which prosocial students may experience a denigration of their achievement. The present study could not, however, establish that expected praise is the path through which this denigration occurs. There are several possible reasons why the present study found no link between expected teacher reactions and effort and ability attributions. Firstly, literature examining the paradox of praise outlines that the praise in question is applied to the achieved outcome directly by praising the performance in a particular task (Meyer et al., 1979; Möller, 2005). In research on this attributional pattern, participants are typically provided vignettes in which fictional students receive neutral feedback or praise following a moderately difficult task (Meyer et al., 1979; Möller, 2005). However, praise in our experiment is not actually given by teachers, rather students were asked whether praise would occur. Furthermore, here, the praise is not stated to relate to the students' grades directly, but instead could be the result of non-academic, prosocial classroom behavior. Our finding that the nondescript student, who achieved equally high grades as the prosocial student, was perceived as receiving less praise confirms this interpretation. The present study was the first to investigate attributions following praise for behavior not directly tied to students' performance on a specific task. Perhaps, and contrary to our expectations, praise needs to be explicitly applied to the achieved outcome in order to serve as a cue for high effort and thus low-ability. Applying attributional theory to social classroom behavior was substantiated by Kessels and Heyder (2020), who showed that disruptive behavior led to distinct attributions. Perhaps disruptive behavior and prosocial behavior are not diametrically opposed to each other when it comes to the attribution of performance results, as we previously believed, but instead take on different, not complementing, roles in the classroom. Firstly, teachers report to respond more frequently and more visibly to disruptive conduct than to favourable conduct in school (Beaman & Wheldall, 2000). Disruptive behavior is met with anger (de Ruiter et al., 2019; Hagenauer et al., 2015) and reprimands (Kulinna, 2008), while prosocial behavior elicits happiness and praise (Rudy & Grusec, 2020). While reprimands for disruptions are commonplace in school (Clunies-Ross et al., 2008), praise for prosocial behavior is seen less often (Beaman & Wheldall, 2000; Clunies-Ross et al., 2008) and decreases in adolescence (Fefer et al., 2016). Perhaps teachers' reactions to prosocial behavior are not very common in classrooms, maybe because teachers are aware of possible drawbacks for students who are singled out for their goodness ("teachers' pet"). Secondly, disruptions in the classroom are a hindrance to a conducive learning environment (Blank & Shavit, 2016; Sortkær & Reimer, 2018) and this is especially true for the disruptive students themselves (Becherer et al., 2021; Zimmermann et al., 2013), whereas prosocial acts are desirable, yet not seen as necessary for facilitating students' learning. Thus, even without mentally taking into account the norms of effort and the paradox of praise, it might be easier for

participating students to relate teachers' reactions to disruptive behavior to negative academic outcomes, while praising prosocial behavior may be seen as less relevant for performance and grades.

While the paradox of praise may not be a fitting explanation for the present pattern of results, our findings are not entirely without precedent. The two fundamental social categories, warmth and competence (Bakan, 1966), have been stated to be compensatory, where high warmth is believed to be associated with lower competence when given limited information (Holoien & Fiske, 2013; Judd et al., 2005; Kervyn et al., 2010; Yzerbyt et al., 2005). In our vignettes, the prosocial student was presented as warmer than the nondescript student and the students' competence was held constant, as both the nondescript and prosocial students were presented as earning good grades. Results show, however, that the warmer, prosocial student was perceived as lower in ability and intelligence than the non-descript student. Our findings highlight that people perceived as high on one of the fundamental dimensions may automatically be perceived as lower on the other dimension.

## 8.2 Prosocial students are seen as more popular and likeable

While ascribed unfavourable attributional patterns, prosocial students had advantageous outcomes for popularity and likeability. Prosocial students were perceived as desirable friends, and as being more popular and likeable than nondescript students. A longitudinal investigation has shown higher popularity and likeability of prosocial youth (Lu et al., 2018) and cross-sectional studies (Kornbluh & Neal, 2016) revealed that friendships and peer relationships are stronger for prosocial adolescents (Lai et al., 2020; Son & Padilla-Walker, 2020; M. Wang et al., 2019). Our study further supports these findings.

## 8.3 Prosocial students are seen as more feminine and masculine

In line with our hypotheses and previous research, prosocial students were perceived as more feminine than non-descript students. The link between femininity and prosocial behavior has previously been established by empirical investigations (Eisenberg et al., 2001; Hine, 2017; Quenneville et al., 2022), which have found fewer (Hine, 2017), weak (Eisenberg et al., 2001), or no (Quenneville et al., 2022) associations between prosocial behavior and masculinity. Researchers state that this is not due to masculine incompatibility with such behavior, but rather to the operationalization of prosociality as feminine (Hine, 2017). Indeed, while many prosocial acts are associated with femininity, certain types of prosocial acts can be typed masculine (Hine, 2017). An association between masculinity and prosocial behavior was found in Chinese adolescents (Ma, 2005) showing that both femininity and masculinity related to prosocial behavior. Our present research supports a link between masculinity and prosocial behavior, finding that prosocial targets were ascribed higher masculinity than non-descript students, contrary to our hypotheses. One possible explanation might be that the type of prosocial behavior described in

the vignette was very proactive and that the scale measuring ascribed masculinity comprised instrumental traits related to action and decision-making.

The present study also found that prosocial female targets were believed to be more typical than male prosocial targets, reflecting the literature on gender differences in adolescent prosocial behavior. Previous studies find female adolescents to score higher than their male peers on prosociality (Bøe et al., 2016; Gerbino et al., 2018; Lohbeck et al., 2015; Van der Graaff et al., 2018; Xiao et al., 2019). Our sample may reflect such gender differences in their judgement that prosocial behavior enacted by female adolescents is more typical. Interestingly, female prosocial targets were not seen as occurring more frequently than male prosocial targets. Why were female prosocial students seen as more typical, but not as more frequent? Adolescents may be signaling their awareness of gender stereotypes surrounding prosociality. However, when examining the frequency of this behavior they might be more inclined to draw upon their own experiences and see fewer actual differences in the prosocial behavior of boys and girls. Carlo and Randall (2002) revealed that adolescent boys score higher on measures of “public” prosociality, but more private prosocial behaviors were more often seen in girls. The prosocial behavior described in the vignettes might be considered public prosocial behavior, which could be associated with a particularly “male” type of prosociality.

## 8.4 Implications

Without calling into question the many positive outcomes of prosociality, the present research reveals some potential negative consequences of displaying prosocial behavior. Multiple intervention studies have aimed at increasing prosocial behavior in educational institutions (Alessandri et al., 2017; Caprara et al., 2014, 2015; Kilian & Kilian, 2011; Kilian et al., 2006; Mesurado et al., 2019; Ramaswamy & Bergin, 2009). Such interventions may not have considered the potential attributional backlash students perceived as prosocial might endure. Encouraging prosocial behavior should aim at attenuating the negative impact on attributions of ability by emphasizing that being caring and prosocial does not imply that one is less clever. Likely, students and teachers are not aware of this potential side-effect of prosocial behavior and their (automatic) attributional patterns. An awareness about the effect would benefit teachers, whose regular communication about students could impart cues of causal attributions without their explicit knowledge. Past research has revealed gender differences in how academic candidates are described, revealing female applicants to be described with more communal terms (Madera et al., 2009) and “grindstone” words (Akos & Kretchmar, 2016). Our results suggest that communication about students, such as written reports and letters of recommendation (Akos & Kretchmar, 2016; Madera et al., 2009), should take care to avoid language that conveys unintended meaning about the targets’ warmth and competence (Ebert et al., 2014; Judd et al., 2005).

As prosocial behavior is typed as feminine (Diekmann & Clark, 2015; Eagly, 2009; Eisenberg et al., 2001; Quenneville et al., 2022) and seen more in female adolescents (Bøe et al., 2016; Gerbino et al., 2018; Lohbeck et al., 2015; Van der

Graaff et al., 2018; Xiao et al., 2019), the finding that displaying such behavior is associated with higher ascriptions of effort and lower ascriptions of ability, despite equal academic performance, has special relevance in a school context. Past research has outlined that particularly female students' achievements are attributed more to effort, especially in masculine subjects (Espinoza et al., 2014; Fennema et al., 1990; Rätty et al., 2002; Tiedemann, 2000). The present study reveals one additional possible reason for the denigration of achievement: gender stereotyped classroom behavior. Girls enact feminine behavior, such as compliancy (Jones & Myhill, 2004) and prosocial behavior (Bøe et al., 2016; Gerbino et al., 2018; Lohbeck et al., 2015; Van der Graaff et al., 2018; Xiao et al., 2019), to express femininity, just as boys enact disruptive behavior to strengthen their masculinity (Heyder et al., 2021). But while displays of disruptive behavior can have beneficial associations (Kessels & Heyder, 2020), the enactment of femininity seems to have negative attributional effects. These findings may seem to contrast past research, which has presented the better fit between school and femininity or being female (Heyder & Kessels, 2013) and an incompatibility between engagement at school and masculinity (Heyder & Kessels, 2015, 2017; Jackson & Dempster, 2009; for an overview, see Kessels et al., 2014). However, even with established trends of girls outperforming boys in terms of academic achievement (O'Dea et al., 2018; Voyer & Voyer, 2014), their accomplishments do not seem to contribute to their equal status. Literature on attributions show that students (Butler, 2014; Stetsenko et al., 2000), parents (Rätty et al., 2002), and teachers (Espinoza et al., 2014; Fennema et al., 1990; Tiedemann, 2000) alike endorse that girls' academic achievements are the result of effort, rather than ability. The present results highlight that simply showing positive classroom behavior, which does not even comprise diligence and effort, but is merely prosocial in nature, could exasperate this denigrating pattern of beliefs about girls' achievements.

## 8.5 Limitations and future directions

This study gives some important insight into how attributions may be made based on classroom behavior, we are, however, limited by our use of vignettes. While the experimental design maximizes internal validity and allows for testing causal relations, the limited information provided in a vignette may not translate to actual peer and teacher interactions, in which parties are aware of a wide variety of information. Future examinations could combine experimental designs with more naturalistic settings. Quenneville et al. (2022) have previously investigated teacher ratings of their own students' prosocial behavior and gender role self-concept, by asking teachers to rate their students on a variety of scales. Adopting such a design, including questions relating to whether students' actual performances can be attributed to effort or ability and controlling for actual performance, may offer further insight into whether teachers relate prosocial behavior of their own students to causes of their academic success. Investigating actual classroom settings would also benefit the literature on the paradox of praise, in which past research has shown less clear effects when using more open-ended measures (Binser & Försterling, 2004; Hofer & Pikowsky, 1988; Weich & Rheinberg, 1988). We would also be interested in investigating whether

teachers are aware of how praise in their classroom, even for non-academic performance, could be (mis-)interpreted by their students.

Another factor that may have had an impact on our results is the construction of our vignettes. Experimental vignettes in educational research can be beneficial (Skilling & Stylianides, 2020), although including suitable control vignettes, in which the experimental manipulation is absent, rather than presented in opposition, is challenging (Carifio & Lanza, 1989). In our study, our vignettes may have unintentionally signalled personality traits, such as agency or extroversion. The prosocial student takes action by helping classmates, makes the decision to share resources, and is not shy about speaking up in order to help, while the non-descript student could be characterised as a “wallflower”. The control vignette may have been perceived as introverted or shy, compared to our prosocial vignette. The impact this may have had on ascribed ability and effort is uncertain: social withdrawal relates the genius stereotype (Baudson, 2016), although teachers rated shy students as lower in intelligence (Coplan et al., 2011). In peer evaluations, shy students were also rated as less intelligent than their social peers (Ding et al., 2015; Zava et al., 2020). It is therefore notable that in our present study nondescript students, who might have appeared introverted, were viewed as more able when compared to prosocial students. Viewing the experimental vignette as more extroverted could also account for the positive social outcomes ascribed to this student. Extroverted individuals are typically highly social (Ashton et al., 2002) and have a larger friendship circle (Harris & Vazire, 2016; Pollet et al., 2011), mirroring our results for popularity and likeability of prosocial students. The prosocial vignette also captures the independent and self-assured nature of instrumentality, making ascriptions of masculinity more likely. As acts of prosociality can be viewed through a gendered lens (Diekmann & Clark, 2015; Eagly, 2009), future investigations could control for the perceived masculinity and femininity of certain helping-behaviors (Hine, 2017). We may have observed a different pattern of results, had our prosocial vignette engaged in different kinds of helping behavior.

We are limited by our recruitment of students from the highest academic track in a large city. While almost half of students attend this track (Berlin Senate Department for Education, Youth and Family, 2023), our findings may not necessarily generalize to students of other academic tracks. The present study was further limited by its design, in which target behavior varied within subjects but target gender varied between subjects. Within-variations of treatments might lead participants to ascribe more meaning to these varying parameters, leading to a boost in power (Charness et al., 2012), while a parameter that is held constant (in our case, gender of target) will receive less attention from the participants (cf. Kessels & Heyder, 2020). Creating multiple statistically comparable, realistic vignettes (Eckerd et al., 2021) and varying these by gender would have greatly increased the complexity of this investigation.

One additional point of interest we were not able to investigate empirically is whether students who describe themselves as being prosocial would also attribute more effort than ability to the prosocial student in the vignette. In other words, are prosocial students themselves making the attributions that could denigrate their achievements, or are such attributions made by others who would not be

characterised as particularly prosocial? A prior study indicates that prosocial students attributed their successes in mathematics to effort to a greater extent than non-prosocial students, but that they attributed their achievements in language to both ability and effort (Redondo et al., 2014). Such findings support the notion that students' actual prosociality shapes their attributional beliefs. Future studies may investigate both participants' own prosocial tendencies, but also perceived identification with the target. High identification or perceived similarity with the target student may lead to more favourable interpretations of the target (Ajzen, 1974; Hampton et al., 2019).

## 8.6 Conclusion

Our present study examined an attributional backlash to enacting prosocial behavior in school, by examining whether displaying prosocial behavior can lead to a denigration of achievement. We found that prosocial students are more likely to have their good grades attributed to effort, rather than ability, when compared to non-descript students, but that teacher praise was not a significant mediator in this process. Rather, prosocial behavior alone was enough to signify that good academic performance is more likely to be due to effort, rather than innate ability. The findings are especially relevant within the context of gender equity, as previous research has shown that attribution of achievement to effort, rather than ability particularly affects female students (Butler, 2014; Espinoza et al., 2014; Fennema et al., 1990; Stetsenko et al., 2000; Tiedemann, 2000) and has been discussed as an important reason for girls' reluctance to join STEM (Chestnut et al., 2018; Kessels, 2015), as STEM is perceived as requiring not dedication, but genius (Leslie et al., 2015). The present findings highlight that displaying caring, prosocial behavior, which seems to be more in line with the female gender role (Eisenberg et al., 2001; Quenneville et al., 2022), leads into the same attribution trap as being highly engaged in class. Overall, research into classroom attributions and student behavior shows that more than one road leads to the denigration of female students' accomplishments.

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## Declarations

**Conflict of interest** The authors have no relevant financial or non-financial interests to disclose.

**Ethical approval** In this study, survey data on adolescents (9th graders) is used. The use of child assent was approved by the schools and the Senate Department for Education, Youth, and Family of our federal state, based on the minimal risk of the study. Anonymity was guaranteed.

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