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ORIGINAL PAPER

Understanding Teachers' Attributions and Responses to Student Misbehavior: The Roles of Explanatory Rationale and Personal Beliefs

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Abstract

In this mixed-methods experiment, we examined the impacts of an externally provided rationale and teachers' own beliefs on cognitive, emotional, and behavioral responses to student misbehavior. Teachers (N = 120) viewed a video describing three instances of a student's misbehavior, then were randomly assigned to receive one of three explanatory rationales for the misbehaviors, including intentionality, cognitive deficits, adverse childhood experiences, or a comparison condition that offered no new information. Teachers reported causal attributions, emotional responses, perceived self-efficacy, and disciplinary strategy. Results suggest that teachers' attributions are independently predicted by their own beliefs about the student's misbehavior and the provided rationale. Further, both sources of information predicted teachers' feelings, self-efficacy, and disciplinary strategies. We discuss implications for changing teachers' attributions of misbehavior and increasing the use of positive behavior management strategies.

Keywords School · Discipline · Attributions · Behavior · Classroom management

Introduction

Misbehavior in school occurs anytime a student does not meet adults' expectations for appropriate conduct, ranging from minor rule infractions (e.g., dress code violations) to more significant acts of opposition and hyperactivity that comprise the key criteria for childhood mental health disorders like oppositional defiant disorder and attention-deficit hyperactivity disorder (American Psychiatric Association, 2013). Chronic school misbehavior is associated with severe and persistent functional, educational, and social difficulties, including higher dropout rates, substance abuse, and incarceration (Arnold et al., 1999; Li & Lerner, 2011; Olivier et al., 2018). Disruptive misbehavior also negatively impacts others, including classmates (Carrell & Hoekstra, 2010) and teachers (Frenzel, 2014; for a review, see Aloe et al., 2014). Classroom misbehavior has received increased attention since the COVID-19 pandemic, and teachers across the U.S. are expressing concern about the negative impact of disruptive behavior on students' learning and socio-emotional development (Institute of Education Sciences, 2022).

Effective behavior management is critical for reducing classroom misbehavior and promoting positive outcomes for students and teachers (Korpershoek et al., 2016). Positive behavior management strategies such as proactive skill-building, establishing clear expectations and routines, instruction of proper behavior, and collaborative problem-solving can reduce misbehavior, increase teachers' self-efficacy, and improve students' academic performance (e.g., Barrett et al., 2008; Lekwa et al., 2019; Stetson & Plog, 2016). In contrast, punitive or exclusionary responses to students' misbehavior are generally ineffective in reducing misbehavior and may even exacerbate behavioral problems and increase teachers' stress (e.g., Gerlinger et al., 2021; Mitchell & Bradshaw, 2013).

Despite the scientific evidence favoring positive over negative discipline, positive strategies remain underused in

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schools, and punitive discipline is still relied upon heavily (e.g., Bambara et al., 2012; Lawson et al., 2022; Mielke & Farrington, 2021). Understanding factors that impact teachers' responses to misbehavior can increase the uptake of positive strategies, ultimately improving short- and long-term outcomes for students and teachers.

The Role of Teacher Attributions

One factor that impacts teachers' responses to students' misbehavior is their attributions, or beliefs about what causes the misbehavior (Carter et al., 2014; Nemer et al., 2019). According to attribution theory (Weiner, 1985, 2000, 2010), there are three dimensions of an individual's attributions about the behavior of another person (the actor), including *locus of causality*, or whether the behavior was caused by something internal versus external to the actor; *stability*, or whether the cause is constant versus varying over time; and *controllability*, or whether the behavior can be controlled or not (Weiner, 1980). The dimension of controllability can be further divided into *personal controllability*, whether the behavior is under the actor's control, and *external controllability*, whether the behavior can be controlled by others (McAuley et al., 1992).

Although attribution theory has been more frequently applied to student achievement (e.g., Wang & Hall, 2018), it also applies to student misbehavior (for an example, see Fig. 1). When teachers attribute misbehavior to factors mainly internal to the student, relatively stable, and under the student's control (a "negative" attribution pattern), they feel more anger and less empathy, are more prone to using punishment in response to the behavior, and report significantly less closeness with the student (Chang & Davis, 2009; Lucas et al., 2009; Thijs & Koomen, 2009; for a review, see Wang & Hall, 2018). When teachers attribute misbehavior to external environmental factors, as variable over time, and out of the student's control (a "positive" attribution pattern), they are more likely to feel sympathy and to offer support (e.g., Reyna & Weiner, 2001).

Attributions of students' misbehaviors can be impacted by factors beyond a teacher's observation of the behavior, such as their pre-existing beliefs and past experiences. Moreover, attributions may be influenced by what they have previously heard about that student or behavior from others. Hart and DiPerna (2017) found that teachers who were told about cognitive skill deficits that underlie a student's misbehavior attributed the behavior as less under the student's control and were more likely to have a positive emotional response toward the student. The idea that misbehavior is due to lagging cognitive skills rather than poor motivation or intent (referred to as "skill, not will" in Ablon & Pollastri, 2018) is consistent with the growing evidence of neurocognitive skill deficits in children who misbehave in the face of adult expectations (e.g., Doyle et al., 2018; Tyler et al., 2019). Beyond predicting teachers' attribution of low personal controllability, a "skill-not-will" explanation may predict a more generally positive attribution pattern. For instance, if a student's misbehavior results from their being asked to meet an expectation that outstrips their skills in flexibility or frustration tolerance, then the misbehavior is not stable (it will only be exhibited in some situations); the child has low personal controllability (they cannot help it); and there is high external controllability (these skills can be built). Of note, while the locus of causality is somewhat internal (i.e., caused by the student's lagging skills), the skill-not-will principle suggests that the cause is at least partially external (i.e., caused by the overwhelming situation).

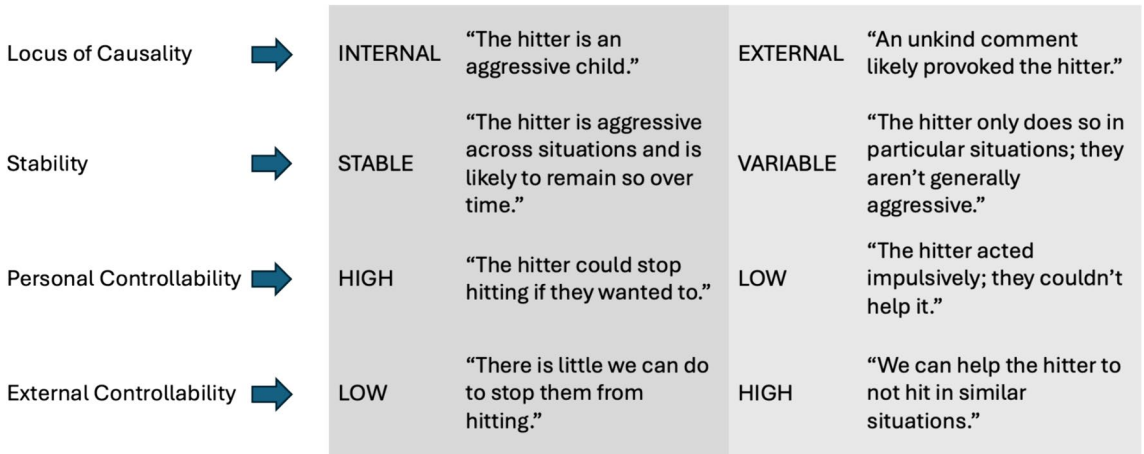

Fig. 1 Applying attribution theory to behavior: one student hit another on the playground

The Current Study

Teachers' understanding of the critical impact that neurocognitive skills have on student misbehavior varies considerably (e.g., Hart & DiPerna, 2017; Mikami et al., 2019), and to our knowledge, no studies have examined whether greater belief in the skill-not-will principle leads to more positive attributions and emotional responses or increased use of positive discipline strategies in the face of classroom misbehavior. In this study, we examined how teachers' attributions about the locus of causality, stability, and controllability of a student's misbehavior varied based on their belief in the principle of skill-not-will and on a rationale provided for that student's misbehavior. We also explored how their attributions, in turn, were associated with their emotional and disciplinary responses. Extending the research of Hart and DiPerna (2017), we hypothesized that teachers who reported a belief consistent with the skill-not-will principle, as well as teachers who were provided with a rationale concerning skill deficits, would rate the student's misbehavior as more external, less stable, and less controllable by the student. We predicted that this, in turn, would engender a more positive emotional response and positive disciplinary response compared to teachers who believed the student's behavior was intentional.

In addition to conditions for skill and will (i.e., intention), we added a condition for adverse childhood experiences (ACEs) to explore the extent to which teachers believe that the effects of ACEs are similar to the effects of cognitive skill deficits. Growing evidence indicates that exposure to childhood maltreatment and adversity is associated with changes in brain structure, functions, and connectivity (e.g., Hart & Rubia, 2012; McCrory et al., 2012). These changes in the brain impact children's executive functions (e.g., Cowell et al., 2015), including inhibitory control, which is closely related to students' self-regulation skills and their behavioral and academic success (Blair & Diamond, 2008). Since neurocognitive skill deficits mediate the relationship between ACEs and misbehavior, we predicted that teachers provided with an explanatory rationale about ACEs would exhibit similar attributions, emotions, and disciplinary responses as those who were provided with a rationale about lagging cognitive skills.

Method

Participants

Teachers (N = 121) who were actively teaching K-12th grade in the United States responded to paid, targeted advertisements on social media (e.g., Facebook) and recruitment letters emailed via schools and teacher-focused organizations. Participants clicked on a link to an online survey, and checked a box confirming that they met eligibility criteria and that they agreed to participate in the study. We followed published recommendations for ensuring the integrity of online survey data, including screening data for multiple responses at the same start and end time, nonsensical or identical open text responses, and unusually fast completion speed that might suggest use of "bots" (Storozuk et al., 2020). All completed open response fields were distinct and coherent, completion times were within expected limits (minimum completion time was 9.5 min), and only one record was removed due to identical (null) responses to all questions, resulting in a final N = 120. Most participants were female (76%) and White/Caucasian (84%), with a mean age of 41.5 years (range 20 to 63). All teachers had at least a bachelor's degree, and most had master's degrees (67.5%). Most worked at public schools (74%), and they were divided between urban (34%), suburban (31%), and rural (21%) communities. Most were teaching at the elementary (35%) or middle school level (32%), and the rest reported teaching high school (16%) or did not answer this item (17%). Participants varied widely in terms of years of teaching experience ($M = 12.6$ years, $SD = 8.79$, range 0 to 41). This sample is similar to the population of U.S. teachers in terms of gender, race, age, education level, and grade level taught (Feistritzer, 2011).

Procedures

The relevant Institutional Review Board (IRB) exempted this project from further review because identifying information was not collected with data, and the requirement for informed consent was waived. The study was administered, and data were collected and managed, with REDCap electronic data capture tools (Harris et al., 2019) hosted at Massachusetts General Hospital. After completing surveys, participants had the option to enter a raffle for one of four $20 gift cards; contact information was not linked with survey results.

Participants first watched a video vignette of another teacher describing a hypothetical student, Kyle, who would be in the participating teacher's class next year, and the teacher relayed some of the behaviors that Kyle had exhibited at school. The introduction was designed to imitate a face-to-face conversation with the student's previous teacher, and the script was reviewed and edited by two educators to maximize realism. The described behaviors included how Kyle (1) frequently leaves his seat without permission, (2) neglects to complete assignments, and (3) has negative interactions with peers.

After watching the video vignette, participants were placed into one of four conditions by the REDCap platform to determine the rationale they would receive about

Kyle's behavior: Standard/No Rationale (N = 24), Intent (N = 35), Skill (N = 33), or ACEs (N = 28). Due to technical limitations of the survey platform, this was accomplished through a pseudo-randomization procedure (Smith et al., 2015) in which participants were assigned a condition based on birth month, a secondary variable that is expected to be random and evenly distributed across the population. Teachers were then provided with a written description intended to mimic a summary that might be found in a student's educational file, including a rationale for Kyle's three misbehaviors. In the Standard condition, each misbehavior is elaborated upon with additional factual content (e.g., 'Kyle gets up several times in class to sharpen his pencil…'). In the Intent condition, descriptions include explicit statements referring to Kyle's behavior as goal-directed (e.g., 'Kyle gets up constantly to avoid doing schoolwork…'). Descriptions in the Skill condition include explicit information about cognitive skill deficits that underlie each behavior (e.g., 'Kyle has a relatively poor attention span and ability to remain focused…'). Finally, in the ACEs condition, descriptions include information about Kyle's exposure to adverse events that can impact neurocognitive development (e.g., 'Kyle lived in a foster home for several years, experiencing significant neglect…'). The descriptions in each condition were matched on length, with a word count between 21 and 27 for each behavior (See Supplementary files for complete materials).

Participants read the assigned rationale for each misbehavior, answering questions about their emotional response, including perceptions of the severity and hopelessness of improving that behavior, their causal attributions related to the misbehavior, and their likely response. Next, participants reported their self-efficacy in handling classroom misbehaviors like those exhibited by Kyle and their belief in the principle of skill-not-will as the reason for Kyle's misbehavior. Then, they provided demographic information and selected from a list of common behavior management and social-emotional learning programs those in which they had received training.

Measures

The dependent variables in this study were teachers' emotional responses to Kyle's behavior (including feelings about the severity of the problem and their hopelessness), their causal attributions for the behavior, their reported self-efficacy, and their discipline responses. The independent variables were condition (the rationale they were given for the behavior) and the extent to which they believed that skill, rather than will, caused Kyle's misbehaviors.

Teachers' Perceptions of Problem Severity

Participants rated two items on their perceptions of the severity of each of Kyle's three misbehaviors on a 5-point Likert scale (1 = not at all severe to 5 = very severe). This included a general rating of the behavior's severity and a rating of the behavior's severity compared to the participant's experience. The scale score was the average of the two items. Cronbach's alpha varied from 0.72 to 0.83 across the three misbehaviors in the present sample.

Teachers' Hopelessness

The three-item Hopelessness subscale of Preschool Expulsion Risk Measure (Gilliam & Reyes, 2018) was used to measure participants' feelings of hope for changing Kyle's behavior on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree), with higher scores representing more hopelessness. Subscale items were slightly rephrased for school-age students (E.g., changing the word "child" to "student"), and the scale score was the mean of the three items. Cronbach's alphas ranged from 0.57 to 0.71 across repeated responses in the present sample.

Teachers' Causal Attributions

The Revised Causal Dimensional Scale (McAuley et al., 1992) measured participants' causal attributions of each of Kyle's misbehaviors on a 9-point Likert scale reflecting agreement with two opposite anchors. Items were rephrased to be about Kyle. The four mean subscales include Locus (e.g., 1 = the cause reflects an aspect of Kyle; 9 = the cause reflects an aspect of the situation), External control (e.g., 1 = something other people can regulate; 9 = something other people cannot regulate), Personal control (e.g., 1 = manageable by Kyle; 9 = not manageable by Kyle), and Stability (e.g., 1 = something unchangeable; 9 = something changeable). Cronbach's alphas for the scales varied between 0.68 and 0.84 for Locus, 0.62 and 0.66 for External control, and 0.78 and 0.87 for Personal control across repeated responses. Cronbach's alpha for the Stability subscale was not acceptable (between 0.41 and 0.63) due to a single item (the cause is something stable/variable over time). After deleting that item, the reliability of the remaining two items (Spearman-Brown coefficient; Eisinga et al., 2013) ranged from 0.66 to 0.81, and these two items were retained for the Stability subscale. Though alphas for External control were on the low side of acceptable, removing one item did not improve internal reliability, and all items were retained.

Teachers' Self-efficacy

The three-item Disciplinary Self-Efficacy subscale of the Teacher Self-Efficacy Scale (Bandura, 2006) was used to measure teachers' self-reported efficacy in handling the misbehavior in the vignette. The items were rephrased to reference Kyle and his misbehavior (e.g., "How much can you do to control disruptive behavior like Kyle's in the classroom?"), and participants responded on a 9-point Likert scale (1 = Nothing, 9 = A great deal), with higher scores indicating higher self-efficacy. Cronbach's alpha was 0.80 in this sample.

Teachers' Belief that Kyle's Misbehavior was Due to Skill, Not Will

The Philosophy subscale from the Collaborative Problem Solving-Adherence and Impact Measure for Educators (CPS-AIM-E, Wang et al., 2019) measures the degree to which participants believe that skill, rather than will, drive misbehavior, and was revised to reference Kyle. Participants rated their agreement with statements on a 7-point Likert scale from 1 = Strongly disagree to 7 = Strongly agree (e.g., 'The reason Kyle chooses to act out is to avoid doing things he doesn't like to do (reversed),' or 'Kyle is doing the best he can with the skills he has'). Higher scores represent a belief that Kyle's misbehavior was due to lagging skills. Cronbach's alpha was 0.76.

Teachers' Planned Discipline Strategy

Teachers provided free-text responses on how they would respond to each of Kyle's three misbehaviors.

Analysis Plan

To confirm that the desired random distribution of participants across experimental conditions was achieved, we conducted ANOVAs and chi-square tests of homogeneity for continuous and categorical demographic variables, respectively. Only participants' school settings (urban, suburban, rural) differed significantly across conditions, with more teachers in the Intent condition from suburban settings, more teachers in the Skill condition from urban settings, and more teachers in the ACEs condition from rural settings. However, there were no significant main or interaction effects of setting, so this variable was dropped in the remaining analyses.

Coding and Quantifying Qualitative Responses

Following Okonofua et al. (2016), two coders who were naïve to condition read all free-text answers to identify distinct categories of disciplinary responses provided by participants. The coders reached a consensus on four categories: (1) punitive actions (e.g., assigning detention); (2) accommodation (e.g., modifications to the classroom or assignment); (3) seeking further information (e.g., talking with the student or referring for testing); and (4) skill-based explanations and interventions (e.g., providing or referring to an intervention to build skills). Then, the coders independently rated whether or not each disciplinary response involved each of the response categories (0 = absent, 1 = present). There was moderate agreement between coders (Kappas = 0.57–0.77), so we averaged the two coders' ratings for each category. Then we summed the ratings for each teacher within each discipline category across the three incidents of misbehavior (totals ranged from 0 to 3) and dichotomized the scores as 0 (sum score = 0 or 0.5) or 1 (sum scores > = 1). The resulting variables represented, given a short list of common misbehaviors, whether the participating teacher *ever* intended to use the disciplinary strategy in question.

Analysis of Quantitative Responses

Given the design, participants rated the severity, their feelings of hopelessness, and their attributions for each of the three misbehaviors in the vignette, and they provided ratings on their self-efficacy of managing misbehavior and their belief in Kyle's behavior as due to skill-not-will once. Preliminary results suggested that the form of misbehavior (leaving seat, homework non-completion, negative peer interactions) had an impact on teachers' attributions and perception of problem severity; teachers attributed negative peer interactions as more external and more severe and leaving his seat as less stable and less controllable by Kyle and others. There were no interactions between forms of misbehavior and other variables. Therefore, the form of misbehavior was included as a covariate, and associations between other variables and specific forms of misbehavior are not described further.

To examine how experimental condition and teachers' beliefs about skill-not-will impacted their attributions and how their attributions were further related to their emotional and disciplinary responses, first, we used mixed-effect models (responses nested within the form of misbehavior) with condition (Standard, Intent, Skill, and ACEs) and belief in the principle of skill-not-will to predict outcomes assessed repeatedly for the three misbehaviors, including dimensions of the causal attributions, teachers' feelings of severity and hopelessness. Then, we used linear and logistic regression to examine the impact of experimental condition and teachers' beliefs about skill-not-will on teachers' self-efficacy and disciplinary responses, respectively. Finally, we used the four domains of teachers' attributions to predict teachers' emotional responses, self-efficacy and disciplinary responses with corresponding models. Where significant relationships

were found, mediation analyses were conducted to explore whether the impact of conditions and teachers' belief about skill-not-will on their emotional and disciplinary responses were mediated by attributions.

We completed analyses in RStudio (v1.3.1093, RStudio Team, 2020), using the lme4 package for mixed effect models when needed (Bates et al., 2015). All reported coefficients are unstandardized. We completed pairwise comparisons for post hoc analysis of significant main effects with Bonferroni adjustment. We explored models with interaction terms and compared them to nested models without interactions, and none of the models with interaction terms were preferred based on model selection indicators (AIC and BIC). We used the psych package (Revelle, 2022) and the MeMoBootR package (Buchanan, 2018) for mediation analyses with continuous (belief in skill-not-will) and categorical (condition) predictors, respectively.

Results

Table 1 shows descriptive statistics for each variable by condition. An ANOVA revealed that teachers' belief in the principle of skill-not-will did not vary by condition, $F(3,103) = 0.40$, $p > 0.05$. Therefore, it was possible to explore how condition (the rationale teachers had been given) and beliefs (about skill-not-will) independently impacted teachers' causal attributions, discipline, and emotional responses.

Impact of Rationale and Beliefs on Dependent Variables

Attributions

Three dimensions of attribution varied significantly by condition: locus of causality, personal controllability, and stability, as shown in Fig. 2. Post-hoc analyses suggest that the ACEs condition drove all main effects of condition. Specifically, teachers in the ACEs condition reported a more external locus of causality for Kyle's misbehaviors compared to all other conditions, $F(3,102) = 16.52$, $p < 0.001$; they reported that Kyle's misbehaviors were more out of his personal control compared to all other conditions, $F(3,102) = 7.01$, $p < 0.001$; and they rated Kyle's misbehaviors as more stable than in the Standard condition, $F(3,102) = 3.62$, $p < 0.05$.

The same three dimensions of attributions were significantly predicted by teachers' belief in skill-not-will, as shown in Fig. 2. In particular, when participants adhered more closely to the principle of skill-not-will (i.e., believing that skills deficits rather than poor intentions cause misbehavior), they were more likely to report that Kyle's misbehaviors had an external, or situational, locus of causality ($B = 0.25$, $F(1,102) = 5.28$, $p < 0.05$, marginal $R^2 = 0.24$), were out of Kyle's control ($B = 0.60$, $F(1,102) = 23.30$, $p < 0.001$, marginal $R^2 = 0.22$), and were less stable ($B = 0.25$, $F(1,102) = 6.55$, $p < 0.05$, marginal $R^2 = 0.10$).

Table 1 Descriptive information and correlations among quantitative variables

Variable	Descriptive: Range and Means (*SD*)					Correlations (Bolded: Significant)						
	Range	Baseline	Intent	Skill	ACEs	1	2	3	4	5	6	7
*Attributions**												
1. Locus	1–9	4.42 (1.05)	4.05 (1.39)	3.82 (1.15)	5.92 (1.49)							
2. External	1–9	4.11 (1.05)	4.53 (1.24)	4.78 (1.03)	4.22 (1.43)	**−.34**						
3. Personal	1–9	4.90 (1.67)	4.95 (1.67)	4.90 (1.46)	6.00 (1.76)	**.44**	.00					
4. Stable	1–9	7.10 (1.15)	6.84 (1.00)	6.51 (1.15)	6.15 (1.33)	.01	**−.31**	**−.20**				
*Emotional response**												
5. Severity	1–5	2.77 (0.73)	2.74 (0.60)	2.98 (0.85)	3.13 (0.89)	−.03	.01	.18	−.10			
6. Hopelessness	1–5	1.49 (0.58)	1.76 (0.69)	1.86 (0.67)	2.1 (0.78)	−.01	**.32**	−.01	**−.41**	.17		
General												
7. Skill-not-will	1–7	4.71 (1.05)	4.40 (1.06)	4.63 (1.21)	4.49 (1.19)	.18	−.11	**.39**	**.24**	−.02	**−.32**	
8. Self-efficacy	1–9	6.78 (0.86)	6.43 (1.29)	6.22 (1.55)	6.88 (1.39)	.17	**−.30**	.08	**.34**	**−.22**	**−.56**	**.34**

Directionality is as follows: Locus (lower = reflects something about Kyle, higher = reflects an aspect of the situation), External (lower = others can control, higher = others cannot control), Personal (lower = self can control, higher = self cannot control), Stable (lower = unchangeable, higher = changeable), Severity (higher = more severe), Hopelessness (higher = more hopeless), Skill-not-will (higher = misbehavior perceived as due to skill rather than intent), Self-efficacy (higher = greater self-efficacy)

*Indicates repeated variables; means are calculated across three forms of misbehavior

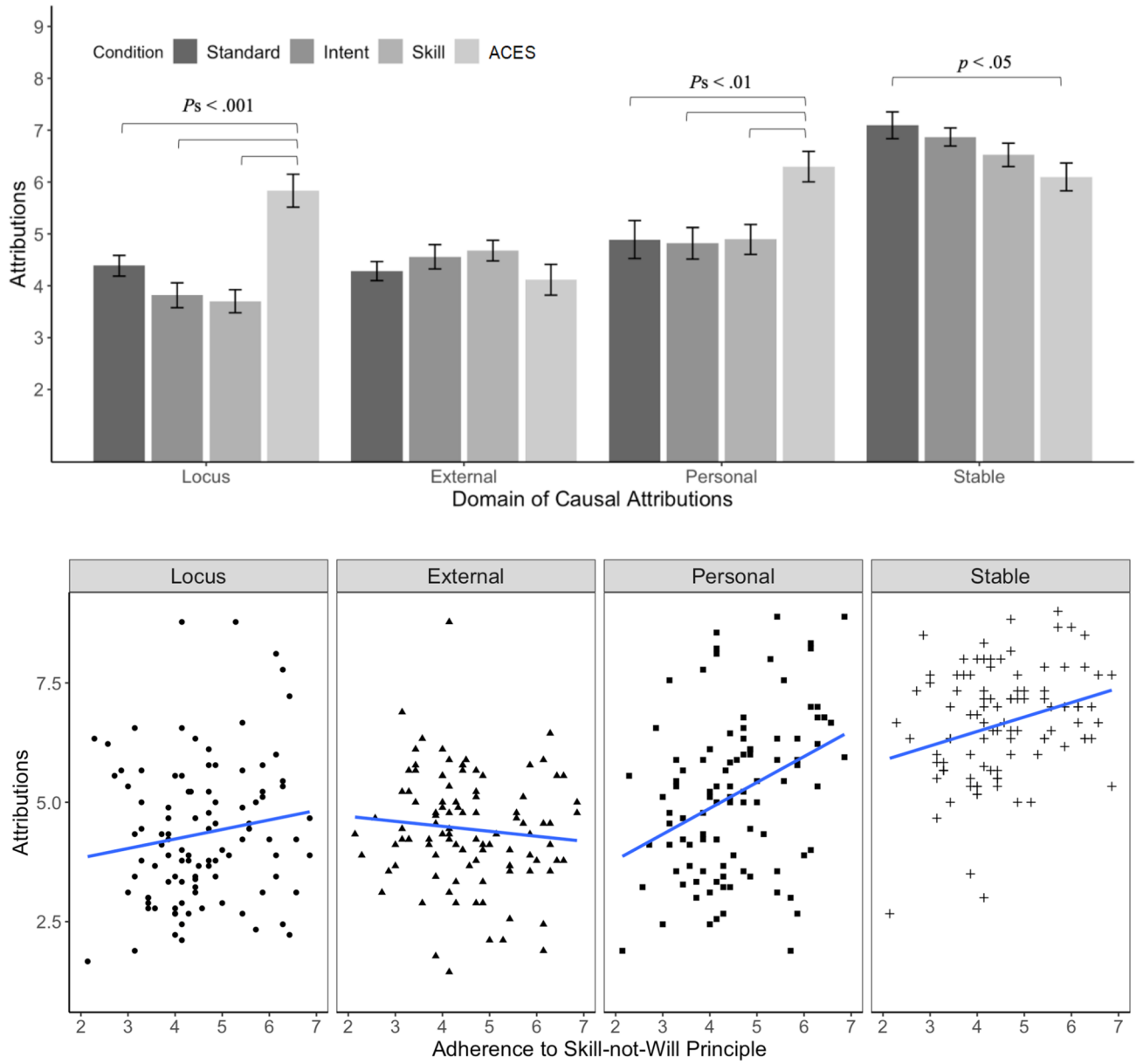

Fig. 2 Two factors predict teachers' attributions: condition (top) and belief that skill-not-will caused Kyle's behavior (bottom)

Emotional Responses and Perceptions of Self-efficacy

Teachers' reports of behavior severity and self-efficacy did not vary based on what they had been told about Kyle (i.e., experimental condition). Their feelings of hopelessness did vary by condition, $F(3,102) = 2.84$, $p < 0.05$, with teachers in the ACEs condition feeling less hopeful compared to the Standard condition. Teachers who were more adherent to the principle of skill-not-will reported greater self-efficacy in handling Kyle's misbehaviors at school ($B = 0.40$, $F(1,102) = 13.83$, $p <$. 001, marginal $R^2 = 0.21$) and more hopefulness ($B =$ -0.19, $F(1,102) = 11.82$, $p < 0.001$, marginal $R^2 = 0.14$).

Disciplinary Response

As shown in Table 2, only about 10% of teachers reported that they would respond to Kyle's misbehaviors with punitive discipline. In comparison, most reported the intention to use modifications (about 90%) or skill-based explanation and intervention (about 70%). About half of the participants reported that they would gather more information about Kyle's misbehavior.

Logistic regression models suggested that no main effects or interactions predicted the use of punitive discipline or modifications. There was a main effect of condition on gathering information ($\chi^2(3) = 8.17$, $p < 0.05$, $R^2 = 0.11$), such

Table 2 Samples of teachers' open responses to student misbehavior

Category	Coder agreement		Sample responses	% Teachers in each condition responding with category			
	Kappa	SE		Standard (n = 20) (%)	Intent (n = 27) (%)	Skill (n = 25) (%)	ACEs (n = 20) (%)
Punitive	0.77	0.10	"I would send him out of the class because the good of one doesn't outweigh the good of the many." "Sit down with the disruptive student and the assistant principal to discuss why the behavior is disruptive"	5	10	11	9
Modify	0.57	0.04	"I would see if rearranging desks would help." "Have him do easy parts of the assignment, to build success and confidence"	90	93	89	91
Gather	0.73	0.04	"I would talk to the student privately. He has a need that is not being met. I would try to understand the need and try to meet it." "First talk with parents about what he is like with friends who come to visit, see if there are any similarities between interactions at home and school. Consult counselor on possible solutions and ideas"	52	53	43	18
Skill	0.76	0.04	"Figure out if the issue is an inability to sit still or if the work is too difficult for him." "[P]rovide instruction regarding other, more socially acceptable ways he can interact with peers"	76	67	79	73

Columns sum to more than 100% since participant responses often included more than one theme

that teachers in the ACEs condition were significantly less likely to gather information (18%) compared to those in the Intent condition (53%). Finally, there was a significant interaction between condition and belief in the principle of skill-not-will in predicting the use of a skill-based explanation and intervention ($\chi^2(3) = 8.17$, $p < 0.05$, $R^2 = 0.32$), such that those who were more adherent to the principle of skill-not-will were more likely to use skill-based interventions, especially in the Intent condition.

Impact of Teachers' Attributions on Other Dependent Variables

In the analyses above, teachers' attributions were the dependent variable. Here, we examined the extent to which attributions predicted emotions, self-efficacy, and disciplinary responses. When teachers rated misbehaviors as less stable, they also reported significantly greater self-efficacy in managing the misbehaviors ($B = 0.35$, $F(1,102) = 10.88$, $p < 0.01$) and more hopefulness ($B = -0.07$, $F(1,260) = 13.17$, $p < 0.001$). When teachers rated misbehavior as more under others' control (i.e., external), they also reported higher self-efficacy ($B = -0.25$, $F(1,102) = 4.44$, $p < 0.05$). Finally, when teachers perceived misbehavior as not under Kyle's control, they were more likely to use skill-based explanations and interventions ($\chi^2(1) = 5.86$, $p < 0.05$).

Mediations

Mediation models were evaluated using bootstrapped confidence intervals for indirect effects (MacKinnon et al., 2007) to explore whether teachers' attributions mediated the significant effects of condition and belief in the skill-not-will principle. See Fig. 3.

Teachers in the ACEs condition reported feeling more hopeless than those in the Standard condition. Their attribution that the misbehaviors were more stable in the ACEs versus Standard condition mediated the effect on hopelessness (indirect effect = 0.20, bootstrapped 95% confidence interval for indirect effect = 0.01, 0.40). Overall, the model with condition and stability accounted for 18% of the variance in teachers' feelings of hopelessness. Other dimensions did not significantly mediate the relationship between condition and hopelessness.

Teachers who believed more in skill-not-will (regardless of condition) reported more hope and higher self-efficacy. These effects were mediated by their attribution that misbehaviors were less stable (the indirect effect and bootstrapped 95% confidence interval was −0.05 [−0.11, −0.01] and 0.08 [0.01, 0.19] for hopelessness and self-efficacy, respectively). Overall, the model with belief in the principle of skill-not-will and stability accounted for 22% and 19% of the variance in teachers' feelings of hopelessness and self-efficacy, respectively. Other dimensions did not significantly mediate the relationship between belief in skill-not-will and feelings of hopelessness or self-efficacy. No attributions significantly mediated the

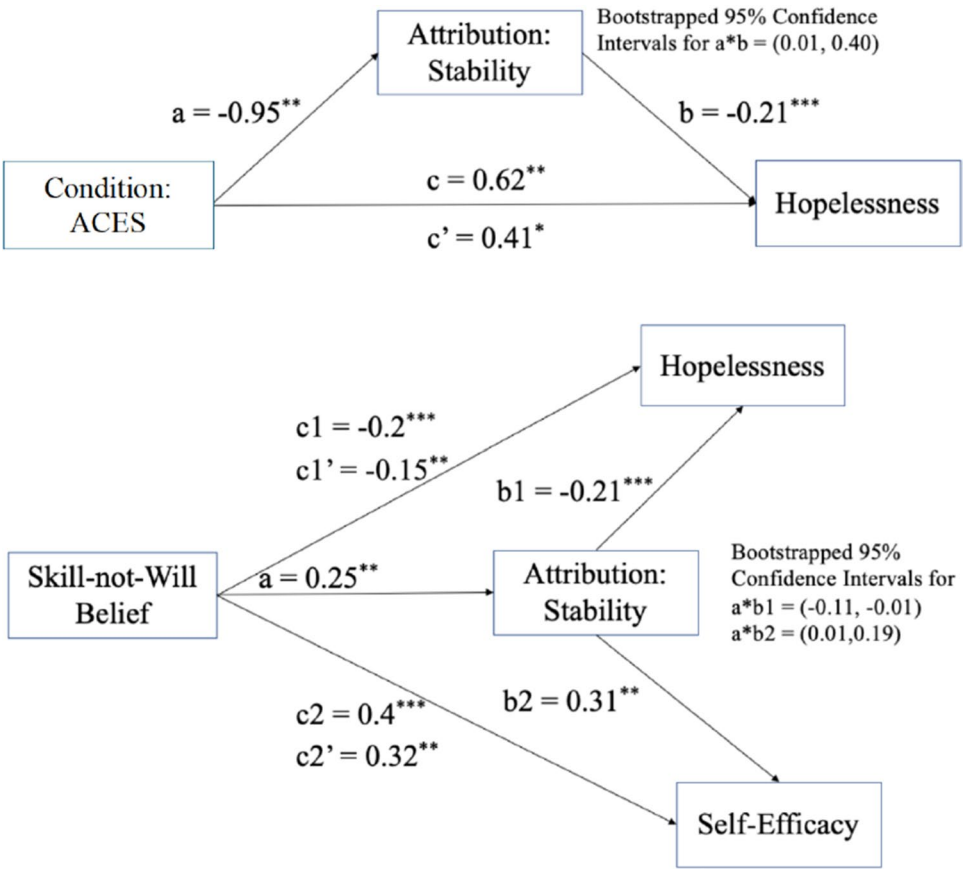

Fig. 3 Teachers' attribution of behavior stability mediated the significant impact of condition on hopelessness (top) and belief on hopelessness and self-efficacy (bottom)

relationship between predictors and teachers' stated disciplinary responses.

Impact of Past Training

Since results suggested that teachers' beliefs remained stable across conditions and that these beliefs, in part, predicted emotional and disciplinary responses, we wondered the extent to which these beliefs may have resulted from professional development activities. We conducted post-hoc analyses on which study variables were associated with exposure to common evidence-based interventions. Table 3 summarizes the percentage of teachers who reported having attended training on common interventions and associations

Table 3 Teachers' self-reported exposure to common programs and Pearson correlations with study variables

Approach	Trained (%)	Skill-not-will	Locus	External	Personal	Stable	Severity	Hopeless	Self efficacy
Incredible Years	1	0.00	−0.05	0.12	−0.08	0.11	0.01	−0.11	0.08
Trauma Informed Care (TIC)	25	0.17	−0.04	**−0.21**	0.01	0.15	−0.14	**−0.24**	**0.20**
Brain Gym	13	0.00	−0.04	0.05	0.00	−0.02	−0.07	0.04	0.13
Social Thinking	22	0.11	0.07	−0.05	0.02	0.05	**−0.26**	−0.14	0.15
Collaborative Problem Solving (CPS)	33	**0.43***	0.00	−0.15	0.06	0.18	−0.07	**−0.23**	**0.33***
Growth Mindset	58	0.00	0.11	−0.09	0.01	0.12	−0.07	−0.16	**0.27**
Positive Behavioral Interventions and Supports (PBIS)	59	−0.03	0.02	−0.07	−0.06	0.15	−0.16	−0.14	**0.20**
The Responsive Classroom	29	0.05	0.11	0.04	−0.01	0.16	0.09	0.02	0.14
Classroom Organization and Management Program	14	−0.13	0.08	−0.16	−0.13	0.17	−0.06	−0.10	0.15
Check-in Check-out	24	−0.04	−0.01	−0.03	−0.01	−0.03	−0.02	−0.02	0.18

Bolded correlations are significant at $p < .05$; asterisk indicates significance after Bonferroni adjustment (.05/70)

between exposure to these interventions and the outcome variables. Exposures to four of the interventions [Trauma Informed Care (TIC), Collaborative Problem Solving (CPS), Growth Mindset, and Positive Behavioral Intervention and Supports (PBIS)] were associated with perceptions of greater self-efficacy. Across conditions, teachers who reported exposure to TIC were more likely to make attributions of higher external controllability, and teachers who attended training in TIC or CPS reported more hopefulness. Finally, teachers who reported having attended CPS training were more adherent to the principle of skill-not-will for misbehavior.

Discussion

In this study, we examined how an explanatory rationale provided to a teacher about a student's misbehavior and the teachers' belief that a lack of skill caused the misbehavior predicts their causal attributions, emotional responses, and disciplinary responses to three common forms of school misbehavior. Overall, teachers who were told that a student named Kyle experienced familial ACEs attributed his misbehavior as a reflection of the situation rather than of Kyle, less under Kyle's control and more stable over time. Additionally, these teachers reported feeling less hopeful and were less likely to gather additional information about the problem. Moreover, independent of the rationale provided, teachers who more strongly believed that lagging skills caused Kyle's misbehaviors attributed them to a reflection of the situation rather than of Kyle, less under Kyle's control and less stable. They felt more hopeful, reported greater self-efficacy to address the behavior, and were more likely to use skill-related interventions and explanations.

Based on prior research (e.g., Hart & DiPerna, 2017), we expected that teachers who believed that misbehavior was due to lagging skills or who were provided with a skills-focused rationale would have a more positive and less punitive response compared to those who believed or were told that the student's behavior was due to an intent to get or avoid something. Contrary to our hypothesis and inconsistent with previous findings, there were no differences between the Skill and Intent conditions regarding how teachers thought about the student, the behavior, or the appropriate intervention; the explanatory rationale they were given was less critical than their beliefs about the cause. Hart and DiPerna (2017) found that a skill-focused rationale impacted teachers' responses; however, their participants received a comprehensive profile of the student's skill deficits in 37 skills across five cognitive domains; in the current study, participants received more limited information. Further research should explore whether a specific type or amount of information is necessary to alter teachers' attributions and responses.

Independent of condition, teachers who believed that skill, not will, caused Kyle's misbehavior had more positive attributions, hope, and self-efficacy and used more skill-based interventions. Moreover, the attribution of low stability mediated the relationship between belief in skill-not-will and teachers' hopefulness and self-efficacy. These findings confirm that positive attributions predict teachers' positive feelings and behavior (e.g., Reyna & Weiner, 2001) and suggest that teachers' belief in "skill-not-will" is associated with these outcomes, both directly and indirectly via their attributions.

Despite our expectation that teachers in the ACEs and Skill conditions would respond similarly, the patterns across these conditions differed. Teachers in the ACEs condition attributed misbehavior more to external factors and outside the student's control than all other groups, including those in the Skill condition. In contrast to past research, however (e.g., Reyna & Weiner, 2001), these attributions did not translate to more positive feelings or supportive disciplinary strategies. If ACEs impact behavior via neurocognitive changes (e.g., Cowell et al., 2015), it is unclear why teachers who were provided a rationale about Kyle's cognitive skill deficits would respond differently than those provided information about ACEs. Educators may be relatively unaware of advances in brain science and traumatology; thus, the participants may not have made the connection between adverse events and cognitive skill deficits. Consistent with this explanation, we found that teachers in the ACEs condition who had been exposed to Trauma Informed Care, a family of evidence-based interventions that explicitly illustrate the detrimental impact of chronic trauma on brain and cognitive skill development (Evans & Coccoma, 2014), were more hopeful and reported higher self-efficacy in managing student's misbehavior. Alternatively, whether or not teachers understood the connection between ACEs and cognitive skills deficits, it is possible that information about ACEs nonetheless elicited different attributions and feelings. Attributions for teachers in the ACEs condition included greater stability, which was in turn associated with hopelessness, consistent with other studies that have found that when teachers attribute misbehavior as caused by family and parental problems, they report lower self-efficacy and tend to use neutral or punitive discipline strategies to manage the behavior (e.g., Andreou & Rapti, 2010; Cothran et al., 2009). With 39% of U.S. youth reporting exposure to at least one adverse experience known to be associated with trauma and toxic stress (Child and Adolescent Health Measurement Initiative, 2020–2021), more research is needed on teachers' understanding of ACEs and

their impact on skills and behavior, so we can find ways to increase teachers' feelings of self-efficacy and their use of positive strategies with students who have experienced ACEs.

Finally, it is notable that in this study, stability was the only attribution that mediated the relationship between teachers' beliefs and their responses to misbehavior. Teachers' understanding of behavioral stability may be an important intervention point if we seek to ensure that our educators feel hopeful about students' futures and efficacious about their work (Larsen et al., 2021). When teachers understood Kyle's misbehavior as due to skill deficits, they felt that his behavior could change over time, and they felt more hopeful. However, when provided information about ACEs, they rated the misbehavior as more stable, and their hopefulness and self-efficacy waned. As experts in the link between brain and behavior, mental health professionals in schools can help teachers understand students' behavior as malleable, no matter the cause of that behavior, which in turn may help them to maintain hope and perceive themselves as the agent of change, both factors that have been previously associated with educators' success, optimism, and work engagement (e.g., Sezgin & Erdogan, 2015).

These results should be interpreted in the context of study limitations. It is not clear the extent to which using vignettes is valid and generalizable to teachers' behavior outside of the study (Lucas et al., 2009). Moreover, as Kyle was presented as male, it is unclear the extent to which the findings might be influenced by student gender. Future research should explore how teachers' beliefs about skill-not-will impact their responses to real students' classroom misbehaviors. Nonetheless, these results can still guide professional development and pre-service education. For example, the current results suggest that school-based mental health practitioners, with frequent touchpoints around student behavior, could try building teachers' understanding of and belief in the skill-not-will principle, increasing teachers' use of positive discipline.

Finally, our analysis of participants' previous exposure to common approaches provides preliminary guidance on related professional development opportunities. Training educators and school mental health providers on the link between cognitive skill deficits and misbehavior may facilitate belief in the skill-not-will principle. For example, one such intervention, Collaborative Problem Solving (CPS; Greene & Ablon, 2005), suggests that misbehavior occurs when the child cannot access or implement the required neurocognitive skills to meet the demands of a situation. In this study, teachers who received previous training in CPS reported greater belief in skill-not-will. Approaches like CPS may help school personnel adopt the skill-focused perspective necessary to improve their hope and self-efficacy, which in turn may translate to improved educator and student outcomes in the long term.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s12310-024-09673-7.

Declarations

Conflict of interest At the time this study was conducted, all authors were employed by a non-profit organization that receives payment for training in Collaborative Problem Solving.

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