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Linking self-transcendence values to classroom prosocial behavior: the mediating role of teachers' autonomy support in elementary school students

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Abstract
This longitudinal study explored whether students' self-transcendence values predicted their classroom prosocial behavior through perceived teachers' autonomy support. Participants in this three-wave study were 395 fourth and fifth grade students (52% female, mean age = 9.41 at T1). In fourth grade, students reported their self-transcendence values. Four months into fifth grade, students assessed teachers' autonomy support, and their teachers evaluated students' prosocial behavior. Teachers evaluated prosocial behavior again at the end of fifth grade. Results showed self-transcendence values in fourth grade predicted increases in prosocial behavior in fifth grade through perceptions of teachers' autonomy support. These findings expand knowledge of mechanisms underlying relations between self-transcendence values and classroom prosocial behavior. They suggest students are agents capable of shaping their environment.

Keywords Self-transcendence values · Autonomy support · Prosocial behavior · Elementary school

1 Introduction

In addition to fostering students' academic competencies, elementary school is an arena where students socialize and take their first steps as agentic individuals capable of contributing to society (Krijnen et al., 2024). A vital aspect of this socialization process involves promoting students' engagement in prosocial behavior towards

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their peers (Dirks et al., 2018). Beyond the school's role in promoting such behavior, students' personal values, particularly self-transcendence values, motivate them to engage in behavior that benefits others (Eisenberg et al., 2015; Twito-Weingarten & Knafo-Noam, 2023).

But values are abstract and broad guiding principles. As such, how can they motivate students to engage in something so concrete as prosocial behavior? Studies suggest children's values can shape the attitudes and behaviors of various socialization agents towards them (e.g., Benish-Weisman et al., 2013). Following this line of reasoning, we argued students' self-transcendence values may predict their teachers' motivational practices (as perceived by the students), playing a more proximal role in motivating students to engage in prosocial behavior in the classroom. Specifically, we were interested in exploring students' perceptions of their teachers' autonomy support (Reeve & Cheon, 2021), a motivational practice identified in recent research as predictive of students' prosocial behavior (e.g., Collie, 2022; Lan, 2022). To that end, we investigated the predictive role of students' self-transcendence values on teachers' perceptions of their prosocial behaviors in the classroom and their perceptions of their teachers' autonomy support as the mechanism explaining this link.

1.1 Children's self-transcendence values and prosocial behavior

Values represent an individual's abstract core beliefs and serve as guiding principles or motivational objectives that remain relatively consistent across situations and over time (Rokeach, 1973; Schwartz, 1992). They are fundamental aspects of our personality and have a significant influence on our actions (Bardi & Schwartz, 2003; Cieciuch, 2017). The more significant a value is to us, the more we strive to fulfill it by acting in accordance with it (Bardi & Schwartz, 2003). In this way, values motivate behavior.

Self-transcendence values emphasize the importance of caring for others' well-being, along with the recognition of interconnectedness and the pursuit of collective goals (Sanderson & McQuilkin, 2017). Research has consistently shown that from an early age, throughout kindergarten and elementary school, children who endorse self-transcendence values not only demonstrate sharing behavior in controlled laboratory settings (Abramson et al., 2018), but are also recognized by their classmates as more prosocial (Benish-Weisman et al., 2019), suggesting students' self-transcendence values are crucial motivators of their involvement in prosocial behavior, especially in the classroom setting.

The mechanism underlying the relations between students' self-transcendence values and their prosocial behavior is less clear. Values theory suggests an individual effectively pursues important values by adopting behaviors that reflect or facilitate their attainment (Bardi & Schwartz, 2003). Many studies have examined the direct relationship between values and behavior among youth (Benish-Weisman, 2015; Knafo et al., 2008; Vecchione et al., 2016), including the specific link between values and prosocial behaviors (Abramson et al., 2018). For example, a study conducted among elementary school students in Switzerland found those with stronger self-transcendence values were reported to exhibit more supportive behavior in the

classroom (Scholz-Kuhn et al., 2023). Most values theories and studies examining the explanatory factors for these relationships have focused on internal mechanisms (e.g., the perception and interpretation of values) and explored external mechanisms (e.g., the social environment) primarily as moderators (Sagiv & Roccas, 2021), highlighting the need for further investigation.

Motivation research makes an important distinction between distal and proximal determinants of behavior (e.g., Badura et al., 2020; Elliot & Thrash, 2001). In this way of thinking, the processes motivating behavior are hierarchically ordered, wherein broader or distal determinants of behavior translate into more concrete proximal determinants, giving rise to specific intentions to engage in behavior. As relatively abstract and broad guiding principles, values typically play a distal role in motivating behavior. Thus, if self-transcendence values are to motivate students to engage in prosocial behavior towards peers in the classroom, they need to be translated into more concrete or proximal determinants of behavior. One such proximal determinant of students' prosocial behavior is teachers' instructional behavior, particularly autonomy supportive behavior (Reeve & Cheon, 2021).

1.2 Perceived teachers' autonomy support and students' prosocial behavior

The concept of autonomy support is rooted in the motivational perspective of self-determination theory (SDT; Ryan & Deci, 2017), which elucidates the processes underlying individuals' intrinsic tendencies for personal growth. Engagement in prosocial behavior, particularly when accompanied by a sense of choice and volition, epitomizes these tendencies (Weinstein & Ryan, 2010).

According to SDT, within the classroom, teachers' implementation of autonomy supportive instructional behavior facilitates volitional (or autonomous) functioning (Reeve & Cheon, 2021). Researchers have identified several autonomy supportive practices (Aelterman et al., 2019). Three commonly recognized and measured ones are adopting a child's perspective, offering meaningful explanations, and providing genuine choices (e.g., Assor et al., 2002; Benita et al., 2014; Deci et al., 1994; Reeve & Cheon, 2021). These practices are typically assessed via student perceptions of teacher behavior.

Autonomy supportive instructional behavior in the classroom predict numerous optimal outcomes, one of which is students' prosocial behavior (e.g., Collie, 2022; Jang et al., 2020; Lan, 2022; Ma et al., 2023; Simões et al., 2018). Autonomy supportive teaching practices are claimed to nurture students' 'brighter' attributes, as they afford opportunities for positive social interactions, the development of empathy towards others, the expression of positive emotions, and the effective and proactive management of interpersonal conflicts (Jang et al., 2020). Importantly, Cheon et al. (2018) demonstrated a causal relationship between teachers' autonomy support and student prosocial behavior. When these researchers implemented an intervention aimed at enhancing teachers' autonomy support, they found the experimental group, which received the intervention, showed higher levels of teacher-reported student prosocial behavior than the control group.

1.3 Self-transcendence values and perceived teachers' autonomy support

It is not immediately obvious that students' self-transcendence values will predict their perceptions of their teachers' autonomy support. One of the main goals of education is to inculcate values, such as self-transcendence values, in children (Nucci et al., 2014). If teachers' autonomy support predicts student prosocial behavior, it is likely to do so by increasing students' identification with prosocial values, such as self-transcendence values (e.g., Roth & Weinstock, 2013). Autonomy-supportive practices have traditionally been viewed as contributing to students' values, particularly self-transcendence values, rather than the reverse. Despite the prevalence of this perspective, we examined the opposite possibility, namely that students' self-transcendence values may predict their perceptions of teachers' autonomy support, which, in turn, could predict prosocial behavior. We had two complementary reasons for proposing this alternative direction.

First, research indicates a substantial portion of the variability in students' self-transcendence values stems from intrapersonal factors, such as genetics (Uzefovsky et al., 2016). Furthermore, relatively stable values structure are already evident in middle childhood (Daniel et al., 2023), and as early as the age of six, self-transcendence values are related to classroom prosocial behavior (Benish-Weisman et al., 2019). Thus, when teachers meet students for the first time in later elementary school years, students are likely to already have an organized value system (Knafo-Noam et al., 2024).

Second, recent theories and studies suggest students are not passive recipients of teacher practices; rather, students' values might influence specific teacher behaviors. Previous research conducted with children and parents has emphasized the significant role of children in shaping their own socialization (Knafo & Galansky, 2008). For instance, a child learning about climate change at school may develop pro-environmental values. Even if the parents do not prioritize these issues, seeing their child's enthusiasm could encourage them to support the child's behavior and possibly adopt those values themselves. Supporting this notion, Benish-Weisman et al. (2013) showed adolescents' values can predict the values their parents aim to instill in them.

More direct evidence for the potential impact of students' self-transcendence values on their perceptions of teacher support comes from Collins et al.'s (2024) recent study. Their findings indicated that students' growth values—a composite of self-transcendence and openness-to-change values—predicted the social support they received from significant others, including teachers. This, in turn, was associated with their well-being. However, the study had limitations: it was cross-sectional, making it impossible to establish the time order of these relationships. Additionally, it measured general social support rather than specifically assessing perceptions of teachers' autonomy support and did not isolate self-transcendence values from openness-to-change values.

We propose a more nuanced examination of the predictive role of self-transcendence values on teachers' autonomy support using a longitudinal design. We contend that within a classroom setting, students' self-transcendence values will predict their future perceptions of their teachers' autonomy supportive practices. Research

anchored in SDT suggests teachers' autonomy support is particularly amenable to student influence. For instance, students' inclination to ask questions in the classroom and express their preferences (i.e., agentic engagement) was found to predict longitudinal increases in perceived teachers' autonomy support (Reeve, 2013). In another study, Jang et al. (2020) found students' self-reported prosocial behavior was not only predicted by their perceptions of their teachers' autonomy support but also predicted an increase in their perceptions of their teachers' autonomy support over time.

We argued a similar process might occur with students' self-transcendence values. Such values are likely to be recognized by teachers and viewed as desirable. Teachers may therefore respond to these students by providing greater autonomy support; they may be more willing to take their perspective, provide a meaningful rationale for expected behavior, and offer choices. Such teacher behavior is likely to evoke children's predisposition to engage in prosocial behavior within the classroom, and this, in turn, may predict an increase in teachers' perceptions of students' prosocial behavior over the academic year.

1.4 The present investigation

In this paper, we present our findings from an investigation conducted among elementary school students and their homeroom teachers in [country] at three time points across two academic years (fourth and fifth grades). We explored whether students' self-transcendence values in fourth grade predicted their perceptions of their teachers' autonomy support in fifth grade and whether this, in turn, predicted a longitudinal gain in teachers' reports of the students' prosocial behavior toward peers. We thus hypothesized the students' self-transcendence values in fourth grade would predict an increase in the teachers' reports of the students' prosocial behavior in fifth grade, mediated by the students' perceptions of their teachers' autonomy support in the first half of fifth grade.

2 Method

2.1 Participants and procedure

Participants were 395 students from 15 classes in six urban elementary schools in Israel. The average number of students in each classroom was 26.33. About half (52%) identified as female. The mean age was 9.41 at baseline (SD = 0.45). All teachers identified as female, with ages ranging from 34 to 56 years (M = 44.84, SD = 6.39). It is important to note that in [country] elementary schools, students typically remain with the same classmates in their homeroom class from grades 1–6. Homeroom teachers, with whom students spend most of their time, typically change classrooms every two years. Of the 15 teachers in our sample, three teachers continued with their classroom from fourth to fifth grade, while the remaining 12 teachers

were new to the children in fifth grade. In our analyses, we controlled for teacher replacement between the academic years.

In fourth grade (April–May 2018; Time 1), students reported on their personal values, specifically, self-transcendence values. In the middle of their fifth-grade school year (December 2018; Time 2), students reported on their perceptions of their teachers' autonomy support. At this time point, the teachers also reported on each student's prosocial behavior. At the end of the fifth-grade school year (May–June 2019; Time 3), teachers reported again on students' prosocial behavior.

The students completed the entire set of questionnaires during a 45 min lesson under the guidance of the study's staff. They were informed that all their answers would be confidential, and they did not have to answer any of the questions if they did not want to. Teachers worked on their questionnaires simultaneously, but they could finish them at home and hand them in later. All participants were assigned a unique identifying number to protect their privacy and to facilitate matching the questionnaires from the different time-points. The protocol of the comprehensive research was granted approval by the Israel Ministry of Education (protocol number: 10694).

Overall, 395 students had at least one measurement and were included in the study. We used full information maximum likelihood estimation to handle missing data. Two hundred and ninety-six students completed Time 1 reports on their self-transcendence values (26% missing). Of these, 215 completed Time 2 (27% attrition) reports on their teachers' autonomy support. An additional (new) 81 students also completed the Time 2 reports (296 students in total; 26% missing). Thus, 377 students completed the questionnaires. Teachers reported on the prosocial behavior of 312 students at Time 2 and on 311 at Time 3. Thus, teachers reported on an additional 18 students who had no self-reports on self-transcendence values (Time 1) and perceived autonomy support (Time 2). Missing students were randomly dispersed across classrooms. Little's missing completely at random test (Little, 1988) was non-significant, $\chi^2_{(2)} = 0.64$; $p > 0.727$, indicating data were missing completely at random.

2.2 Measures

2.2.1 Students' self-transcendence values

All students completed the Picture-Based Value Survey for Children (PBVS-C; Döring et al., 2010). The PBVS-C presents values in 20 pictures. Each picture is accompanied by a brief caption directing focus to the underlying values. Child participants rank the pictures according to the importance they ascribe to them. The PBVS-C assesses higher order values based on Schwartz's theory of basic values: self-transcendence, self-enhancement, openness-to-change, and conservation values (Schwartz, 1992). We used the four items assessing self-transcendence values, which are composed of benevolence and universalism values (e.g., 'Be a friend of children of all kinds'; 'Help others'). Across a range of studies, the PBVS-C has shown good structural validity (e.g., Döring et al., 2015; Uzefovsky et al., 2016).

To determine our scale's structural validity, we used the SPSS PROXSCAL procedure to test the structure of values. This procedure was advised and used in other studies (Rubel-Lifschitz et al., 2021; Schwartz et al., 2012). As proposed by Borg et al. (2017), we used Kruskal's stress measure (Stress I in SPSS) to determine fit. Stress measures the loss of information that occurs when data are represented in a two-dimensional space. A perfect multidimensional scaling (MDS) solution has Stress I = 0, indicating the distances in the MDS configuration characterize the data exactly. We compared the observed stress to the expected stress values for a random ranking of MDS using 12 items (stress = 0.225; Spence & Ogilvie, 1973), defining a stress value clearly lower than the stress of random rankings as a good fit (Borg et al., 2012). The configuration produced a Stress I value of 0.079, considerably lower than the expected stress for a random configuration. Therefore, the stress values indicated the MDS configuration characterized the data very well. Figure 2 in the Appendix shows the MDS structure.

2.2.2 Perceived teachers' autonomy support

Teachers' autonomy support was measured using a variation of the scale developed by Mageau et al.)2015) to assess parental autonomy support. We modified the scale to assess teachers. The original scale consists of 12 items. However, considering the relatively young age of our participants and to alleviate their burden, we condensed it to nine items. As in the original scale, these items tapped three dimensions of autonomy support: offering choice within certain limits (two items, e.g., 'When possible, our teacher gives us opportunities to make our own decisions about our studies'); explaining the reasons for demands, rules, and limits (three items, e.g., 'When our teacher asks us to do a task, she makes an effort to explain to us why the task is important and what its purpose is'); being aware of, accepting, and recognizing the child's feelings (four items, e.g., 'Our teacher is open to opinions and viewpoints regarding studies and what happens in the classroom, even when they differ from her own'). The 9-item scale showed excellent reliability, $\alpha = 0.80$.

2.2.3 Students' prosocial behavior

Students' prosocial behavior was measured using a subscale of the Schoolchildren's Class Behaviors Scale (Benish-Weisman et al., 2022; Berson & Oreg, 2016). For each child, the homeroom teachers rated students' prosocial behavior towards peers using two items ('Helps other children in the classroom'; 'Sensitive to the needs of other kids'), T2 $\alpha = 0.87$, T3 $\alpha = 0.89$.

2.3 Plan of analysis

All analyses were conducted using Mplus Version 8.6 (Muthén & Muthén, 2017). We first examined the correlations between study variables. Given the hierarchical nature of the data, classroom research often requires multilevel modeling to account for relationships between variables at both the between-classroom level

and the individual (within-classroom) level. However, previous research has found the focal predictor—students' self-transcendence values—exhibits relatively little variance between classrooms, with most of the variance attributable to differences between individuals (e.g., Benish-Weisman et al., 2020). Consequently, we opted not to model classroom-level clustering effects, as their inclusion would likely contribute minimal explanatory power while unnecessarily complicating the analysis. We also had a small number of clusters (i.e., classes). The intraclass correlation coefficients (ICCs) of our variables were 0.01, 0.06, 0.04, and 0.05 for self-transcendence values, perceived teachers' autonomy support, Time 2 student prosocial behavior, and Time 3 student prosocial behavior, respectively. These low ICCs suggested multilevel modeling was not necessary.

We therefore adjusted for the hierarchical nature of the data (students nested within classrooms) by using class as the 'cluster' variable in the 'Type = Complex' method in Mplus, which uses a sandwich estimator to correct for intra-cluster dependencies (Muthén & Muthén, 2017). This option is particularly useful when analyzing clustered data without explicitly modeling the multilevel structure, allowing researchers to correct for design effects while maintaining a single-level model specification. It is especially advantageous over multilevel models when using path models, as it does not require estimating latent variables at multiple levels and allows bootstrap confidence intervals to test indirect effects, considered a more robust approach for assessing mediation effects than traditional methods relying on normal theory-based standard errors. Importantly, since the Type = Complex option combined with bootstrapping affects the chi-square test, traditional model fit indices (i.e., root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the Tucker–Lewis index (TLI)) are not provided. However, the standardized root mean square residual (SRMR) is still provided as it relies on residuals rather than likelihood estimation. SRMR values below 0.08 indicate acceptable fit (Schumacker & Lomax, 2010).

For our main mediation analysis, we used a path model, aimed at establishing time order between variables. In our model, students' self-transcendence values in fourth grade (Time 1) predicted their perceptions of their fifth-grade teachers' autonomy support (Time 2), and this, in turn, predicted teachers' reports of each student's prosocial behavior at the end of the school year (Time 3). We also included the direct path from students' self-transcendence values to Time 3 teacher-reported prosocial behavior. To support the assumption that our predicting and mediating variables would predict changes in students' prosocial behavior, we included the autoregressive path from Time 2 teacher-reported prosocial behavior to Time 3 teacher-reported prosocial behavior. Because girls typically present more prosocial behavior than boys at this age, particularly in elementary school (Chung-Hall & Chen, 2010; Zimmer-Gembeck et al., 2005), we controlled for student gender in our analyses. As noted above, we controlled for homeroom teacher replacement in the transition from fourth to fifth grade. We determined the significance of the indirect effect using the bootstrap method with 2,000 resamples and 95% confidence intervals.

To determine whether our sample size was adequate to infer our observed effect sizes, we conducted sensitivity analyses using G*power (Faul et al., 2009) with a

desired power of 0.80 and an alpha level of 0.05. Sensitivity analysis indicated our sample was sufficient to detect a small effect of 0.02.

2.4 Data availability statement

This study was part of a larger research project examining value transmission in the classroom. Other variables not included in this study were teachers' and students' other values (other than self-transcendence values), students' motivation, and various types of student behaviors (e.g., conformist behavior, learning behavior) and well-being (i.e., self-esteem and sense of belonging in the classroom). All study materials (including all measures from the larger study) and statistical output are available on the open science framework (project link: https://osf.io/67szf/). The studies' designs and their analyses were not pre-registered.

3 Results

3.1 Preliminary analysis

Table 1 presents the intercorrelations between study variables. As indicated, all correlations were significant and in the expected direction. Students' self-transcendence values in fourth grade were positively associated with their perceptions of their teachers' autonomy support in mid-fifth grade and with their fifth-grade teachers' reports of their prosocial behavior at mid-year and at year-end. In addition, fifth-grade student-reported teachers' autonomy support at mid-year was positively associated with teacher-reported student prosocial behavior at both time points. In addition, being female was positively associated with student-reported self-transcendence values (Time 1) and also with teacher-reported student prosocial behavior at both time points in fifth grade (Time 2 and Time 3). Finally, teacher replacement was negatively associated with perceptions of teachers' autonomy support; that is, teachers who continued teaching the same classroom from fourth to fifth grade were perceived as less autonomy supportive in fifth grade.

3.2 Primary analysis

The results supported our hypotheses. Figure 1 shows the path model. As seen in the figure, students' self-transcendence values in fourth grade positively predicted their perceptions of their teachers' autonomy support in fifth grade. Moreover, students' perceptions of their fifth-grade teachers' autonomy support positively predicted year-long increases in the teachers' reports of students' prosocial behavior. Students' values did not predict changes in their prosocial behavior. The observed effects remained significant even after controlling for teacher replacement between grade levels (on perceptions of autonomy support) and student gender (on changes in prosocial behavior), indicating that our results were robust above and beyond the effects of these covariates. Model fit was excellent, as indicated by an *SRMR*

Table 1 Descriptive statistics and intercorrelations of study variables

	Mean	SD	Range	1	2	3	4	5
1. Student self-transcendence values (Time 1)	3.54	0.57	1.50–4.50	–				
2. Perceived teachers' autonomy support (Time 2)	3.87	0.76	1.38–5.00	0.27**	–			
3. Students' prosocial behavior (Time 2)	3.44	0.99	1.00–5.00	0.20**	0.24**	–		
4. Students' prosocial behavior (Time 3)	3.49	0.95	1.00–5.00	0.18**	0.24**	0.60**	–	
5. Student gender	–	–	1, 2	0.16**	0.02	0.26**	0.32**	–
6. Teacher replacement between grade levels	–	–	1, 2	0.06	−0.16**	0.06	0.09	0.06

*$p < 0.05$, **$p < 0.01$. For students' gender: 1 = male, 2 = female. For teacher replacements between grade levels: 1 = different teachers, 2 = same teacher

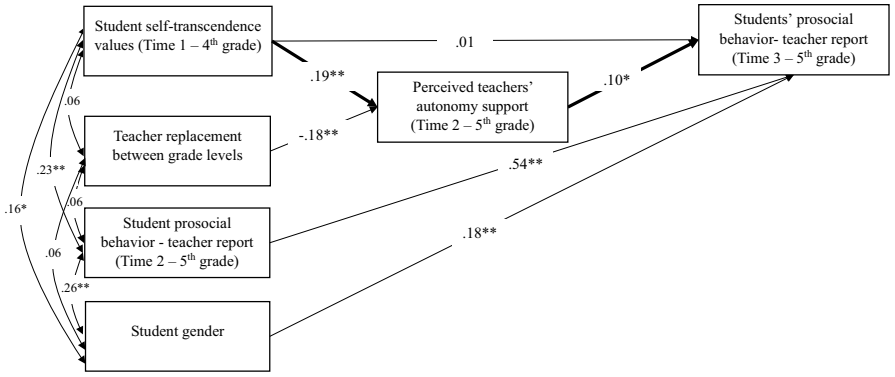

Fig. 1 Path model. *Note* All estimates are standardized coefficients. Thick lines represent paths comprising the indirect effect. *$p < 0.05$. **$p < 0.01$

value of 0.04. The standardized indirect effect was 0.031, tested using bootstrapping with 2,000 resamples. The 95% confidence interval {0.01; 0.05} did not contain 0, confirming statistical significance at $\alpha = 0.05$ and supporting the mediating role of autonomy support in shaping prosocial behavior.

4 Discussion

Our findings supported our hypotheses: perceived teachers' autonomy support mediated the relations between students' self-transcendence values and their future classroom prosocial behavior. Self-transcendence values represent an individual's moral sense of self (Krettenauer & Stichter, 2023), and these well-internalized values have been shown to predict prosocial activities beyond the school context (e.g., Chan, 2020; de Groot & Steg, 2007). However, values are broad and abstract constructs, and the mechanism through which they translate to behavior is less clear. Our findings suggest that within the classroom, an important mechanism through which self-transcendence values manifest themselves in prosocial behavior is their effect on students' perception of teachers' autonomy support. It seems students' perception of teachers' autonomy support, as a more proximal predictor of prosocial behavior in the classroom than values, can facilitate the translation of self-transcendence values into prosocial behavior.

Notably, the ICC for self-transcendence values was very low (0.01). Similarly, Benish-Weisman et al. (2020) reported a low ICC (0.04) for self-transcendence values in a mixed sample of elementary and middle school students, significantly lower than those of other values. Taken together, these findings support the assumption that self-transcendence values primarily reflect a child's moral sense of self, which develops in early childhood (Krettenauer, 2022) and is shaped by early developmental influences. Consequently, by late elementary school and beyond, the school environment has little impact on their development. As our study suggests, at this stage, self-transcendence values should be considered a predictor variable in the

classroom, potentially fostering a positive developmental trajectory for students who endorse them.

We did not explore the mechanism explaining the relations between students' self-transcendence values and autonomy supportive teaching, but this certainly warrants further investigation. For one person's values to influence another person's behavior, these values must be expressed in actions. It is plausible that students with self-transcendence values demonstrate greater prosocial behaviors or openly discuss these values in the classroom. Teachers' autonomy support might reflect these behavioral predispositions, and this support, in turn, may enhance their manifestation in the classroom as the academic year progresses, creating an upward spiral. Supporting this notion, Jang et al. (2020) found a reciprocal relationship between student prosocial behavior and teachers' autonomy support. Greater teachers' autonomy support predicted yearlong increases in student prosocial behavior, and vice versa. However, this study only used two measurements of prosocial behavior and teachers' autonomy support. To gain deeper insights into these classroom dynamics, more intensive longitudinal research with multiple measurements across the academic year is needed. This would better capture nuanced changes in students' prosocial behavior and teachers' autonomy-supportive practices, clarifying temporal ordering and causal relationships.

Our findings have important practical implications, as they highlight the dyadic nature of the teacher-student relationship, whereby teachers tend to adjust their behavior based on their perceptions of a child's values. They thus emphasize the dynamic interplay between students and their learning environment. Contrary to perspectives emphasizing the role of teachers and the school in general in socializing students' values (e.g., Berkowitz, 2011), and in line with recent evidence by Collins et al. (2024), our findings suggest that students' own values not only relate to the support they receive from teachers, but can also actively shape their socialization and educational experiences. Furthermore, this active engagement suggests the need for educators to adopt teaching methods that empower students to take ownership of their learning journey.

Importantly, these findings should alert educators to the potential for biased treatment, as some students may receive more favorable support from teachers simply because they endorse self-transcendence values. Instead of fostering autonomy for all students, teachers may inadvertently support the autonomy of those already inclined towards prosocial behavior. Educators should strive to recognize the unique characteristics of all children in a classroom and ensure equal treatment for every student, regardless of whether they are perceived as prosocial or as endorsing self-transcendence values. In particular, students facing difficulties often require greater autonomy support to guide them toward adaptive behaviors in the classroom.

Moreover, if students' self-transcendence values initiate an upward spiral, as our study suggests, it is essential to foster these values in those who have not yet adopted them. Given that existing research indicates low shared variability in these values within classrooms, efforts to cultivate self-transcendence should focus on early developmental stages. It is plausible that as students reach early adolescence, the school environment becomes less effective in shaping these values.

4.1 Limitations and future directions

Strengths of this study include its longitudinal design, particularly the measurement of students' values before they encountered most teachers in the sample and the control for prosocial behavior at the beginning of the school year. Moreover, the study's reliance on multiple reporters enhances its robustness.

At the same time, the study had some limitations. First, despite establishing the time order between variables and controlling for early-year prosocial behavior, we did not rule out alternative explanations for the observed correlations, particularly those between students' self-transcendence values and perceived teachers' autonomy support. Therefore, we cannot confirm causality. Future research should employ experimental designs or more intensive longitudinal designs, as suggested earlier. Methods such as the random-intercept cross-lagged panel model (Hamaker et al., 2015) can support causal hypotheses to a greater extent than our design (VanderWeele et al., 2020).

Second, while measures of perceived autonomy support are relatively common and considered reliable and valid (Aelterman et al., 2019), additional objective assessments of teachers' autonomy support, such as classroom observations, are required. In addition, despite the value of using teachers' reports of students' prosocial behavior rather than students' self-reports, teachers' reports can be biased (Rucinski et al., 2023), and future research should use other options, such as peer nominations (e.g., Benish-Weisman et al., 2019).

Third, we focused on self-transcendence values and their typical value-congruent behavior—prosocial behavior. Thus, our paper highlights the 'bright' side of students' adjustment. However, students also endorse other values that correspond to different value-congruent behaviors. Specifically, self-enhancement values are often associated with the 'dark' side of students' school functioning and have been found to predict aggressive (Benish-Weisman, 2015) and competitive classroom behavior (Berson & Oreg, 2016). It would be interesting to explore whether these values also shape teachers' practices. For instance, students who strongly endorse self-enhancement values may elicit more controlling behavior from teachers—the opposite of autonomy support (Reeve, 2009). In turn, this could increase the likelihood of students engaging in aggressive classroom behavior, creating a vicious cycle of escalating negative interactions.

Finally, autonomy support can function both as a mediator (as demonstrated in our study) and as a moderator of the relationship between students' self-transcendence values and their classroom prosocial behavior. This suggests that the association between students' self-transcendence values and prosocial behaviors may become more pronounced when teachers provide high levels of autonomy support. Supporting this notion, Pulfrey and Butera (2016) experimentally found that students' self-transcendence values negatively predicted cheating behavior only when students perceived their learning environment as not driven by self-enhancement values, compared to environments emphasizing self-transcendence values or neutral conditions. A similar effect might occur with the variables examined in our study: when teachers offer autonomy support, students may perceive their self-transcendence values as more desirable and acceptable,

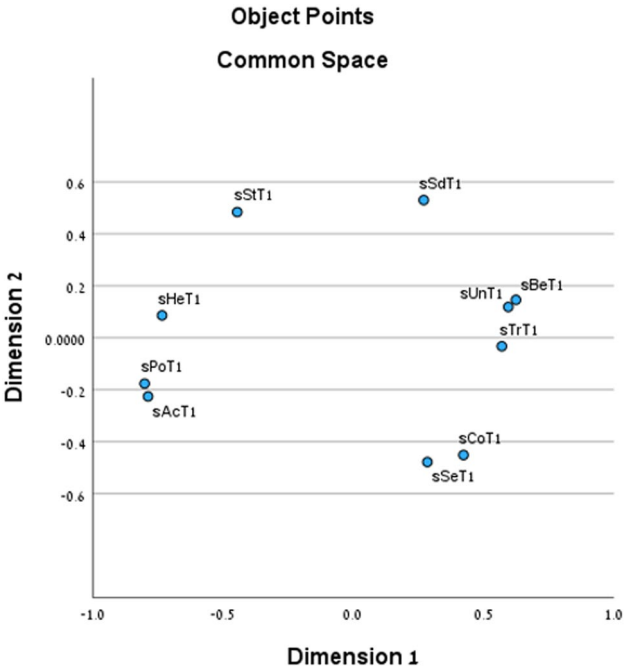

Fig. 2 Multidimensional Scaling of the 10 Values. *Note*. For all value labels, T1 represents Time 1 (students' fourth grade). The designations are as follows: sStT1 = students' stimulation; sSdT1 = students' self-direction; sUnT1 = students' universalism; sBeT1 = students' benevolence; sTrT1 = students' tradition; sCoT1 = students' conformity; sSeT1 = students' security; sPoT1 = students' power; sAcT1 = students' achievement; sHeT1 = students' hedonism

facilitating their expression through prosocial behaviors. Future research should examine this possibility.

5 Conclusion

This study shows that within a classroom, students' self-transcendence values predict long-term classroom prosocial behavior through students' perceptions of their teachers' autonomy support. These findings shed light on the dynamics involved when students are being motivated to engage in prosocial behavior within the classroom. Our findings highlight the active role students play in shaping their educational experience, suggesting the need for adaptable teaching methods that empower student ownership of learning (Fig. 2).

Appendix

See Fig. 2.

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Declarations

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