



Reading between the lines: teacher recognition of students' requests to satisfy their psychological needs as a prerequisite for need-supportive communication style

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Abstract

Supporting the basic psychological needs for autonomy, competence and relatedness has been demonstrated on numerous occasions to enhance human functioning. While most educators would not object to this empirical evidence, not all implement needs-supportive practices in everyday teaching. Is this a matter of reluctance, or a matter of their willingness to discern students' needs? In this vignette study, we examined to what extent teachers are willing to discern when students attempt to fulfill their basic psychological needs through their behaviors. Participants were 484 teachers (80.6% female; mean age=47.52, SD=10.90, years) who reported their general causality orientations, empathy for students, and attributions for academic underachievement of students with physical disabilities. Teachers then read a fictional story about a complaining student with a physical disability and indicated whether the student's complaint reflected an expression of a basic psychological need. They also reported whether they perceived the situation as ego-threatening and indicated their intentions to respond in either an autonomous-supportive or a controlling manner. Path analyses revealed that teachers with an autonomous causality orientation and external attributions for students' underachievement due to physical disabilities were more likely to interpret student requests as implicit messages signaling unmet basic psychological needs. In contrast, teachers with a more controlled orientation and internal attributions for students' shortcomings were more likely to disregard students' requests, with teachers' ego threat mediating these associations. In turn, the more teachers recognized (vs. ignored) students' basic psychological needs, the more likely they were to respond in an autonomous-supportive (vs. controlling) way. These findings suggest that teachers' dispositions enable them to recognize when students' needs await to be met and, consequently, to act accordingly in the classroom.

Keywords Basic psychological needs · Needs-Supportive teaching · Needs recognition · Teachers · Physical disability

Introduction

Within the framework of Self-Determination Theory (SDT), the satisfaction of basic psychological needs (BPNs) constitutes an essential requirement for human growth, integrity and well-being (Ryan & Deci, 2017, pp. 10). Indeed, numerous empirical studies have evidenced the vital role that three basic, innate, and universal psychological needs can have in human functioning and flourishing. This triad of needs, as delineated by SDT, encompass the need for autonomy (the natural desire to assert control over our own thoughts, emotions, and behaviors), competence (the propensity to feel effective), and relatedness (the yearning for warm, profound, and meaningful social connections). Abundant empirical research (Ryan et al., 2022) has consistently demonstrated

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that these three needs are better satisfied in contexts where people feel that their view really matters (autonomy support), accomplish interesting and adequately challenging activities (competence support), and experience a friendly and caring social atmosphere (relatedness support).

Taking a step further, several scholars have pointed out, through intervention studies, how educators, coaches, or parents – essentially, any authority figure – could cultivate a need-supportive environment (e.g., Conesa et al., 2022; Kuld et al., 2023; Su & Reeve, 2011). Given the compelling evidence attesting the positive impact that need support can have on people's well-being and functioning through needs satisfaction, a pertinent question arises: Why do authority figures not readily apply these principles? Research has shown that teachers' beliefs about the effectiveness of needs-supportive strategies and cultural issues, such as the appropriateness of these strategies, play an important role in adopting needs-supportive motivating approaches (Reeve et al., 2014). We argue that, in addition to effectiveness beliefs and cultural factors, the willingness to recognize how the needs for autonomy, competence and relatedness manifest in others' behavior constitute distinct mechanisms that can further explain when socializing agents are more likely to provide need support.

In this study, we used three different vignettes to examine the extent to which teachers are willing to identify subtle social cues that indicate students' implicit requests to satisfy their psychological needs. Further, we examined to what extent teachers' willingness to infer students' needs from implicit requests could be explained by teachers' causality orientations and attributions, whether perceived ego-threat mediate these associations, and the degree to which this ability would ultimately lead to more needs-supportive behavioral intentions. By investigating what make socializing agents, such as teachers, being need-supportive, we can shape effective interventions that could focus not only on developing adaptive beliefs, but on developing empathetic abilities as well.

Basic psychological needs support

According to SDT (Ryan & Deci, 2017), the extent to which a learning environment is need-supportive correlates with psychological benefits experienced by students within it. Research delineates three components of a need-supportive learning environment, each closely aligned with specific psychological needs. Autonomy support primarily addresses the need for autonomy, while provision of structure satisfies the need for competence, and involvement fulfills the need for relatedness. Although each contextual component may influence the other two needs, a theoretical distinction is

made among autonomy support, structure, and involvement (Skinner & Belmont, 1993).

Autonomy support encompasses instructional behaviors that respond to students' interests by fostering agency, considering their perspective, and demonstrating patience through appropriate adjustments in time and allocation of resources to facilitate self-paced learning. Moreover, autonomy support involves justifying each learning activity in terms of its relevance and offering alternative learning activities that are equally engaging and challenging (Reeve & Cheon, 2021). Accordingly, provision of structure pertains to instructional practices characterized by consistency, coherence, and adherence to clearly articulated rules established beforehand. It embodies clear expectations and ongoing monitoring, but also effective scaffolding of tasks and activities aimed at optimizing students' potential for success (Aelterman et al., 2019). As for involvement, it encapsulates instructional strategies aimed at nurturing warm and positive interpersonal relationships. This is achieved through expressions of affection, dedication of personal time and resources, and demonstration of enthusiasm during social interactions with students (Skinner & Belmont, 1993).

Empirical studies have evidenced the positive role that autonomy support can have in learning outcomes, as it has been associated with desired motivational processes and outcomes, such as autonomous motivation (Patall et al., 2018), positive affect (Bartholomew et al., 2011), and use of meta-cognitive strategies (Vansteenkiste et al., 2009). Likewise, structure has been linked with higher levels of autonomous motivation (Stroet et al., 2015), behavioral engagement (Michou et al., 2023), and deep-level learning strategies (Aelterman et al., 2019). Along similar lines, involvement has been related with autonomous motivation (Hornstra et al., 2021), engagement (Stroet et al., 2013), and positive mood (Sparks et al., 2015). Aligned with theoretical predictions formulated by SDT (Ryan & Deci, 2017), several studies have uncovered the mediating role of basic psychological needs satisfaction and frustration in the relation of autonomy support, structure, and involvement to motivational processes and outcomes (for a meta-analysis, see Vasconcellos et al., 2020).

On the importance of inferring other's needs

Taking the school setting as an example, and considering the abundant evidence supporting the facilitative role of need support in the learning process, a relevant question arises: To what extent are educators willing to recognize the behavioral manifestations of their students' psychological needs and hence understand the importance of addressing support for those needs in their daily teaching? A handful of qualitative studies rooted in SDT have revealed that educators may

indeed recognize the fundamental importance of students' basic psychological needs during the learning process, with emphasis placed on prioritizing their fulfillment (Prickett & Hayes, 2023). Likewise, research suggests that instructors may intuitively grasp the benefits of adopting a need-supportive approach, even in the absence of explicit familiarity with the theoretical underpinnings of SDT (Aelterman et al., 2013; Sebire et al., 2016). However, the application of need-supportive practices requires, apart from appreciating their effectiveness, a recognition of the behaviors that express a psychological need. Are all educators willing to acknowledge that a student's complaint, for example, may be expressing an underlying need for autonomy, or relatedness? Or do they interpret such behavior as misconduct, perceiving it as a challenge to their authority and thus ego-threatening?

Herein, we argue that teachers' differences in supporting students' needs might stem from their willingness, to acknowledge in the first place when students explicitly or implicitly express their desire to get their needs fulfilled. In essence, educators who are committed to discern implicit messages in various situations can better comprehend when students indicate their desire to fulfill their need for autonomy, competence, relatedness, or a blend of these psychological needs. Such a readiness may facilitate the adoption of need-supportive instructional practices. Moreover, although intervention studies have been proven particularly effective (Reeve & Cheon, 2021), there may be different training needs for teachers who have difficulty in identifying students' psychological needs for autonomy, competence, and relatedness. By focusing on teachers' propensity to recognize students' implicit requests, as evidenced by their behavior, and to identify the psychological needs that these requests reflect, we will be able to tailor more individualized, cost-effective professional development programs.

Personal antecedents of acknowledging others' psychological needs

In terms of identifying the likely personal characteristics that might predict the recognition of students' needs, the General Causality Orientation, a mini-theory within the Self-Determination Theory (Ryan & Deci, 2017; Vansteenkiste et al., 2010), could be used as a useful tool. General causality orientation sub-theory proposes that individuals vary in how they interpret, initiate, or regulate their thoughts, emotions, and behaviors in a situation. This variation is predicated on people's perceptions of the underlying causes that govern the situation and orient them to act either autonomously, controllingly, or impersonally (Deci & Ryan, 1985).

People with an autonomous causality orientation tend to act in a self-determined way. They interpret social cues as

opportunities to exercise their autonomy and promote their interests and goals. In contrast, people with a controlled causality orientation tend to regulate their thoughts, emotions, and behaviors either through internal pressures (such as personal obligations) or through external pressures (such as rewards). Of interest here is the notion that people with a control orientation may either comply with perceived pressures or rebel against them through displays of defiance (Van Petegem et al., 2015). Finally, people with an impersonal orientation tend to feel helpless because they perceive that their contribution will not affect the expected outcome because the latter will be determined by other impersonal forces (Deci & Ryan, 1985).

Empirical research indicates that individuals with an autonomous causality orientation are more likely to carry out activities for autonomous reasons (Solberg et al., 2013; Williams & Deci, 1996), or seek out activities that will undertake for intrinsic reasons when autonomy frustration precedes (Fang et al., 2022). In educational settings, teachers seem more ready to endorse an autonomous supportive motivating style if they are autonomously oriented themselves (Su & Reeve, 2011), while teachers with a control causality orientation tend to resort more to controlling teaching (Van den Berghe et al., 2013), a link which has also been observed in parenting practices (Wuyts et al., 2015). Along similar lines, an empirical study with elementary school teachers has shown autonomous causality orientation to predict changes in teachers' autonomy support in the classroom and control causality orientation to predict respective changes in controlling teaching (Reeve et al., 2018).

These findings could indicate that autonomous causality orientation enables teachers to interpret students' behaviors as less threatening to their autonomy. Consequently, they view these behaviors as more aligned with students' particular needs rather than as personal affronts. Hence, educators are more likely to perceive students' proactive effort to fulfill their psychological needs as less ego-threatening (Ryan & Deci, 2017). This perspective allows them to adopt a more supportive teaching style that is attuned to students' needs. In contrast, control causality orientation may hinder teachers from perceiving students' behaviors as related to their needs. This orientation makes them more attuned to controlling cues in their environment, such as rewards or criticism. Therefore, teachers with a control causality orientation are more likely to perceive students' effort to satisfy their psychological needs as ego-threatening, prompting them to react in a controlling manner.

Drawing on attribution theory (Weiner, 2014), Pettigrew (1979) ultimate attribution error theory can further shed light on when teachers are likely to recognize that a student's behavior may signal unmet psychological needs. According to the ultimate attribution error theory, teachers

may perceive an “outgroup” member (in this case, a student) as more responsible for their own misbehavior or mishap, attributing it to internal factors rather than external influences (such as social context). Research on stereotyping and prejudice supports this view, showing that people are more inclined to make internal attributions for negative actions or negative states of perceived outgroup members (Hewstone, 1990). Therefore, we propose that teachers who hold negative views for students with physical disabilities, as evidenced by the internal attributions they ascribe to them, are less likely to consider the students’ request as an implicit attempt to meet their psychological needs.

An interesting question therefore is whether teachers who are confronted with an ambiguous situation—for example, a student with a physical disability who behaves in a demanding manner—will be more eager to recognize an implicit message in what appears to be misbehavior. That is, whether teachers would agree that a student in such a situation has psychological needs waiting to be met. We argue that such recognition is more likely to occur when teachers feel that such a request does not challenge their authority. Instead, a teacher is more likely to dismiss, that is, ignore, the idea that a student is indirectly expressing their will to satisfy their needs when she or he perceives that such a request limits their sense of control over the situation. This idea is based on reactance theory, which states that threatening one’s freedom or control over a situation can elicit reactance, a behavioral pattern that leads a person to regain control by showing hostility or derogating the source that threatens their freedom (Rosenberg & Siegel, 2018). Thus, we assume that if teachers perceive a student’s request as a pretext for challenging their authority and thus their right to have the final say in classroom matters, they are more likely to deny the request and thus reject the idea that the student implicitly expects his or her needs to be fulfilled.

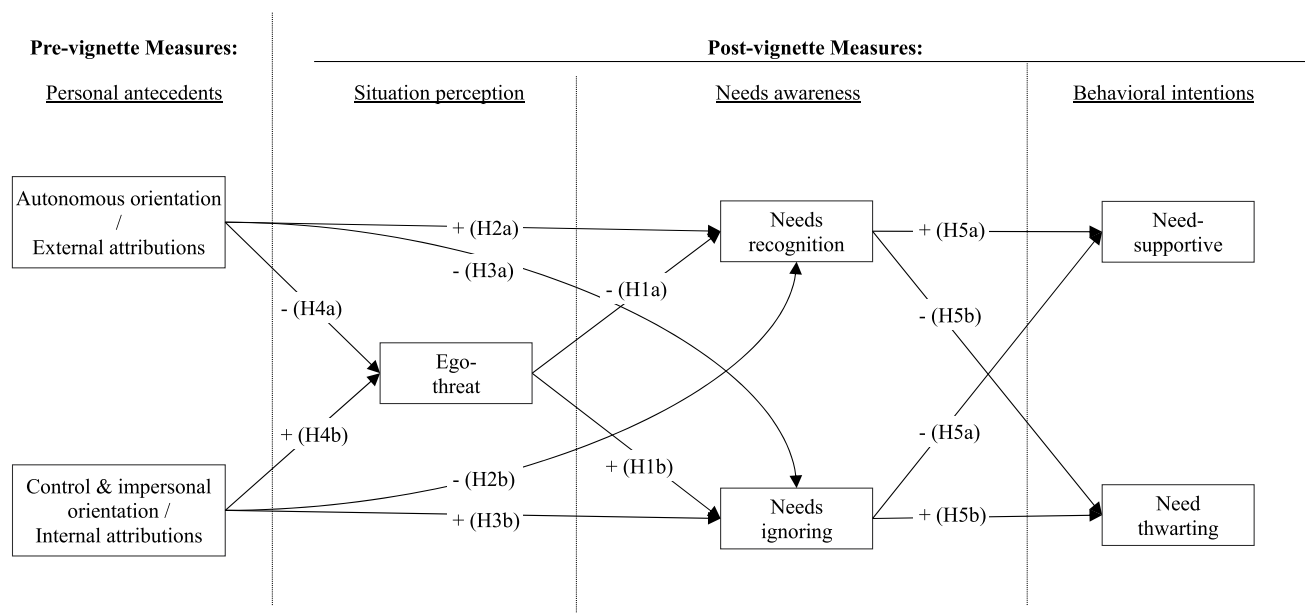
The present study

Despite the ever-growing body of research focusing on needs-supportive strategies (Reeve & Cheon, 2021), we are less aware of the antecedents that may guide an authority figure, such as a teacher, to embrace such need nurturing behaviors (Howard et al., 2024; Ntoumanis et al., 2024). In this study, we argue that an essential prerequisite for teachers to provide need support is their readiness to acknowledge that students’ behaviors often revolve around fulfilling their needs for autonomy, competence, and relatedness. When teachers possess this attribute, they are more likely to discern that the root cause behind a student’s proactive and reactive verbal and nonverbal behavior is an unspoken plea to get support from their teachers to satisfy their psychological needs. Under such a condition, teachers can provide

higher need support. On the flip side, a teacher who is reluctant to recognize that a student’s reaction to a situation is driven by their desire to fulfill their needs may be inclined to dismiss the idea of responding empathetically and embracing needs-supportive strategies. Further, we argue that teachers’ proficiency, or conversely, their reluctance in “reading between the lines” of students’ daily negotiations in the classroom rests on their perception of the situation as non-ego-threatening or ego-threatening, respectively.

To test this proposition, we also examined a set of potential antecedents that could explain teachers’ tendency to endorse an ego-threatening attitude and in turn their ability to acknowledge or, alternatively, dismiss students’ implicit request to satisfy their basic psychological needs. In particular, we focused on two sets of potential antecedences, general causality orientations as delineated by SDT (Ryan & Deci, 2017) and causal attributions (Frohlich et al., 2016). Finally, we tested whether teachers’ willingness to recognize students’ requests for satisfying their basic psychological needs could predict endorsing need-supportive behaviors. To ensure that teachers’ ratings to the situation will not be solely driven by likely empathetic concerns, we statistically controlled for respondents’ empathy that we assessed before exposing them to the vignettes. Likewise, we included a short social desirability scale to statistically control for the participants’ tendency to respond in a socially desirable way.

We formulated the following hypotheses (which we graphically represent in Fig. 1). First, we hypothesized that ego-threatening perceptions of the situation would relate negatively to teachers’ ability to recognize students’ implied request for needs support—hereafter *needs recognition*—(Hypothesis 1a) and positively to ignore such request—hereafter *needs ignoring*—(Hypothesis 1b). In addition, we anticipated that teachers’ needs recognition would be predicted positively by autonomous causality orientations and external attributions (Hypothesis 2a) and negatively by controlled and impersonal orientations and internal-stable attributions (Hypothesis 2b). We expected an opposite pattern for needs ignoring (Hypothesis 3a and 3b, respectively). Moreover, we theorized that ego-threat would mediate the relations of causality orientations and attributions to needs recognition or needs ignoring with autonomous orientations and external attributions relating negatively to ego-threat (Hypothesis 4a) and controlled and impersonal orientations as well as internal attributions relating positively to ego-threat (Hypothesis 4b). Finally, we expected needs recognition to predict positively needs supporting behavioral intentions (Hypothesis 5a) and negatively needs thwarting ones (Hypothesis 5b) and an opposite pattern for needs ignoring (see Fig. 1).



Note. * $p < .05$. ** $p < .01$

Fig. 1 The Hypothesized Relations of the Study. Note. * $p < .05$. ** $p < .01$

To examine our hypotheses, we enlisted a sizable sample of in-service teachers. They were presented with three carefully designed fictional scenarios in which a student with a physical disability subtly challenged the teacher's by contesting the teacher's instructional choices. Each scenario was strategically designed to address a specific need—be it autonomy, competence, or relatedness—that the student implicitly sought more support for. The vignettes presented an ambiguous situation so that the implied issue—students' request for need support—would be barely apparent. This design allowed us testing whether the teacher could identify these underlying needs, as a students' protest may be perceived as a misbehavior in the classroom context rather than a proactive behavior to meet psychological needs.

To render the situation even more ambiguous, we presented the protesting student as having a physical disability. Previous research has shown that students with physical disabilities, similar to people with disabilities in general, are often targets of unfavorable stereotyping (Antonopoulos et al., 2023; Crowson & Brandes, 2014; Rohmer & Louvet, 2018). Accordingly, the present study was designed to elicit potential implicit negative stereotypes by presenting teachers with a vignette depicting a student with a physical disability who engaged in norm-violating behavior, thereby reducing the likelihood of socially desirable responses.

Method

Participants

Participants were 484 Greek teachers ($M_{age} = 47.52$, $SD = 10.90$, years). Among them, 390 were women (80.6%), 93 men (19.2%) and one did not report their sex (0.2%). Teachers had, on average, approximately 18 years of educational experience ($M = 18.15$, $SD = 10.57$), with most of them being tenured ($N = 384$; 79.3%) and the others working as temporary teachers at their schools. As to their highest education degree, 229 of the teachers reported they held a university degree (47.3%), followed by those holding a master ($N = 232$; 47.9%), doctoral ($N = 19$; 3.9%) and post-doctoral level ($N = 4$, 0.8%). Also, four teachers were college graduates (0.8%). Participants worked in elementary ($N = 236$, 48.8%), secondary ($N = 239$, 49.4%), elementary and secondary ($N = 2$, 0.4%), and tertiary ($N = 6$, 1.2%) education or unspecified level of education ($N = 1$, 0.2%). One hundred and sixteen (23.97%) teachers were working in special education schools, self-contained classes or other special education context. However, the Greek educational system is quite inclusive, meaning that most teachers are expected to encounter students with special education needs in their classes.

Procedures

The whole research protocol (participants' approach, procedures, questionnaires etc.) was conducted in line with the

APA ethical standards and was approved by the Committee for Research Ethics of the host university. An invitation to participate in the online survey was sent to several schools across the country to ensure data collection from a relatively representative sample. Invited teachers read that their participation was voluntary and anonymous, their responses would be kept confidential, and that they could quit at any time. Upon their written consent, the teachers filled out the online survey which was identical in all sections except for the vignette part. Specifically, the survey was structured into three sequential sections: the pre-vignette part, the vignette itself, and the post-vignette part. The pre-vignette section included the consent form, demographic questions, and scales assessing empathy, causality orientations and causal attributions. The vignette section presented participants with a single scenario describing a student's actions that, while appearing as misbehavior, could also be interpreted as an indirect expression, or plea for, psychological need support. Teachers were randomly assigned to one of the three vignettes. In particular, 154 (31.8%) teachers read a vignette describing an ambiguous situation implying a student's desire to satisfy their need for autonomy. Another 166 (34.3%) teachers were assigned a scenario implying the need for competence, and 164 (33.9%) teachers were assigned a scenario implying the need for relatedness. Immediately following the vignette, the post-vignette questionnaire assessed the teachers' perceptions of the situation. This included whether they considered that situation to be ego-threatening, followed by questions tapping into needs recognition, needs ignoring, and potential reactions to the fictional scenario.

Measures

Empathy (Pre-vignette measure)

Teachers' trait empathy – a highly valued professional trait – was assessed using the Empathy Scale for Teachers (EST, Wang et al., 2022). The items included in this questionnaire are considered to reflect both the empathic and sympathetic aspects. The questionnaire is comprised of three domains, namely cognitive empathy which refers to teachers' ability to understand their students' emotional state (six items; e.g., "I can quickly tell whether my pupils are happy or not"; $\omega=0.89$), and negative and positive affective empathy which refers to the extent to which teachers are affected by their students' negative and positive emotional states, respectively (six items each; e.g., Students' bad moods affect me a lot; $\omega=0.81$ and "When students smile, I am happy too"; $\omega=0.89$).

The scale worked quite well, according to the CFA three-factor model, in which however a pair of items from

cognitive empathy and another pair of items from the negative affective empathy subscale were allowed to correlate: $S-B\chi^2$ (147; $N=484$) = 359.29, $p<.001$, CFI = 0.940, SRMR = 0.059, RMSEA = 0.062 (90%-CI: 0.054, 0.071). In light of these findings, we computed an overall score for trait empathy.

Causality orientations (Pre-vignette measure)

To assess participants' autonomy, control and impersonal way of functioning we used six social situations from the General Causality Orientations Scales (GCOS; Deci & Ryan, 1985) that we considered as more relevant to teachers' personal and professional life (see Appendix). Collectively, the GCOS measures the degree to which a person is inclined to employ autonomously driven, controllingly driven or impersonal responses to general social situations (Reeve et al., 2018). The six social situations included in total 6 autonomous orientation items, 6 control orientation items and 6 impersonal orientation items. The scale's original 7-point Likert response modulus (1 = *Very unlikely*; 7 = *Very likely*) was adopted.

A CFA of a three-factor model yielded acceptable fit, provided three items were discarded (one from the autonomy, one from the controlled, and one from the impersonal orientation subscale) and the errors between an autonomous and an impersonal orientation item were set free to correlate: $S-B\chi^2$ (86; $N=484$) = 189.09, $p<.001$, CFI = 0.921, SRMR = 0.065, RMSEA = 0.054 (90%-CI: 0.043, 0.064). As a result, we computed a mean factor score for each subscale with the retained items.

Causal attributions (Pre-vignette Measure)

Teachers' causal attributions for the academic underperformance of students with physical disabilities were assessed using an adapted version of Froehlich et al.'s (2016) questionnaire. It examines teachers' attributional beliefs about the underachievement of a target group (here, students with physical disabilities) compared to typically developing students. The questionnaire consists of four statements, each with three items: one tapping into internal, stable attributions (e.g., "they have lower intellectual abilities"), another assessing internal, variable causes (e.g., "they do not study enough for school"), and a third measuring external, stable attributions (e.g., "they are disadvantaged in our educational system").

Preliminary analyses showed poor fit for a model with three separate factors. Moreover, the two internal attributions latent factors were highly intercorrelated ($r=.95$). As a result, we revised our model by setting up an external and an internal factor (in which we collapsed the four internal,

stable and the three out of four internal, variable items and in which the errors between two internal, variable items were estimated freely). The revised two-factor model yielded the following fit: $S-B\chi^2$ (42; $N=484$)=138.44, $p<.001$, CFI=0.927, SRMR=0.053, RMSEA=0.075 (90%-CI: 0.061, 0.088).

Vignettes

We developed three vignettes (see Appendix) by following similar principles with those endorsed by Reeve et al. (2014). Each scenario presented a case in which a student with physical disability objected to a teacher's practice. To inspect the content validity of each scenario, we pilot tested them with 13 tenured, experienced and highly qualified teachers (PhD and MSc holders), all knowledgeable about SDT. The experts rated each scenario for its realistic plot and dilemmatic content. They also rated the extent to which each scenario would lead potential participants to assume that the underlying theme was a student's desire to satisfy his or her needs or to induce ego-threatening thoughts. The experts also evaluated the extent to which each scenario revolved around each of the three basic psychological needs and which need was more salient in each vignette. All items were presented with a 10-point Likert-type scale (ranging from 1 = "Not at all" to 10 = "Very much so"). The results from the pilot test are presented in supplementary material. Although all scenarios were positively rated, most experts could not easily discern the autonomy scenario. Given these findings and after taking into account experts' feedback (as there was an open-ended question asking how each scenario could be improved), we reviewed and finalized the three vignettes. In their final version, each scenario contained about 180 words. In the end, teachers of a subsample of the final research replied on how realistic each scenario felt to them. A six-point Likert response modus was used (ranging from 1 = "Strongly disagree" to 6 = "Strongly agree")¹. All scenarios were viewed as quite realistic (Autonomy: $M=4.80$, $SD=0.85$, $N=76$; Competence: $M=4.91$, $SD=0.83$, $N=85$; Relatedness: $M=4.63$, $SD=0.88$, $N=64$).

Ego-threat (Post-vignette measure)

To assess ego-threat appraisals we relied on the four-item-perceived-ego-threat questionnaire (Cale & Lilienfeld, 2006), to devise a four item-scale. Each of the four items tap into feelings of devaluation, unjustness, criticism and image threat and they were as follows ("I feel that John's behavior would be very unfair to me."; "I feel that John would not recognize the efforts I make."; "I feel that all this

would offend my image as a teacher."; and "I feel that this would be a criticism of my teaching approach.". A CFA for a single-factor resulted in poor fit: $S-B\chi^2$ (2; $N=484$)=55.44, $p<.001$, CFI=0.882, SRMR=0.084, RMSEA=0.241 (90%-CI: 0.189, 0.298), namely because the item ("I feel that this would be a criticism of my teaching approach"), showed relatively weak loading to the latent factor ($\lambda=0.20$). Hence this item was dropped and the three-item scale showed acceptable internal consistency ($\omega=0.78$) and a perfect CFA fit, given that the model was just-identified).

Needs recognition and needs ignoring (Post-vignette measure)

To assess needs recognition, we devised five items which we adapted from the Basic Psychological Needs Satisfaction and Needs Frustration scale (Chen et al., 2015). Specifically, in each scenario five items that correspond to the respective need were presented. For instance, in the autonomy vignette, an item read "I feel that John seeks to co-decide on issues that concern him", while in the competence vignette a sample item read as "I feel that John likes to fully understand the tasks he is asked to do" (Competence). Accordingly, in the relatedness vignette, a sample item was "I feel that John desires to receive and give love/sympathy in the classroom". The scale, presented in the Appendix, showed adequate internal consistency for the autonomy ($\omega=0.77$), competence ($\omega=0.84$), and relatedness vignette ($\omega=0.85$).

To minimize response bias and likely ceiling effects due to social desirability response tendency and agreement acquiescence (Bentler et al., 1971) while assessing needs recognition, we devised and included six items that discredited the idea of needs recognition by stating that the student described in the vignette did nothing but disturbed the classroom. In this way, we attempted to counterbalance participants' tendency to retrieve socially desirable beliefs in support of the needs recognition statements if they were offered only such items (Weijters & Baumgartner, 2012). We considered these items as needs ignoring items. A sample item reads, "I feel that John just found an excuse to disturb the lesson"; ($\omega=0.91$). These items, presented in the Appendix as well, were the same in each of the three scenarios.

The three scales, ego-threat, needs recognition, and needs ignoring were well separated from each other, with each item loading sufficiently to its latent factor (all λ s > 0.46). A CFA of a two -factor model, in which the errors of two items from the needs ignoring scale were set free to covary showed the following fit indices: $S-B\chi^2$ (33; $N=484$)=119.57, $p<.001$, CFI=0.950, SRMR=0.070, RMSEA=0.080 (90%-CI: 0.065, 0.096).

¹ If not otherwise indicated, this 6-point Likert scale was used for all of the following measurements.

Behavioral intentions (Post-vignette measure)

To assess teachers' need-supportive versus need thwarting intentional response to the scenario, we adapted four items derived from Aelterman et al. (2019; see also Escrivá-Bouley et al., 2021). In both autonomy and relatedness scenarios two items denoted autonomy support (e.g., Say to him: "Okay, how do you think we should do it; any suggestions?") and two controlling strategies (e.g., Stick to my plan, asking him to pay attention, as he needs to practice himself on that particular task for his own good). In the competence scenario, two items were devoted to provision of structure (e.g., Show him how to solve the learning problem step by step) and two described a chaotic teaching style (e.g., Ignore his complaints and whining; he must study properly and overcome any obstacle on his own).

A two-factor model in which autonomy support versus psychological control, and structure versus chaos latent factors were each defined by their respective pair of items (with equality constraints being imposed on each pair to locally identify the model) showed the following fit: $S-B\chi^2(3; N=484)=18.74$, $p<.001$, CFI=0.936, SRMR=0.059, RMSEA=0.110 (90%-CI: 0.066, 0.150).

Plan of analyses

In preliminary analyses, we examined the interrelations among the study variables, followed by a group mean comparison in ego-threat, needs recognition and needs ignoring, and needs-supportive and need thwarting behavioral intentions across the three conditions (i.e., the three vignettes). This analysis would help us check whether participants in the three conditions reported similar levels of the assessed constructs.

Next, to test our hypotheses, we set up two separate path models, in which causality orientation (Model 1) and attributions (Model 2) served as antecedents of needs recognition and needs ignoring, ego-threat as a mediator, and needs-supportive and need thwarting behavioral intentions as dependent variables (see Fig. 1). In both models we statistically controlled for empathy trait when we tested for the relation of causality orientations (or attributions) to needs recognition and needs ignoring through ego-threat. Also, in both models, sex and years of experience were included as covariates. Finally, in supplementary analyses, we examined the same two models for each condition (i.e., the autonomy, competence, and relatedness vignette) by comparing the regression paths and the intercepts. In all models, we controlled for teachers' sex (with females as a reference group), years of experience, and self-reported empathy. To take into account measurement error, all variables but years

of experience and sex were estimated through their latent factor scores as derived through the respective CFAs.

Results

Preliminary analyses

Descriptive statistics and bivariate correlations are shown in Table 1. As can be seen, empathy and autonomous causality orientation related positively to needs recognition and negatively to needs ignoring, while controlled and impersonal orientations yielded the opposite pattern. A similar pattern was found for the relation of attributions to needs recognition and needs ignoring with external attributions relating positively with needs recognition and internal attributions relating positively to needs ignoring and negatively to needs recognition. Regarding ego-threat, it was associated negatively with needs recognition and positively with needs ignoring. As for the two behavioral intentions, needs recognition was linked positively with need-supportive behavioral intentions and negatively with need thwarting and the opposite was true for the associations of psychological control. Regarding the two demographic covariates, sex and years of experience, male teachers were found to report less autonomous orientation, empathy, and needs recognition and more need thwarting intentions than their female counterparts. Finally, experienced teachers were less likely to attribute underperformance of students with physical disabilities to external causes. Also, they were more likely to resort to need thwarting practices in incidents like the ones described in the scenarios.

Next, we examined whether there were differences in the mean scores of the situational (i.e., post-vignette) measures across the three conditions. A MANOVA testing the linear combination of ego-threat, needs recognition, needs ignoring, need-supportive, and need thwarting behavioral intentions was statistically significant ($F(10, 954)=16.25$, $p<.001$, Wilk's $\Lambda=0.73$). A follow-up ANOVA, controlling for familywise error rate due to multiple comparisons, showed statistically significant differences in needs recognition, needs ignoring, need-supportive and need thwarting intentions (see Table 2). Specifically, the participants who read the vignette revolve around the need for relatedness were more likely to recognize that need and to provide more support than their counterparts in the other two conditions. Accordingly, the participants who read the vignette focusing on the need for autonomy were more likely to deny that need and to exercise more psychological control than the participants in the other two conditions. Given these findings in all the subsequent analyses, we included condition

Table 1 Means, standard Deviations, and correlations of the variables of the study

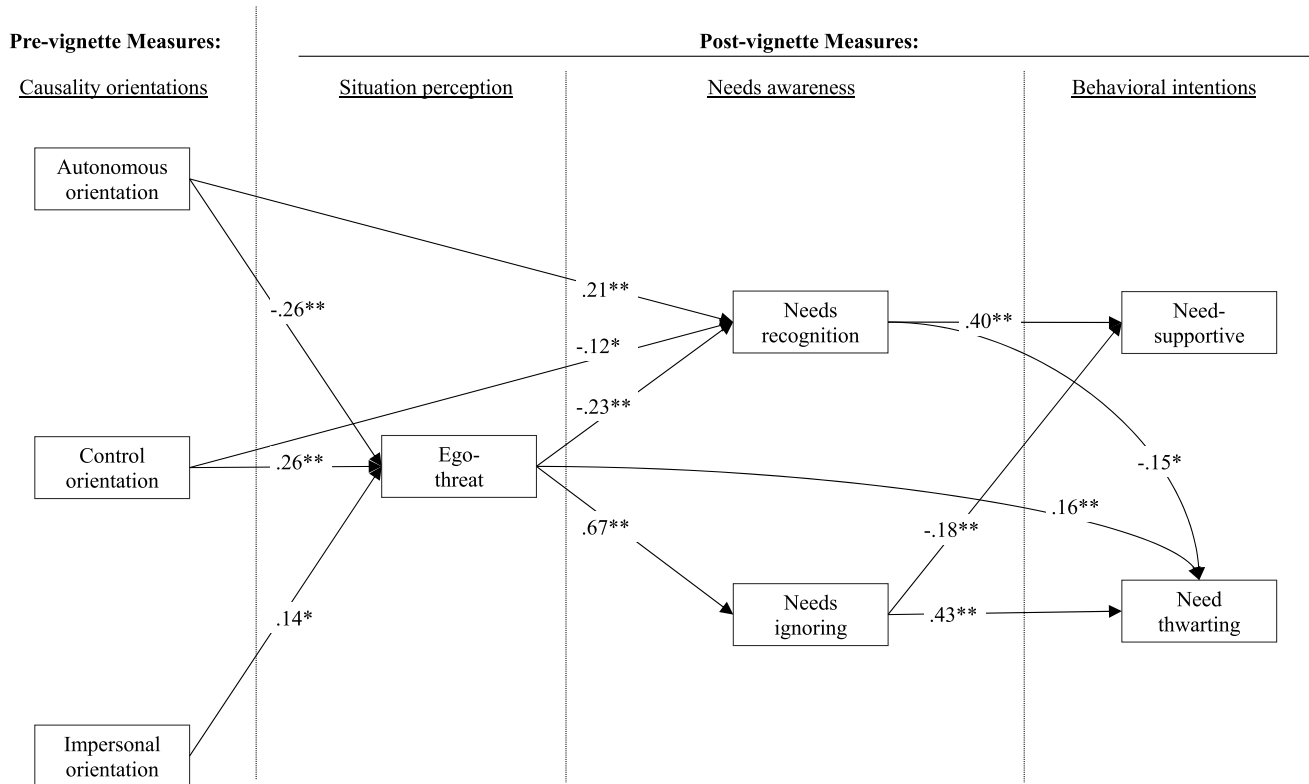
Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
Covariates															
1. Sex (ref: Females)	0.19	0.39	-												
2. Teaching experience	18.15	10.57	0.06	-											
3. Empathy	4.80	0.57	-0.17**	0.08	-										
Causality orientations															
4. Autonomous	5.62	1.03	-0.13**	0.01	0.15**	-									
5. Control	3.48	0.98	0.08	0.05	0.13**	0.24**	-								
6. Impersonal	3.30	1.06	-0.01	-0.01	0.06	0.13**	0.56**	-							
Attributions															
7. External	4.42	1.01	-0.06	-0.19**	-0.02	0.12*	-0.01	0.03	-						
8. Internal	2.14	0.79	0.02	0.06	-0.02	-0.15**	0.20**	0.16**	0.07	-					
Situational Measures															
9. Ego-threat	2.65	1.05	0.09	0.07	-0.12**	-0.16**	0.24**	0.31**	-0.11*	0.28**	-				
10. Needs recognition	4.73	0.82	-0.17**	0.02	0.22**	0.23**	-0.10*	-0.09*	0.21**	-0.10*	-0.20**	-			
11. Ignoring needs	2.23	0.91	0.08	0.06	-0.15**	-0.15**	0.24**	0.22**	-0.07	0.43**	0.59**	-0.24**	-		
Behavioral intentions															
12. Need-supportive	4.79	0.94	-0.03	0.02	0.19**	0.21**	0.11*	0.03	0.14**	-0.10*	-0.08	0.42**	-0.17**	-	
13. Need thwarting	2.35	1.16	0.14**	0.11*	-0.06	-0.19**	0.24**	0.21**	-0.17**	0.28**	0.43**	-0.31**	0.58**	-0.17	-

Note. * $p < .05$. ** $p < .01$

Table 2 Group comparison of the Post-Vignette measures across the three conditions

Variables	Autonomy-focused		Competence-focused		Relatedness-focused		$F(2, 481)$	η^2
	M	(SD)	M	(SD)	M	(SD)		
1. Ego threat	2.72	(1.13)	2.48	(0.94)	2.76	(1.06)	3.36*	0.01
2. Needs recognition	4.52 _a	(0.74)	4.65 _a	(0.86)	5.01 _b	(0.79)	16.39**	0.06
3. Needs ignoring	2.58 _a	(0.96)	2.01 _b	(0.84)	2.13 _b	(0.85)	18.16**	0.07
4. Need-supportive	4.57 _a	(1.01)	4.64 _a	(0.93)	5.15 _b	(0.75)	19.81**	0.08
5. Need thwarting	3.01 _a	(1.18)	2.15 _b	(1.05)	1.94 _b	(0.96)	44.43**	0.16

Note. * $p < .01$. Cells sharing different subscripts across a row are statistically significant at $\alpha = 0.01$ (Tukey, two-tailed comparison)



Note. * $p < .05$. ** $p < .01$

Fig. 2 Predictors: Causality Orientations. Note. * $p < .05$. ** $p < .01$

and its two-way interactions with the other predictors as an additional covariate of our model.

Main analyses

In the first step, we tested our hypotheses through path analysis. In a first model, we considered the three types of causality orientations (i.e., autonomy, controlled, and impersonal) and in a second model the two attributions (external and internal) as potential antecedents of ego-threat and in turn of needs recognition and needs ignoring. In both models, the behavioral intentions of providing need-supportive and need thwarting behaviors were considered as the dependent variables of the hypothesized model.

Causality orientations

The path model with the three causality orientations, shown in Fig. 2, yielded the following fit: $S-B\chi^2(13; N=484)=29.21$, $p=.01$, $CFI=0.979$, $SRMR=0.029$, $RMSEA=0.056$ (90%-CI: 0.029, 0.083). In support of Hypothesis 1a and 1b ego-threat related negatively to needs recognition and positively to needs ignoring, while autonomous causality orientation was positively associated with needs recognition both directly and indirectly through its negative relation to ego-threat. This finding provided support to Hypothesis 2a and 4a. In turn, and in support of hypothesis 5a and 5b, needs recognition related positively to need-supportive behavioral intentions and negatively to

need thwarting ones. An opposite pattern of relations was found for control and impersonal causality orientation as, in support of Hypothesis 2b, they related positively to ego-threat, which in turn related positively to needs ignoring. The latter was linked positively with need thwarting intentions and negatively with needs-supportive intentions, a finding which lend credence to Hypotheses 5a and 5b. Further, ego-threat was found to directly predict need thwarting intentions. As for the covariates (not shown in Fig. 1), empathy related negatively to ego-threat ($B = -0.37$, $SE = 0.15$, $z = -2.46$, $p = .014$, $\beta = -0.12$) and positively to needs recognition ($B = 0.36$, $SE = 0.10$, $z = 3.63$, $p < .001$, $\beta = 0.18$).

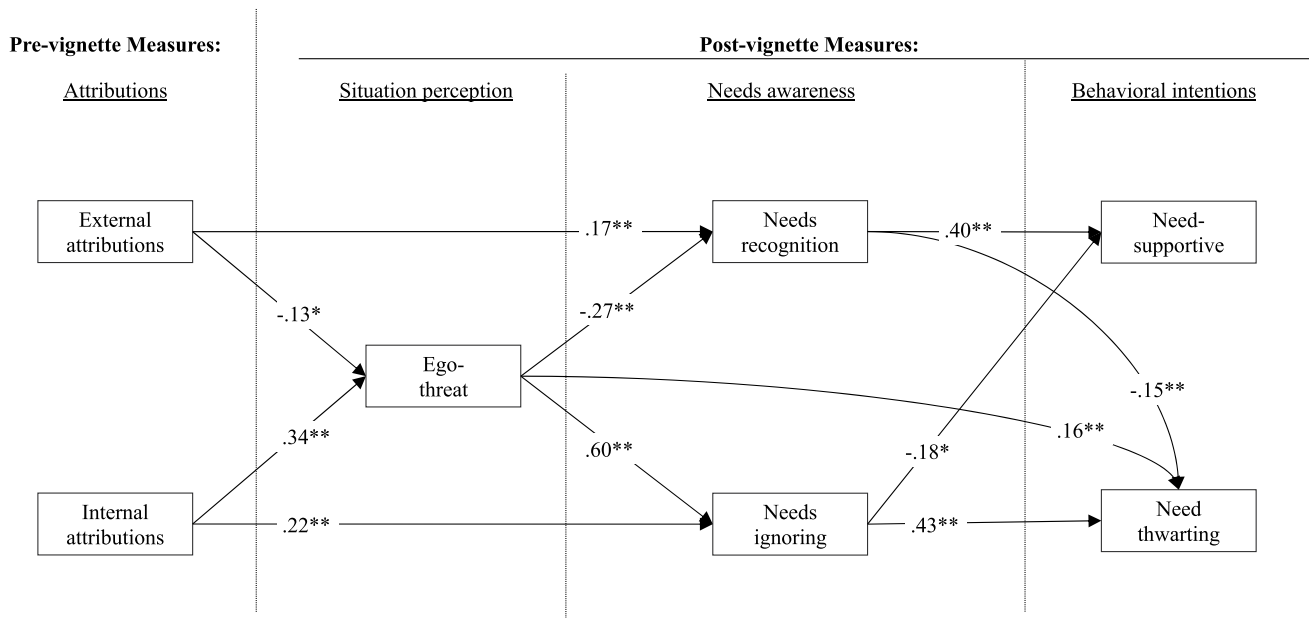
Regarding sex differences, males were less likely to discern students' need after reading the vignettes ($B = -0.14$, $SE = 0.06$, $z = -2.25$, $p = .025$, $\beta = -0.10$), while teachers with more experience were somewhat more prone to resort to the use of need thwarting behaviors in response to a students' reaction like the one that they read in the vignettes ($B = 0.01$, $SE = 0.00$, $z = 2.04$, $p = .041$, $\beta = 0.07$). A test of indirect effects with 10,000 bootstrap replications showed that upper and lower bound of the 95% confidence intervals of all the indirect relations were in the same direction (i.e., either positive or negative). This finding implies a link among the antecedents (autonomy, control, and impersonal causality orientation), and the two behavioral intentions (need-supportive and need thwarting) via the mediators (i.e., ego-threat, needs recognition and needs ignoring). The unstandardized estimates of these indirect paths are shown in supplementary material (Table S1).

Attributions

The path model with external and internal attributions as exogenous variables showed the following fit: $S-B\chi^2$ (9; $N = 484$) = 21.71, $p = .01$, CFI = 0.985, SRMR = 0.026, RMSEA = 0.057 (90%-CI: 0.026, 0.088). This model is shown in Fig. 3. Again, in support of Hypothesis 4a and 4b, ego-threat was negatively predicted by external attributions and positively by internal ones, with the remaining parts of the model being similar with the one concerning causality orientations. Like the previous model, a test of indirect effects (with $n = 10,000$ replications) showed that the 95% confidence interval of all the indirect relations were either on the positive or the negative side (see Table S2).

Supplementary analyses

As a final step, we examined to what extent the relations that we found in the whole sample would differ among the three subgroups. Concretely, whether the participants who read the scenario focusing on the autonomy need, would differ from those who read the scenario focusing on the competence need or the relatedness need or whether the latter two groups would differ to each other. The fit of the models for which constraints were gradually imposed on the tested relations (configural invariance), on the estimated coefficients of the regression paths, and on the intercepts is shown in the supplementary material in Table S3. The coefficients per group are exhibited in Figures S1 and S2 (for the model with causality orientations and attributions, respectively).



Note. * $p < .05$. ** $p < .01$

Fig. 3 Predictors: Attributions. Note. * $p < .05$. ** $p < .01$

As can be seen, for both models there were no systematic or striking differences in the regression paths among the three conditions, as the fit of these models implies (see the respective rows in both panels in Table S3 in the supplementary material).

The unstandardized coefficients of all the variables involved in the model that included autonomy, controlled and impersonal orientations as predictors are shown in Table S4 in the supplementary material. Aside from some paths involving the relation of covariates to some of the variables (for example, the path linking experience with ego-threat was higher in the relatedness condition than the other two conditions – see Table S4), and the differences in intercepts (which in essence replicated the findings reported in Table 2), two main paths were found to differ across the three conditions. Specifically, as can be seen in Table S4, the positive path linking needs recognition with need-supportive behavioral intentions was higher in the relatedness condition ($B=0.49$, $SE=0.09$, $p<.001$) than the autonomy ($B=0.37$, $SE=0.10$, $p<.001$) or the relatedness condition ($B=0.25$, $SE=0.07$, $p=.001$). Also, the negative path linking needs recognition with need thwarting behavioral intentions was higher in the autonomy condition ($B=-0.33$, $SE=0.13$, $p=.014$) than the competence condition ($B=-0.04$, $SE=0.09$, $p=.64$), with relatedness condition not being different from the other two ($B=-0.21$, $SE=0.10$, $p=.047$). A similar pattern was found for the model that included attributions as the exogenous variables (see Table S5 in the supplementary material). In that model however, the path linking needs recognition with need-supportive intentions in the autonomy condition ($B=0.37$, $SE=0.10$, $p<.001$) did not differ from the competence ($B=0.25$, $SE=0.07$, $p=.001$) or the relatedness conditions ($B=0.49$, $SE=0.09$, $p<.001$), which continued to differ to each other.

Discussion

The primary objective of this study was to evaluate the extent to which teachers are willing to recognize and address students' basic psychological needs by interpreting ostensible misbehavior as an implicit request for fulfilling those needs. Thereupon, our primary endeavor was to explore the concept of recognizing students' innate needs as a potentially substantial component of teachers' need-supportive strategies, by providing autonomy and structure. Additionally, we sought to test two sets of probable antecedents of a teachers' ability to recognize students' needs, general causality orientations and internal versus external attributions. Further, we examined to what extent ego-threat mediates the relation between the antecedents and needs recognition. Teachers were randomly presented with a scenario focusing on

a specific need: autonomy, competence and relatedness. In the present research we opted for a between-subjects design and used empathy as a covariate, so that confounding effects could be restrained.

In support of most of our hypotheses, we found that teachers who were more willing to acknowledge student's implicit request for need satisfaction were also more eager to react in a need-supportive manner and refrain from endorsing need thwarting practices. Additionally, these teachers were less likely to feel ego-threatened by such requests. This perception was associated with higher levels of autonomous causality orientation and lower levels of internal attributions. In the next sections we discuss these findings analytically.

The notion of needs recognition

At the core of our research is the concept of recognizing the three basic psychological needs in human behavior. In the absence of an existing inventory, we devised three scenarios featuring an ambiguous situation where a student with physical disability was portrayed as behaving assertively. By doing this, we aimed to place our participants in a dilemma and have them rate whether the student's request was an implicit message seeking to satisfy their needs or a form of misbehavior. Including the misbehavior option as an alternative explanation acted as negatively worded items to minimize acquiescence bias and ceiling effects in the teachers' responses, which might have result from social desirability if we had only offered the option that the students' request was an implicit message to satisfy their needs.

Statistical analyses around reliability and structural validity of our novel instrument lend support to the idea that teachers are inclined to recognize to some extent implicit messages containing needs satisfaction requests. Namely, teachers were assessed on their willingness to interpret behavioral cues as needs-based. Inspection of the means across the three conditions implied that teachers did not automatically or uncritically opt for full needs recognition. This promising finding suggests that such instruments could be used as an assessment of teachers' perceptions in ambiguous situations where students' basic psychological needs await fulfillment. Apparently, more research should complement the present findings before scholars and practitioners widely adopt such an instrument in educational settings.

A related issue that warrants further investigation concerns whether teachers' willingness to recognize students' needs as reflected in their behavior primarily represents a cognitive capacity to accurately decode and interpret underlying needs – as suggested by studies focusing on emotion recognition (e.g., Barraza & Rodríguez, 2023) – or whether it instead reflects teachers' inclination to regard these needs

as legitimate and worthy of acknowledgement. In our view, most of the SDT research (e.g., Aelterman et al., 2019) supports the latter interpretation, typically conceptualizing teachers as either willing or unwilling to support students, without clearly distinguishing this motivational component from the perceptual skill required to recognize students' needs.

On a more detailed look at each of the three needs, the groups' mean scores revealed that participants interpreted differently each scenario. Specifically, the autonomy group was more reluctant to express need recognition and support, in comparison to the other two groups, indicating that teachers may withhold autonomy support in the case of class disruption. This finding fits well with prior research indicating that educators hesitate to endorse the notion of need for autonomy. In essence, teachers probably believe that attempts to satisfy such a need, especially by offering choices, may be impractical in the daily classroom environment and could undermine the attainment of learning objectives (Aelterman et al., 2013). Finally, teachers in the relatedness condition were more prone to recognize and support this need, than the other two needs presented in the respective conditions. One potential explanation is that the relatedness scenario was made more salient, thus facilitating its detection by teachers assigned to that condition. Alternatively, it could be that teachers are more attuned to relatedness, as they ascribe greater importance to this need especially for students with physical disabilities.

On the proximal antecedents of needs recognition (ego threat)

Our results revealed that ego-threat acted as a proximal predictor of needs recognition. The assumption that recognizing students' needs constitutes a part of teachers' proactive motivational functioning is supported by the finding that ego-threat was negatively related to needs recognition and positively to needs ignoring. This shows that when teachers perceive students' reaction as a threat of their authority, they are more likely to blame students for misconduct. This finding aligns with psychological reactance theory (Brehm, 1966), which posits that individuals who perceive a threat to their freedom or to their control on a situation are more likely to react in a manner to restore it. For instance, research on parenting has indicated that adolescents may indeed react and defy parental requests when they feel that their sense of freedom is under stake (Petegem et al., 2015). It seems reasonable to posit that a similar mechanism may operate in the classroom context. In instances where teachers perceive a threat to their authority from students' requests, they may opt to disregard such requests as a means of reasserting control within the classroom. This reasoning is partially

supported by research indicating that teachers encountering exuberant students tend to employ high-powered strategies (such as punishing, directly intervening to stop or change students' misbehavior, or having the student apologize for it) more frequently than teachers encountering average students (Deng et al., 2017). Nevertheless, as no systematic research has yet investigated the proposition that teachers who feel that their authority is questioned in the classroom are more likely to disregard students' requests, further studies are required to test whether needs recognition depends on the degree to which a situation is perceived as ego-threatening or not (Cale & Lilienfeld, 2006; Ryan & Deci, 2017).

Causality orientations as distal antecedents of needs recognition and ignoring

In support of Hypotheses 2a and 4a, we found autonomous causality orientations to positively predict needs recognition and negatively needs ignoring, either directly or indirectly by means of ego-threat. An opposite pattern was found for control causality orientation and impersonal orientation (though for the latter this relation did not hold for the competence scenario). This finding is in partial support of Hypothesis 2b and 4b. Taken together, these findings are consistent with a longitudinal study, indicating that teachers with an autonomous causality orientation are more likely to gradually endorse an autonomy-supportive motivating style in their teaching (Reeve et al., 2018). Likewise, an observation study showed that teacher-reported controlled causality orientations predicted lower levels of needs-supportive instructional behaviors, as rated by observers (Van den Berghe et al., 2013). As for the relation of autonomous and control causality orientation to ego-threat, our finding aligns with prior empirical data showing that people with autonomous and control causality orientation are more likely to endorse, respectively, high and low ego defensive attitudes (Goldstein & Iso-Ahola, 2008). Blaming students or projecting students their «self-blaming» can be such a mechanism. Moreover, a control causality orientation indicates that social cues are interpreted as rewards (internal or external) to obtain or threats (internal or external) to avoid. Therefore, it sounds logical a control causality orientation to be positively related to ego-threats.

Our results complement these prior findings by showing in a sequence model that autonomous and control causality orientations relate to need-supportive and need thwarting practices partly by means of ego-threat perceptions. More importantly, our tested model suggests that these associations could be partly explained also by the degree to which teachers are willing to recognize students' needs. Obviously, more research in different contexts is required to test whether needs recognition (and needs ignoring) partially

mediate the relations of autonomous and control causality orientation to need-supportive and need thwarting teaching practices.

Causal attributions as distal antecedents of needs recognition and ignoring

Hypothesis 3 related to teachers' attributions were well supported. The paths from external attributions to needs recognition and from internal attributions to needs ignoring were statistically significant in the whole sample, as well as in each scenario. Moreover, relevant indirect path estimates underpinned the idea that needs recognition and needs ignoring could also be predicted by teachers' attributions through teachers' perceptions of ego-threat.

Hence, when it comes to physical disability, teachers' stereotypical attributional beliefs can become quite influential in predicting needs recognition or needs ignoring, both directly and indirectly. The findings conform to repeated previous demonstrations suggesting that the quality of teachers' stereotypical thinking (i.e., favorable versus unfavorable), about their students' ability forms positive versus negative teachers' expectations respectively (e.g., Woodcock & Moore, 2021). For example, negative expectations being expressed in the classroom can frequently be interwoven with stigmatization and may lead to students' isolation (Chatzitheochari & Butler-Rees, 2023; Froehlich et al., 2016). Thus, attributional beliefs may predict whether teachers interpret a student's behavior as an ego-threat or, alternatively, as a cue to address the students' underlying psychological needs. Consequently, teachers who are willing to recognize students' needs are less likely to hold negative biases towards students with physical disabilities.

On the consequences of needs recognition and needs ignoring

The findings of the present study propose that teachers base their behavioral need-supportive or need thwarting intentions toward their students on important situational prerequisites related to needs recognition. More specifically, hypotheses 5a and 5b referred to associations between needs recognition or needs ignoring and need-supportive or needs thwarting behavioral intentions respectively. In the present research we used empathy as a covariate, in an attempt to control for its influences on needs recognition or needs ignoring.

As expected, needs recognition related positively to needs supportive intentions and negatively to needs thwarting intentions, while an opposite pattern was found for needs ignoring. While several psychological factors may predict the endorsement of needs-supportive instructional

behaviors, our study complements prior findings by highlighting needs recognition and needs ignoring as additional predictors of such need-supportive intentions. Similar empirical findings stem from the empathy literature. For example, caring for the well-being of others –and thus for the satisfaction of their essential needs– often leads people to supportive intentions or even prosocial behaviors (Reeve et al., 2018). Our models, in which we controlled for teachers' empathy, suggest that acknowledging a student's innate needs (i.e., needs recognition) seems a distinct process from simply empathizing with a student to provide need support (Aelterman et al., 2019; Reeve et al., 2018).

On gender differences and teacher's experience

Although not among our primary objectives, our study revealed some sex differences in teachers' tendency to respond in empathic way to students and to recognize the student's need request. As in our study, previous research provides strong evidence that female teachers can be more caring than male ones (Kajonius & Johnson, 2018). However, prior research doesn't systematically confirm the sex differences found in autonomous causality orientation and needs thwarting practices (Demetriou et al., 2009; Vermote et al., 2020). As to the needs thwarting practices, critical variables, such as students' (dis)ability and sex, could have influenced teachers' responses (Beißert et al., 2022; Sypré et al., 2024). As to the teaching experience, previous research suggests that empathizing, holding external causes of students' performance and prioritizing needs supportive strategies may wear off as teachers acquire more experience over the time (Huang et al., 2020; Vermote et al., 2020; Wang & Hall, 2018). Apart from looking at confounding factors, such as age and burnout, this phenomenon could be explained through the ever-growing socialization process, teachers undergo within the school system (see also Hellebaut et al., 2023).

Limitations

The study has several limitations that should be acknowledged. First, the relations tested are based on correlational data, which means that no concrete causal inferences can be drawn from the hypothesized models. Although less likely, we cannot rule out the possibility that teachers who feel their ego is more threatened in the classroom may report a more controlled causal orientation or attribute a students' mishap to internal causes. Second, with the current research design it remains unclear whether teachers' needs recognition refers to teachers' ability to recognize such needs, their willingness to do so or both. Apparently, future research will need to disentangle ability versus readiness to recognize

students' needs. Moreover, the vignettes described a rather limited situation in which a student with a physical disability requested something from the teacher in a rather assertive tone without providing more details about the classroom dynamics – for example, classmates' reactions to the requests of main character of the story. Teachers' attitudes and responses are namely sensible to situational and contextual factors (e.g., providing strength-based information about a student, cf. Ginevra et al., 2021). Thirdly, the study involved teachers from one country, and thus more research is needed to generalize these findings to other cultural and educational contexts. Finally, causal orientations were assessed via a short form measure, which may have narrowed its capacity.

Conclusion

The present study was undertaken with the objective of investigating the phenomenon of basic psychological needs recognition. The primary research question was whether educators were able to discern these needs in the behavior of a student with a physical disability. The study demonstrated statistically significant relations between needs recognition (and their reverse counterpart, needs ignoring) and teachers' causality orientations, attributional beliefs, situational ego-threat, and supportive (as well as controlling) behavioral intentions while controlling for teachers' empathy. All associations were in accordance with SDT's theoretical framework. Further research is required to determine the nature and function of needs recognition, particularly in relation to its distinctiveness from other factors, such as teachers' acquired knowledge (or literacy) about needs and their learned skills after training concerning autonomy support.

Appendix

Appendix A. Vignettes

A1. Vignette focusing on the need for autonomy

Some time ago you asked your students what they thought of your lessons. John, a student with a physical disability who is in the last class at your school, spoke up and complained. From his words you understood that it was about the way the groups are formed. He likes to work with some classmates more than others, because they have found their own efficient and pleasant way of working. Therefore, he thinks it is unfair that he has no say in which group he works in, but also that he has no room for ideas and initiatives.

Some of his classmates agreed with him, and a short classroom discussion ensued. A few days later, you come into the classroom and ask the students to work in groups of four at their neighboring desks to save valuable time when dividing up the groups. You notice that one of your female students becomes emotional. At first, John seems upset, skeptical, and reluctant to participate in this activity, and then he protests because he does not want to work with the students at the neighboring desk. He is also influencing other students, thus disrupting the effective functioning of the classroom.

A2. Vignette focusing on the need for competence

Some time ago you asked your students what they thought of your lessons. John, a student with a physical disability who is in the last class at your school, spoke up and complained. From his words you understood that it was about the difficulty of the work done in the class and the fast pace at which new concepts are introduced. He feels that lessons move on too quickly, without checking whether the students have mastered the prerequisite knowledge. Consequently, many students find it difficult to understand the lesson and to solve the exercises, and as a result they often feel inadequate, frustrated and give up. Some of his classmates agreed with him, and a short classroom discussion ensued. A few days later, you come into the classroom and give the students a leaflet with challenging tasks on a lot of the subject matter. You notice that one of your female students becomes emotional. At first, John seems upset, skeptical, and reluctant to participate in this activity, and then protests that they haven't prepared enough for these tasks. He is also influencing other students, thus disrupting the effective functioning of the classroom.

A3. Vignette focusing on the need for relatedness

Some time ago you asked your students what they thought of your lessons. John, a student with a physical disability who is in the last class at your school, spoke up and complained. From his words you understood that it was about the fact that you do not discuss matters concerning their personal life. He feels that you focus too much on the knowledge part of the lesson and less on how the students feel or what their experiences are. Consequently, many feel you are distant from them and as a result they do not feel the acceptance they need. Some of his classmates agreed with him, and a short classroom discussion ensued. Several days later, you enter the classroom and before you start the lesson, you notice that something is bothering one of your female students. You point out to the class that the break is over and then you start the lesson. The female student becomes emotional. At first, John seems upset, skeptical, and reluctant

to participate, and then protests that in this class everyone is working like a machine. He is also influencing other students, thus disrupting the effective functioning of the classroom.

Appendix B. Attributions

B1. Students with physical disabilities show lower academic performance compared to typical students. This is because..

- ..they have lower intellectual abilities (internal/stable).
- .. they are disadvantaged in the current educational system (external, stable).
- ..they do not study enough for school (internal, variable).

B2. Students with physical disabilities attend the highest school track less frequently than typical students. This is because..

- ..with similar performance they get a teacher's recommendation for the highest track less frequently (external, stable).
- ..they are overwhelmed intellectually by the academic level of the highest school track (internal, stable).
- ..they do not make enough effort to aspire to the highest school degree (internal, variable).

B3. Students with physical disabilities hold a school-leaving certificate less frequently than typical students. This is because..

- ..they have insufficient knowledge to pass the final examination (internal, variable).
- ..educational success is less important to them (internal, stable).
- ..they are less integrated into the German educational system (external, stable).

B4. Students with physical disabilities are unemployed more frequently than typical students. This is because... they present themselves worse in job interviews (internal, variable).

- ..the employers like to hire typical people more than people with physical disabilities (external, stable).
- ..they lack the abilities required in assessment centers (internal, stable)

Appendix C

See Table 3

Table 3 Social Situations being Used from the General Causality Orientations Scale

	Very unlikely	Mod-erately likely	Very likely
1. You have been offered a new position in a company where you have worked for some time. The first question that is likely to come to mind is			
a. What if I can't live up to the new responsibility?	1	2 3 4 5 6	7
b. Will I make more at this position? *	1	2 3 4 5 6	7
c. I wonder if the new work will be interesting.	1	2 3 4 5 6	7
2. You have a school-age daughter. On parents' night the teacher tells you that your daughter is doing poorly and doesn't seem involved in the work. You are likely to:			
a. Talk it over with your daughter to understand further what the problem is.	1	2 3 4 5 6	7
b. Scold her and hope she does better.*	1	2 3 4 5 6	7
c. Make sure she does the assignments, because she should be working harder.	1	2 3 4 5 6	7
3. A close (same-sex) friend of yours has been moody lately, and a couple of times has become very angry with you over "nothing." You might:			
a. Share your observations with him/her and try to find out what is going on for him/her.	1	2 3 4 5 6	7
b. Ignore it because there's not much you can do about it anyway.	1	2 3 4 5 6	7
c. Tell him/her that you're willing to spend time together if and only if he/she makes more effort to control him/herself.	1	2 3 4 5 6	7
4. You have just received the results of a test you took, and you discovered that you did very poorly. Your initial reaction is likely to be:			
a. "I can't do anything right," and feel sad.	1	2 3 4 5 6	7
b. "I wonder how it is I did so poorly," and feel disappointed.*	1	2 3 4 5 6	7
c. "That stupid test doesn't show anything," and feel angry.	1	2 3 4 5 6	7
5. You have been invited to a large party where you know very few people. As you look forward to the evening, you would likely expect that:			
a. You'll try to fit in with whatever is happening in order to have a good time and not look bad.	1	2 3 4 5 6	7
b. You'll find some people with whom you can relate.	1	2 3 4 5 6	7
c. You'll probably feel somewhat isolated and unnoticed.	1	2 3 4 5 6	7
6. A woman who works for you has generally done an adequate job. However, for the past two weeks her work has not been up to par and she appears to be less actively interested in her work. Your reaction is likely to be:			
a. Tell her that her work is below what is expected and that she should start working harder.	1	2 3 4 5 6	7
b. Ask her about the problem and let her know you are available to help work it out.	1	2 3 4 5 6	7
c. It's hard to know what to do to get her straightened out.	1	2 3 4 5 6	7

Note * Discarded items due to poor fit in the CFA

Appendix D. Post vignette questionnaire

D1. Post vignette items assessing autonomy need recognition

I feel that John wants to choose how he will work in the classroom.

I feel that John wants to do things that really express him.

I feel that John wants to feel like his real self in the class.

I feel that John has the need to express his opinion on issues that concern him.

I feel that John seeks to co-decide on issues that concern him.

D2. Post vignette items assessing competence need recognition

I feel that John wants to have the sense that he can solve the exercises in the course.

I feel that John wants to have the feeling that he can achieve his learning goals.

I feel that John likes to fully understand the tasks he is asked to do.

I feel that John seeks to feel competent in everything he undertakes.

I feel that John wants to experience that he can complete even the most difficult exercises.

D3. Post vignette items assessing relatedness need recognition

I feel that John wants to have mutual warmth and caring in the classroom.

I feel that John wants to feel close to those he is going to work with.

I feel that John wants to feel that you are approachable and available.

I feel that John desires to receive and give love/sympathy in the classroom.

I feel that John wants to feel that he and his classmates are important to you.

D4. Post vignette items assessing needs ignoring

I feel that John just found an excuse to disturb the lesson.

I feel like John is taking advantage of the situation to get what he wants.

I feel that John has his own issues and is trying to resolve them this way.

I feel that John is exploiting rights related to his disability.

I feel that John has found a good opportunity to make a splash.

I feel that John wants in every way to ensure a very good performance.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s11031-025-10182-6>.

Data Availability Data sets generated during the current study are available from the corresponding author on reasonable request.

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