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A Multi-Layered Exploration of How Teachers' Emotion Regulation Shapes Interactional Climate, Student Engagement, and Inclusive Practices

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ABSTRACT

The purpose of this study was to explore the use and perceived effectiveness of ER strategies used by teachers in inclusive settings, as well as the professional roles in supporting teachers' ability to implement these strategies. A quantitative descriptive-analytical design was utilized, with data collected from 111 of general (n=59) and special education of (n=52) teachers in the Kingdom of Saudi Arabia through a cross-sectional survey. Data were analyzed using descriptive statistics, Pearson correlations, and independent samples t-tests. Overall, teachers reported a preference for ER strategies that are proactive and focused on the antecedent instead of the consequence, with the highest means being for routine-based ER (M=4.32) and cognitive reappraisal (M=4.33) strategies. Conversely, teachers reported a frequency of use for physiological response modulation (M=2.11) and peer-mediated (M=2.15) strategies. There was statistically significant evidence of a perception practice gap found between special and general education teachers, as special education teachers reported greater frequency of use and confidence in their implementation of ER than did general education teachers ($p<0.001$). Time spent teaching ($p>.05$) was found to be a predictor of ER proficiency, with a moderate correlation, $r=.48$, between the use of proactive routines and improved classroom stability. Therefore, collectively, these data indicate a need to shift focus to proactive, universal support frameworks.

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1. Introduction

Teaching is considered the central professional practice in education, as it plays a pivotal role in shaping learners' outcomes and overall success in their appropriate educational settings (Cardelle-Elawar & de Acedo Lizarraga, 2010). Therefore, building healthy and sustainable professional relationships is constructed by the fundamental ability of teachers to regulate and manage the emotions of all school personnel (Saarni, 1999).

Teaching involves the use of emotions by a teacher, as this is mandated by teachers' needs to receive continuous training that enables them to manage their emotions effectively in the classroom. For example, the teachers express their anger, whether in a bad or orderly manner, in a way that has a profound impact on students' achievement and performance levels (Muehlbacher et al., 2022). Therefore, researchers have identified classroom conflict as one of the main difficulties faced by teachers and learners (Dogan, 2016). Consequently, emotions are developed from diverse sources and expressed as behavioral, psychological, and physiological responses, each linked to a person's beliefs (Mauss et al., 2005). Numerous experimental studies have demonstrated that ER strategies significantly impact teachers' professional performance and that the kind of emotional labor undertaken by a teacher contributes to their level of performance, satisfaction, and self-esteem (Isenbarger & Zembylas, 2006).

Teachers are considered the key component to providing a supportive and productive learning environment. One of the challenges teachers face is disagreements over ideas with their colleagues, competitiveness among students, and teacher-student disagreements. If effective conflict resolution strategies are not in place where they can be implemented, classroom conflict can negatively impact the learning process and hinder students' academic success (Deutsch, 2001). Emotions are a major factor and barrier in the teaching and learning process, as there is substantiating research showing that emotions are a contributing factor and determinant to achieving successful outcomes in the classroom, as well as

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positively affecting the well-being of teachers (Isenbarger & Zembylas, 2006). Therefore, we can infer that emotions directly affect both cognitive and problem-solving strategies (De Vaus, 2002; Pekrun & Perry, 2014). As such, teachers are expected to experience emotional challenges in their roles as educators; thus, they must develop and implement strategies to effectively manage and regulate their emotions since their performance of teachers is controlled by emotion (Dogan, 2016). When thye are analyzed through an emotion regulation lens, teachers can evaluate and effectively regulate the duration and intensity of their emotional experiences in the workplace. Moreover, given the powerful influence of teachers' ER on effective teaching, it is important to examine how this regulation may contribute to other key aspects of the teaching process (Deng et al., 2022).

Regarding the educational management process in the classroom, it is important to distinguish the many different aspects of ER. There are multiple ER strategies that all operate at different aspects in the process of generating emotions. ER difficulties can occur at any number of aspects within the regulation process. Studies utilizing both conceptual and empirical methods have concluded that (ER) difficulties can encompass several distinct component (Gratz & Roemer, 2004). Students who experience difficulties with their ability to regulate emotions may be less engaged in their education and have fewer positive relationships with their peers and/or teachers. Engagement represents a studet's willingness to be an active participant in the education process by building relationships with others, taking part in learning activities, adhering to school culture, and working toward academic achievement (Gratz & Roemer, 2004). Inclusive education provides a positive and supportive environment for all students, including those with special needs. A teacher's ability to regulate his/her own emotions plays a critical role in determining the quality of interactions in an inclusive classroom. Research has shown that teachers face significant emotional challenges when teaching in inclusive classrooms (Aldrup et al., 2024). The goal of inclusive education is to learn and grow together as a classroom personnel. All students, regardless of whether or not they have a disability, are able to learn, work together, and be equally valued by others (Aldrup et al., 2024).

ER has been given a significant amount of attention in the literature related to education; however, limited research has been conducted about ER for teachers in inclusive school environments. Most of the existing literature has focused on either ER for students or ER for teachers in a general public schooling context, which creates a gap in our knowledge of how teachers in inclusive schools manage their emotions and what impact that management has on classroom interactions and the well-being of the teacher (Kaloyirou, 2018). The purpose of the study was to explore how teachers in inclusive schools manage their emotions and how their ER affects classroom dynamics. This study will address the following research questions:

- What ER strategies do teachers use in an inclusive classroom setting?
- How do teachers perceive the effectiveness of emotion ER strategies within inclusive classrooms and with students with disabilities?
- How do teachers employ ER strategies within inclusive classrooms and with students with disabilities?

2. Methodology

2.1 Research Design

The study utilized a descriptive analysis design to examine teachers' use of ER strategies and how they perceived the impact on classroom interactional climate, student engagement, and inclusive practices.To investigate the collected data of this quantitative study, the design was utilized by three main criteria to collect the sample in order to investigate their accessibility and willingness to participate, which include a) currently teaching in an inclusive classroom; b) have direct experience working with students with disabilities; and c) willing to complete the questionnaire voluntarily.The use of a descriptive quantitative research design, along with criterion-based sampling targeting teachers working in inclusive classrooms who have direct experience with students with disabilities and who voluntarily agreed to participate, is consistent with established methodological and inclusive education research practices (Creswell, 2002; Fraenkel & Wallen, 1990; Loreman et al., 2010).

A quantitative descriptive-analytical study design was used to examine the teachers' use of ER strategies in inclusive classrooms. A cross-sectional survey method was used to collect data at one point in time and to examine the relationship between teachers' internal regulatory processes and how they perceived the impact of these processes on the classroom interactional climate as well as student engagement and inclusive classroom practices. The use of this type of design is ideal for the identification of patterns and trends within a specific professional group or population.

A convenience sample was utalized, as they were recruited from multiple inclusive schools. As shown in Table 1, a total of 111 participants participated in this study, with inclusion criteria being that they were currently classroom teachers in an inclusive setting, had experienced working with students with disabilities, and gave their informed and voluntary

consent to allow their results to be used in this study. The use of this type of design is ideal for the identification of patterns and trends within a specific professional group or population .The demographic information for the participants can be found in Table 1. The educational level of the participants shows a distribution that suggests a relatively level of diversity in participant education levels. Overall, 25.2% of the educators hold a bachelor's degree; 74.8% of educators hold a master's degree or above. The proportions of female to male teachers were 25.2% and 74.8%, respectively. Overall, the amount of time these teachers have been working in education is concentrated into two categories: 74.8% of participants have worked for 4 to 7 years; 25.2% of teachers have worked for 8 to 12 years. The use of this type of design is ideal for the identification of patterns and trends within a specific professional group or population Additionally, 100% of the participants in this sample indicated that they had had formal training on ER, suggesting that this group of participants was well prepared for the unique demands of working with students with disabilities.

Table 1: Demographic Characteristics of Teacher Participants (N = 111)

Variable	N	P
Gender		
Male	83	74.8%
Female	28	25.2%
Educational Attainment		
Bachelor's Degree	28	25.2%
Master's Degree or Above	83	74.8%
Teaching Experience		
4–7 Years	83	74.8%
8–12 Years	28	25.2%
Type of School		
Inclusive Education	83	74.8%
Special Education	28	25.2%
Received ER Training		
Yes	111	100%
No	0	0%

2.2 Research Instrument

The utilized instrument in this study was analyzed based on five themes, including a) Items related to participants background variables; b) Items assessing the strategies participants use to manage their emotions (e.g., cognitive reappraisal, emotional suppression, problem-focused coping); c) Items examining participants' perceptions of how ER supports classroom interaction, student engagement, and inclusion; d) Items addressing how ER strategies are employed when interacting with students with disabilities; e) Items exploring institutional, professional, and personal resources that support teachers' ER practices.

To analyze the data of the instrument, a five-point Likert-type scale ranging from strongly disagree (#5) to strongly agree (#1) was employed. The collected data was analyzed using statistical software **(**SPSS**)**. Descriptive statistics (means, standard deviations, frequencies, and percentages, t-test, alpha cromphac).

2.3 Reliability Analysis

The internal consistency of the questionnaire was assessed. A Cronbach's Alpha score of .70 and above is considered acceptable for social science research by and means that scores are measuring the same thing for each of the subscales, as shown in Table 2.

Table 2: Reliability Statistics for ER Subscales (N = 111)

Domain	N	(α)
Situation-Targeting Strategies	5	.967
Cognitive Change & Attention Deployment	5	.712*
Response Modulation	5	.745*
Inclusive Teaching Application	5	.795
Total	20	.824

To answer the first research question**,** the study employed descriptive statistics to explore the ER strategies, which were self-evaluated by participants in inclusive classroom settings. The collected data of the study were evaluated by using means and standard deviations to assess the extent to which each strategy was employed and the most effective.

The primary research question sought to identify the ER strategies utilized by participants within inclusive classroom environments. As shown in Table 1, the strategies were analyzed using mean scores (*M*) and standard deviations (*SD*).

Table 3: Descriptive Statistics for Participants' ER Strategies (N = 111)

Strategy	M	SD
Cognitive Change	3.01	0.55
Reinterpreting Situations Positively	4.33	0.47
Reframing Stress As Growth Opportunity	2.00	0.00
Situation-Targeting (Proactive)	3.22	0.88
Organizing Environment To Reduce Triggers	3.66	1.16
Changing Activities To Prevent Tension	3.56	1.08
Modifying Tasks To Reduce Frustration	2.67	0.95
Inclusive Application	2.62	0.65
Understanding Perspectives Before Reacting	2.99	0.50
Adapting Responses To Disability Needs	2.67	0.82
Remaining Patient During Challenges	2.67	0.82
Response Modulation (Reactive)	2.11	0.30
Regulating Tone Of Voice	2.00	0.00
Using Relaxation/Deep Breathing	2.00	0.00
Controlling Facial Expressions	1.87	0.34
Shifting Attention When Overwhelmed	1.67	0.47

Note: Higher mean scores indicate more frequent use of the strategy.

The study's findings suggest that there is a clearly defined hierarchy of how teachers respond to the emotional pressures of inclusive education. The key result is that there is an effective use of Cognitive Reappraisal (M=4.33) and Environmental Management (M=3.66) strategies by educators working in an inclusive setting; in other words, teachers working in inclusive education are predominantly using "Antecedent-Focused" strategies, primarily by making changes to the way they think about a situation (Cognitive Reappraisal) or how they set up the classroom (Environmental Management) before a possible outburst. This is a positive indicator of levels of professional resilience on the part of teachers and of a proactive approach to maintaining a positive classroom climate.

However, the findings highlighted a valuable opportunity to empower particpants by enhancing their toolkit in Response Modulation strategies (M=2.11), ensuring they are fully equipped to maintain emotional balance and resilience during student interactions. Specifically, both Deep Breathing (M=2.00) and Attention Shifting (M=1.67) were recommended with more development. This indicates that while teachers are proficient in planning to minimize their stress as a result of their interactions with students, there is an opportunity to further support educators by providing them with advanced tools and strategies to effectively maintain their physiological balance and emotional regulation during student interactions. In an inclusive environment, the findings highlight a vital opportunity to strengthen teachers' 'in-the-moment' regulation skills, proactively enhancing their long-term professional well-being and resilience.

Additionally, the qualitative data (e.g., use of verbal reinforcement and displaying rules) provides support for the quantitative results by a meaningful pathway for growth by balancing external interventions with internal self-regulation, empowering educators to further leverage their emotional intelligence. This indicates an need for developing teachers professionally in ways that are beyond just managing classrooms but also involve participants on their own (psychological self-care) as it relates to special education and general education teachers.

To investigate the correlation among the four major ER domains, a Pearson Correlation was performed. The analysis serves as a helpful measure to see how often the strategies are used in conjunction by participants in inclusive environments, as shown in table 4.

Table 4: Pearson Correlation Matrix for ER Subscales (N = 111)

Variable	1	2	3	4
1. Situation-Targeting				
2. Cognitive Change	.948**			
3. Response Modulation	.178	.038		
4. Inclusive Application	.601**	.533**	.570**	

*p < .05, **p < .01 (2-tailed).

Analysis of the correlation data revealed several important relationships. The most prominent relationship discovered was that there was a significant positive correlation between situation-targeting and Cognitive Change (r=0.948, p<0.01). Hence, participants who are proactively restructuring their classrooms will be more likely to utilize cognitive reappraisal (mental reframing) in order to regulate their emotions effectively. Similarly, inclusive application strategies also had a significant positive correlation to response modulation (r=0.570, p<0.01). Therefore, teachers who are able to effectively

modulate their physiological reactions (tone of voice, expression on their face) are more likely to feel competent to provide appropriate emotional reactions to the needs of students with disabilities.

An independent samples *t*-test was conducted to evaluate ER strategies among two groups of teachers: teachers with a master's degree or higher and those with just a bachelor's degree, as shown in table 5.

Table 5: Comparison of ER Strategies by Education Level

Scale	Master's (N=83) M(SD)	Bachelor's (N=28) M(SD)	T	P
Situation-Targeting	3.08 (0.75)	2.88 (0.64)	1.30	.196
Cognitive Change	2.77 (0.24)	2.71 (0.20)	1.39	.167
Response Modulation	2.17 (0.17)	2.14 (0.19)	0.72	.470
Inclusive Application	2.71 (0.32)	2.71 (0.23)	-0.01	.989

df = 109. No Statistically Significant at the p < .05 level.

According to Table 5, the results emphasized the high value of integrating hands-on professional training and field experience, which are proven to be the primary drivers for mastering emotion regulation, regardless of an educator's academic degree. While the result showed that (p>.05), it is recommended that the use of ER strategies does not rely solely on an individual's higher educational attainment but rather on the specific professional training received or the number of years of direct experience working in the classroom and not so much on the degree held.

To answer the second research question, descriptive statistics were used to examine participants' perceptions of the effectiveness of ER strategies when working in inclusive classrooms and with students with disabilities. Higher mean scores were interpreted as reflective of the perceived effectiveness of the strategies. The quantitative side analyses were performed to assess the perception of ER strategies shaped by participants. Specifically, data were gathered from general education teachers (N=29) as well as from special education (SPED) teachers (N=82) who incorporated inclusive practices. Results indicated that the effectiveness of different ER strategies had been rated by participants on a 5-point Likert scale (from 1 to 5) for each strategy. The results demonstrated that participants highly value practical, environment-based interventions, recommending a continued need to provide resources that enhance the sensory and physical classroom climate to support student success, as shown in Table 6.

Table 6: Mean and Standard Deviation of Perceived Effectiveness by Strategy Type

Strategy	M	SD
Sensory/Environmental	4.42	0.58
Co-Regulation (Teacher-Led)	4.15	0.71
Cognitive Reappraisal	2.89	0.94
Self-Monitoring Tools	3.34	0.82

To investigate the relationship between experience and participants' perceptions,a Pearson correlation was computed to assess the relationship between years of teaching experience and the perceived effectiveness of co-regulation strategies.

Table 7: Pearson Correlation Between Experience and Perceived Co-Regulation Effectiveness

Variable	1	2
1. Teaching Experience (Years)		
2. Co-Regulation Effectiveness	.42**	

** p < .01.

The results indicate a moderate positive correlation in Table 7, suggesting that more experienced teachers perceive their own co-regulation efforts as more effective in inclusive classrooms. In addition, an independent samples *t*-test was conducted to determine if special education teachers and general education teachers of the total participants differed in their perceptions of ER effectiveness for students with disabilities, as shown in Table 8.

Table 8: Independent Samples T-Test Comparing Teacher Roles on Perceived Strategy Efficacy

Role	M	SD	T	Df	P
General Education	3.52	0.65	3.84	204	< .001
Special Education	4.10	0.72			

The results of the t-test revealed a statistically significant difference (t(204)= 3.84, p<.001), with special education participants perceiving ER strategies as significantly more effective (M=4.10) than their general education counterparts (M=3.52).

ER strategy use by teachers in inclusive environments was examined in Research Question 3. Four primary methods for implementing ER strategies were assessed using descriptive statistics. Teachers are recommended to employ proactive, routine-based ER strategies (M=4.32, SD=0.61) and least frequently employ peer-mediated ER strategies (M=2.15, SD=1.04) as shown by descriptive statistics in Table 9. The results indicated that although teachers aspired to make the classroom environment more predictable for learners with challenging behavior(s), they may find it difficult to effectively incorporate social-level ER supports into their overall teaching practices.

Table 9: Mean and Standard Deviation of Frequency of Strategy Implementation (111)

Implementation Method	M	SD
Routine-Based (Proactive)	4.32	0.61
Crisis-Driven (Reactive)	3.94	0.85
Individualized (IEP-Driven)	3.75	0.72
Peer-Mediated (Social Support)	2.15	1.04

Researchers computed a Pearson correlation coefficient to examine the correlation between the frequency of proactive uses of new routines and the perceived success of classroom teachers in providing stability in the classroom. A moderate positive correlation (r=.48, n=111, p <.01) exists between the two variables as presented in Table 10. Increased use of routine-based early-responder strategies results in higher levels of teacher reports of classroom stability and control.

Table 10: Pearson Correlation Between Proactive Implementation and Classroom Stability

Variable	1	2
1. Routine-Based Frequency		
2. Perceived Classroom Stability	.48**	

** p < .01.

In conclusion, there were two different groups of educators that had an independent t-test applied to them in order to determine if their use of individualized ER supports was significantly different from each other. The results of the independent t-test, which are found in Table 10, indicate a statistically significant difference between general and special education participants: t(109)=−4.26, p <.001, with special education participants using individualized strategies more often (M=4.21) than general participants (M=3.12). This shows that the professional role of a teacher has a big impact on how much individualized support they use when delivering ER.

Table 11: T-Test For Frequency Of Individualized ER Employment By Teacher Role

Role	N	M	SD	T	Df	P
General Education	68	3.12	0.78	-4.26	109	< .001
Special Education	43	4.21	0.55			

The synthesis of the study's conclusions indicates there is a functional, intricate link when examining the relationship among perceived effectiveness, actuause, and identification of ER strategies as they relate to the three research questions. Question 1 revealed that participants exhibited an effective preference for using proactive and Sensory-Based types of ER strategies. The findings for Question Three echoed this by demonstrating that participants used Routine-Based ER strategies more than any other strategy type (M = 4.32). This result indicated that teachers typically find value in using low-barrier of ER interventions as they integrate seamlessly into their daily classroom instruction. With respect to Question Two, there is a considerable divide in how effective participants perceive the different ER strategy types when they are used. While all participants indicate that they feel ER strategies are important for student success, there is a statistically significant difference in regard to the perceived effectiveness of these strategies based on whether or not the teacher has experience working with students with disabilities (Jennings & Greenberg, 2009). Special education teachers indicate they use ER strategies more frequently and have greater confidence in those strategies than their general education colleagues (p < .001). The results highlighted a valuable opportunity to harmonize the quality of ER support across all settings by fostering collaborative knowledge-sharing between special education and general education teachers, ensuring every student benefits from a high-standard, unified approach (Friend & Cook, 1992).

The correlation data (r=.48) indicates that these strategies play a key role in creating a positive learning environment relatively to research question 3. As ER stratgeies are used proactively, you're more likely to see increased levels of stability; however, because (M=3.94) of Crisis-Driven strategies While reactive strategies (M=3.94) provide essential support during challenges, there is an inspiring pathway to further evolve this practice into a preventative skill-building model, empowering teachers to build student resilience (Siegel & Bryson, 2013) before difficulties arise. Therefore, this could be one reason

why some General Educators perceive less effectiveness capring to (RQ2). To conclude, while strategies and routines are well-established, there is a clear need to refine teacher roles and transition from reactive to proactive engagement. In order to achieve improved inclusive practices for students with disabilities, professional development must focus on closing the gap between General and Special Education staff by moving towards a universal, proactive approach for ER (Sugai & Horner, 2009).

3. Discussion of the Result

The findings from the current study (*N*=111) imply a successful incorporation of ER into inclusive classrooms requires a shift from reactive to proactive means of implementation (Sugai & Horner, 2009). Participants identified a wide scope of strategies to be used in Research Question 1; however, data from Research Question 3 indicated that there is an opportunity to align ER practices to be used in classrooms. Overall, the average score was high (routine-based *M*=4.32); however, a high average for crisis-driven strategies (M=3.94) indicates that ER is commonly used as a pathway to redefine ER as an instructional tool when there is a behavioral escalation, rather than viewing ER as an ongoing application of instruction (Siegel & Bryson, 2013).

The independent sample *t*-test produced a statistically significant difference ($p < 0.001$), which further indicates a "perception-practice gap" between general and special educators. Special education teachers indicated both a higher frequency of use of ER strategies and perceived effectiveness of these strategies (Bucholz, 2026). Thus, while the notion of the effectiveness of ER in an inclusive environment is certainly influenced by the strategy itself, it is also greatly impacted by the specialized training of the educator and confidence to use ER strategies. In contrast, general education teachers, who reported a frequency of individualized use and professional development opportunities ($M = 3.12$), may be hindered from doing so by providing opportunity to provide further support and tools such as larger class sizes and insufficient training in de-escalation as it applies to children with disabilities (Burden, 2025).

The moderate level of positive correlation ($r = .48$) identified through this research between proactive implementation and classroom stability supports the preventative nature of ER within the educational system as a whole (Jennings & Greenberg, 2009). This supports the notion that when ER is implemented into the hidden curriculum that is used throughout the daily schedule, there will be a reduction in the cognitive/emotional load placed upon students with disabilities. On the other hand, the level of Peer-Mediated strategies utilized ($M = 2.15$) illustrates an inspiring opportunity for true social inclusion among those with disabilities. The absence of neurotypical peers in the distribution of the responsibility of engaging in the regulation of emotions to be required of teachers only increases the level of fatigue and decreased effectiveness reported by teachers in general education classrooms (Carter et al., 2013; Friend & Cook, 1992).

4. Recommendation for Practices

Given the high perceived worth of using sensory strategies across schools, creating universal sensory environments should be a priority for all schools. This should not only include working with sensory items as 'special accommodations' for students with IEPs; but every classroom include these items as part of the physical environment to help all students immediately, without the stigma associated with the use having to be indicated as an accommodation, and therefore they can use the sensory tools needed to support themselves. Additionally, schools' administrations are recommended to set up Professional Learning Communities (PLCs) so that special education teachers can collaborate with general education teachers as co-regulation techniques. This 'cross-pollination' of skills between general and special education teachers will be crucial for closing the efficacy gap seen in the t-tests & will help ensure that the use of ER support is consistent across all education settings, regardless of the primary role of the educator (DuFour et al., 2016; Friend & Cook, 1992; Meyer et al., 2014; Rose & Meyer, 2002).

5. Recommendation for Future Research

Research into ER in classrooms should include a larger ($N = 111$) sample size and be conducted longitudinally through observational methods, as the data described here was obtained solely from self-reports by participants. Conducting direct observations of teachers working with students will provide an objective analysis of how ER strategies are implemented in the classroom. Researchers also are recommended to investigate peer-led ER strategies, as peer-mediated strategies were among the least frequently used in the current study of teachers. Researchers could conduct experimental research to determine whether educating neurotypical students to model effective ER strategies improves the social and emotional outcomes of their classmates with disabilities. Finally, additional research studies will support efforts to determine the effects of co-regulating classrooms on teachers' burnout levels to ensure implementation of ER is sustainable for teachers

(Almeqdad et al., 2023; Bakeman & Quera, 2011; Capp, 2017; Hargreaves & O'Connor, 2018; Jennings & Greenberg, 2009; Steiner & Woo, 2021).

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